

DIGITAL MEDIA AND INCLUSIVE EDUCATION IN HOME-SCHOOLING

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Abstract

The paper focuses on one of the aspects most investigated and monitored in recent years by the Desi index (Digital Economy and Society Index) on the digitization process in Europe, human capital, with an in-depth focus on primary school teachers.

The emergent state of Covid 19 has had a strong impact in the field of education, so much so that the uses of digital technology and its applications are now an essential topic in public and political debate. The implementation of digital devices for education, during the lockdown, has necessarily led to a reflection on the methodological paths that can be applied and tested in the educational context. There are many uncertainties linked to the validity of new digital didactic approaches and to the communicative and transmissive effectiveness of the contents where the digital skills of teachers and families and the lack of adequate equipment risk compromising the objective of effective and inclusive education.

How can educational quality and inclusion be guaranteed through digital communication, beyond socio-cultural inequalities? How can school digital capital guarantee new educational planning in the classroom?

These are the main questions of the paper, which will focus on illustrating the communicative strategies of visual storytelling and graphicacy as tools for democratising digital communication, for sociocultural inclusion and for reducing sociocultural inequalities, by illustrating the structural framework and the main actions/strategy of the European Erasmus Plus project CAVE (Communication and Visual Education in homeschooling).

Keywords: *Digital competences, teaching, digital education, inclusion, digitalization.*

1. Introduction

Within the field of education, already in 2018, the Teaching and Learning International Survey (TALIS) promoted by Organization for Economic Co-operation and Development (OECD), highlighted how the percentage of primary school teachers for whom "the use of ICT for teaching" was included in their formal education and training internationally is equal to 56% (in particular Italy, 52%; Spain, 38%; Lithuania, 45%; Romania, 70%; Poland, not available) (OECD, 2019a). If we refer, instead, to the number of teachers who claim to be "well prepared" or "very well prepared" for the use of ICT in teaching, the percentage drops to 43% (Italy and Spain, 36%; Lithuania, 57%; Romania, 70%). The very results of the 2018 TALIS show that only 18% of the teachers surveyed use ICT skills for teaching, about 60% include the use of technologies for activities related to their professional development and only 53% of them let students use devices for projects or project work.

These data reflect the framework set by the DESI INDEX¹ in 2021 with respect to human capital on the basic and advanced skills of citizens in the field of ICT, which requires implementations in at least 12 European countries (European Commission, 2021).

The report "Digital Economy Outlook 2020" (OECD, 2020) analyses how the COVID-19 pandemic has amplified both the opportunities and challenges of the digital transformation. It confirms, therefore, how technologies have proved essential in the management of the epidemic and how this has further accelerated the already rapid pace of implementation of digitalisation, while significantly hitting also the public sector, which proves to be generally slower in times of technological transition because of its large size and bureaucratic management.

¹Since 2015, the Digital Economy and Society Index (DESI) has been monitoring the process of digitalization of EU countries using 4 main indicators: connectivity, human capital, integration of digital technologies in organizational contexts and implementation of digital public services.

However, the surveys have also highlighted significant issues of digital divide, resulting both from structural deficiencies and delays in terms of technological-infrastructure adaptation of organizations and local authorities, as well as situations of digital illiteracy that are still extremely high among citizens. In particular, with respect to schools, the 2022 S.U.P.I. (Social Uncertainty, Precarity, Insecurity) report by Eurispes presents a comparison of the policies and strategies activated by the educational systems of several European countries during the lockdown period, highlighting four main transversal factors of inadequacy within the education sector: 1. time to effectively manage the school organisational system in an emergency situation; 2. adequate training of school staff to cope with the emergency and acquire sufficient skills to design digital educational pathways while safeguarding the quality of education; 3. the absence of official guidelines by government bodies that provide unambiguous guidance on the tools, strategies and teaching methods; 4. infrastructural and technological – but also human and cultural – resources to manage the new digital education system in the medium term (Fluxa, 2022).

In line with the objectives set by Europe 2030 and the *European Green Deal* strategy, the education system is also involved in the process of transition to digitalisation, with regard to sustainability issues, in a long-term perspective ranging from 2030 to 2050, oriented towards initiating structural and methodological transformations, with regard to the models of delivery and transmission of knowledge, to the skills of its actors, and to the organizational and managerial structures of schools.

2. Designing the didactic inclusion in the primary schools

The European Commission's Communication of 30 September 2020 on achieving the European Education Area by 2025 (5) defines inclusion as one of its key objectives.

In the Eurydice report 2022, *Towards equity and inclusion in Higher Education in Europe*, "Inclusion is an objective that has both an individual and a societal basis. Education is a human right, enshrined in both article 26 of the Universal Declaration of Human Rights (18) and article 2, protocol 1 of the European Convention of Human Rights (19). Furthermore, investment in education is an investment in personal and societal development. In this sense, inclusion is at the heart of our understanding of democratic culture. We cannot accept limitations on citizens' rights to education as this would be counterproductive for both citizens and society" (Eurydice, 2022, p.37).

The complex framework of sociocultural and digital inequalities, which the period of health emergency from COVID-19 has revealed and amplified, is the subject of public and scientific debate, in order to identify pathways that meet the training needs of teachers on the digital issue.

CAVE (Communication and Visual Education) is a European project started in 2020 under Erasmus+ that aims to lead primarily teachers, but also students, towards knowledge and wisdom; inspired by the myth of Plato's cave, the project uses visual representation (visual storytelling) and especially pictograms (which recall the rock marks), thus stimulating all participants to overcome physical, cultural and social barriers that have always conditioned traditional learning and teaching, especially during the pandemic period.

The project, while taking its cue from the condition of global health crisis generated by COVID-19, widens its gaze by framing other types of precariousness already manifest before the pandemic and equally critical in compromising the path of school socialization among children; among these we can include: 1. individual health precariousness, determined by physical fragility or degenerative diseases that may affect educational continuity; 2. geographical precariousness, determined by conditions of forced isolation due to natural disasters; 3. all situations of precariousness which may compromise the regular flow of school education for social, cultural, political or economic reasons that do not necessarily depend on the individual's will.

In this sense, CAVE wishes to offer food for thought and opportunities for experimentation for primary schools, in order to identify innovative strategies and alternative educational paths, in which digital technology can be a useful support for the reduction of the various forms of socio-cultural disparity, thanks to its ability to combine the potential of different languages and its multidisciplinary nature conducive to the reduction of linguistic inequalities or generated by cognitive, psychological and physical deficits.

The main priorities of the proposal are two:

1. Reinforcing the development of key competences, through the enhancement of digital competences, of teachers.

In this sense, the project intends to link to the two additional priorities identified by the European Commission under the Digital Education Action Plan, related to digital education: 1) improve the quality of the pedagogical use of technologies in teaching and learning processes; 2) foster the development of digital skills of teachers and students to cope with contemporary sociocultural changes (European

commission, 2018) through adequate digital training (Bulger & Davison, 2018; Hartai, 2014; Hobbs & Tuzel, 2015).

In this regard, the theoretical reference frameworks regarding the digital competence taken into account by the project are: DIGCOMP (2013) and subsequent updates, with particular reference to critical analysis, creative production, communication and collaboration and problem solving. (Ferrari, 2013; Carretero et alii, 2017) and the DIGCOMPEDU (Punie, Redeker, 2017) with particular reference to the following areas: a) "Teaching and learning" which calls for the use of technologies for innovation especially in terms of improving communication and the transferability of educational content to students through an integrated digital teaching. b) "Digital resources" inviting teachers to use new media languages, with particular reference to visual and multimedia languages to prepare teaching material, c) "Learner's empowering" on the implementation of students' soft skills also through the use of digital tools and an engaging teaching methodology and d) "Assessing", relating to the design and application of evaluation methods and tools adaptable to the pathways of Digital Education.

2. Social inclusion of children, through a proposal of didactic experimentation close to the languages and environments of mediated socialization of the new generations. The aim of this priority is to work in several directions:

- the reduction of school drop-out of students resulting from demotivation and deresponsibilisation;
- the weakening of different types of barriers: from the language barriers of immigrant children to the cognitive barriers of children with SLDs², from the geographical barriers, induced by the health emergency condition, to the socio-cultural family; often determined by the different availability of the technological endowment, the economic capital and the cultural and digital background, and finally those barriers linked to the digital capital of the same schools in proposing activities through distance teaching³.

3. Communication and Visual Education in home-schooling: Analysis of intellectual outputs

Through this project, the discipline of Communication Design comes into play to stimulate reflection on the strategies and methods of planning of integrated digital education courses, in a context of Digital Education. The work of critical reflection focuses mainly on at least two aspects underlying the principles of digital educational quality: 1. inclusive communicative languages at the basis of perceptive and cognitive processes, and information storage and 2. the design of the architecture underlying the environment of delivery of teaching in compliance with both the requirements of accessibility and usability for a very young target, such as that of children under 10 and their teachers, both of the relational and communicative dimension, weakened by social distance and digital mediation at school during the pandemic, and of the dimension relating to the safeguarding and protection of data shared and shareable online during the use of the same educational platform.

The main key intervention strategies of CAVE focus on 3 aspects, with respect to which innovative project proposals have been put forward; these are functional to the implementation of social inclusion and quality in the perspective of an integrated digital education:

1. the language;
2. the method;
3. the communication channel.

In the first case, during the didactic experimentation phase of the project, the aim was to adopt visual communicative codes based on better communication and transferability of teaching content both to teachers (during the training phase) and students. To this end, *Information Design* comes into play as a two-stage process: 1. the organization of data (or content) from multiple sources in information; 2. their creation in graphic or representative form (*design*) (Tufte, 1997, IIID, 2007; Manchia, 2020). The final visual communicative artifact, therefore, is not simply reduced to a graphic transposition of a set of notions, but to a codified text, mainly syncretic (Polidoro, 2008)⁴, in which it is possible to recognize a point of view, a communicative style, and a theoretical stance just like in a literary text (Manchia, 2020).

²From the 2018 TALIS surveys, it emerges that about 18% of teachers now teach in classes with more than 10% of students whose first language is different from that of education, both with respect to inequalities generated by learning disorders (SLD) and cognitive and physical deficits knowing that, according to the results of the TALIS 2018 surveys, about 27% of teachers teach in classes with more than 10% of students with SLD and SEND.

³A study carried out on Spain's 2013 TALIS dataset showed that the use of ICT by teachers in the classroom depends not only on teacher training in ICT, but also on cooperation between teachers themselves, the perception of self-efficacy and beliefs in teaching, as well as (albeit to a lesser extent) availability of educational softwares or educational infrastructures (Gil-Flores, Rodríguez-Santero and Torres-Gordillo, 2017). (OECD (2019a), p. 29)

⁴We are talking about syncretic texts (Polidoro, 2008) that are texts capable of connecting multiple languages, from the verbal to the visual one in its different expressions (videos, photos, icons, drawings, etc.).

In this sense, not only the result (the communicative artifact) but also the process of representation (Tufte, 1983) acquire relevance in the process of infographization of the informative and didactic content which recalls cognitive operations related to the reading of raw material, the selection of information, the reorganization of concepts, the synthesis of data and their visual representation on the basis of communication objectives.

In the wake of *Isotype* by Neurath (1945)⁵, the adoption of a visual language, with the aim of "explaining by images", recalls the democratic power of visual design or the possibility of transferring one or more information and knowledge in a clear way to masses of subjects not necessarily prepared on the proposed themes and with heterogeneous skills. In fact, the iconic language (mainly infographic) is easily recognizable and interpretable even by those who do not have adequate linguistic codes (for example, immigrant students), by those who may have learning disabilities (dyslexia, dyscalculia, etc.), as well as students with different learning and expression times, starting from the different cultural stimuli of the sociocultural context.

In the second case, in order to stimulate active participation of students and their cooperation, including between peers (Taddeo and Tirocchi, 2019), the project focus was on two methodological proposals: visual storytelling (Lankow, Ritchie, Crooks, 2012), also understood as the link between storytelling and Information Design (Cortoni, Pandolfini, 2019) and the Munari method.

Visual storytelling is a cognitive method, aimed at understanding the surrounding reality and attributing meaning to the complexity of the surrounding events; it is a cognitive means to stimulate people's interpretive processes and to direct perceptions of reality, ideologies that can lead to social positions or actions. It is also an instrument of socialization through which people can become aware of their identity, their emotions, their social role, and is a specific resource, in an educational context, to stimulate learning processes through laboratory experience (Cortoni, Faloni, 2019).

Bruno Munari's design method is mainly based on the stimulation of visual creativity through play, focusing not so much on the outcome of the workshop (the visual product) but on the process put in place to achieve it. The peculiarity of Munari's approach lies in frequently stimulating the recipients to search for alternative ways of representation of the same object, identifying and discovering "other possibilities" to explore the infinite aspects of the phenomena, without stopping at the already known, stereotypes and representative uniqueness (Munari, 1981)⁶.

The basic principles of communicative design, visual storytelling and Munari's design method have represented some of the main and innovative educational inputs proposed in the first intellectual output of the European project for educators, in order to implement specific skills related to effective communication through the appropriate use of visual languages, as well as developing skills for the design of online classes using the rules of animation and visual storytelling, being able to coordinate moments of knowledge sharing with moments of experimentation and implementation.

Finally, the communication channel that was chosen to experiment the communicative relationship between teacher and student is a social media platform for educational purposes accessible through different devices, from smartphones to PCs, which mainly conveys visual content, with similar settings to those of Instagram, the most popular social medium amongst preteens. For this reason the second intellectual output of CAVE has focused on the design and testing of a visual social educational network, addressed exclusively to students and primary school teachers and functional to support and ensure continuity to the activities proposed in the classroom not only in times and situations of social insecurity, but also throughout the regular teaching routine, thus inaugurating new communicative, linguistic and relational modes that make school socialization keep up with the transformations of digital culture ensuring heterogeneity in educational relations between the different school actors.

The choice of the social visual environment as a communication and educational channel, in fact, meets two specific needs: 1. the stimulation of a relationship with the teacher, as well as peer to peer, and the use of visual language for communication easily accessible beyond disparities; 2. the choice of mobile devices as the main means of enjoyment of educational content by responding to the prerequisite of inclusiveness, insofar as this medium is generally owned and used by more than 90% of young people in Italy regardless of social, cultural, economic and technological disadvantages. The only precondition required is an active Internet connection. The use of this platform can certainly contribute to the medium and long term implementation of some transversal and digital skills such as:

- the ability for students to use online sources and re-process them appropriately;
- the ability to visually represent thoughts and content by learning to synthesize information and organize it by key concepts;

⁵*Isotype* is considered the first example of contemporary infographics

⁶The Munari method goes from the identification of the problem, to its detailed definition, to proceed with the research and analysis of the information related to the problem and then propose a solution with respect to the problem investigated, to be tested, verified and validated.

- stimulate online collaboration between peers and with teachers, who acquire more authority;
- increase interest and curiosity about school topics, often labelled as boring or distant from the interests of learners, especially children.

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