TECHNOLOGY, EDUCATION, INCLUSION FOR STUDENTS WITH VULNERABILITY

TECNOLOGIA, DIDATTICA, INCLUSIONE PER STUDENTI CON VULNERABILITÁ

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Abstract (English)
The risks and benefits of technology in school and university education play an important role in the educational paths used by teachers, especially for students with vulnerabilities. The article tries to indicate the elements that contribute to making conscious choices in an inclusive vision of education where the speed of technological innovation brings with it extraordinary potential that must however be declined. The body, in some approaches, risks being overshadowed but the evidence from Embodied Cognitive Science shows an intra and transdisciplinary vision that goes in the opposite direction. One of the current pedagogical challenges is that of being able to integrate technology effectively for school and university learning but also that the body can express its potential and that it is not silenced in particular for those who show vulnerabilities.

Abstract (Italiano)
I rischi e i benefici della tecnologia nell'istruzione scolastica e universitaria giocano un ruolo importante nei percorsi didattici utilizzati dagli insegnanti in particolare per gli studenti con vulnerabilità. L'articolo è volto alla ricerca e all'analisi di quei fattori che contribuiscono a scelte educative consapevoli in una visione inclusiva dell'istruzione dove la velocità dell'innovazione tecnologica rivela straordinarie potenzialità che vanno però declinate. Il corpo, in alcuni approcci, rischia di essere messo in secondo piano ma le evidenze dell'Embodied Cognitive Science mostrano una visione intra e transdisciplinare che vanno in direzione opposta. Una delle sfide pedagogiche attuali è quella di riuscire a integrare la tecnologia, in modo efficace per l'apprendimento scolastico e universitario, con la corporeità in modo che questa possa esprimere tutte le sue potenzialità e che non venga messa a tacere specialmente per coloro che manifestano vulnerabilità.

Keywords

Didactic technology, vulnerability, the body, ECS

Tecnologia didattica, vulnerabilità, corpo, ECS

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Introduction

For several years now, the rapid change of technology in schools has required specific attention to teaching and its effectiveness for the growth of the individual. In the academic field, this aspect has a dual character: on the one hand, it searches for evidence and specificities inherent in the new didactics combined with technologies and, on the other hand, it tries to anticipate the times by probing which horizons are worth pursuing in the years to come. In this speculative and predictive function, the task is covered by the ethical imperative of safeguarding individuality and creating inclusive environments, for all and with all, safeguarding the peculiarities in a process of enhancement and growth. The complexity to which we are exposed can become, for people with fragility and vulnerability, a wall erected to stop their journey, but it is also a set of resources to be brought into play with enthusiasm, aware that focusing more on the potential and mobilization of the same rather than on limitations, even if obvious, means widening the possible horizons. From this point of view, didactic and technological changes are worthwhile when they are able to create a climate of learning and growth for everyone, students with or without vulnerability and for teachers as well. The removal of difficulties for people with fragility and vulnerability in schools or universities is also a cultural problem that concerns not only the implementation of constitutional rights but also a process of effective recognition and inclusion. The historical framework, in particular in Italy, of the protection of the rights of students with frailty or with a disability includes numerous legislative interventions promoted by a vision of the person who is and must be able to take ownership of his or her own destiny and success at school. The presence of technology stands out as a characterizing element of the last decades with the extraordinary possibility of accesses to knowledge and the enhancement of the effects of residual capacities, but also with a significant increase in risks and harmful effects both in the relational sphere and in defending oneself from external conditioning. Learning, in particular children, the variable "cultural tools" introduced by Lev Vygotskij (1987) starting from the concept of "priëm" (stimulus-means), subsequently implemented by the concept of "mediation through cultural artifacts" by Michael Cole (1996), remains a fundamental reference for a prospective vision of technology and its actual impact on schooling. The life of today's citizen is increasingly projected towards a rapidly evolving future where the digital world overwhelmingly interacts in almost every aspect of everyday life. Critical views and claims of dangers associated with the use of technology, for children in particular, argue that

cognitive development may be limited. Manfred Spitzer (2012) a physician and psychiatrist, referring to digital media, describes digital dementia as "the inability to fully use and control mental performance, that is to think, want, act, know what is happening, where we are and, ultimately, who we are". Storing the fruits of mental work through a PC, or cloud, allows it to be quickly shared in every part of the world together with the possibility of extraordinary comparisons, unthinkable until a few decades ago: At the same time the incorporation of the same in the individual memory to elaborate new horizons of thought or new conclusions enriching the cultural landscape with its own subjective interpretation, seems to be questioned because the mnemonic process requires a suitable effort and time that are limited by the perception of security of having placed the contents in a digital memory and the speed with which it can be accessed again, regardless of where one is at that moment (M. Spitzer 2012). On the other hand, the opportunity to amplify and assist learning with technology has undoubted possibilities for those with sensory limitations (reading programs for the blind, writing programs for the deaf, etc.) or cognitive limitations (the possibility of reviewing the entire lesson on video, focusing on the parts that are not clear, implementation of the visual impact of significant parts, simplification and multiplication of remote feedback, etc.) through new strategies and didactics where the technological aspect functions as a means of adaptation to the residual and real possibilities of the learner. Certainly, the problem arises of how to understand the presence of technology in the learning process also from an "ergonomic" perspective of didactics, aimed at obtaining the best in terms of effectiveness and identifying possible pedagogical principles that indicate the best paths and solutions (Calvani, F. Landriscina, I. Talloni 2007). The complex framework, which can be addressed at different levels and now with a wealth of publications, has its foundation in the need to implement an active process necessary for learning, historically focused on by the constructivist tradition (G. Bonaiuti et al. 2010) and finds a contribution of clarity in the interventions presented in the webinar "Technology, didactics, inclusion. The quality of life of vulnerable students" by the Catholic University of Milan (2021). In his speech, Prof. Santo Di Nuovo, describes the student with vulnerability not only as one who has a certified disability but also one who has limitations regarding activity and participation in the process of growth, including those who could be defined as border-line, redefining in practice the degree of disability as an element particularly related to the environment and the presence or absence of appropriate supports, including technology. In this sense, students with Specific Learning Disabilities, who are generally placed in the context of neurodevelopmental

disorders and therefore have a certification and a functional profile, and people with physical and mental disabilities, are not the only ones who can benefit from a purpose-built technology, since those who have a condition of non-adaptation, in terms of activity and participation, can also benefit. However, the latter must be identified through processes of observation within the relationship of the teacher and the class group since nosography alone would be insufficient in this case. Therefore, it is important to emphasize the importance of the teacher/educator's attention to the individual student in order to develop a specific project dedicated to him/her. Identifying the prerequisites for achieving an adequate status of effectiveness and quality of life for students with fragility and vulnerability, is extremely important. Attention must be paid both to verifying the capacity to respond to environmental stresses, and to the way in which this response is expressed. The situation becomes optimal when the learner is able to modulate responses by actively orienting himself in the learning environment and asserting his own opinions while respecting those of others. These two elements, knowing how to respond actively and knowing how to orient oneself adequately, are necessary and must be integrated and coexist to attain an improvement in the quality of the educational experience because the perception of satisfaction in school and university life passes through the processes of satisfying the personal needs of being considered, of feeling an active part of the process and of feeling able to accept new challenges. Personal needs can be more easily satisfied if they are also understood and evaluated by the teaching staff, but they cannot be separated from a condition of psychophysical well-being and a balanced relationship with others. Feeling part of a group and living relationships with active but not aggressive attitudes, is one of the most important indicators of the inclusion process. In fact, Di Santo (2021) stresses the importance of assuming an active and assertive orientation, capable of interacting with one's own personal way of interpreting reality and participating in its co-construction.

1.Inclusion between the nomothetic and the ideographic. Does technology help?

The educational function is characterized in these cases by the requirement to identify needs, both those expressed and those latent, and the personalization of the work both for the purely curricular aspects, and with regard to the search for a general well-being. For unexpressed needs, observation and the potential of the relationship between learner and student are of great importance, but the contributions of the professionals that gravitate around the institutions are not excluded. When do technologies help? When they are referred to the

generic nomothetic indication and are standardized, they risk being ineffective if they are not adapted to individual conditions. When they are inserted after an ideographic analysis that takes into account the modalities and possible cognitive styles, then they can become suitable tools. The contribution of the student has to do, in this delicate process of approach, with the willingness to use them and with the ability to adapt to the specific technical elements.The teacher has the task of facilitating this process of approach to technology, referring to the functional diagnosis or analysis prior to its use, but also has the task of monitoring its effectiveness. This circularity with regard to the choice and application of technology makes it possible to safeguard the growth process by readjusting it over time. Another crucial element regarding the adequacy of the use of technology in school and university training is the need to stimulate what is still powerful that is, the abilities and skills that will be translated into competencies, but which are currently under-expressed. In the event that the technology adopted replaces some functional aspects in their entirety, there is a danger that the absence of stimuli linked to the replacement of cognitive work or simply memorization, will lead to a failure to increase skills and, if prolonged in time, to their limitation. Therefore, compensatory tools can inhibit certain skills while still allowing for the success of the required task, and this danger must be averted by analyzing which skills are "replaced" by the use of technology and then soliciting them in other ways. The optimal situation occurs when the ability exercised is the maximum possible and the tool allows an additional level of functionality to achieve the objective of the task. The compensatory-dispensatory tools can therefore present this dual role and it is up to the free choice of the teacher and his competence to evaluate the use to avoid a block of growth on the one hand and the opening towards new horizons of help oriented to a better life condition in the path on the other. Pleasantness and willingness for use should also be considered beforehand in view of an acceptance that is not taken for granted a priori. The new elements can be taken into consideration within two extremes, that of an unjustified fear and that of absolute trust in the proposal. In this context, the teacher's awareness and authority play a decisive role if realized in a process of mutual trust, in order to facilitate the student's committed adherence. Effectiveness then will further motivate its use. Another element to be considered is the need for planned monitoring program that combines the results of adherence and effectiveness with the conditions of the setting and the perceived quality of the path from this point of view, the critical behavior of the teacher allows the acquisition of additional elements that enrich his personal competence, an important background that can be reused in similar

situations in a professionalizing perspective. In the elements described above, the possibility of "being there" in the group with one's own suitable path rather than adapted, stands as a founding element of an inclusion in the facts, whereas all, in parallel, one proceeds towards a horizon of maximum autonomy enriched by personal modes and learning styles. In this way, the weaknesses, whether or not described by a functional diagnosis, are mitigated in a shared educational process of guidance in which the motivation and acceptance of the educational challenge for enrichment is on two levels, that of the learner who grows and that of the teacher who trains himself. In conclusion, these elements combine to allow virtuous circuits where inclusion becomes - parallel to the learning process- the modality which on the one hand "sees" and "supports" the student and on the other allows for growth similar to that of those who do not experience frailty. When this happens, the situation of vulnerability is declined in a process of respect and growth with the possibility of extinguishing it at least in some of its aspects or nuances.

2.Inclusion of teacher's rights, good practices and characterizations

Professor D'Alonzo (2021), underlines how the regulatory aspect in our country has an absolute primacy in the international scene in the protection of the rights of people with disabilities or frailties. Starting from the dictates of the Constitution (in particular art. 3), the historical declination of laws and decrees since the early 70s, has enshrined the right to a feasible participation in education for all. The difficulties encountered in the school process are different, but in any case, schools and universities have been dealing with them for some time. In the current situation, linked to the pandemic with the forced introduction of Distance Learning (ODL), in many cases those who have had the most difficulty belong to this vulnerable population. As a contribution to clarity, there are some general indications to refer to, cited by D'Alonzo (2021):

- the context, as a third player in education, increasingly fundamental in a complicated world that varies rapidly and that changes the youth population

- the language, for the pervasive capacity of words that can give proper dignity and respect to those who experience frailty

- the possibility of making a difference as educators and teachers if, in addition to competence, passion and heart are brought into play in an effective relationship, which sees more potential than frailties or shortcomings

- the awareness that life projects can be built starting from school experience, helping the development of skills to be directed towards the outside world.

Moreover, in schools, gathered in a single descriptive acronym (BES= Special Educational Needs), students with disabilities or frailty/vulnerability are increasingly present with a trend which has been growing for several years (ISTAT 2019) where even in universities the presence is becoming more consistent. The fulcrum of the teaching activity is the teaching staff: in the meta-analysis of John Hattie (2017) the variable with the greatest impact (Effect Size), for growth and achievement of a student, is precisely the effectiveness of the teaching staff that translates in terms of skills (disciplinary, methodological-didactic, as well as relationship, communication, motivational skills) but also of collaboration and unity of purpose while remaining within the constitutionally assigned freedom of teaching. D'Alonzo indicates some operational pillars of reference which must characterize the behavior of the teaching staff

- The importance of the moment of reception/welcoming

- Work on the relationship that becomes the main tool of interaction

- Highlight needs and not limitations / frailties

- Operate primarily on the resources of the person

- Encourage participation

- Establish a unified, community effort/work

  Further identify the following criteria to be followed:

- Equity, as a form of respect for the different possibilities and not "equality" understood as "the same thing to everyone"

- Welcoming diversity as an asset and as an educational challenge

- Didactic renewal as a tool to make participation in the learning and growth path effective

- Unified work as an operational style to safeguard the learner and as a way to get the best out of it

- Use of technology in a targeted manner, including for eminently inclusive purposes

3.Embodied Cognitive Science: the role of the body in inclusion

Interest in the body as an integral part and driver of learning has grown considerably in recent decades and is contributing to the wealth of proposals for educational innovation. In particular, the research supported by the Embodied Cognitive Science (ECS) has opened up spaces for analysis and linkage between different disciplines that converge in an extended definition such as 'neuroscience', with others of great tradition such as psychology, special pedagogy, motor sciences and others. The importance of a broader transdisciplinary and interdisciplinary approach to learning and its characterisations and variables is linked to the multifactorial nature of a process that involves the whole person and that lives in a variable and multiform environment that can strongly condition behaviour and growth. The Embodied Cognition paradigm, widely used on the international scene, is concerned with cognition and refers to the theory that considers it as embodied, located in the body. This relationship is complex and does not end with the statement that "the states of the body modify the states of the mind" (A. Wilson and S Golonka 2013) but finds in the complexity of the implications related to sensoriality and its paradoxes, the use of concentration, the conscious construction of perception and thought, the limited understanding of the binomial mind-brain, the action of emotional states and the intervention of the unconscious, horizons only partially explored by science but which have a potential of undoubted interest for learning and teaching processes not only in school. The need to integrate knowledge of different origins, also detected in different ways, is a demanding but necessary challenge because there is the need to provide teachers with innovative elements that have a safety status in the evidence and in their organicity a guarantee of effectiveness. The single conclusions that emerge from disciplinary research, help to compose an increasingly interesting and stimulating mosaic, but on the other hand, if introduced individually, there is a risk of suggesting generalizable values which they actually might not always have, determined by "fads" or "myths" of the moment that can become counterproductive.

The critical attitude of the teachers is necessary, on one hand to orient themselves on evidence-based aspects of specific research useful to the contingent situation, and on the other to decide where and when the inclusion of innovations is most appropriate for the class

group or for the individual student, while avoiding getting carried away by the enthusiasm of having understood new possibilities of intervention. Embodied Cognitive Science is historically structured on the assumptions of Embodied Cognition (EC) where, authors such as M. Wilson (2002) and Barsalou (2008), identify perception and action as two fundamental elements, and is constituted through those interdisciplinary meeting points that link biochemical aspects with learning responses "...promoting deliveries and proposals that are in accordance with the principles.... and consistent with the basic mechanisms of the functioning of our nervous system" (Gomez Paloma 2014). This fundamental passage that foregrounds corporeality in the teaching process, is enriched with a biopsychosocial connotation through the contribution of Caruana and Borghi (2013) where they attribute the function of connecting the individual and the environment.to dynamic cognitive systems. The decade-long research activity of the Rizzolatti group on mirror neurons has highlighted the importance of imitation as a relevant training mechanism and it is no coincidence that motor activities use the example to make clear what it is and how it can be used for a task which has to be learned. The response mechanism of mirror neurons places more emphasis on the emotional dimension of the relationship between the internal and external environments of the individual and, therefore, also in the teaching-learning binomial. Stanislas Dehaene (2014) helps to clarify some aspects of becoming aware of the external environment. The multitude of sensory stimuli, for example environmental, is initially distributed in specific areas of the brain to undergo an initial unconscious pre-selection process that tends to be isolated. If the stimuli are not particularly important, the delimited area that receives them, remains active only for a short time and the conscious mind is not aware of them. The moment such signals acquire a certain importance, however, they go out of the area where they arrive and invade other larger areas where they undergo further processing and we become aware of it. In this way the information is made available to other areas, even if not necessarily only neighboring ones, to implement further tasks, such as a motor response. In the first case the process is completely unconscious, in the second, it becomes conscious through different degrees of neuronal activity, the signatures, which involve more areas, different vibrational modulations and higher processing times than those of reflex activities. Embodied Cognitive Science thus contributes to a vision of the processes of learning and growth of the person not only by bringing into play the bodily, emotional, affective, relational and implicit aspects (Damiani, 20018), but also suggests a mode that can support the challenge of bringing together in an increasingly organic way this trans-disciplinary

complexity by orienting it in a pedagogical path of concreteness. This vision enriches the opportunities to make teaching suitable, in particular for situations of neurodiversity, frailty and disability in an inclusive perspective by not only opening up to new knowledge but also by consolidating an understanding of the body that enhances those processes implemented by teachers and pedagogists such as observation, attention and self-evaluation reserved for their students but also for themselves.The new technologies must deal with the bodily sphere in order to bring the training experience to a further level of effectiveness and to avoid losing the opportunity to stimulate those potentials, even residual ones, normally activated by relationships, emotions and affectivity during growth and education

Conclusion

The body works with the logic of physiology, what is not stimulated - similarly to what happens to synapses - atrophies, loses tone and effectiveness. While a good state of health allows you to take advantage of an active and participatory body even in learning in schools of all levels, the absence of movement leads to an impoverishment that reverberates in a generalized way. The pandemic situation has highlighted, especially for those who are fragile, a further absence of movement and distance learning, while necessary, does not help to keep away the syndromes of sedentariness and the growth of psychological suffering such as youth depression that is on the rise. Likewise, for many students with special educational needs, all of this leads to increased levels of risk of suffering and dropping out because they are not supported and, in some cases, not even seen. The movement, the educational relationship and the availability of welcoming schools that can handle users divided into small groups with a greater number of teachers and a greater availability of evidence-based technological-didactic training tools could turn the tide even in this pandemic period. In conclusion, the need to adapt technologies to the possibilities of a person with a disability or frailty, within educational institutions, is fundamental in terms of effectiveness and in opening new horizons. Nonetheless, the relational aspect, where and when it is lacking, leads to an impoverishment that the young population cannot afford, since learning becomes sterile if it is not included in the sphere of social relations, in a becoming of authentic encounters that allows for the growth of all, people with disabilities in primis. From this point of view, the educational function is adapting to try to anticipate a future of integration, but the adaptation of means and didactics requires a continuous creative tension and evidence that is not always present. Ultimately, the body, as the seat and reference point of the formative and

educational process, must find its place in the analysis of the use of technology in order to avoid, as is happening in these times, being silenced and not being able to use it as a resource of identity and planning.

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