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Bridging skills and teaching practices: a study on learning effectiveness in extra-curricular activities

Competenze non cognitive e prassi didattiche: uno studio sull'efficacia formativa nelle progettualità extracurriculari

di
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Abstract:

The article aims to investigate the undermined scenario in which children, during this *intrapandemic* period, had to rely on their own strength, supporting themselves in the processes of acquiring cognitive and transversal skills, within a new, private and mutilated social dimension. Through the analysis of extra-curricular activities within the National Operational Program (NOP FSE) planning, this article presents the results of a research conducted on a sample of 223 primary and secondary school children and 18 teachers; its aim is to identify the dynamics of learning behaviours in relation to non cognitive skills and the repercussions in terms of educational success.

Keywords: Non cognitive skills, Educational success, Extracurricular activities, Lifelong learning, Intrapandemic time.

Abstract:
L'articolo intende approfondire lo scenario minato, in cui i ragazzi, in questo periodo *intrapandemico*, hanno dovuto sorreggersi autonomamente, autosupportandosi nei processi di acquisizione delle competenze cognitive e trasversali, all'interno di una dimensione sociale nuova, privata e mutilata. Mediante l'analisi delle progettualità extracurriculari all'interno della pianificazione PON FSE, il contributo presenta i risultati di una ricerca condotta su un campione di 223 ragazzi di scuola primaria e secondaria di primo grado e 18 insegnanti, volta ad identificare le dinamiche delle condotte di apprendimento in relazione alle competenze non cognitive e le ricadute in termini di successo formativo.

Parole chiave: Competenze non cognitive, Successo formativo, Progettualità extracurriculari, Longlife learning, Fase intrapandemica.

1. Introduzione[1]

Today learning processes are varigated. They develop through profoundly changed dynamics, supported by methodologies and strategies no longer based on the old traditional methods of transmission of knowledge, but planned through procedures aimed at activating learning processes linked to the development of skills, and therefore focused on a dynamic education, on the acquisition of an "active" knowledge, the competence.
Starting from the analysis of key competences (European Indications on key competences, 2018), it may certainly be argued that the attention is focused on a transversal and multi-directional development of the individual, made possible through the simultaneous use of both key competences, related to disciplinary learning, and transversal skills, that are activated through formal, non-formal and informal paths, and that create and shape what is defined *lifelong learning*.
The structure of cognitive learning is realized through correlated mental processes, structured diachronically and synchronously thanks to the different multiple intelligences (Gardner, 1987). They phenomenologically substantiate through the development and application of the different individual skills, supported by specific motivational aptitudes and propensities which, at times, become the indicator and cause of the pupil's educational success or failure. In the transition from knowing to understanding (Gardner, 2000), the re-elaboration and re-use of knowledge in a different context takes place through the use of transversal - bridging - skills, essential and fundamental for a successful training process.
Knowing for understanding is in fact a mental activity that develops through different cognitive levels. Knowledge becomes understanding when it bends towards new and varied situations, through a metacognitive passage.
The Italian education system, thanks to the National Operational Program (hereinafter, NOP), supported and financed by the EU structural funds, proposes extracurricular educational activities with a seven-year planning. They detect the criticalities in the vertical curriculum structure, as specified the National Guidelines for the vertical curriculum (2012), and support, within the feasible pathways, the

[1] The manuscript is the result of a collective work of the authors, the specific contribution of which is to be referred to as follows: introduction (1), paragraphs 2, 3, 5 are attributed to Cristiana Cardinali; paragraphs 3.1, 4 and conclusions are attributed to Massimiliano Lo Iacono.

enhancement of disciplinary skills by promoting and developing soft skills. If developed through innovative teaching practices and methodologies, the teaching/learning process is therefore able to promote the enhancement of non-cognitive transversal skills unrelated to the characteristics of the individual discipline.
The extra-curricular projects activated thanks to the NOP planning are aimed at enhancing key and transversal skills simultaneously, through alternative paths, regardless of the type of discipline involved. The greater or lesser ability to intercept some of the non-cognitive skills will mainly depend on the strategic choices of the teacher and on their ability to adopt innovative, engaging, circular and polycommunicative teaching methodologies.
However, it is even more evident how some curricular disciplines are better facilitators and become fertile ground on which it is possible to open communication channels and expressive languages that refer to transversal skills, such as collaboration, self-esteem, affectivity and empathy, self-determination and environmental management, emotionality and self-efficacy. However, even in this last year (s.y. 21/22) the spread of the pandemic produced great difficulties, perhaps even more than in the previous two years, creating sociological phenomena of alienation and individual frustration, making learning discontinuous and increasingly individual, almost completely canceling interpersonal relationships and moments of aggregation and emotional involvement. The criticalities exposed and experienced in the classrooms in this intrapandemic period, mainly boosted the safe planning of extra-curricular NOP projects, creating moments of aggregation and socialization. Thanks to these, it was possible to develop basic and transversal skills, through collaborative, innovative and laboratory methods, useful for the full realization of an effective socio-psycho-training path for students.

2. Non cognitive skills: some different perspectives

The current studies highlights that, besides knowledge, other skills related to individual behavioural patterns, attitudes and personality traits are crucial for both professional success and personal fulfillment (Cinque et al., 2021). As early as the 1970s, sociologists Bowles and Gintis (2001) argued that personality or non-cognitive traits, such as effort and motivation, could be at least as important as cognitive abilities in explaining the achievement of status and the persistence of inequality through generations (Farkas, 2003). Their findings have been recently reinforced by further studies demonstrating the significant role of non-cognitive skills (NCS), i.e. attitudes, motivation and personal characteristics beyond cognitive abilities, in shaping labour market outcomes, social behaviour and health (Barsalou, 2010), early interventions to reduce social inequalities (Heckman, 2007). Likewise, the importance of NCS in fostering learning and academic success through motivation, concentration, perseverance, socio-emotional well-being has been firmly established by research (Heckman & Kautz, 2012).
However, there are several controversies in literature, that prevent non-cognitive competences from being referred to and defined unanimously (Camfield, 2015). First of all, as Cinque (2021) points out, the set of skills, traits, behaviours, mentalities and attitudes referable to non-cognitive skills are often labeled with different terms: socio-emotional skills, soft skills, transversal skills, social skills, “21st century skills”, key competences, generic competences, or even basic and life skills (Shapiro et al., 2011). This diversity of definitions sometimes leads to confusion, since economists tend to use the term non-cognitive skills, psychologists mainly use “socio-emotional skills”, while business and management or education studies often favour “soft skills” (Sanchez Puerta et al., 2016).

Furthermore, the wide range of skills, traits, beliefs and behaviours gathered under the "non-cognitive" descriptor, includes a very variegated selection of characteristics including motivation, confidence, tenacity, reliability, perseverance, social and communication skills. Each of them has a long and distinct history of theoretical and methodological approaches, which make any possible measurement difficult. Therefore, self-report and teacher-report questionnaires are more often used in the measurement of non-cognitive skills, since they are cheap, fast and reliable (Connelly & Ones, 2010). Finally, the fundamental limit lies in the segregation of cognitive and non-cognitive learning, which intrinsically tends to denote a sense of detachment of the cognitive from the non-cognitive. The term 'non-cognitive' highlights an incorrect distinction between cognitive and non-cognitive factors. As Borghans et al. (2008, p. 974) underline, "few aspects of human behaviour are devoid of cognition". Thus, while some studies draw a conceptual line between non-cognitive and cognitive skills, it is not possible to completely separate these concepts: all non-cognitive skills involve cognition, and some performances on cognitive tasks is made possible by non-cognitive skills. Cognitive and non-cognitive skills usually interact, and it is difficult to distinguish them during an action (Petway, 2016). Similarly, as Gutman and Schoon (2013) point out, it is not possible to individually define the non-cognitive skills, since they tend to overlap each other.

3. Extracurricular activities and non cognitive skills

Research on extracurricular activities (EA) has constantly documented positive relationships between participation in EA and the cognitive, psychological and social outcomes in children and adolescents (Marsh & Kleitman, 2002). Although research indicates that participation in EA varies according to the children's social backgrounds (Snellman et al., 2015), a growing number of children and teenagers participate in some kind of organized EA. If adolescent participation in EA has been positively associated with educational outcomes - better grades, higher test scores, and higher school commitment and educational aspirations (Fredricks & Eccles, 2008), the positive relationship between participation in EA and learning outcomes in elementary school children has been proven by several studies (Schuepbach, 2015).

In particular, participation in EA is widely believed to support the development of non-cognitive skills, which presumably facilitate the success of children and adolescents at school (Roksa & Potter, 2011). Despite the scant empirical evidence explaining the mediation mechanisms by which participation in EA leads to favorable educational outcomes (Stone, & Hunt, 2003), especially among younger children (Covay & Carbonaro, 2010), in agreement with Carolan (2018), a hypothesised mechanism consists in the chidren's growth in non-cognitive abilities, defined as individual qualities that collectively facilitate goal-oriented behaviours, judgment and pro-social relationships (Duckworth & Yeager, 2015). According to Covay & Carbonaro (2010), non-cognitive skills developed through participation in EA result in academic success because EA reflect the social context of classroom life, characterised by possessing psychological qualities, including the persistence to overcome setbacks and the ability to pay attention. Consequently, EA provide an additional context through which children can develop and practice a variety of non-cognitive skills, that can ultimately turn into benefits in cognitive areas. What leads to success in EA, therefore, is the same that leads to success in schools.

3.1 The National Operational Programme "For School - skills and learning environments"

The National Operational Programme 2014-2020 "For School - skills and learning environments" (hereinafter, NOP "For School") is an important tool to support Italian policies in the field of Education. The Programme covers the seven-year 2014-2020 period and is intended to fund both interventions of a tangible nature, through the European Regional Development Fund (ERDF), and intangible actions, through the European Social Fund (ESF). The NOP "For School" is intended for the structural and qualitative enhancement and improvement of schools of all levels and types present throughout the national territory. It has a dual purpose: on one hand to pursue impartiality and cohesion, encouraging the reduction of territorial disparities, strengthening the most disadvantaged schools and supporting students with difficulties; on the other, to promote excellence to guarantee equal access to education for everyone, also ensuring the potential for educational success and the enhancement of individual talent, regardless of socioeconomic background (www.istruzione.it › pon).

The NOP "For School" is divided into six axes: Education; Educational infrastructures; Institutional and administrative ability; Technical Assistance; Promote the overcoming of the effects of the COVID-19 pandemic and its social consequences and favour a green, digital and resilient recovery of the economy; Technical Assistance.

Among the priority investments related to Axis I (ESF) "Education", a specific interest of this study is the improvement of the students' key competences, recalibrating the transmission of knowledge through cooperative and participatory teaching practices, strictly linked to the development of relational and socialization skills (Fig. 1). The importance of this objective for the EU2020 strategy and its centrality for the promotion of social cohesion and the right to active citizenship and for the fight against poverty induce to continue and implement the investment in students' skills, as an essential contribution to the country's economy and competitiveness in relation to employment policies for young people. Through this specific objective, the Program intends to insist on enhancing the students' learning levels, with reference to both the basic disciplinary areas (communication in Italian and foreign languages, scientific and mathematical skills, digital skills) and the transversal skills ("learning to learn", social and civic skills, sense of initiative and entrepreneurship, cultural awareness and expression). The educational success, in fact, is pursued through complementary and integrated training actions of the teaching staff, aimed at acquiring the ability to use different skills that must be updated and deepened: disciplinary skills, aimed at improving the teaching of contents in the different basic subjects; methodological skills, aimed at facilitating learning processes to offer an adequate path to each of the students involved; assessment skills, to support the process of improving the school system; development of laboratory teaching.

SPECIFIC AIM	ILLUSTRATIVE ACTIONS
10.2 - Improving students' key competences	10.2.1 Specific actions for pre-school (language and multimedia - creative expression - body expression);
	10.2.2 Actions for the integration and strengthening of the basic subject areas (Italian language, foreign languages, mathematics, science, new technologies and new languages, etc.) with particular reference to the first cycle and the second cycle and also through on-line courses. This action also contributes in part to tackling the health crisis linked to the spread of the COVID 19 pandemic, through a specific intervention that offers educational institutions the possibility of purchasing supports, books and teaching kits to be given to pupils belonging to families that have had greater economic repercussions as a result of the pandemic;
	10.2.3 Actions for the internationalisation of education systems and mobility (language learning pathways in other countries, language enhancement and CLIL development actions, ...), also to reinforce and complement the Erasmus + Project;
	10.2.4 Scholarships for the deserving and disciplinary competitions;
	10.2.5 Actions aimed at the development of soft skills with particular attention to those aimed at the dissemination of entrepreneurial culture;
	10.2.6 Training actions for teachers, school staff, trainers and staff, also in an international dimension, with particular regard to - methodological and disciplinary innovation - key and disciplinary competences - individualised learning - learning about assessment methodologies - competences for service quality and school management (also through courses in other countries, summer schools, mobility, scholarships)
	10.2.7 System actions for the definition of models, contents and innovative methodologies (also with territorial declination)

Figure 1 The NOP "For School" -"Axis 1 - Education"

This research is specifically developed on the Notice "Learning and sociality", issued as part of Axis I (FSE) "For the school" 2014-2020. It intends to expand and support the educational offer for the school years 2020-2021 and 2021-2022, by integrating - in synergy and complementarity - the strategic interventions defined at national level with specific actions aimed at improving basic skills and reducing the digital divide, as well as promoting initiatives for aggregation, sociality and group life of students and adults, in compliance with the currenanti-Covid security measures.

4. Research

4.1 Research hypotheses

The present study aims to identify the dynamics of learning behaviours in relation to non cognitive skills and the repercussions in terms of students' educational success, through the analysis of extra-curricular projects within the National Operational Program (PON FSE) planning.

The research hypotheses are: (1) the involvement of children in the EA of NOP influences the development of their non-cognitive skills and, ultimately, their growth in terms of educational success; (2) participation in the EA of the NOP enhances social skills, self-esteem and interpersonal skills; (3) the extra-curricular projects activated thanks to the NOP planning are aimed at enhancing key and transversal skills simultaneously, through alternative paths, regardless of the type of discipline involved; (4) the greater or lesser ability to intercept some of the non-cognitive skills will mainly depend

on the strategic choices of the teacher and on their ability to adopt innovative, engaging, teaching methodologies; (5) the pandemic period influences the training, learning and socialization paths of pupils and among pupils.

4.2 Sample

The research was conducted on a sample of 223 pupils attending the first cycle of education (Fig. 2). In particular, 35.9% is represented by pupils attending the third year of lower secondary school (13 years), and 64.1% by pupils attending the fourth and fifth year of primary school. Furthermore, within the latter portion (9/10 years), 23.8% attended the projects in the main school complex, located in the city centre, while the remaining 76.2% carried out their activities in a in a more peripheral school. In relation to gender, 53.4% of the total sample is female and the remaining 46.6% is male. The percentages are equivalent for lower secondary pupils, while in the peripheral primary school a predominance of female pupils is ascertained:

SCHOOL		total sample	età		1 - SCHOOL BUILDING			2 - GENDER	
			9/10 years	13 years	SECONDARY CITY	PRIMARY CITY	PRIMARy -NEIGHBORHOOD	FAMALE	MALE
SECONDARY(13 YEARS OLD)	%	35,9%	0,0%	100,0%	100,0%	0,0%	0,0%	31,9%	40,4%
PRIMARY - CITY (9/10 anni)	%	15,2%	23,8%	0,0%	0,0%	100,0%	0,0%	19,3%	10,6%
PRIMARY - NEIGHBORHOOD (9/10 anni)	%	48,9%	76,2%	0,0%	0,0%	0,0%	100,0%	48,7%	49,0%

Figure 2 - Percentage distribution by order and grade

Overall, the students participated in 9 types of extracurricular projects; the teachers' sample is represented by 18 total teachers, 9 teachers with the function of expert and 9 with the function of tutor. 6 out of total 18 are teachers in lower secondary school and 14 out of 4 are female (Fig. 3).

	TOT. SAMPLE	school		GENDER		EA								
		primary	secondary	M	F	STORIC	SCRITCREA	PAROL	ENGLISH	MEDIA	MUSIC	CREO	SPORT	MATLAB
STUDENTS	223	143	80	104	109	18	22	22	40	41	19	21	21	19
TEACHER	18	2	16	4	14	2	2	2	2	2	2	2	2	2

Figure 3 – Percentage distribution by gender

4.3 Method and tools

The research established the administration of a questionnaire for teachers/tutors and one for students. Both questionnaires, filled in anonymously, were created with the Google Modules platform. Informed consent was negotiated with the participants involved.

For the Teachers/Tutor questionnaire, made up of 18 items, the following tool was used:

- Teacher/Tutor monitoring questionnaire (Indire, 2018). The questionnaire is aimed at understanding what the training needs expressed by teachers are today, and can represent an important opportunity to express one's opinion and provide useful information to activate the most useful training interventions for daily teaching. In addition to the methodological aspects, the items investigate the incidence of the pandemic in the learning and socialization process.

For the Student questionnaire, made up of 58 items and divided into 2 sections, the following tools were used:
- Student monitoring questionnaire (Indire, 2018). The questionnaire is addressed to all primary and lower secondary school students who have completed the NOP training activity. Participants are asked to express their degree of satisfaction on each Module attended, with particular attention to the following aspects: utility, interest and participation, didactics, teaching, tutoring, teaching material, organization and services. Participants are also asked to express their opinions and observations in relation to the motivations and expectations on the NOP module, the teaching aspects, as well as to provide some general information on their personal school background. The items also investigate the incidence of the pandemic in the learning process and the relationship sphere.
- TMA - Multidimensional Self-Concept Scale (Bracken 2003). The TMA was created by Bracken (1992) on the basis of the theoretical model postulated by Shavelson and colleagues (1976). According to a multidimensional model, it evaluates the self-esteem of children and adolescents between the ages of 9 and 19. The level of self-esteem is used by the Italian version of the Test Multidimensional of self-esteem (TMA - Bracken, 2003), that analyzes six dimensions of self-esteem: personal relationships, scholastic success, environment capability, sensibility, family life and sense of self-mobility. Each of these dimensions is observed through a set of 25 items meas-ured on a four-point Likert scale, from 1 (strongly disagree) to 4 (strongly agree). More specifically, in the present study, the items included in the questionnaire investigate four dimensions: personal relationships, scholastic success, environment capability, sensibility.

4.4 Data analysis

The following table shows the abbreviations used to indicate the different projects within this research:

EA	SIGLA
UNO SGUARDO STORICO SUL TERRITORIO	STORIC
SCRITTURA CREATIVA	SCRITCREA
PAROLE PER COMUNICARE	PAROL
LET'S SPEAK ENGLISH	ENGLISH
LABORATORIO MULTIMEDIALE COOPERATIVO	MEDIA
LABORATORIO DI MUSICA	MUSIC
INVENTO, RICICLO, CREO	CREO
GIOCO E SPORT	SPORT
GIOCHI MATEMATICI	MATELAB

Figure 4. Abbreviations associated with projects

Within the Indire Monitoring questionnaire proposed to the students, we particularly monitored Items 7-8-15-16-17, with the aim of analyzing how the different project ideas and disciplinary fields, through alternative teaching methodologies, are able to intersect the non-cognitive skills and to what extent. Furthermore, the items indicated were subsequently correlated with the various macro-areas investigated, through the TMA-Multidimensional Self-Concept Scale questionnaire. Item 7 (Fig.5) highlights how the path interfaces with the pupil's self-esteem and self-determination:

			tot	age		3 - EA								
			total sample	9/10 years	13 years	STORIC	SCRITCREA	PAROL	ENGLISH	MEDIA	MUSIC	CREO	SPORT	MATELAB
7 - Do you think that after the activities you just attended you will be more willing to study the didactic topics covered in the NOP?	4- a lot	%	75,8%	82,5%	63,7%	77,8%	81,8%	59,1%	65,0%	80,5%	84,2%	100,0%	85,7%	52,6%
	3-sufficiently	%	18,8%	14,7%	26,3%	11,1%	13,6%	36,4%	30,0%	17,1%	10,5%	0,0%	14,3%	26,3%
	2-a little	%	4,9%	2,1%	10,0%	11,1%	4,5%	4,5%	2,5%	2,4%	5,3%	0,0%	0,0%	21,1%
	1-at all	%	0,4%	0,7%	0,0%	0,0%	0,0%	0,0%	2,5%	0,0%	0,0%	0,0%	0,0%	0,0%
	Statistiche	N	223	143	80	18	22	22	40	41	19	21	21	19
		mean	3,7	3,8	3,5	3,7	3,8	3,5	3,6	3,8	3,8	4,0	3,9	3,3
		median	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0
		std. dev.	0,581	0,501	0,674	0,686	0,528	0,596	0,675	0,475	0,535	0,000	0,359	0,820
		variance	0,337	0,251	0,454	0,471	0,279	0,355	0,456	0,226	0,287	0,000	0,129	0,673
		range	3,0	3,0	2,0	2,0	2,0	2,0	3,0	2,0	2,0	0,0	1,0	2,0
		min	1,0	1,0	2,0	2,0	2,0	2,0	1,0	2,0	2,0	4,0	3,0	2,0
		max	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0
		std.e. m.	0,039	0,042	0,075	0,162	0,113	0,127	0,107	0,074	0,123	0,000	0,078	0,188

Figure 5. Project impact on self-esteem and self-determination

The analysis shows how the disciplinary paths most intersected with the emotional-creative sphere (CREO, SPORT, MUSIC, MEDIA) have obtained the highest percentage, while answer 2 (a little) obtains large percentages in the development of the basic "logical- mathematical" skill. Item 8 (Fig. 6) was calibrated to detect which of the different projects could make the affective-relational area more effective in terms of relations with the peer group and sociability:

			tot	age		3 - EA								
			total sample	9/10 years	13 years	STORIC	SCRITCREA	PAROL	ENGLISH	MEDIA	MUSIC	CREO	SPORT	MATELAB
8 - Has a positive and collaborative climate with peers been created in the NOP class group?	4- a lot	%	84,8%	93,0%	70,0%	66,7%	81,8%	68,2%	97,5%	90,2%	78,9%	95,2%	100,0%	63,2%
	3-sufficiently	%	14,8%	7,0%	28,7%	33,3%	18,2%	27,3%	2,5%	9,8%	21,1%	4,8%	0,0%	36,8%
	2-a little	%	0,4%	0,0%	1,3%	0,0%	0,0%	4,5%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
	1-at all	%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
	Statistiche	N	223	143	80	18	22	22	40	41	19	21	21	19
		mean	3,8	3,9	3,7	3,7	3,8	3,6	4,0	3,9	3,8	4,0	4,0	3,6
		median	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0
		std. dev.	0,377	0,256	0,493	0,485	0,395	0,581	0,158	0,300	0,419	0,218	0,000	0,496
		variance	0,142	0,065	0,243	0,235	0,156	0,338	0,025	0,090	0,175	0,048	0,000	0,246
		range	2,0	1,0	2,0	1,0	1,0	2,0	1,0	1,0	1,0	1,0	0,0	1,0
		min	2,0	3,0	2,0	3,0	3,0	2,0	3,0	3,0	3,0	3,0	4,0	3,0
		max	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0
		std.e. m.	0,025	0,021	0,055	0,114	0,084	0,124	0,025	0,047	0,096	0,048	0,000	0,114

Figure 6. Project impact on sociality and interpersonal relationships

Within the analysis of percentages, it is clear that answer 4 (a lot) obtains the maximum percentage (100%) within the sports project. In item 15 (fig. 7) we monitored how engaging it was to carry out a project with schoolmates other than those usually met during the morning curricular hours:

			tot	age		3 - EA								
			total sample	9/10 years	13 years	STORIC	SCRITCREA	PAROL	ENGLISH	MEDIA	MUSIC	CREO	SPORT	MATELAB
15 - Were you happy to do the workshop with new classmates other than your own class?	4- a lot	%	87,4%	97,9%	68,8%	77,8%	100,0%	59,1%	100,0%	87,8%	94,7%	100,0%	90,5%	63,2%
	3-sufficiently	%	5,8%	0,7%	15,0%	0,0%	0,0%	36,4%	0,0%	0,0%	5,3%	0,0%	0,0%	21,1%
	2-a little	%	6,7%	1,4%	16,3%	22,2%	0,0%	4,5%	0,0%	12,2%	0,0%	0,0%	9,5%	15,8%
	1-at all	%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
	Statistiche	N	223	143	80	18	22	22	40	41	19	21	21	19
		mean	3,8	4,0	3,5	3,6	4,0	3,5	4,0	3,8	3,9	4,0	3,8	3,5
		median	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0
		std. dev.	0,540	0,249	0,763	0,856	0,000	0,596	0,000	0,663	0,229	0,000	0,602	0,772
		variance	0,291	0,062	0,582	0,732	0,000	0,355	0,000	0,439	0,053	0,000	0,362	0,596
		range	2,0	2,0	2,0	2,0	0,0	2,0	0,0	2,0	1,0	0,0	2,0	2,0
		min	2,0	2,0	2,0	2,0	4,0	2,0	4,0	2,0	3,0	4,0	2,0	2,0
		max	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0
		std.e. m.	0,036	0,021	0,085	0,202	0,000	0,127	0,000	0,103	0,053	0,000	0,131	0,177

Figure 7. Sociability Management with new schoolmates

The data analysis shows us how satisfaction is higher or lower, as the age group varies. In fact, for the 9-10 year old sample, referring to primary school, the negative incidence of attending with non-habitual schoolmates is minimal, while the gap rises considerably in the paths carried out by eighth-grade pupils (13 years). Answer n.4 (a lot) was chosen only by 68.8% of the sample. If related to the different paths, the data is confirmed by the pupils who chose answer n.2 (a little), where, in fact, the highest value is produced in music (22.2%) and history (16.3%) projects. Items 16 and 17, (fig. 8) not present in the Indire monitoring questionnaire until 2018, were included after the pandemic period.

			tot	age		3 - EA								
			total sample	9/10 years	13 years	STORIC	SCRITCREA	PAROL	ENGLISH	MEDIA	MUSIC	CREO	SPORT	MATELAB
16 - At the end of the activities do you think the pandemic could have negatively affected your learning?	4- a lot	%	24,2%	23,1%	26,3%	22,2%	0,0%	40,9%	72,5%	2,4%	10,5%	4,8%	0,0%	42,1%
	3-sufficiently	%	7,2%	0,0%	20,0%	0,0%	0,0%	40,9%	0,0%	0,0%	0,0%	0,0%	0,0%	36,8%
	2-a little	%	31,4%	32,9%	28,7%	50,0%	4,5%	9,1%	25,0%	39,0%	31,6%	71,4%	42,9%	10,5%
	1-at all	%	37,2%	44,1%	25,0%	27,8%	95,5%	9,1%	2,5%	58,5%	57,9%	23,8%	57,1%	10,5%
	Statistiche	N	223	143	80	18	22	22	40	41	19	21	21	19
		mean	2,2	2,0	2,5	2,2	1,0	3,1	3,4	1,5	1,6	1,9	1,4	3,1
		median	2,0	2,0	2,0	2,0	1,0	3,0	4,0	1,0	1,0	2,0	1,0	3,0
		std. dev.	1,177	1,172	1,136	1,098	0,213	0,941	0,958	0,636	0,955	0,655	0,507	0,994
		variance	1,385	1,373	1,291	1,206	0,045	0,885	0,917	0,405	0,912	0,429	0,257	0,988
		range	3,0	3,0	3,0	3,0	1,0	3,0	3,0	3,0	3,0	3,0	1,0	3,0
		min	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0
		max	4,0	4,0	4,0	4,0	2,0	4,0	4,0	4,0	4,0	4,0	2,0	4,0
		std.e. m.	0,079	0,098	0,127	0,259	0,045	0,201	0,151	0,099	0,219	0,143	0,111	0,228

Figure 8. Self-assessment on pandemic incidence in learning

The analysis of Figure 9 shows a clear incidence peak in the foreign language project, where 72.5% indicated answer 4 (a lot), highlighting how the pandemic is negatively affecting language learning. Furthermore, the percentages of NET 4+3 amounted to 81.8% for skills in the Italian language and 78.9% for logical-mathematical skills. Item 17 (fig. 9) relates to the intrapandemic period analysis:

			tot	age		3 - EA								
			total sample	9/10 years	13 years	STORIC	SCRITCREA	PAROL	ENGLISH	MEDIA	MUSIC	CREO	SPORT	MATELAB
17 - At the end of the activities, do you think the pandemic could have negatively affected your relationships with peers?	4- a lot	%	27,4%	23,8%	33,8%	11,1%	0,0%	45,5%	77,5%	14,6%	5,3%	4,8%	4,8%	47,4%
	3-sufficiently	%	7,2%	0,0%	20,0%	0,0%	0,0%	45,5%	0,0%	0,0%	0,0%	0,0%	0,0%	31,6%
	2-a little	%	29,1%	30,1%	27,5%	44,4%	4,5%	9,1%	15,0%	36,6%	47,4%	61,9%	42,9%	10,5%
	1-at all	%	36,3%	46,2%	18,8%	44,4%	95,5%	0,0%	7,5%	48,8%	47,4%	33,3%	52,4%	10,5%
	Statistiche	N	223	143	80	18	22	22	40	41	19	21	21	19
		mean	2,3	2,0	2,7	1,8	1,0	3,4	3,5	1,8	1,6	1,8	1,6	3,2
		median	2,0	2,0	3,0	2,0	1,0	3,0	4,0	2,0	2,0	2,0	1,0	3,0
		std. dev.	1,213	1,193	1,132	0,943	0,213	0,658	1,012	1,030	0,761	0,700	0,746	1,015
		variance	1,470	1,422	1,281	0,889	0,045	0,433	1,025	1,061	0,579	0,490	0,557	1,029
		range	3,0	3,0	3,0	3,0	1,0	2,0	3,0	3,0	3,0	3,0	3,0	3,0
		min	1,0	1,0	1,0	1,0	1,0	2,0	1,0	1,0	1,0	1,0	1,0	1,0
		max	4,0	4,0	4,0	4,0	2,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0
		std.e. m.	0,081	0,100	0,127	0,222	0,045	0,140	0,160	0,161	0,175	0,153	0,163	0,233

Figure 9. Self-perception of the pandemic incidence in socialization

This analysis also demonstrates how the incidence percentages in all three key competences are very high, the NET 4-3 (a lot, enough) is at 91% in the PAROL path, 79% in the MATELAB path and 77.5% in the English language path. If, on the other hand, we compare these results with the different ages of the sample, we can clearly see how, unlike the 9-10 year old sample, the pupils attending the eighth grade (13 years) amounted to a total percentage of 53.8% of the relevant sample.

The subsequent analysis takes as reference the battery of questions of the TMA - Multidimensional Self-Concept Scale - appropriately calibrated on the sample. Each pupil answered a series of 10 questions for each survey area relating to non-cognitive skills.
The following table, inside of the interpersonal sphere (items 19/28), (Fig. 10) shows how the highest percentage referring to NET 3+4 is related to the English project while the lowest refers to the Parol project.

			tot	age		EA	
			total sample	9/10 years	13 years	ENGLISH	PAROL
Interpersonal area (items from 19 to 28)	NET3+4: Absolutley true +true	%	51,9%	53,1%	49,8%	56,5%	47,2%
	4-absolutely true	%	21,6%	21,1%	22,4%	29,8%	20,8%
	3-true	%	30,3%	31,9%	27,4%	26,7%	26,4%
	2-not true	%	29,7%	31,0%	27,4%	23,7%	28,3%
	1-absolutely not true	%	18,4%	16,0%	22,8%	19,8%	24,5%
	NET2+1: Not true + absolutely not true	%	48,1%	46,9%	50,2%	43,5%	52,8%
	Totale	%	100,0%	100,0%	100,0%	100,0%	100,0%

Figure 10. Interpersonal area with maximum and minimum values referring to projects

Among the different items in the area, we have focused and correlated the numbers 22/24 (Fig. 11)

			tot	age		gender	
			total sample	9/10 years	13 years	male	female
24 - people like being with me	4-absolutely true	%	32,3%	31,5%	33,8%	28,8%	35,3%
	3-true	%	59,2%	62,2%	53,8%	59,6%	58,8%
	2-not true	%	7,6%	6,3%	10,0%	9,6%	5,9%
	1-absolutely not true	%	0,9%	0,0%	2,5%	1,9%	0,0%
	Statistics	N	223	143	80	104	119
		media	3,2	3,3	3,2	3,2	3,3
		mediana	3,0	3,0	3,0	3,0	3,0
		dev. std.	0,620	0,563	0,713	0,665	0,573
		varianza	0,384	0,316	0,509	0,442	0,328
		range	3,0	2,0	3,0	3,0	2,0
		min	1,0	2,0	1,0	1,0	2,0
		max	4,0	4,0	4,0	4,0	4,0
		e.s.m.	0,042	0,047	0,080	0,065	0,053
			tot	age		gender	
			total sample	9/10 years	13 years	male	female
22 - others avoid me	4-absolutely true	%	0,9%	0,0%	2,5%	1,0%	0,8%
	3-true	%	6,3%	2,8%	12,5%	7,7%	5,0%
	2-not true	%	59,2%	66,4%	46,3%	54,8%	63,0%
	1-absolutely not true	%	33,6%	30,8%	38,8%	36,5%	31,1%
	Statistics	N	223	143	80	104	119
		media	1,7	1,7	1,8	1,7	1,8
		mediana	2,0	2,0	2,0	2,0	2,0
		dev. std.	0,609	0,509	0,758	0,642	0,582
		varianza	0,371	0,259	0,575	0,412	0,338
		range	3,0	2,0	3,0	3,0	3,0
		min	1,0	1,0	1,0	1,0	1,0
		max	4,0	3,0	4,0	4,0	4,0
		e.s.m.	0,041	0,043	0,085	0,063	0,053

Figure 11. Interpersonal area, correlations of items 24 / 22

The Net 2+1 relating to item 24 shows how the perception of not feeling well together with others is at 12.5% in 13-year-old children. The same survey on the 143 primary school pupils sample reveals a much lower percentage of 6.3 points. Similarly, item no. 22 shows a NET 4+3 of 15.5 percentage points. Furthermore, it is noted that the difficulties relating to the interpersonal/relational sphere are affecting more the male sample (Item 24 NET2+1 11.5%) compared to the opposite gender sample (5.9%). In the "Environmental control" macro area of investigation, we administered 10 items aimed at finding out how the pupils are more able to control the context and the surrounding environment, in relation to the peer group and in the dynamics with the teaching staff, within extracurricular projects. The data analysis shows that the widest gap between the NET3+4 and NET2+1(7%) is within the age group of 9/10, representative of the primary school sample, while it decreases to 4.2% for 13-year-olds attending the last year of lower secondary school.
In relation to self-esteem and self-efficacy in item n.33 (Fig. 12) we record positive percentage values of 84.3% (NET4+3), also item 37 "I can do most things quite well" indicates that 87.4% of the sample responded positively.

			tot	age		2 - gender	
			total sample	9/10 years old	13 years old	male	female
33 - I trust myself.	4-absolutely true	%	24,7%	24,5%	25,0%	25,0%	24,4%
	3-true	%	59,6%	67,1%	46,3%	57,7%	61,3%
	2-not true	%	11,7%	7,0%	20,0%	13,5%	10,1%
	1-absolutely not true	%	4,0%	1,4%	8,8%	3,8%	4,2%
	Statistics	N	223	143	80	104	119
		mean	3,0	3,1	2,9	3,0	3,1
		median	3,0	3,0	3,0	3,0	3,0
		std. dev.	0,724	0,593	0,891	0,736	0,717
		variance	0,525	0,352	0,794	0,542	0,513
		range	3,0	3,0	3,0	3,0	3,0
		min	1,0	1,0	1,0	1,0	1,0
		max	4,0	4,0	4,0	4,0	4,0
		std. e. m.	0,049	0,050	0,100	0,072	0,066
			tot	age		2 - gender	
			total sample	9/10 years old	13 years old	male	female
37 - I can do most things pretty well.	4-absolutely true	%	19,7%	22,4%	15,0%	20,2%	19,3%
	3-true	%	67,7%	74,1%	56,3%	64,4%	70,6%
	2-not true	%	12,1%	3,5%	27,5%	15,4%	9,2%
	1-absolutely not true	%	0,4%	0,0%	1,3%	0,0%	0,8%
	Statistics	N	223	143	80	104	119
		mean	3,1	3,2	2,9	3,0	3,1
		median	3,0	3,0	3,0	3,0	3,0
		std. dev.	0,577	0,474	0,677	0,597	0,561
		variance	0,333	0,225	0,458	0,357	0,315
		range	3,0	2,0	3,0	2,0	3,0
		min	1,0	2,0	1,0	2,0	1,0
		max	4,0	4,0	4,0	4,0	4,0
		std. e. m.	0,039	0,040	0,076	0,059	0,051

Figure 12. Self-esteem and self-efficacy

Within the battery of 10 Items (39/48) relating to the emotional sphere, item 41 (Fig. 13), relating to self-determination, self-efficacy and introspective perception of the self, is of great importance. Analyzing the percentage data, it appears that the NET 1+2 for age 9/10 is at 7.7 percentage points; considering the smaller 13-year-old sample, the value found in upper secondary school is even more marked (21.3 percentage points).
Other evidence is that in the emotional sphere, in percentage terms, the female gender is more dissatisfied with their way of being than males, 14.3% compared to 10.6%.

			tot	age		gender	
			total sample	9/10 years	13 years	male	female
41 -I'm happy with me as I am	4-absolutely true	%	33,2%	35,7%	28,7%	34,6%	31,9%
	3-true	%	54,3%	56,6%	50,0%	54,8%	53,8%
	2-not true	%	9,0%	7,0%	12,5%	9,6%	8,4%
	1-absolutely not true	%	3,6%	0,7%	8,8%	1,0%	5,9%
	Statistics	N	223	143	80	104	119
		media	3,2	3,3	3,0	3,2	3,1
		mediana	3,0	3,0	3,0	3,0	3,0
		dev. std.	0,734	0,619	0,879	0,657	0,794
		varianza	0,538	0,383	0,772	0,432	0,630
		range	3,0	3,0	3,0	3,0	3,0
		min	1,0	1,0	1,0	1,0	1,0
		max	4,0	4,0	4,0	4,0	4,0
		e.s.m.	0,049	0,052	0,098	0,064	0,073

Figure 13. Emotional area and self-efficacy

Finally, item no. 43 (Fig. 14) fully confirms the hypothesis by returning a percentage of NET4+3 equal to 90.1%.

			tot	age		2 - gender	
			total sample	9/10 years old	13 years old	male	female
43 - I look at life from a positive perspective	4-absolutely true	%	36,3%	41,3%	27,5%	36,5%	36,1%
	3-true	%	53,8%	51,7%	57,5%	54,8%	52,9%
	2-not true	%	6,7%	5,6%	8,8%	7,7%	5,9%
	1-absolutely not true	%	3,1%	1,4%	6,3%	1,0%	5,0%
	Statistics	N	223	143	80	104	119
		mean	3,2	3,3	3,1	3,3	3,2
		median	3,0	3,0	3,0	3,0	3,0
		std. dev.	0,710	0,648	0,785	0,642	0,766
		variance	0,504	0,419	0,616	0,412	0,586
		range	3,0	3,0	3,0	3,0	3,0
		min	1,0	1,0	1,0	1,0	1,0
		max	4,0	4,0	4,0	4,0	4,0
		std. e. m.	0,048	0,054	0,088	0,063	0,070

Fig. 14. Educational success

On the other hand, Item n.44 (Fig. 15) illustrates the opposite awareness, that is the perception of not being at the level of the context, of not being effective and useful in relational and emotional terms. Within the total sample, the value of NET4+3 ("absolutely true / true") indicates a percentage of 24.2%. While for primary school data settle at 13.3%, for lower secondary school it is 43.8%: more than 4 out of ten children believe they are worthless, not capable, have low esteem of themselves and of their work. In percentage terms, the male gender registers 8.7%, against 5.8% of the female one.

			tot	age		gender	
			total sample	9/10 years	13 years	male	female
44 - Sometimes I feel like I'm worthless.	4-absolutely true	%	6,7%	1,4%	16,3%	6,7%	6,7%
	3-true	%	17,5%	11,9%	27,5%	22,1%	13,4%
	2-not true	%	53,4%	62,2%	37,5%	50,0%	56,3%
	1-absolutely not true	%	22,4%	24,5%	18,8%	21,2%	23,5%
	Statistics	N	223	143	80	104	119
		media	2,1	1,9	2,4	2,1	2,0
		mediana	2,0	2,0	2,0	2,0	2,0
		dev. std.	0,815	0,643	0,977	0,829	0,802
		varianza	0,664	0,413	0,954	0,688	0,643
		range	3,0	3,0	3,0	3,0	3,0
		min	1,0	1,0	1,0	1,0	1,0
		max	4,0	4,0	4,0	4,0	4,0
		e.s.m.	0,055	0,054	0,109	0,081	0,074

Figure 15. Emotional area and self-esteem

Among the ten items relating to the area of school success (49/58), an analysis was carried out on items 51 and 57, both connected to the critical aspects of staying at school and aimed at intercepting school failure and discomfort . The answers relating to item 51 (Fig 16) report that 17.5% of the 9/10 year old sample (NET 3+4) finds difficulties in studying, while for 13 year-old pupils the percentage rises up to 38.8%. Furthermore, as for gender difference, 29.8% is represented by males and 21% by females. In relation to discomfort (item 57) the value is relatively low (8.4%) for primary school pupils, while it is 30% for lower secondary school.

			tot	age		gender	
			total sample	9/10 years	13 years	male	female
51 - Studying is difficult for me	4-absolutely true	%	5,4%	4,9%	6,3%	5,8%	5,0%
	3-true	%	19,7%	12,6%	32,5%	24,0%	16,0%
	2-not true	%	56,1%	62,9%	43,8%	52,9%	58,8%
	1-absolutely not true	%	18,8%	19,6%	17,5%	17,3%	20,2%
	Statistics	N	223	143	80	104	119
		media	2,1	2,0	2,3	2,2	2,1
		mediana	2,0	2,0	2,0	2,0	2,0
		dev. std.	0,768	0,721	0,826	0,785	0,751
		varianza	0,590	0,520	0,683	0,617	0,564
		range	3,0	3,0	3,0	3,0	3,0
		min	1,0	1,0	1,0	1,0	1,0
		max	4,0	4,0	4,0	4,0	4,0
		e.s.m.	0,051	0,060	0,092	0,077	0,069
			tot	age		gender	
			total sample	9/10 years	13 years	male	female
52 - I am proud of my school work.	4-absolutely true	%	26,0%	30,8%	17,5%	2,9%	3,4%
	3-true	%	56,5%	59,4%	51,2%	15,4%	10,9%
	2-not true	%	15,7%	9,8%	26,3%	61,5%	56,3%
	1-absolutely not true	%	1,8%	0,0%	5,0%	20,2%	29,4%
	Statistics	N	223	143	80	104	119
		media	3,1	3,2	2,8	2,0	1,9
		mediana	3,0	3,0	3,0	2,0	2,0
		dev. std.	0,697	0,603	0,781	0,690	0,727
		varianza	0,486	0,364	0,610	0,476	0,528
		range	3,0	2,0	3,0	3,0	3,0
		min	1,0	2,0	1,0	1,0	1,0
		max	4,0	4,0	4,0	4,0	4,0
		e.s.m.	0,047	0,050	0,087	0,068	0,067

Figure 16. Area of school success, criticalities and discomfort

Therefore, these two items were compared to the project plans (Fig.17), identifying in which of them the difficulty in studying and the feeling of discomfort have already been significant. With regard to item 51, the greatest evidence of difficulties in studying was indicated in the PAROL project, while the absence of difficulties is to be found in the SPORT project. As for school discomfort, in the Storic project the NET 4+3 is 39.9%, while the least discomfort was found in the Creo project, where the answers "not true / absolutely not true" reached the value of 95.2%.

			tot	age		gender		EA	
			total sample	9/10 years	13 years	male	female	parol	sport
51 - Studying is difficult for me	4-absolutely true	%	5,4%	4,9%	6,3%	5,8%	5,0%	0,0%	0,0%
	3-true	%	19,7%	12,6%	32,5%	24,0%	16,0%	77,3%	4,8%
	2-not true	%	56,1%	62,9%	43,8%	52,9%	58,8%	9,1%	90,5%
	1-absolutely not true	%	18,8%	19,6%	17,5%	17,3%	20,2%	13,6%	4,8%
	Statistics	N	223	143	80	104	119	22	21
		media	2,1	2,0	2,3	2,2	2,1	2,6	2,0
		mediana	2,0	2,0	2,0	2,0	2,0	3,0	2,0
		dev. std.	0,768	0,721	0,826	0,785	0,751	0,727	0,316
		varianza	0,590	0,520	0,683	0,617	0,564	0,528	0,100
		range	3,0	3,0	3,0	3,0	3,0	2,0	2,0
		min	1,0	1,0	1,0	1,0	1,0	1,0	1,0
		max	4,0	4,0	4,0	4,0	4,0	3,0	3,0
		e.s.m.	0,051	0,060	0,092	0,077	0,069	0,155	0,069
			tot	age		gender		EA	
			total sample	9/10 years	13 years	male	female	storic	creo
57 - I am proud of my school work.	4-absolutely true	%	26,0%	30,8%	17,5%	2,9%	3,4%	22,2%	0,0%
	3-true	%	56,5%	59,4%	51,2%	15,4%	10,9%	16,7%	4,8%
	2-not true	%	15,7%	9,8%	26,3%	61,5%	56,3%	44,4%	71,4%
	1-absolutely not true	%	1,8%	0,0%	5,0%	20,2%	29,4%	16,7%	23,8%
	Statistics	N	223	143	80	104	119	18	21
		media	3,1	3,2	2,8	2,0	1,9	2,4	1,8
		mediana	3,0	3,0	3,0	2,0	2,0	2,0	2,0
		dev. std.	0,697	0,603	0,781	0,690	0,727	1,042	0,512
		varianza	0,486	0,364	0,610	0,476	0,528	1,085	0,262
		range	3,0	2,0	3,0	3,0	3,0	3,0	2,0
		min	1,0	2,0	1,0	1,0	1,0	1,0	1,0
		max	4,0	4,0	4,0	4,0	4,0	4,0	3,0
		e.s.m.	0,047	0,050	0,087	0,068	0,067	0,246	0,112

Figure 17. Failure, school discomfort and projects

Finally, the four areas relating to the TMA questionnaire were globally monitored (Fig.18-19), developing the relative graph with the averages of the results obtained in the various extracurricular projects, highlighting the maximum and minimum values for each learning path. The following table shows the maximum values in red and the minimum values in blue.

TMA AREAS		3 - EA attended								
		MATELAB	SPORT	CREO	MUSIC	MEDIA	ENGLISH	PAROL	SCRITCREA	STORIC
Interpersonal area(item from19 to 28)	Median	2,45	2,45	2,49	2,44	2,60	2,71	2,47	2,53	2,65
Environmental Control Competence Area (item from 29 to 38)	Median	2,43	2,41	2,59	2,51	2,66	2,89	2,48	2,45	2,67
Emotional area(item from 39 to 48)	Median	2,44	2,48	2,50	2,35	2,63	2,60	2,49	2,65	2,96
School Success Area(item from 49 to 58)	Median	2,42	2,44	2,55	2,49	2,53	2,62	2,45	2,50	2,61

Figure 18. TMA areas and correlation with the analysed projects

Figure 19. TMA areas and projects correlation chart

The data on the teacher sample were obtained through the analysis of the INDIRE monitoring questionnaire, appropriately adapted on the teaching methods and on the repercussions due to the pandemic period. In the questionnaire we monitored the teaching strategies and methodologies used by the teachers through items no. 7 and 8 (Fig. 20):

			tot	Rispondente	
			total sample	expert teacher	tutor
7. What teaching methodology did you use during the project?	Peer tutoring	%	11,1%	11,1%	-
	Fair play	%	11,1%	11,1%	-
	Cooperative learning	%	77,8%	77,8%	-
	Statistics	N	9	9	-
			tot	Rispondente	
			total sample	expert teacher	tutor
8. What teaching strategy did you use during the project?	Problem solving	%	33,3%	33,3%	-
	Learning by doing	%	66,7%	66,7%	-
	Statistics	N	9	9	-

Fig 20. Teaching strategies and methodologies

In relation to the possible answers, it is evident that all the teachers involved preferred to implement learning processes based on cooperative and productive strategies, favouring the students' active involvement and participation (Fig. 21):

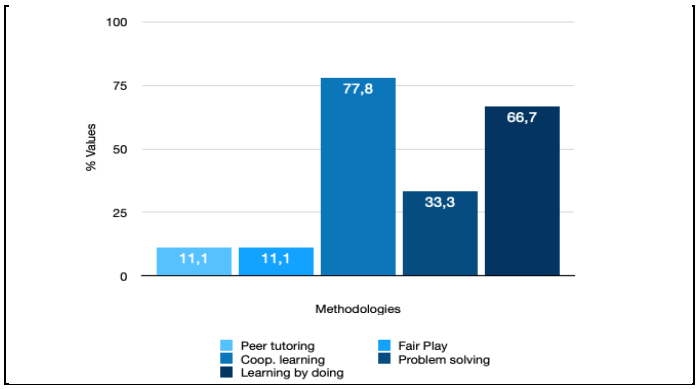

Fig 21. Histogram teaching strategies and methodologies

In item 6 (Fig. 22) we asked teachers and tutors how effective the methodology used was:

			tot	responding	
			total sample	expert teacher	tutor
6. Do you feel that the adopted teaching methodology was?	% 4 + %3	%	100,0%	100,0%	100,0%
	effective	%	94,4%	100,0%	88,9%
	partially effective	%	5,6%	0,0%	11,1%
	not very suitable	%	0,0%	0,0%	0,0%
	wrong	%	0,0%	0,0%	0,0%
	%1 + %2	%	0,0%	0,0%	0,0%
	Statistics	N	18	9	9
		mean	3,9	4,0	3,9
		median	4,0	4,0	4,0
		std.dev.	0,236	0,000	0,333
		variance	0,056	0,000	0,111
		range	1,0	0,0	1,0
		min	3,0	4,0	3,0
		max	4,0	4,0	4,0
		std.e.m.	0,056	0,000	0,111

Fig 22. Effectiveness of the methodology

The data show that all teachers and tutors are fully satisfied in terms of results and effectiveness of their methodological choice.
Item 9 (Fig. 23) represents how the teachers have intentionally intercepted the students' non-cognitive skills within the didactic paths. The table shows how 77.8% answered "a lot" and 22.2% "sufficiently". In particular, the projects whose index is represented by 22.2 percentage points are:

			tot	responding	
			total sample	expert teacher	tutor
9. How much attention was given to the development of soft skills in the proposed instructional activities?	% 4 + %3	%	100,0%	100,0%	-
	a lot	%	77,8%	77,8%	-
	sufficiently	%	22,2%	22,2%	-
	little	%	0,0%	0,0%	-
	at all	%	0,0%	0,0%	-
	%1 + %2	%	0,0%	0,0%	-
	Statistics	N	9	9	-
		mean	3,8	3,8	-
		median	4,0	4,0	-
		std.dev.	0,441	0,441	-
		variance	0,194	0,194	-
		range	1,0	1,0	-
		min	3,0	3,0	-
		max	4,0	4,0	-
		std.e.m.	0,147	0,147	-

Fig. 23 Non-cognitive skills interception

As for the collaborative climate in the context (item 12 - Fig. 24) 83.3% of the sample gave "very good" as an answer, and the remaining 16.7% "good". No percentage for the other answers.

			tot	responding	
			total sample	expert teacher	tutor
12. Relationships within the group and context were?	% 4 + %3	%	100,0%	100,0%	100,0%
	very good	%	83,3%	66,7%	100,0%
	good	%	16,7%	33,3%	0,0%
	just enough	%	0,0%	0,0%	0,0%
	critical	%	0,0%	0,0%	0,0%
	%1 + %2	%	0,0%	0,0%	0,0%
	Statistics	N	18	9	9
		mean	3,8	3,7	4,0
		median	4,0	4,0	4,0
		std.dev.	0,383	0,500	0,000
		variance	0,147	0,250	0,000
		range	1,0	1,0	0,0
		min	3,0	3,0	4,0
		max	4,0	4,0	4,0
		std.e.m.	0,090	0,167	0,000

Fig. 24 Climate in the context

Item 15 (Fig.25) , in relation to the pandemic emergency, showed that the NETs “a lot-sufficiently” cover 38.9% of the answers, while the NETs “a little-at all” cover 61.1%.

			tot	responding	
			total sample	expert teacher	tutor
15. How much has the pandemic emergency affected students' learning and relationships?	% 4 + %3	%	38,9%	44,4%	33,3%
	a lot	%	5,6%	11,1%	0,0%
	sufficiently	%	33,3%	33,3%	33,3%
	a little	%	38,9%	44,4%	33,3%
	at all	%	22,2%	11,1%	33,3%
	%1 + %2	%	61,1%	55,6%	66,7%
	Statistics	N	18	9	9
		mean	2,2	2,4	2,0
		median	2,0	2,0	2,0
		std.dev.	0,878	0,882	0,866
		variance	0,771	0,778	0,750
		range	3,0	3,0	2,0
		min	1,0	1,0	1,0
		max	4,0	4,0	3,0
		std.e.m.	0,207	0,294	0,289

Fig. 25 On pandemic emergency

5. Discussion

In line with the research hypotheses and consistent with the findings of numerous researches (Duckworth & Yeager, 2015; Carolan, 2018), this study confirms that the involvement of children in the EA of NOP influences the development of non-cognitive skills in terms of educational success. The data relating to self-confidence (Fig. 12a) clearly indicate a positive impact on pupils' educational success. A remarked confirmation of this hypothesis can be found in Fig. 15a, which shows a positive percentage of 90.1%. The evidence therefore demonstrates that participation in EA has positive outcomes on non-cognitive skills object of this research. According to Metsapelto & Pulkkinen (2012) our results confirm that children’s participation in EA is associated with positive behavioural outcomes, including higher task persistence and carefulness. Our investigation confirms (Fig 20) the positivity in self-representation and self-perception, which is reflected in the behaviour and individual attitude towards the learning process. It also highlights the decrease in difficulties in completing tasks. Compared to the hypothesis (2), the results confirm that participation in EA of the NOP improves social skills, self-esteem and interpersonal skills (Kort-Butler, 2012). The results of this research confirm a high level of self-esteem in absolute value (Fig. 16/17) on the total sample and in the analysis by gender. In relation to the specific type of project, there are differences connected to the various related disciplines (fig. 18).

Ultimately, participation in EA confirms a very high level of self-esteem enhancement. Social skills, such as collaboration and teamwork, are also linked to participation in EA (Howie et al., 2010). In fact, the INDIRE monitoring (fig. 7) confirms that the spirit of collaboration and cooperation with new schoolmates registers a very high percentage. Furthermore, the know-how to work as a team and the know-how to back each other in the learning processes (fig. 6) fully supports and confirms the hypothesis. Consistent with studies showing how participation in EA created "prosocial peer groups", which encouraged positive behaviours and attachment to school, while building a school-based social capital (Eccles & Gootman 2002; Fredricks & Eccles 2006). This research highlights that after attending an EA, 83.8% of the total sample believe that they do not feel any discomfort in staying at

school and attending training courses with their classmates. Similarly, it is highlighted, that EA participation leads to a reduction in risky behaviours among adolescents (Denault & Poulin, 2009; Fredricks & Eccles, 2006). By monitoring the EA projects, risky behaviours - the deviations due to adolescent depressive and degenerative problems – seem in decline, but not completely cancelled. The data analysis (Fig. 18) shows how the risk cancellation percentage is at 75.6 percentage points. Although high, we believe it useful to highlight that 24.4% of the entire sample (which rises to 43.8% if we narrow the sample at the age group of 13) confirms that, at least sometimes, they experience a deep discomfort, thus confirming the theory that there is a reduction but not a complete cancellation. Compared to hypothesis 3, the data show that the extra-curricular projects activated thanks to the NOP planning are aimed at enhancing key and transversal skills simultaneously, through alternative paths, regardless of the type of discipline involved (Morris, 2015). The data is evident if related to the disciplines involved. In fact the highest incidence is found within the paths not related to those teaching subjects that in France are defined "hard core", that is Italian, Mathematics and Foreign Language, corresponding to the first three European key competences. Moreover it is evident that the emotional sphere (fig. 16) is more involved through the historical-social path in relation to that of the English language; furthermore, also the competence of self-determination and self-efficacy (Bandura 2006) is conveyed to a greater extent by the historical project than by that relating to functional alphabetic competence. In the area of self-perception in relation to the learning path and the context (fig. 23), it is confirmed that the activation and enhancement of non-cognitive skills takes place through the “Sport” and “Creo” projects, where specific disciplinary skills are not so necessary. In this regard, in accordance with the existing literature (Larsen et al., 2006; Metsäpelto & Pulkkinen 2012), the research revealed how the paths related to musical disciplines (MUSIC), sports (SPORT), creativity (CREO) and multimedia (MEDIA) resulted in very high percentages in relation to non-cognitive skills, in particular connected to the self-perception of educational success.
In relation to hypothesis 4, it was shown that all the teachers involved preferred to implement learning processes based on pro-active cooperative strategies, favouring the students’ active involvement and participation. The survey confirms that the activation and enhancement of non-cognitive skills, regardless of the discipline involved (Morris, 2015), is activated spontaneously through didactic practices based on cooperative and laboratory models.
As regards hypothesis 5, the data (Fig. 9) reveal that the disciplinary paths relating to Italian, Mathematics and Language are profoundly influenced by the pandemic period; on the contrary, pupils attending transversal projects perceive the pandemic period as irrelevant. This also highlights the decrease in performance in these disciplines as monitored by the INVALSI national surveys (2021).
Compared to the evidence in the literature (Denault & Déry, 2015; Schuepbach, 2015) according to which EA result in better school results, and although this research cannot take into account the final results of the current school year, it is highlighted (Fig. 5) that 94.6% (NET 4+3) of the total sample are convinced to continue their curricular studies in a more proactive and effective way. This evidence represents a valid starting point for the development of future studies.

Conclusions

The primary reflection on the effectiveness and co-functionality of the so-called bridging skills deeply invests the analysis of the relationship between personal interests/attitudes and learning. During the process identified as lifelong learning, these types of skills clearly represent operational methods for

the individual within curricular and extra-curricular processes, therefore within formal, non-formal and informal learning. While, on the one hand, basic skills are acquired mainly through educational paths, the others are developed and enhanced by parallel dimensions and contexts, by socio-psycho-social dynamics that strengthen, and sometimes cancel, the skills required for the development of non-cognitive skills. An education system that is able to find a balance between cognitive and non-cognitive skills curricula is key for a society that is capable of fighting socio-economic inequalities, unemployment, poverty, discrimination and social exclusion (OECD, 2015). The NOP pathways represent valuable extra-curricular training activities that can have a profound effect on the development of non-cognitive skills. The laboratory, experimental and cooperative aspect of the activities, developed through methodologies far from the typical frontal didactics, support and favour the transversal competences of the students who, far from the typical logic of the correlation performance/assessment, are able to face the teaching/learning process with more serenity and interest. The reduction of performance anxiety (Pontillo &Vicari, 2020) and the serene control of the context (Dal Zovo, 2020), represent two fundamental variables to prepare the pupil to a greater awareness of his own abilities and to an enhancement of his aptitudes. Even the attitude (European Recommendations 2018) becomes more aware and proactive, creates the backbone through which to establish the empathy necessary for the creation of a structured and positive educational pathway; the confidence and self-determination necessary to achieve one's educational success are achieved through the possibility offered by the NOP structure of being able to choose the project pathway closest to one's predispositions and abilities. The disciplines belonging to the transversal spheres, which intercept the emotional, affective, relational and creative sphere, such as sport, music, multimedia and art, are rediscovered in new, cooperative and experimental workshop forms, opening up a direct pathway to learning non-cognitive skills.

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