EMOTIONS AND TEACHINGS FOR LEARNING ENVIRONMENTS (D.A.D.A.)

EMOZIONI E DIDATTICHE PER AMBIENTI DI APPRENDIMENTO (D.A.D.A.)

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ABSTRACT
The essay aims to study and decode emotions in schools that adhere to the D.A.D.A. Model (teaching for learning environments) through the use of AI. At the basis of this model is the centrality that emotion plays in the learning process. Thanks to sentimental analysis we will analyze the emotions of the educational community within schools that adhere to the D.A.D.A. model.

Il saggio si propone di studiare e decodificare le emozioni nelle scuole che aderiscono al modello D.A.D.A. (didattiche per ambienti di apprendimento) attraverso l'uso dell'IA. Alla base di questo modello la centralità che l'emozione gioca nel processo di apprendimento.Grazie alla sentimental analysis andremo ad analizzare le emozioni della comunità educativa all'interno di scuole che aderiscono al modello D.A.D.A.

KEYWORDS
Sentiment analysis, D.A.D.A models, innovative educational practices
Analisi dei sentimenti, modello D.A.D.A., pratiche educative innovative

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Introduction

In 2014/2015, at the behest of two headmasters, Lidia Cangemi and Ottavio Fattorini, the D.A.D.A. (Didactics for Learning Environments) model was launched in two high schools in Rome. The contribution aims to study and decode the emotions felt by students attending schools that adhere to the model through the use of AI.
The first part describes the origins and characteristics set out in the model's manifesto.
Next we trace the scientific-pedagogical and neuro-scientific assumptions that support it and which we can summarise, but not exhaust, with the maxim move the *body to move the mind.* After a brief excursus into the connection between didactics, emotions and learning, we then move on to illustrate the idea of research and the methodology to be applied in the preliminary phase.

1. Model D.A.D.A. schools: concept and educational approach

In the 2014-2015 school year, Rome's Kennedy and Labriola high schools led by headmasters Lidia Cangemi and Ottavio Fattorini launched the D.A.D.A. model (Scuole D.A.D.A., n.d.). D.A.D.A. "stems from the need to valorise the excellence of our educational system and, at the same time, from a tension towards overcoming educational models of a transmissive nature, essentially passive, which show their inadequacy in the face of current challenges" (Cangemi & Fattorini, 2015). Such a model rethinks the educational space so that the classroom-learning environment (Asquini, Benvenuto, Cesareni, 2017; Bordini, Bortolotti & Cecalupo, 2017) allows and facilitates active learning/teaching processes, where students are protagonists of the educational process. Each school subject occupies a classroom that is shared and set up as needed by one or two teachers. The class group, respecting its own timetable and maintaining order will move from one classroom to another, this move in Italian schools is a novelty, unlike Swedish and American schools.
In 2014, INDIRE, involving many Italian schools (Laici & Orlandini, 2016; Giunti et al., 2018; Mughini, 2020), promoted the Avanguardie educative project, a research-action centred on the innovative strategies put into system by Italian schools, to identify, disseminate and support practices and models that rethink the spaces and times of teaching. D.A.D.A. is also part of this project, while maintaining its own identity.
The Educational Vanguard Movement draws up a Programmatic Manifesto for Innovation summarised in seven points:

1. transforming the transmissive model of schooling;

2. exploit the opportunities offered by ICT and digital languages to support new ways of teaching, learning and assessment;
3. create new spaces for learning;
4. reorganising the time of schooling;
5. reconnecting the knowledge of school and the knowledge of the knowledge society;
6. investing in 'human capital' by rethinking relationships (inside/outside, frontal teaching/peer learning, school/company, etc.);
7. promote innovation so that it is sustainable and transferable (Laici & Orlandini,2016).

D.A.D.A. schools follow the Educational Vanguards, implementing the seven points in their educational approach (De Santis & Asquini, 2020), the main difference between D.A.D.A. and other Educational Vanguards initiatives is its 'choral' dimension, which involves the entire educational community. Therefore, students, teachers, managers, school staff, parents and the local community adopt the model 'together'. All the protagonists therefore, despite some resistance to change, participate in an adaptive and innovative process, experiencing the benefits on a daily basis and proposing improvements through continuous monitoring (Cangemi & Fattorini, 2015).
First and foremost, students are actively involved in their own learning process, promoting hands-on approaches that foster better assimilation of knowledge and the development of skills and competences (D.A.D. Schools, s.d.). The new learning environment promotes collaboration within the classroom, enabling the development of skills in a context that sees the school as a promoter of citizenship education. UNESCO (Simeone et al., 2020) for the development of civic skills recommends focusing on contexts rather than specific actions, and in this perspective the organisation recognises the significant role of D.A.D.A. schools, where alternative models of organising school space and time are experimented with to encourage active learning in which students are protagonists. The opening of the school to the community and citizenship even outside school hours promotes a positive connection between the school institution and society. This concept of collective involvement in education ties in perfectly with the idea of 'education as a common good'. A positive learning environment helps to shape future generations by creating a world in which people interact, communicate and adopt collaborative behaviour with respect for diversity. In this way, young people learn not only school subjects, but also develop social and interpersonal skills. Aiming at the well-being of the younger generations to build the communities of the future in an inclusive, collaborative and dialogic environment.

In this way, the D.A.D.A. model seems to respond perfectly to the National Indications, which call for education based on a broad range of competences, including both learning and the ability to cope with the world.

2. Fundamental Principles of the D.A.D.A. Model Schools

The agreement between adults (teachers, parents, school staff, local authorities) underpins the 'choral' approach of the D.A.D.A. model. while the social aspect of education is supported by the importance of collaborative learning, encouraging interaction and collaboration through mutual aid, peer learning, group work and the use of technology.

Teachers are mediators, tutors, facilitators, planners and managers of learning environments, with the cross-curricular objective of promoting the ability to 'learn to learn'.

The teacher (in Brunerian fashion) becomes a resource and collaborates as part of a community, offering his or her support and advice to construct knowledge together with the students, in this way knowledge becomes the result of an active process of construction on the part of the student, which is "situated" and "social", connected to the real context thanks to specific forms of social collaboration (Benvenuto & Fattorini, 2020, p. 87). Let us also recall that in the wake of these assumptions in recent years an increasingly significant role has been attributed, in the educational sphere, to cultural heritage, understood in its broadest sense as the set of tangible and intangible assets that are the expression of a culture in its various manifestations. In this regard, it would be desirable for the use of heritage to become a fundamental objective in these new school models, thus stimulating continuous exchanges between school and territory, between intangible heritage and cultural landscape. As the Parliamentary Assembly of the Council of Europe stated in 2019, "culture and heritage are today at the heart of democratic stability because they inspire and mobilise people and do so even more in a period of uncertainty and economic decline because they are able to rekindle hope, nurture identity and a sense of belonging" It seems appropriate to seize the opportunity to strengthen partnerships and nurture ambition in the cultural field, so that culture and heritage become real drivers of change for the whole school system. In this sense, starting with a renewed didactics and learning environments, which seek to develop the expected transversal competences, would make it possible to anticipate and prepare young people for the requirements and skills that the labour market of the future will demand. However, in order to achieve these objectives and to activate a didactics that can well combine *cultural awareness and expression* with *digital competences*, it is not only necessary to know the characteristics, values and

expectations of the new generations, but also the challenges and complexities of heritage education (Amendola & Esposito, 2022). For heritage education, the premises of this approach can already be traced back to the experiments of the 1930s inspired by the pedagogical principles of the pragmatist philosopher John Dewey and in particular in the value given to direct experience (*learning by doing*) as a driver of knowledge (1975). On the technological front, on the other hand, in the 1960s, the Canadian sociologist Marshall McLuhan, who saw the birth and spread of the new digital technologies, encouraging a non-instrumental vision of them, spoke of the 'classroom without walls', an expression with which he encouraged education to transcend the limits (not only physical) of schools and formal educational institutions (1966). And if twenty years earlier, in France, André Malroux had prophesied a "Musée Imaginaire", without walls because instructed by the extraordinary multiplication of available photographic reproductions of works and objects preserved in museums all over the world, today the heritage of museums and collections is also virtual thanks to tours, catalogues and 3D experiences to be lived *online* and immersive environments constitute the "third space" of learning, beyond that of the family and school (Potter and McDougall 2017; Rivoltella, 2018). Technology and social media can be undisputed protagonists for future generations of a new digital humanism, determining new educational and participatory possibilities that dismantle the traditionally binary nature of cultural experience, thus amplifying the multi-experiential value and providing an integration between traditional cultural content, socialisation, entertainment and learning.

But how are technologies used today in heritage education between school and museum? There is no shortage of interesting cases of application that characterise particularly effective didactic interventions to strengthen *cultural awareness and expression skills* and *digital competence* (European Council Recommendations, 2018), designed and implemented in educational pathways in accordance with the objectives of Law 107/2015 and the 4th *National Plan for Cultural Heritage Education*. It is therefore desirable that in these new school models such as D.A.D.A., heritage pedagogy finds ample space to interweave knowledge and promote a sense of belonging to that "community of heritage" present in the contexts in which the schools are located. To realise through the model a school of proximity, where the school extends to the territory and the territory provides the social and cultural capital to build organisational forms that rethink space and time. Reconceptualising educational environments, with the aim of exploring ways of integrating the cultural and spatial heritage of museums into formal and non-formal educational experiences. Hypothesising in D.A.D.A. schools the Byod Museum formula, i.e. the possibility of using digitised heritage through augmented reality.

In D.A.D.A. model schools, the 'classroom space' and the 'building space' offer an opportunity to foster collaborative and trialogical learning (Benvenuto & Fattorini, 2020; Fattorini, n.d.). The Trialogical Approach to Learning, originating from Finland, proposes the integration of three key elements: an individual and conceptual approach to knowledge and learning (called monological), a dialogical approach that emphasises the importance of social and material interactions (such as Lave & Wenger's "communities of practice", 1991/2006) and intentional processes that lead to the collaborative creation of an artefact deemed useful for the community (Cesareni & Sansone, 2019).

The learning of the trialogical model is thus shown to be founded on the construction of artefacts and the processes of co-construction and collaboration linked to them, becoming mediators in learning processes, promoting the active participation of students (Bortolotti, Sansone & Rizzo, 2018; Ritella & Hakkarainen, 2011). The trialogical approach has also become an important reference for the Implementation Measures of the National Plan for the Digital School for 2021, in which it is stated, in section 6 dedicated to Ideas for possible pedagogical didactic insights, that "materials and tools may be acquired to implement the so-called "trialogical" approach which, through techniques typical of collaborative learning, carries out activities for the construction of objects intended for concrete use" (Ministry of Education, 2021, point 6). Thus, the D.A.D.A. model presents itself as an "incubator of innovations" (Cangemi & Fattorini, 2018) and as a flexible model it is adaptable to both didactic-organisational and socio-cultural changes.

In September 2020, as a result of the Covid-19 pandemic from the D.A.D.A. model, the Digital D.A.D.A. brand was officially registered and trademarked, which reads "My teaching space is the world, my teaching time is the object of study" (Fattorini, 2020), proposes a change in the way teachers design their teaching. They use the approach of "enabling teaching", transforming themselves into "facilitators" of spaces, tools and resources, easily accessible outside traditional educational contexts. In this new model, teachers create educational environments, even at a distance, for students, offering learning opportunities and tasks that go beyond the boundaries of the school. D.A.D.A. schools can potentially develop anywhere: parks, theatres, cafés, forests and also of course, most often in the case of forced school closures, at students' homes (De Santis, Germani & Di Donato, 2021; Fattorini, 2020).

Schools can participate in the D.A.D.A. Schools Network in different ways and to different degrees. Initially, the school must sign the network agreement available at https://www.scuoleD.A.D.A..it/modello-D.A.D.A./informazioni, which contains the didactic-organisational elements that characterise the D.A.D.A. model. This agreement describes the operational intention to move from a transmissive to a competence-based learning model, orienting educational action towards

authentic and meaningful learning processes. The D.A.D.A. School Network acts as a 'bridge' between the various member schools, sharing innovative teaching methodologies and practices and committing to implementing structural changes within school buildings.
Some key points include:

1. Transformation of classrooms into laboratories, eliminating the distinction between different spaces.
2. Experimentation with educational teaching approaches such as cooperative learning, peer education and the flipped classroom.
3. Supporting and promoting teacher training, particularly in the development of transversal competences related to the teacher-student relationship.
4. Teacher training on the role of the 'educating person' and the 'educating community'.
5. Enhancement of collaborative skills, empathic communication and active listening between colleagues and students.
6. Encouragement of the creation of positive motivation and self-motivation mechanisms for training and further education.
7. Collecting and sharing 'good practices'.

The founding schools of the D.A.D.A. model offer their experience and knowledge to institutions interested in joining the Network, acting as training centres for teachers and ATA staff. The schools that join the Network undertake to integrate the D.A.D.A. model in their Three-Year Educational Offer Plans (PTOF), to organise specific training courses for teachers and students on the D.A.D.A. model, and to participate in conferences to share experiences and practices. It is possible to visit the founding institutes to understand the structural requirements. In order to obtain official recognition as a D.A.D.A. school, it is necessary to follow certain procedures, including visiting a D.A.D.A. school, participating in training sessions on the D.A.D.A. model, and starting the model within one's own school.

3. The D.A.D.A. Schools Manifesto

From the experiences of the founding schools of the D.A.D.A. model and the first adhering schools, a construct has been defined which, although flexible and customisable by the individual school communities, is a theoretical and operational point of reference, centred on 5 general postulates and 5 characteristics that define the model and constitute the principles on which the Manifesto of the D.A.D.A. model schools is based, developed and made available on the official website (https://www.scuoleD.A.D.A..it/images/-

Bibliography/Manifesto_schools_Model_D.A.D.A._Fattorini.pdf) by the Headmaster of the Labriola High School: Ottavio Fattorini.
The five postulates on which the D.A.D.A. model is based are:
1) Classroom-Learning Environment. Each classroom is transformed into a 'learning environment' and its organisation and furnishings are the responsibility of the teacher; thus, for example, in the maths and science department, teachers will find their own classrooms- learning environments according to their own and their teaching needs. Students, as a class group, move between departments and classrooms according to their own timetable. Spaces outside the classrooms are all available and usable as learning environments.
2) Inescapable choral involvement of the educational community. Compared to other innovations, also part of the Educational Vanguards promoted by INDIRE, A.D.A. is characterised by the involvement of all the participants in the educational community: students, teachers, managers, parents, school personnel (ATA and secretarial staff). Everyone has a specific role, important, for example, for the functioning of the "classroom change" (Asquini, Benvenuto & Cesareni, 2017), a moment in which almost the entire school "moves" in safety: students know the route to move from one classroom to another, moving in a line; school staff supervise blind spots such as stairs or corridors; teachers wait at the classroom door for the class group to be welcomed and visually control the exit and entry of each class group.
3) From organisational device to "innovation incubator The D.A.D.A. model was born as an organisational device of school environments, soliciting indirect effects on the community, encouraging the implementation of innovations, not only organisational, but also educational, that can be activated autonomously (Asquini, Benvenuto, Cesareni, 2017; De Santis, 2021).
4) Awareness of the pedagogical-didactic rationale behind the change. As mentioned in the previous paragraph, the theoretical-operational references at the basis of the D.A.D.A. model can be found in John Dewey's pedagogical activism, which goes beyond the traditional transmissive model of the school, proposing instead a model open to experimentation, to laboratories, to experience as a formative continuum in the learning process, which is seen as an active development in which the learner is at the centre of the process (Dewey, 1938/2014). Kilpatrick, a pupil of Dewey, is a reference point for the 'project method' (Kilpatrick, 1918/2010), a method that involves the realisation of projects and products agreed upon between students and teacher. Another author of reference is Washburne (1942/1953), who considers didactic personalisation as a fundamental act for learning and which, to be effective, must take into account the social context, since it is in collective activities that creativity, considered necessary for the success of the collective enterprise, is developed. The idea of a welcoming and appropriate space to promote the social, moral, cognitive and

emotional growth of the child, elaborated by Maria Montessori is a pivotal idea for the D.A.D.A. model (Cecalupo, 2021; Pesci, 2016). Constructivism also forms the theoretical background of the D.A.D.A. model, in particular Vygotsky's social-historical constructivism and Bruner's cultural constructivism. Rogers (1969), one of the first to theorise the importance of the quality of interpersonal relationships for the well-being and growth of individuals, is fundamental to the central role of students in the D.A.D.A. model. More recent theoretical references are those that make skills the springboard for building an innovative learning process: the emotional education proposed by Goleman and Senge (2016) is considered one of the pillars of the formation of the person, together with a body of social skills that enable children and young people to adapt to the rapid changes in societies. Morin, an advocate of a trans-disciplinary approach, is convinced of the need for a new paradigmatic approach that avoids the separation between the domains of knowledge, as if it were possible to separate a 'human science' from another 'scientific' one; on the contrary, it is in the trait d'union between the two aspects of culture that a 'reform' of teaching and learning processes can be found. One is reminded of the well-known statement, echoed by Michel de Montaigne, it is better to have a well-made head than a well-filled head, a phrase that can be interpreted as a paradigmatic shift away from a purely transmissive and accumulated knowledge (Morin, 2000). Finally, a common thread running from Dewey to Corradini (Corradini, Fornasa & Poli, 2003) is the formation of citizens: school is not only the place where one learns about theories and norms of citizenship, but is also a 'testing ground' where students experience the sense of belonging to a community, conflict management and being-in-the-world.
5) Recognition and adhesion to the D.A.D.A. community of practice. The model created by the two founding schools can be freely interpreted, adapted and customised by the Italian schools that decide to adhere, precisely because it is a flexible model that can be adapted to the social and local context.

The D.A.D.A. School Network, to date, has more than 150 schools in Italy that have adopted the model (Benvenuto & Fattorini, 2020).

From the five postulates derive the five typical characteristics of a D.A.D.A. model school:

1) Movement as functional to the teaching-learning process. In the literature on the mind-body relationship it is emphasised that movement is a fundamental aspect for enhancing personal development, learning and awareness of one's psycho-physical well-being (Cozzolino, 2012). Moving students from one classroom-learning environment to another is instrumental in reactivating their concentration and cognitive abilities. Neuroscience has shown how a purely sedentary lifestyle negatively affects and inhibits learning: a person who sits for

more than 15 minutes undergoes changes, even if not perceived, i.e. blood tends to flow to the lower part of the body (lower limbs), decreasing glucose and oxygen to the brain, so the latter is considered to be 'at rest', the release of melatonin confirms the state of 'inactivity' and the learner has to make a great effort to maintain concentration compared to the lethargic state he or she is in (Olivieri, 2016). Furthermore, movement has been shown to help students with Attention Deficit Hyperactivity Disorder (ADHD): physical activity stimulates the brain's supply of dopamine and norepinephrine, which are effective in managing ADHD because they affect the attentional system (Medina et al., 2010). Movement also influences mood, predisposes to a positive attitude and is effective in learning (Ekkekakis, 2009).

2) The 'educating person' as the real key to change. Teachers have a classroom dedicated to their discipline that they can furnish independently, enhancing their teaching professionalism through personalisation and the continuous 'remodelling' of the learning setting. The comparison between "educating people" fosters a more open and collaborative climate, the possibility to question oneself and improve one's practices (Cangemi & Fattorini, 2018).

3) Trust as 'pedagogical infusion'. Trust and responsibility are intimately linked and are two essential ingredients for the functioning of the D.A.D.A. model: students are made responsible in moving around, in collaborating in the maintenance and restoration of the decorum of school spaces, in the renewal of the institute's Rules and Regulations, of the student organisation chart, as are the teachers. This makes it possible to develop a sense of belonging and community, with the active exercise of active citizenship skills. Participation calls into question the whole-school approach of civic and citizenship education, i.e. the integration of democratic values and principles in teaching and learning, but also in the general context of the school, including teachers, headmasters, auxiliary staff and parents (Council of Europe, 2018).

4) Towards the 'learning building'. The common spaces: corridors, entrances, 'jolly classrooms', porticos, hallways, gardens and so on can be enriched and personalised by everyone; the embellishment of the entire school building, the characterisation by thematic spaces, artistically decorated or functionally set up, can be experienced as products of trialogical learning (Benvenuto & Fattorini, 2020; Cesareni, Ligorio & Sansone, 2018). Spaces, thus curated, become 'social' places of ludiform learning (De Santis, 2021).

5) Constructiveness and purposefulness of discussion devices and organisational serendipity. The opportunities for interaction and exchange between teachers and with the extended school community: students, families, territory are part of the organisational challenge of the D.A.D.A. model, aim at problem solving and are laboratories of ideas.

4. Didactics, emotions and learning

Emotion plays a significant role in the learning process, acting as a guide in decision-making and the processing of ideas. According to Lev Semënovič Vygotsky, 'Thought itself does not arise from another thought, but from the motivations present in our consciousness, which include passions, needs, interests, impulses, actions and emotions. Behind thought lies the field of active and volitional tendencies, which provide the answer to the last question of the analysis of thought' (Vygotsky, 1966, p. 225). It may be useful to open up a broad space for reflection on the dimension of the emotions in order to be able to grasp further insights into the formative and educational dimension. 'Emotion and emotion make education closer to people, enhance their stratagems, practices, orientations. The circulation of positive emotions generates further positive emotions, and being aware of this process means setting out on a path towards the valorisation of emotions and maximum attention to people in training and their learning. Indeed, it is important and necessary to learn how to solicit positive emotions and manage and curb negative ones, with the aim of enhancing training performance in terms of involvement and effectiveness. Emotions become a formative resource if they are named, recognised and declined. Even in the absence of striking events, the emotional element always exists: if learners express indifference, we must not forget that it is still an emotion. This requires that trainers be prepared to handle their own emotions first and then the emotions of others, at least at the level of awareness of the areas that emotions cover. Knowing the reactions of oneself and others, one can work by addressing emotions without the risk of entering 'dangerous' circuits that may trigger personal or interpersonal dynamics that are the exclusive competence and management skills of psychology experts. Managing emotions and avoiding risks does not in fact mean turning into a psychologist, but rather knowing within what boundaries one can move without doing damage, which is desirable' (Stefanini 2013, p.19). And so emotion must be preparatory and sedimentary to learning in order to be incorporated into teaching.

Among the numerous studies in the field, those conducted by US psychologist and academic Howard Gardner (2010) and US psychologist and journalist Daniel Goleman (2011) stand out for their interest.

Gardner attaches great importance to the emotions felt by students during the learning process. According to the scholar, students who explore a new world with enthusiasm and are intrigued will learn more successfully and with less effort than those who are given a task without interest. Emotionless experiences will be less engaging and soon forgotten, leaving no mental trace behind. An emotionally engaging context is necessary for knowledge to be absorbed and utilised later.

The concept of 'Emotional Intelligence' developed in 1990 by Professors Peter Salovey and John D. Mayer in their article 'Emotional Intelligence' is the basis for the thinking of Daniel Goleman who emphasises its importance for individuals of all ages, whether in relational, learning or work contexts. According to Goleman, Emotional Intelligence is decisive for a person's success or failure, impacting on everyday actions. For psychological well-being, stemming from the balance between positive emotions (those that allow one to learn and enjoy the positive aspects of life) and negative emotions (those that offer cues for reflection and growth), it is necessary to enhance emotional intelligence. Goleman also points out that emotional experiences during childhood and adolescence influence our emotional responses, emphasising the importance of educating children from an early age to prepare them to deal with life in an emotionally aware manner. Many other social scientists have explored the link between learning and emotions. In particular, the studies of Vygotsky and Bloom underline the importance of the close relationship between emotions and school learning.

According to Vygotsky, learning is not just conditioning and passive absorption of prefabricated content, but represents a challenge and an adventure due to strong emotional-cognitive activation. This requires an act of trust that implies the courage to face the uncertain and the unknown. School success or failure, as well as certain social problems such as anxiety, self-esteem and insecurity, depend on early learning experiences and must be carefully considered by the teacher.

Psychopedagogist Benjamin Samuel Bloom argues that there is a close connection between affectivity, motivation and learning. Affective and motivational variables play a significant role in the processes of learning, understanding and socialisation within the school environment.

The fundamental importance of emotions in learning is also underlined by the connection between emotions and memory. Emotions play a crucial role in memory-related cognitive processes, as the strength of memories depends on the level of emotional involvement generated during learning. Events and experiences experienced with high emotional intensity are stored as 'important' in our thinking, involving brain structures of the limbic system such as the amygdala and orbitofrontal cortex, thus increasing the likelihood of being remembered later. When properly integrated into teaching, emotions can turn into an important resource, comparable to the content of the learning action, as students not only think and process, but also 'feel' and actively participate. The task of a good teacher is to detect them, integrate them into an effective teaching intervention and exploit them as a powerful teaching tool, promoting a well-balanced development between rational, cognitive and emotional aspects.

It follows that an effective didactics must include the emotional dimension in its processes, focusing on the inner space, valuing all forms of diversity and forming complete individuals in a climate of free expression: 'The term didactics refers

both to the activity of those who teach, and to the reflection and operational planning related to teaching, to the definition of guidelines, conditions, operational methods that are considered to ensure its educational effectiveness [...]. The definition of didactics refers to that of teaching, which can be identified as an activity aimed intentionally, in an organised form, [...] according to procedures considered effective, to develop (extend, deepen, modify) skills, knowledge, values [...] the relationship of the subject with his own culture and with other cultures" (Trisciuzzi, 1999, pp. 10-11).
At the base of this TEACHING/EMOTIONS/LEARNING triangle lies the main purpose of this preliminary research, namely to investigate through affective computing, with techniques such as sentiment analysis what are the main emotions felt by srudents in a D.A.D.A. environment. We assume that learning environments and the emotions generated in them are closely interconnected, profoundly influencing not only the way in which students acquire knowledge, but also their psychological well-being. A positive learning environment that encourages interaction and mutual support can greatly contribute to improving students' emotions, increasing their motivation and enthusiasm for studying.

5. Research objective and methodology

Our research aims to understand what emotions emerge from the reorganisation of environments and the other innovations included in the D.A.D.A. model. At a preliminary level, it envisages the cyclical collection of data through differentiated instruments such as semi-structured questionnaires, focus groups and/or interviews.
After selecting and contacting the sample school, a dialogue will be initiated in order to share the modus operandi, then the material to be administered will be prepared and analysed with text mining software. In order to extract the students' emotions, Machine Learning techniques based on text processing and analysis will be used, thanks to Sentiment Analysis or SA (Natural Language Processing NLP and Deep Learning research area) the written language will be classified using computational linguistics, according to the polarity of opinion and emotion identification. This type of analysis will make it possible to get an overview of the students' emotions, and if necessary intervene by modifying the course. Furthermore, the possibility of having a classification model available can help to make predictions following changes in the structure. The results obtained in this way with the help of sentiment analysis could be of crucial importance for increasing student involvement and motivation.
Creating learning environments that take students' emotions into account means not only promoting more effective learning, but also promoting psychological

well-being. The use of sentiment analysis in this context can help create a more positive school climate in which each student feels listened to and supported in his or her emotional and educational needs.

Conclusions and practical implications

The discussion is currently heated and lively because this model is relatively new in Italy (even considering the forced halt during Covid), and it is also important to consider the potential inconveniences and ethical concerns related to the integration of sentiment analysis in educational contexts, where the risk could be to overlook the complexity of human emotions and the context in which they arise.
In conclusion, the integration of sentiment analysis into A.D.A. schools (albeit with the risks we have only introduced) offers enormous potential; through artificial intelligence, educators can gain a deeper understanding of students' emotional states and customise their pedagogical approaches to create a more supportive and effective learning environment. Furthermore, AI-based emotion analysis allows for the early detection of emotional distress or disengagement among students, enabling educators to implement targeted strategies to meet students' emotional needs.

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