The school as a place learning ecosystem - Participatory evaluation of the boundary conditions: the case of the IIS Amaldi

Carlo Giovannella[1,3], Maria Rosaria Autiero[2]

[1] University of Rome Tor Vergata
[2] IIS E. Amaldi, Rome
[3] ASLERD
gvncrl00@uniroma2.it

Abstract. The *community pact* is a tool potentially capable of fostering the development of place learning ecosystems and communities with a variable territorial size (from an urban district to a city or a region). The realisation of such potential is, however, subjected to an adequate understanding of the boundary conditions, investigated in this paper through a participatory evaluation process. The outcomes of such an evaluation process show that teachers and parents tend to develop different visions of how schools can act as a territorial presidium, although both are expecting that it is exclusively focused on the needs of the students, rather than those of the territory. The perception of an increased level of school smartness over the last seven years, in fact, has induced a strong sense of belonging to the school community in all the stakeholders - students, teachers, and parents - which has not been accompanied by an equally strong sense of belonging to the territory of reference. The significant increase in the perceived smartness of the learning ecosystem does not seem a sufficient condition, even in the presence of the formal stipulation of a community pact, to push the development of an educating community capable of interacting in a capillary manner with all components of a territory that is characterized by elements of strong degradation. Even the establishment of a territorial presidium having the school as a pole of attraction requires a long work of confrontation, sharing, co-planning, and assumption of co-responsibility to integrate the different points of view emerging from the participatory evaluation process.

Keywords: smart learning ecosystems, place learning ecosystems, school community pact, learning community, participatory evaluation.

1   Introduction

The obsolescence of the model born in the aftermath of the industrial revolution - known as the 'school factory' [1] - is showing all the limits brought about by a rigid organisation fostering a growth of the learners based almost exclusively on their age [2]. Since the last quarter of the last century, in fact, the democratisation of education,

combined with an increasingly rapid transformation of productive processes - induced by technological progress - has led to schools that are less and less aligned with the demands of the labor market (skills gap phenomenon [3,4]) and, paradoxically, also less and less capable of transferring basic contents and procedures, due to the combined effect of progression based mainly, if not only, on the student's age and a strong push towards inclusion [5-8].

Actually, schools should consider individual propensities and help all learners - accordingly to the time needed by each one - to develop first and foremost as persons and active agents of society [9], capable to respect both others and their living environment. This, in turn, means that educational processes should be *competence-based* (not exclusively age-based), *learning by being* inspired, and that the integrated competence space of reference to be developed should include, in addition to basic skills [10]: (a) *life skills* useful for the harmonious development of the personality and to prepare proactive subjects of society; (b) *vertical skills* useful for the insertion of individuals into the job market (no longer as a primary objective, but as a complementary and integrated one aimed at the acquisition of an adequate level of personal dignity and independence, going beyond the support to the growth of the productive system); (c) *digital skills,* understood as a tool for amplifying the other skills, rather than as a separate and independent set of skills.

The centrality of the students, of their well-being, and of their becoming competent persons endows learning environments (LEs) with a new centrality with respect to the territory of reference, to the productive activities and the territorial stakeholders and, as well as, to the entire population (including the students' families) [11]. It would not be enough to modify the perspective and the architecture of the educational processes. One needs also to change the citizens' perception of schools: no longer seen as a service but, rather, as a driving force for the growth of the whole territory.

What instruments, actions, and boundary conditions are needed to transform the schools into veritable smart place learning ecosystems [12,13] capable of behaving also as territorial hubs [14] and contributing to the increase of the well-being of its students and all members of the community of reference?

In the Italian context, a possibility to reinforce school autonomy (Law no.59 of 15/3/1997 and its implementing decree, Presidential Decree no. 275 of 8/3/1999 [15]) is offered by the so-called community pacts proposed in 2020 by the Ministry of Education to reinforce the sense of identity of the territorial community of reference of a school [16]. The community pact implements the idea - supported by the Ministry since 2012 - that each school could become a veritable civic center. The main goal of the community pact is the activation of the local community to identify shared solutions to serious problems that may affect the most disadvantaged areas of a given territory: such as educational poverty, the dropout at school, the high delinquency rate, etc. It is no coincidence that during the pandemic the Italian government enacted guidelines and gave impetus to the community pacts, considered a strong basis for the establishment and development of veritable place learning ecosystems. During the pandemic, in fact, the community pacts were used, among other purposes, to sustain the search for spaces and resources useful to counteract the confinement and the social distancing imposed by the lockdown.

In the current post-pandemic context, the community pacts can also be considered a tool capable to foster the achievement of excellence, the culture of active and digital citizenship, to support the Sustainable Development Goals SDGs [17], social innovation and territorial development, and, therefore, the overall increase of smartness of territories and cities. They represent, in fact, a tool through which it is possible to stimulate the engagement of the local communities and involve them in the processes of co-evaluation, co-design, and co-responsibility, to support the growth of students' competencies and, as well, those of all other citizens belonging to the local communities, in a coevolutionary perspective.

Expanding the view to the international panorama, we can frame the *community pact* tool and strategy within the so-called place-based approaches and initiatives - often also referred to as area-based approaches, comprehensive community initiatives and collective impact initiatives - which involve the engagement of school stakeholders in "*a collaborative process to address problems as they are experienced within a geographical space, be it a neighbourhood, a region or an ecosystem*" [37, 41]. The idea that schools should be considered a "*genuine form of active community life, instead of a place set apart in which to learn lessons*" can be traced back to Dewey [38,46] and it has been continuously developed over a century [47] following a red thread leading up to, for example, the Collective Impact (CI) initiatives that aim at identifying solutions to major societal problems [39], and the Schools as Community Hubs (SaCHs) that aim at addressing some of society's most complex problems [40,41] and improving outcomes in the schools and communities [42,43]. SACHs "*typically involve the co-location of facilities or services at a school site and/or the sharing of school facilities with government agencies, non-governmental organisations (NGOs), service providers and the community, enabling the provision of services beyond the typical capacity of schools*" [44,45]. Because of this each SaCH, like each community pact, can be considered unique because it seeks to address the needs of the local community, although SaCHs may share many communalities.

Coming back to the Italian situation, a recent survey [18] has brought to light the existence of a few hundred community pacts on the Italian territory and an initial analysis [19] carried out on some fifteen cases of formalised community pacts and educational alliances (which often constitute a preliminary step to the formalisation of a community pact) has highlighted, in fact, the impossibility of identifying any standardisation of their nature, since they differ in terms of territorial dimension, operating methods, purpose, and potential to induce changes, due to the heterogeneity of the contexts and the dependence of a fairly wide range of factors. Among these, the human factor emerges very clearly in terms of individual motivation, leadership, desire to get involved, willingness to learn and undertake training and individual growth to broaden one's horizons and competencies, the possibility of ensuring continuity to the actions undertaken, and, as well, stability to the territorial presidium established. These are all fundamental aspects in the constitution and stabilisation of an educating territorial community, which, as highlighted by another report [20], should primarily include parents and their relations, as well as the social capital that characterises the specific territory.

From these studies and reports, recommendations also emerge regarding the need for participatory approaches aimed at co-planning and developing co-responsibility, as

well as the need for the development of an *evaluative thinking* [48] to design and implement monitoring and evaluation processes, which should not be used to generate reports and rankings but, rather, as a tool to share knowledge and trigger processes of change to solve critical issues and to take advantage of valuable elements that characterize a given context.

Starting from this evidence and needs, in this contribution, we intend to follow up on the preliminary investigation carried out in 2021 [11] on the case of the community pact of the IIS E. Amaldi of Rome utilizing a participatory evaluation process involving the main players of a learning ecosystem: students, teachers, and parents. Among other aspects, this process has also made it possible to bring out the perception that each of these categories has developed over the years regarding the level of *smartness* of the school [21], with particular reference to the dimension of *social interaction* and how this reflects on the school-territory relationship and, as well as, on expectations about possible initiatives to be undertaken. The use of the participatory evaluation had also the goal, as recommended by [20,48], of reinforcing and supporting the culture of monitoring and evaluation to produce a knowledge base useful to elaborate improvement plans [22,23].

In the next sections of this paper, the context, the participatory evaluation process, and the analysis of the data collected (numerical and textual answers) will be described, with particular reference to the outcomes that are more relevant to the theme of the community pact. To close, conclusions and recommendations will be drawn to support the stabilisation of the pact and its activities, as a contribution to the realisation of a stable territorial presidium.

2   The context

The IIS Amaldi is a high school that offers the following curricula: classical high school, science high school and language high school.

The context of the pact stipulated by the IIS Amaldi - entitled *"Schools in common - We generate the change"* – is the typical one [24] that can be associated to communities located within the urban areas of large cities: '*often peripheral neighborhoods of medium-large cities characterised by situations of hardship and degradation, both material and immaterial. Contexts with difficult and precarious living and working conditions, with high rates of poverty, unemployment and dropping out of school, in some cases with a foreign presence higher than the average, often characterised by forms of organised crime, contexts lacking in services and equipment and need of care in public spaces, starting with schools, which often represent a bulwark for the local community'*.

Specifically, the community pact promoted by IIS Amaldi involves also a Comprehensive Institute (Melissa BASSI), the metropolitan city of Rome, the Municipio VI, two parishes, and more than 20 cultural associations, most of them active within the territory of reference of the school: Tor Bella Monaca district. The main declared objective of the pact is to foster the educational co-responsibility of families and citizens to foster the establishment of an educating community, together with the socio-cultural development of the territory through the implementation of what has been defined as a

community school, i.e. a hub capable to connect public institutions and citizens' associations. The pact proposes to take advantage of the skills and competencies of each member to counteract educational poverty, the uneasiness of the youths, the school dropout, and, as well, to favor the integration of formal, informal, and non-formal learning.

3   The participatory evaluation process

The verification of the extent to which the working hypotheses enunciated in the "*Schools in common - We generate the change*" pact was able to meet the imaginary, desires and stimulate the co-responsibility of the players involved in the educational process was entrusted, as mentioned above, to a participatory evaluation whose intent and objectives were, actually, much broader. The survey, in fact, intended to measure the perceived value of three complementary constructs: the *smartness* of the learning ecosystems [12,13], its *e-maturity* [26-30]*,* and the level of *well-being* [31] induced in students and teachers. The full description of the contents of the survey will be addressed in a forthcoming paper. Here, we will limit ourselves to comparing, and describing, the factors that allowed to measure the level of smartness of the learning ecosystem and to compare it with the results of equivalent surveys carried out in the same and other schools in 2016 and 2017. In addition, we will focus on the subset of factors that determined the contribution to the social interaction level of the ecosystem's smartness and on the open-ended questions about the community pact topic.

The participatory evaluation was conducted utilizing questionnaires that proposed 106 questions for the students, 85 for the parents, and 145 for the teachers, most of which only required a numerical response on a Likert scale. The table in Appendix A shows the set of factors that have been used to calculate the average values of the indices (Table 1) characterizing the dimensions that determine the ecosystem's *smartness*. Fig. 1. These indices are also useful for making a comparison with the level of smartness perceived in the participatory evaluation campaigns carried out previously (see next section). The data collection period was three weeks. A total of 98 students (58F and 40M), 77 teachers (55F and 22M, average age 48.9), and 254 parents (209F and 45M, average age 47.9) responded to the questionnaires; previously, during the 2016 and 2017 campaigns, the participatory evaluations had been attended respectively by 1231 and 1567 students, 103 and 49 teachers, and 29 and 26 parents, respectively. The participation of students in the present participatory evaluation is greatly reduced compared to the previous ones due to the choice in favour of student-free participation; the participation of teachers, on the other hand, is on the average similar to those observed previously, while the participation of parents is tenfold. A so large participation of the parents may have been related to an increased habit of 'digital participation' induced by the recent pandemic and/or by an improved quality of the relationship with the staff of the educational institution.

The participatory evaluation has not involved the territorial stakeholders because their participation in the preliminary survey [11] was far lower than the number of those adhering to the pact, denoting a limited sense of co-responsibility.
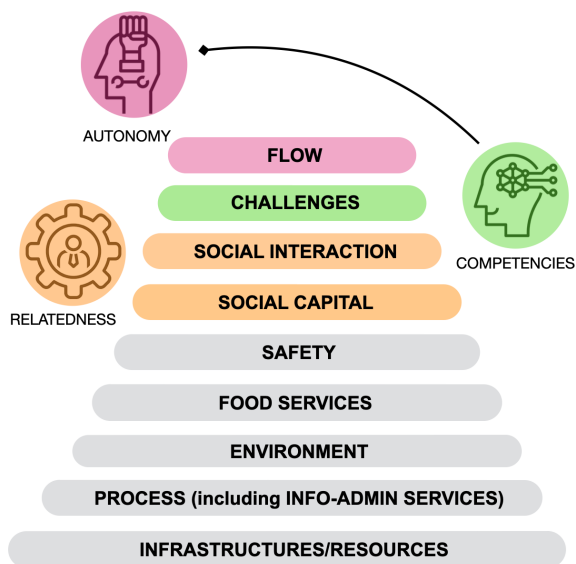
Fig. 1. the ASLERD pyramid of the smartness of a learning ecosystem (adaptation to school contexts of the construct defined for a generic smart ecosystem [32,33]). The first 8 levels have been used for the comparison of the participatory evaluation campaigns carried on from 2016 to the present (see figure 2); flow was not used because it was not measured in all evaluation campaigns. Also shown in the figure is the positioning of the factors relevant to Self-Determination Theory (SDT [34] with respect to the dimensions composing the ASLERD pyramid.

The distributions of students and parents over the five years of the curricula was more or less equivalent (students: I - 28.5%, II - 18.4%, III - 21.4%, IV - 22.4% and V - 11.2%; parents: I - 29.1%, II - 22.4%, III - 20.5%, IV - 18. 5% and V - 9.4%) and shows how the level of participation tends to be higher in the first year and, then, to gradually decrease over the years, even considerably during the fifth year, i.e. in the year the students will leave the school after the baccalaureate examination. This may be due to the fact that both students and their families see themselves projected into the new phase of life that will await them after high school, with a relative weakening of the sense of belonging to the school community.

As far as the family context is concerned, it is interesting to note that *parent 1* (usually the father) is employed 42% in the private sector, 25% in the public sector, while about 20% work as freelancers and only 2% are unemployed and 1% are householders; on the other hand, *parent 2* (usually the mother) is employed 36% in the private sector, 28% in the public sector, while 8% work as freelancers, 19% are housewives and 4% are unemployed. The social context of the school students, or at least of those who responded to the questionnaire, is therefore characterised by families with at least one if not two incomes, belonging to a predominantly clerical or working class that tends to border on the middle class. Situations of strong socio-economic hardship seem to be limited in percentage and certainly far lower than the local average. This would lead

one to suppose that the students of the IIS Amaldi belong in a large majority to the more privileged groups that populate the Tor Bella Monaca neighborhood and its surroundings.

4 Data analysis

4.1 Descriptive statistics

The table in appendix A shows the average values of the factors that, as stated above, could be compared with those extracted in the 2016 (M16) and 2017 (M17) campaigns, calculated for students (S), teachers (T), and parents (P), respectively. Light green and bold green were used to highlight the increases in the mean that (according to the Wilcoxon test) could be considered, respectively, statistically significant and highly significant in comparison to those worked out from the 2017 participatory evaluation. The same criterion was used for negative variations, but using the red colour.

The first observation to be highlighted concerns the average values of the factors derived from the students' answers that, as in the participatory evaluation campaigns carried out in past years, appear to be considerably lower than those perceived by the teachers. Parents' perceptions, as usual, lie numerically between those of the students and those of the teachers, much closer to the latter.

A detailed comparison with the participatory evaluation carried out in 2017 reveals a significantly more positive perception towards the 'Amaldi' learning ecosystem particularly, but not exclusively, by parents. Overall, this indicates a positive perception towards the work done by the school principal and by all those involved in the processes implemented by the learning ecosystem from 2017 to date. Let's look at the outcomes of the participatory evaluation for each of the macro-areas considered.

Basic needs. There is a significant improvement in internal services related to the provision of food and drink, as well as a marked improvement in the perception of safety within the school, also as a workplace (teachers). The feeling of safety in the outside area also improves for students and, above all, parents; the perception of teachers on this topic remains stable. Overall, however, the average values for external safety are, although sufficient, fairly low and, in any case, quite lower than those for internal safety. This is the first evidence of the difficulty of considering the territory, in its entirety and complexity, as an interlocutor for the constitution of an educating community.

Infrastructure and technological resources. Unanimous among students, teachers, and parents is the perception of a highly significant improvement in both the adequacy of school spaces and the technological resources available to the school.

Competences. There is a positive variation in the perception of civic and social competences possessed by the students, both by teachers and parents, the perception of the students being stable on this factor.

The positive change also extends, as far as parents are concerned, to the perception of professional competences expressed by the school.

Organisational factors. As far as organisational factors (evaluated almost exclusively by the teachers) one can observe a general increase in the average values of the factor associated with this area, an increase that becomes statistically significant as regards the *sharing of choices and actions to be taken*, the *support for co-design* and the *impact of collaborative work*, indicating an open design approach and a shared governance. For teachers, peer relationships have also improved (see the section on social interaction). On the parents' side, a significantly more positive perception emerges about the *easiness of administrative procedures*, while the teachers' perceptions in this regard remain unchanged.

These observations are corroborated by: a) an increased agreement with the *objectives pursued by the school*, an increase that is statistically significant as far as parents are concerned; b) a statistically significant *appreciation of the school organisation* for all categories that participated in the evaluation.

The picture is completed by the increase in the average value relating to the willingness to listen to the *opinions expressed by individuals*, detected in the case of both teachers and parents; stable on this factor is the opinion of students.

Educational process. Positive and statistically significant feedback was obtained from parents on almost all factors concerning the educational process. In particular, this feedback was extremely significant about the initiatives to support the *Development of Transversal Skills* and increase the students *Orientation* (PCTO) and, as well, *the support for excellence*.

In the opinion of the students, the situation is somewhat critical about *personalised teaching* and in particular for what concerns the *support for individual development* (personal propensities). The *support* provided for *collaborative work* is judged equally negatively by the students.

These observations, together with the perceived low sufficiency in the use of technologies to support the educational processes, seem to indicate critical aspects in the relationship between students and teachers, which is also underlined by the statistically significant decrease in the mean value of the perception regarding the student-teacher relationship.

Social interaction. The school's effort in terms of *inclusion* and *valorization of diversity* is judged positively by all categories.

On the other hand, the evaluation regarding the *climate within the classroom* does not rise, with a statistically significant decrease for parents, perhaps due to the worse student-teacher relationship mentioned above.

Support for social interaction is perceived more positively by teachers and, above all, parents, while it remains at the same level for students.

Support for interaction with the territory is perceived as significantly increasing.

The significance of the positive changes in the average values of most of the factors examined so far (see Appendix A) is reflected in the calculation of the indices shown

in Table 1. Such indices are useful not only to make an immediate comparison with the values of the same indices obtained in 2016 and 2017 but also to carry out a comparison with the values found in similar campaigns conducted in other schools located in the city of Rome.

Table 1. Comparison of the indices obtained as the average of the values of the factors listed in square brackets for each index (see Table 1A in Appendix A for the description of the factors), weighted for the opinions of students, teachers, and parents, collected during the 2016, 2017 and 2023 participatory evaluation campaigns carried out in the IIS Amaldi school. The last column shows, in green colour, the increase in the index values detected in 2023 in comparison to those measured in 2017.

Indices	2016	2017	2023	Delta-17
Smartness: integrated values				
Infrastructures/ Resources [SSA, STA, SPC]	6.48	6.98	7.23	0.25
Process	6.43	6.01	7.03	1.02
Process subindices				
Learning process: design [ASO, ShOA, FUA, RWLSA, SOA, SCoD]	6.56	6.22	7.24	
Learning process: activities [SCoW, ICoW, ESSLD, LCA, OIQ, SED, SPESE]	6.30	5.80	6.81	
Info-Admin Services [ECSO, APF, IwP, IDSGA, IATA]	7.47	6.55	7.01	
Environment [EnC]	6.10	5.66	6.55	0.88
Food Services [FSA]	5.86	5.75	6.71	0.96
Safety [ISe, Ese]	6.52	6.42	7.21	0.79
Social capital (community) [SSSI, SSCC, TSI, PISA]	6.03	5.92	6.88	0.96
Support to socialization [(SSSI), SiD, SIA]	6.30	6.25	7.37	1.22

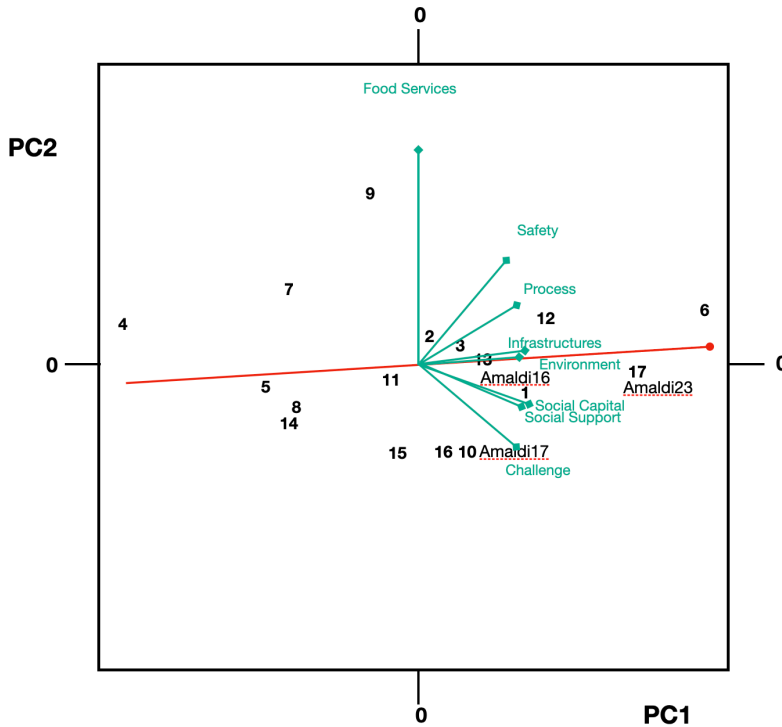| Other socialization indices			
School Climate [CSC, PRQ, SSCC]	6.82	6.70	7.11	0.41
Relationships [STR, TPR, TATAR]	6.85	6.68	7.49	0.81
Challenges [SCQ]	5.91	6.10	6.92	0.82
Flow [well-being at work, challenges, (ILTT), SSID PCTO]	6.04	6.11	6.89	0.79

Fig. 2. Results of the principal component analysis carried out on the indices shown in Table 1 measured in the case of 10 schools, indicated by a number to maintain anonymity. Only the labels corresponding to the participatory evaluation campaigns carried out in the Amaldi school are shown. In green are shown the contributions by the various indices to the first two principal components PC1 and PC2. The direction of increasing smartness is indicated, as a guide for the eyes, by a red line.

A possible way of comparison among indices is represented by a Principal Component Analysis [35,36] of the values found in the different campaigns, see Fig. 2.

One can immediately realise how the ISS Amaldi has substantially modified its position on the plane represented by the first two principal components by shifting significantly to the right, i.e. along the first principal component to which almost all indices contribute. This shift corresponds, therefore, to a shift towards higher values of perceived *smartness*. The direction of the increase in smartness is indicated, as a guide for the eyes, by a red line. It is particularly interesting to note that the position of the ISS Amaldi in 2023 is very close to the position of the school identified by no. 6, i.e. a private school that can be attended for a fee. This latter type of school, usually, is characterised by a far more positive perception of the services provided with those available, on average, in public schools.

Factors of specific interest for the community pact. Fig.2 and the analysis of the results of the participatory evaluation discussed so far show us - apart from a few criticisms, relating to the personalisation of the teaching process and the relationship between students and teachers – that the perception of the various players with regard to the 'Amaldi' learning ecosystem is very positive, to the point of also suggesting a positive predisposition towards the development of a solid community sanctioned and supported by a community pact.

The nature of such hypothetical predisposition can be inferred and checked from an analysis of the indicators that are most relevant to the development of an educating community to support the school ecosystem, see Table 2.

Table 2. Mean values and standard deviation of additional factors related to the theme of Community Pact investigated during the participatory evaluation derived from the opinion of students (S), teachers (T) and parents (P).

Social interaction: Community Pact Related Factors			
Factors	**Mean S**	**Mean T**	**Mean P**
Belonging to School Community (BSC)	M = 6.58 [6.16, 7.04]	M = 8.18 [7.83, 8.18]	M = 6.80 [6.59, 7.00]
Support to Territorial Social Interaction (STSI)	M = 6.34 [5.94, 6.74]	M = 7.73 [7.44, 8.02]	M = 7.12 [6.92, 7.33]
Utility of Territorial Community Development (UTCD)	M = 6.65 [6.22, 7.09]	M = 8.13 [7.80, 8.46]	M = 7.87 [7.69, 8.05]
Utility of Territorial Virtual Community Development (UTVCD)	M = 6.09 [5.66, 6.51]	M = 6.95 [6.58, 7.31]	M = 7.22 [7.02, 7.42]
Belonging to School Territory (BST)	M = 6.56 [6.13, 6.99]	M = 6.53 [6.05, 7.00]	M = 6.90 [6.69, 7.11]
Availability to support the	M = 6.70 [6.24, 7.16]	M = 6.91 [6.49, 7.33]	-

School Community (ASSC)			
Parents Involvement in School Activities (PISA)*[also organizational factor]	M = 5.52 [5.05, 5.98]	M = 6.87 [6.46, 7.27]	M = 6.85 [6.60, 7.10]
Availability to support the School Territory (ASST)	M = 6.44 [6.00, 6.89]	M = 6.37 [5.89, 6.85]	-

From Table 2 it can be noticed that, although at a sufficient level, the *willingness to support actions aimed at the territory,* compared to actions aimed at *supporting the school community*, is significantly lower in the teachers and lower in the students (data from parents are not available). This result would seem to be justified by the difference between the teachers' s*ense of belonging to the school community* and that *to the territorial community*. Sufficient values were found for the *sense of belonging to the school* and *territorial communities* in the case of parents and students, although they appear to be quite low in comparison with to those found for almost all the other factors considered in this investigation. It is possible to speculate that this result may have been induced by the sense of limited safety offered by the area surrounding the school, compared to the protected environment of the school itself.

The above also reveals a limited openness of the teachers towards the school's territory of reference; an evidence that can most likely be explained by the fact that the territorial area in which the teachers reside, in most cases, does not coincide with the school's reference territory. It seems that the critical aspects capable of inducing a limited feeling of territorial safety also influence the value of the indicators related to the sense of belonging and openness towards the territory. Somewhat greater appears to be the openness of teachers and students towards the school community.

To better identify the community model that corresponds to the results of the analysis illustrated so far, it was necessary to carry out an analysis of the textual answers given by the participants to some open questions proposed by the questionnaire, see next subsection.

4.2 Analysis of the Textual Answers

Before going into the analysis of the answers given by students, parents and teachers, it is worth emphasising that a very high percentage of the participants declared themselves insufficiently informed about the nature and purpose of the community pact: 89% of the students, 68% of the parents and 27% of the teachers. This situation resulted in a very limited contribution from the students to the survey.

The analysis of the texts of the answers of those who felt sufficiently informed to provide their contribution focused on the following questions: *What should be the purpose of a community pact? What should be the school's additional offer sustained by the pact? How could a denser social interaction between students and a broader*

participation of parents be fostered? What challenges and opportunities would be desirable to offer to the students?

Purposes of the community pact. From the parents' point of view, the aims of the pact should be to: a) realise a school as open as possible to the territory, during the whole day and capable of promoting socialisation, recreational activities, and educational activities to train students as active and environmentally respectful citizens b) foster collaboration between families and the school to share and be co-responsible for the projects listed above and for the student's growth. Objectives that are expected to be achieved also thanks to interchange and collaboration with territorial realities (in particular public bodies).

Only a small minority believe that a secondary goal of the pact could be the valorisation and development of the territory, also to support individuals undergoing economic and social hardships.

From the teachers' point of view, the pact should amplify the school's networking ability (especially concerning public bodies and institutions, but also other schools and associations) to create an educating community capable of designing and offering services, as well as implementing cultural initiatives. More specifically, a certain number of teachers believe that the school should be open to the territory and operate as an aggregating pole, also with social aims; offer educational initiatives to make up for the territory's shortcomings, foster the development of competences and the integration of formal and informal knowledge, counteract school drop-out and educational poverty, foster the harmonious development of personality and, as well, a responsible and active citizenship.
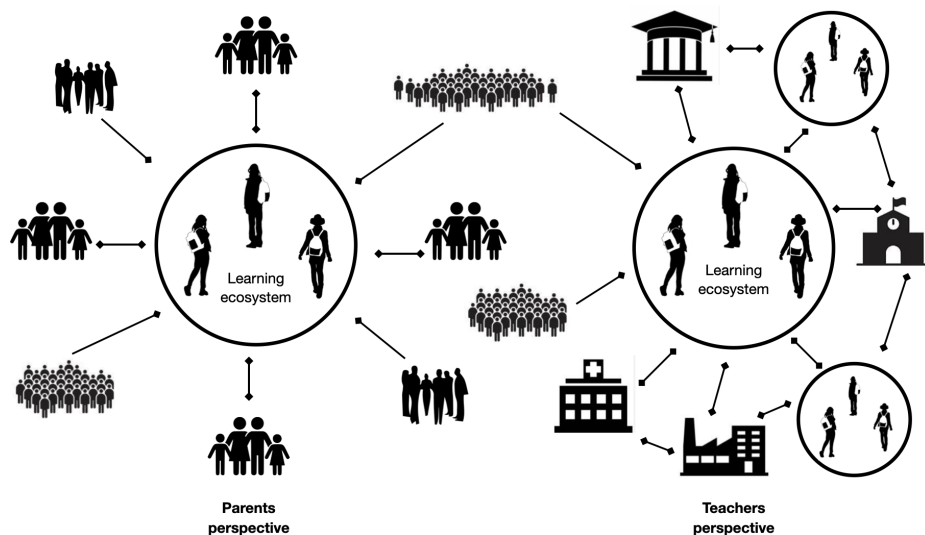

Fig. 3. Graphic representation of the perspective view of parents and teachers on the topology and direction of the relationships that should be established by the learning ecosystem thanks to the community pact.

Also, in the case of teachers,   few individuals think that the school should operate to support the development of the territory for the benefit of all citizens.

The contribution made by the few student responses cannot be considered significant.

From what has been reported above it is quite evident that for most parents and teachers the dominant model should be that of a learning ecosystem acting as a reference pole, aimed primarily at a more complete and harmonious development of the students who are members of the school community, with the possibility to assume also the role of a civic center and permanent presidium open to citizens. In the case of parents, a closer collaboration between the school, families, and local stakeholders is recommended. In the case of teachers, more focus is placed on a network of collaboration among peers (other learning ecosystems) and with institutions located on the territory. For both categories of actors, the dominant model looks topologically centripetal (with respect to the territory) with variations that are represented in Fig. 3.

Offer of initiatives and services by the pole. The parents' opinions reveal an idea of the pole as somewhere between a recreational/socialisation center and an after-school center for remedial and further education purposes. Meetings with external experts from various fields (artists, writers, technicians and scientists, politicians, psychologists) are also part of possible cultural insights to be offered. There emerges also a demand for access to laboratory space and computer equipment after school hours. As far as extracurricular activities are concerned, the preferences go, in order, to music, theatre, digital communication, and art.

Also, from this set of answers is confirmed a weak propensities to support an ubiquitous interaction with the territory, which appear confined to the request for agreements with facilities capable of adding a plus to the school context (theatre and swimming pools) and to a few requests to organize courses for senior citizens and adults (IT and languages).

In line with the parents' imaginary is the contribution of the students, who focus essentially on extracurricular activities of a creative nature (music, art, acting, creation of multimedia products) and sports (including swimming pool). Meetings with scientists and external visits are also mentioned, as well as initiatives capable of supporting, at large, individual development.

Less relevant, although not absent in the teachers' imaginary are extracurricular activities of a cultural and recreational nature (cinema, theatre, music, sport). The prevailing opinion among the teachers is that the center should organise itself and function as a service center (medical, psychological, pedagogical), also capable of offering study support, and cultural and linguistic mediation. They also mention the possibility for the students to access spaces (study rooms, library, reading rooms, computer rooms, laboratories, outdoor/green spaces) and equipment (books, teaching materials, photocopier) to carry on for after-school activities, supported by technical and pedagogical assistance. It is also hoped that additional competences (with regards to those already available at the school) could be accessed to offer in-depth computer and language (Italian L2) courses for adults and working students too. Few teachers see the community pact also as an opportunity to renew the school's indoor and outdoor spaces (parquet,

computers, WIFI) making them more beautiful and functional, and also to create a sci-
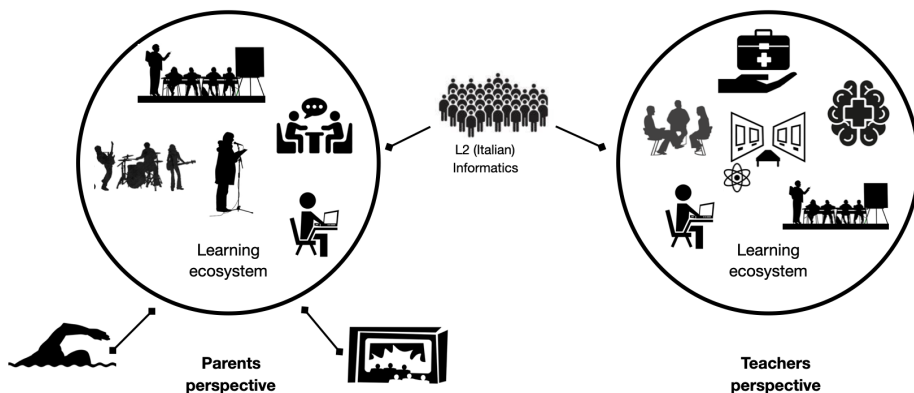ence museum devoted to mathematics and physics.

Fig. 4. Graphic representation of the perspective view of parents and teachers on activities and
services that should be offered by the learning ecosystem thanks to the community pact.

Parents involvement. More active parent involvement is frowned upon by teachers who
fear interferences in teaching and unjustified defensive positions on the topic of student
assessment. Only a limited number of teachers propose involving parents in online ac-
tivities to take advantage of their skills (cultural mediation, work and/or personal expe-
rience, etc.).

Parents show their willingness to support also financially – on average 27€ and 30
€ - initiatives aimed respectively at improving school infrastructures and at developing
students' transversal competences (e.g. knowing how to relate, knowing how to deal
with the unexpected, exercising critical thinking, developing initiative skills, managing
emotions, etc.). They also call for awareness initiatives about the most common and
dangerous addictions. Both parents and teachers, in any case, feel the need to further
improve school-family communication and to increase the number of occasions for
meetings and discussions.

5   Conclusions and lesson learnt

The present case study dedicated to investigating the factors that can determine the
development of a place learning ecosystem supported by a community pact showed us,
first of all, that there exist a clear difference between: a) the development of a commu-
nity in which the learning ecosystem acts as an engine to foster social innovation and
development of a degraded territory; b) the development of a community in which the
learning ecosystem acts as an aggregating pole, even a civic center, whose main goal is
to enhance the process of growth of its students to which can, only eventually, be added
an openings to the territory dedicated to, for example, to the training for adults.

The latter is certainly the dominant view in the collective imaginary of parents, teachers, and students. A result that confirms what has been observed in the past [11], albeit in a preliminary survey in which also a limited number of stakeholders took part and showed themselves more interested in the development of activities in the school than in the development of activities carried out on the territory with the school. An attitude like this one most likely, as already pointed out, could be induced by a sense of insecurity in operating in a territory that shows clear signs of degradation and social suffering.

A very positive perception of the school ecosystem as a whole (level of *smartness*, *e-maturity*, and *wellbeing induced*) and, as well, of the actions that have been implemented in recent years, is certainly an element that can induce a high sense of belonging to the school community, but on its own, it does not seem enough to determine a *communion of intentions* among all the actors involved in the establishment of an *educating community*. The achievement of such a communion requires a lot of additional work on the side of communication, confrontation, the development of mutual trust, codesign activities, and the assumption of co-responsibility, to which the formal stipulation of a community pact is not sufficient. For the time being, in fact, despite the existence of a community pact and a high level of appreciation regarding the school's objectives, there are still quite different views expressed by parents and teachers on the role of the learning ecosystem as a promoter of an educating community. This concerns both its nature and the range of initiatives on offer.

In the teachers' imaginary, as we have seen, the learning ecosystem should promote the development of a network among peers (schools) and with public bodies and institutions that can bring prestige to the ecosystem considered as a centralising pole capable of providing opportunities for its students. Even more centripetal and centralizing is the vision of parents who imagine a stronger interaction with families and an ability of the pole to attract stakeholders and expertise to support initiatives to be carried out within the school.

Parents and teachers have different visions also on the activities that the pole should offer: on the one hand the parents hope for activities aimed at supporting study, socialization, and cultural recreation. The territory is mentioned only for the implementation of agreements with the few realities that can enrich the pole's offer (swimming pools and theatre). On the other hand, the teachers image the pole as a civic center providing remedial schooling services, but also medical and psychological care together with support to linguistic and cultural mediation. Both categories of actors seem to agree that the relationship with residents should be limited to the offer of language and computer courses for adults.

Teachers' and parents' visions, although different, appear, however, integrable and, maybe - through the few actions aimed at the adults - could represent a starting point also to eradicate educational poverty and raise the cultural level of the neediest pockets of the population. In any case, to achieve an integrated and unified vision and, thus, a higher degree of commonality, it would be necessary to create a stable confrontation and co-design platform.

The scarce participation of local stakeholders in the participatory evaluation processes and the important growth of the parents' participation, with their desire for confrontation and willingness to support - at least for a large part of the time their children attend the school curricula - makes one speculate that are the parents that may act as backbone on which to build up a veritable educating community, also thanks to the competencies they can offer and their system of relationships.

At present, however, there is also a lot of work to be done on the involvement of parents and the achievement of mutual trust with teachers, while respecting the role that each category should play within an educating community.

What emerges from the above is that the construction of a veritable educating community implies a long process of cultural change that goes far beyond: a) an appreciation for a given learning ecosystem and the actions it implements; b) the formalisation of any pact that, while acting as a booster, requires the signatories and all the players in the ecosystem to rise above their legitimate interests and expectations.

The keystone of the architecture of an educating community is the sharing of intentions and actions that can be achieved through a slow and constant work of confrontation.

It is certainly useful to treasure all the recommendations and guidelines drawn up in the studies already mentioned [18-20] but at the root of an educating community that wishes to become a stable presidium over time, there can only be a sharing of intentions and the ability to co-design. It seems obvious, thus, that a work that takes a long time must be structured according to methods and governance that can ensure continuity through the various generations of students, parents, and teachers that will succeed one another.

It is also obvious that financial resources are needed for the implementation of the actions the respondents suggest implementing, but it is also true that a willingness to contribute - both in terms of competencies and financial resources - has emerged on the part of the parents. Crowdsourcing is not, therefore, a hypothesis to be discarded, at least for the constitution of an economic basis to be increased through the search for funds of a more structural nature and the participation in competitive calls. Parents volunteering could be transformed into an extremely effective flywheel, if it is well managed (perhaps also with the help of a *community manager*) and included in a generative process that must be constantly monitored and assessed - as it has been shown in this work - to highlight critical issues and make emerge directions to be explored.

References

1. Wikipedia (n.d.): Factory Model School. Retrieved on November 30th, 2023 from https://en.wikipedia.org/wiki/Factory_model_school
2. Robinson K.: Changing Education paradigms. TED talk (2010), Retrieved on November 30th, 2023 from https://www.ted.com/talks/sir_ken_robinson_changing_education_paradigms
3. CEDEFOP: The skill matching challenge: analyzing skill mismatch & policy implications (2010).
4. McGuinness S., Ortiz L.: Skill gaps in the workplace: Measurement, Determinants and

Impacts, IZA DP no. 9278 (2015).

5. UNICEF (n.d.): Inclusive Education:. Retrieved on November 30th, 2023 from https://www.unicef.org/education/inclusive-education

6. Kauffman JM, Hornby G.: Inclusive Vision Versus Special Education Reality. Education Sciences. no. 10(9): 258 (2020). https://doi.org/10.3390/educsci10090258

7. Leijen Ä., Arcidiacono F. and Baucal A.: The Dilemma of Inclusive Education: Inclusion for Some or Inclusion for All, Front. Psychol. no. 12: 633066 (2021). doi: 10.3389/fpsyg.2021.633066

8. as examples of the huge amount of grey literature on this topic see: Villegas T.: 4 Common Arguments Again Inclusive Education and Why They are Wrong (2019). Retrieved October 3, 2023 from https://resources.noodle.com/articles/4-common-arguments-against-inclusive-education-and-why-theyre-wrong/; Secret teacher (n.d.). I am all for inclusion in principle, but it doesn't always work. Retrieved November 30th, 2023 from The Guardian

9. Giovannella C.: At the Root of the Smart Cities: Smart Learning Ecosystems to train Smart Citizens, Building on Smart Cities Skills and Competences, Springer publisher, pp. 217 – 228 (2022)

10. Giovannella C.: 'Learning by being': integrated thinking and competencies to mark the difference from AIs, Interaction Design & Architecture(s) Journal – IxD&A, 57, pp. 8–26 (2023) https://doi.org/10.55612/s-5002-057-001

11. Urbanetti I., Giovannella C., Baraniello V. and Autiero M.R.: Community pacts and we4SLE as tools to support the implementation of Smart Learning Ecosystems, in SLERD 2022: towards the polyphonic construction of a new normality, Springer, pp. 115-128 (2022) https://doi.org/10.1007/978-981-19-5240-1_8

12. Giovannella C.: Smartness as complex emergent property of a process. The case of learning eco-systems. ICWOAL 2014, IEEE publisher, pp. 1—5 (2014)

13. Giovannella C., Andone D., Dascalu M., Popescu E., Rehm M., Roccasalva G.: Evaluating the Resilience of the Bottom-up Method used to Detect and Benchmark the Smartness of University Campuses. ICS2 2016, IEEE publisher, pp. 341--345 (2016)

14. Fuster M., Polchar J., Burns T.: Back to the Future of Education. Four OECD Scenarios for Schooling (2020) https://espas.secure.europarl.europa.eu/orbis/sites/default/files/generated/document/en/178ef527-en.pdf, retrieved on November 30th, 2023

15. https://www.parlamento.it/parlam/leggi/97059l.htm (in Italian), retrieved on November 30th, 2023

16. https://www.miur.gov.it/documents/20182/2467413/Le+linee+guida.pdf/4e4bb411-1f90-9502-f01e-d8841a949429?version=1.0&t =1593201965918, retrieved on November 30th, 2023

17. United Nations (n.d.): The 17 goals. Retrieved on November 30th, 2023 from https://sdgs.un.org/goals

18. https://www.labsus.org/2022/02/piccole-scuole-patti-e-comunita/ (in Italian) retrieved on November 30th, 2023

19. https://www.forumdisuguaglianzediversita.org/patti-educativi-territoriali-e-percorsi-abilitanti-unindagine-esplorativa/ (in Italian) retrieved on November 30th, 2023

20. https://www.alleanzainfanzia.it/wp-content/uploads/2023/08/PATTI-EDUCATIVI-RETE-EDUCAZIONI.pdf (in Italian) retrieved on November 30th, 2023

21. Giovannella C.: Participatory bottom-up self-evaluation of schools' smartness: an Italian case study, Interaction Design & Architecture(s) Journal – IxD&A, 31, pp. 9–18 (2016)

https://doi.org/10.55612/s-5002-031-001

22. Giovannella C.: Participatory evaluation as starting point to design for smarter learning eco-systems: the UTOV case history, in "Citizen, Territory and Technologies: Smart Learning Contexts and Practices", Springer publisher, pp. 64-74 (2017)

23. Meahla O., Giovannella C., Delgado F.: School Smartness augmented by educational community members: a pilot contribution from K9 students, in D'Andrea Fabio and Baldi Vania (eds.) "Codice e luoghi. Abitare le relazioni nel reale/digitale", Roma, Meltemi Editore, pp. 143-164 (2019)

24. https://www.liceo-amaldi.edu.it/index.php/patto-educativo-di-comunita-scuole-in-comune-generiamo-il-cambiamento, retrieved on November 30th, 2023

25. Durando, M., Blamire, R., Balanskat, A. & Joyce, A.: E-mature schools in Europe.Insight-Knowledge building andexchange on ICT policy and practice, European Schoolnet (2007) retrieved on November 30th, 2023 from http://www.eun.org/documents/411753/817341/emature_schools_in_europe_final.pdf/e5d4 b90e-24ff-454f-9722-167b402ce7f4 Accessed 2022/04/10

26. Underwood, J., Baguley, T., Banyard, P., Dillon, G., Farrington-Flint, L., Hayes, M., ... & Selwood, I.: Understanding the impact of technology: Learner and school level factors (2010) retrieved on November 30th, 2023 from http://dera.ioe.ac.uk/1434/1/becta_2010_understandingimpacttechnology_report.

27. Sergis S., Zervas P., Sampson D. G.: A Holistic Approach for Managing School ICT Competence Profiles towards Supporting School ICT Uptake, International Journal of Digital Literacy and Digital Competence no. 5(4), pp. 33-46 (2014) https://doi.org/10.4018/ijdldc.2014100103

28. Kampylis, P., Punie, Y. and Devine, J.: Promoting Effective Digital-Age Learning: A European Framework for Digitally-Competent Educational Organisations, EUR 27599 EN, Publications Office of the European Union, Luxembourg. (2015) https://doi.org/10.2791/54070, JRC98209.

29. Giovannella C., Cianfriglia L., Giannelli A.: The Italian School Ecosystems two years after the lockdown: an overview on the "digital shock" triggered by the pandemic in the perceptions of schools' principals and teachers, in "SLERD 2022: towards the polyphonic construction of a new normality", Springer, pp. 47-76 (2022) https://doi.org/10.1007/978-981-19-5240-1_4

30. Giovannella C., Cianfriglia L., Giannelli A.: The Italian School Ecosystems two years after the pandemic in the perceptions of schools' principals and teachers -part 2 (a segmented analysis), Interaction Design and Architecture(s) Journal - IxD&A, 55, pp. 83 – 108 (2022) DOI: https://doi.org/10.55612/s-5002-055-004

31. Giovannella C.: From simplex to complex: designing for wellbeing at scale, Interaction Design & Architecture(s) – IxD&A Journal, N.55, pp. 123–138 (2022) DOI: https://doi.org/10.55612/s-5002-055-006

32. Giovannella C., Andone D., Dascalu M., Popescu E., Rehm M., Roccasalva G.: Smartness of Learning Ecosystems and its bottom-up emergence in six European Campuses, Interaction Design and Architecture(s) Journal - IxD&A, 27, pp. 79-92 (2015) https://doi.org/10.55612/s-5002-027-005

33. Giovannella C.: The ASLERD Pyramid of Smartness: A Study on the Stability of Indices and Indicators in Schools in Project and Design Literacy as Cornerstones of Smart Education, Springer, pp. 81-91 (2020) https://doi.org/10.1007/978-981-13-9652-6

34. Desmet P. MA and Pohlmeyer A. E .: Positive design: An introduction to design for subjective well-being". International journal of design, 7, 3 pp. 5–19 (2013) retrieved on November 30th, 2023 from https://repository.tudelft.nl/islandora/object/uuid%3A06ec60ac-0363-43ea-9ccd-8426ef0d6b64.

35. Jolliffe, I.T.: Principal Component Analysis, Springer Series in Statistics, 2nd ed., Springer, NY (2002)

36. Hotelling, H.: Analysis of a complex of statistical variables into principal components. Journal of Educational Psychology, 24, pp. 417–441, and pp. 498–520 (1933)

37. Bellefontaine T., & Wisener R.: The evaluation of place-based approaches. A report prepared for Policy Horizons Canada (2011) Retrieved on March 2024 from https://publications.gc.ca/collections/collection_2011/hpc-phc/PH4-80-2011-eng.pdf

38. Kania J., & Kramer M.: Collective impact. Stanford Social Innovation Review, Winter, pp. 36–41 (2011)

39. Dewey, J.: The school and society. The University of Chicago Press (1915)

40. Fry R.: Simple rules for place-based approaches addressing disadvantage. Thesis, University of Melbourne (2019). Retrieved on March 2024 from https://rest.neptune-prod.its.unimelb.edu.au/server/api/core/bitstreams/3957a0bb-192f-5878-9796-ece8acda5c77/content

41. Cleveland B., Backhouse S., Chandler P., McShane I., Clinton J.M., Newton C. (Eds): Schools as Community Hubs, Springer, (2023), https://doi.org/10.1007/978-981-19-9972-7

42. Jacobson R.: Community schools: A place-based approach to education and neighborhood change. A series of discussion papers on building healthy neighborhoods (2016) retrieved on March 2024 from https://healthequity.globalpolicysolutions.org/wp-content/uploads/2016/12/jacobson-final-layout-published-11-16-16.pdf, 2016

43. Maier, A., Daniel, J., Oakes, J., & Lam, L.: Community schools as an effective school improvement strategy: A review of the evidence. Palo Alto, CA: Learning Policy Institute (2017) retrieved on March 2024 from https://learningpolicyinstitute.org/sites/default/files/product-files/Community_Schools_Effective_REPORT.pdf

44. Black, R., Lemon, B., & Walsh, L.: Literature review and background research for the National Collaboration Project: Extended service school models (2010) https://www.researchgate.net/publication/265030157_Literature_review_and_background_research_for_the_National_Collaboration_Project_Extended_Service_School_Model

45. Cleveland B: A school but not as we know it! Towards schools for networked communities. Australian Association of Research in Education, Melbourne (2016) retrieved on March 2024 from https://files.eric.ed.gov/fulltext/ED591862.pdf

46. Dewey J.: The school as social centre. The Elementary School Teacher, 3(2), pp. 73-86 (1902)

47. Rogers J.: Community Schools: Lessons from the Past and Present, Los Angeles: UCLA IDEA (1998)

48. Paproth H., Clinton J.M., Aston R.: The Role of Evaluative Thinking in the Success of Schools as Community Hubs in Cleveland B. et al. (Eds), Schools as Community Hubs, Springer, pp. 309-321 (2023) https://doi.org/10.1007/978-981-19-9972-7_21

Appendix A

The table in this appendix lists the average values of the factors that contribute to define the smartness of the IIS Amaldi learning ecosystem measured during the 2016 (M16), 2017 (M17) and 2023 (M23) participatory evaluation campaigns, calculated based on the opinion expressed by students (S), teachers (T) and parents (P). In the case of the mean values calculated in 2023, their dispersion is also shown. The Wilcoxon test shows the significance of the changes detected in 2023 with respect to the values measured in 2017 (in green if positive and significant, in bold green if positive and highly significant, in red if negative and significant, in bold red if negative and highly significant).

Table 1A.

Factors	Mean S	Wilcoxon t17	Mean T	Wilcoxon t17	Mean P	Wilcoxon t17
Technological resources and infrastructures						
School Technological Adequacy (STA)	M23 = 6.30 [5.83, 6.76] M17 = 5.73 M16 = 5.53	V = 3161 p = .009 Cohen's d = 0.24	M23 = **7.70** [7.41, 8.00] M17 = 5.98 M16 = 5.98	V = 2923 p < .001 Cohen's d = 1.33	M23 = **7.06** [6.86, 7.27] M17 = 6.23 M16 = 6.00	V = 25247 p < .001 Cohen's d = 0.50
School Spaces Adequacy (SSA)	M23 = **6.87** [6.48, 7.25] M17 = 6.41 M16 = 6.51	V = 3491 p < .001 Cohen's d = 0.24	M23 = **7.29** [6.97, 7.60] M17 = 6.79 M16 = 7.10	V = 2212 p < .001 Cohen's d = 0.35	M23 = **7.43** [7.24, 7.61] M17 = 6.69 M16 = 7.23	V = 24201 p < .001 Cohen's d = 0.49
Competences						
School professional competences (SPC)	M23 = 6.88 [6.52, 7.23] M17 = 7.05 M16 = 7.11		M23 = 7.65 [7.35, 7.95] M17 = 7.73 M16 = 7.59		M23 = **7.55** [7.36, 7.74] M17 = 7.17 M16 = 7.38	V = 20132 p < .001 Cohen's d = 0.25
Student Social & Civic Competences (SSCC) *(also social interaction)*	M23 = 6.32 [5.95, 6.69] M17 = 6.02 M16 = 6.43		M23 = **7.06** [6.82, 7.31] M17 = 6.67 M16 = 6.64	V = 2059 p =.004 Cohen's d = 0.37	M23 = **7.18** [6.98, 7.37] M17 = 6.52 M16 = 7.11	V = 20206 p < .001 Cohen's d = 0.43
Quality of Life Long Training (QLLT)	–	–	M = 7.04 [6.66, 7.42] M16 = 6.77		–	–
Organizational factors						
Administrative Practices Friendliness (APF)	–	–	M23 = 6.80 [6.40, 7.20] M17 = 6.71 M16 = 6.79		M23 = **7.19** [6,98, 7.39] M17 = 6.58 M16 = 6.66	V = 21188 p < .001 Cohen's d = 0.37
Agreement on School Objectives (ASO)	M23 = 6.65 [6.19, 7.10] M17 = 6.32 M16 = 6.82		M23 = 7.43 [7.09, 7.77] M17 = 7.18 M16 = 7.12		M23 = **7.42** [7.25, 7.60] M17 = 6.52 M16 = 7.31	V = 23699 p < .001 Cohen's d = 0.65
Sharing of Objectives and	–	–	M23 = **7.18** [6.84, 7.51] M17 =	V = 1833 p = .02	–	–

Actions (ShOA)			M17 = 6.67 M16 = 6.88	Cohen's d = 0.35		
Funds Usage Adequacy (FUA)	–	–	M23 = 6.49 [6.06, 6.92] M17 = 6.20 M16 = 6.98		–	–
Responsibilities and Working Load Sharing Adequacy (RWLSA)	–	–	M23 = 7.03 [6.65, 7.40] M17 = 6.55 M16 = 6.67		–	–
Human Resources Valorization (HRV)	–	–	M23 = 6.91 [6.54, 7.27] M17 = 6.56 M16 = 6.70		–	–
Support to Co-Working (SCoW)	–	–	M23 = 6.96 [6.57, 7.34] M17 = 6.66 M16 = 6.52		–	–
Impact of Co-Working (ICoW)	–	–	M23 = 7.16 [6.79, 7.52] M17 = 6.76 M16 = 6.86	V = 1691 p = .008 Cohen's d = 0.26	–	–
Support to Co-Design (SCoD)	–	–	M23 = 7.15 [6.81, 7.50] M17 = 6.62	V = 1637 p = .04 Cohen's d = 0.36	–	–
Support to Participatory Evaluation and Self-Evaluation SPESE	M23 = 5.64 [5.19, 6.08] M17 = 5.42 M16 = 5.16		M23 = 6.99 [6.63, 7.34] M17 = 6.57		–	–
School Organization Appreciation (SOA)	M23 = 6.65 [6.19, 7.10] M17 = 6.07 M16 = 6.20	V = 3385 p = .03 Cohen's d = 0.26	M23 = 7.73 [7.44, 8.01] M17 = 7.20 M16 = 7.67	V = 1960 p = .002 Cohen's d = 0.43	M23 = 7.57 [7.39, 7.75] M17 = 6.88 M16 = 6.90	V = 25198 p < .001 Cohen's d = 0.47
External Communication of School Objectives (ECSO)	M23 = 6.01 [5.58, 6.45] M17 = 6.30 M16 = 5.86		M23 = 7.04 [6.67, 7.42] M17 = 7.09 M16 = 7.41		M23 = 7.15 [6.96, 7.34] M17 = 6.29 M16 = 6.77	V = 24917 p < .001 Cohen's d = 0.57
Interaction with Principal (IwP)	–	–	M23 = 7.65 [7.26, 8.05] M17 = 7.36 M16 = 7.79		M23 = 6.89 [6.64, 7.13] M17 = 6.88 M16 = 6.38	
Interaction with DSGA (IDSGA)	–	–	M23 = 7.27 [6.81, 7.74] M17 = 6,49	V = 2095 p < .001 Cohen's d = 0.39	–	–
Interaction with ATA (IATA)*?	–	–	M23 = 7.00 [6.56, 7.44] M17 = 7.16		–	–

Personal factors					
School Challenge Quality (SCQ)*[also organizational factor]	M23 = 6.22 [5.75, 6,69] M17 = 6.07 M16 = 5.83		M23 = 7.15 [6,77, 7.52] M17 = 6.78 M16 = 6.83	V = 1852 p =.02 Cohen's d = 0.23	M23 = 7.13 [6,91, 7.36] M17 = 6.46 M16 = 5.93	V = 24053 p < .001 Cohen's d = 0.37
Appreciation by Peers (AbP)	M23 = 7.23 [6.82, 7.64] M17 = 7.34 M16 = 7.41		–	–	–	–
Individual Competences Appreciation (ICA)	–	–	M23 = 7.43 [7.06, 7.79] M17 = 6.84 M16 = 6.83	V = 2194 p < .001 Cohen's d = 0.37	–	–
Individual Results Valorization (IRA)	–	–	M23 = 7.11 [6.73, 7.49] M17 = 6.56 M16 = 6.62	V = 2532 p = .024 Cohen's d = 0.33	–	–
Individual Opinions Consideration (IOC) Students (SOC) Parents Advice Consideration (PAC)	M23 = 6.24 [5.78, 6.70] M17 = 5.91 M16 = 6.06		M23 = 7.13 [6.74, 7.52] M17 = 6.36 M16 = 6.45	V = 2243 p < .001 Cohen's d = 0.46	M23 = 6.49 [6.25, 6.72] M17 = 5.71	V = 21226 p < .001 Cohen's d = 0.42
School Support to Individual Development (SSID)	M23 = 6.29 [5.80, 6.79] M17 = 6.81 M16 = 6.77		M23 = 7.36 [6.99, 7.74] M17 = 6.89 M16 = 6.99	V = 2023 p = .002 Cohen's d = .28	M23 = 7.33 [7,13, 7.52] M17 = 6.17 M16 = 6.63	V = 25525 p < .001 Cohen's d = 0.73
Educational process related factors					
Collaborative Work Support & Stimulation (CWSS)	M23 = 5.81 [5.37, 6.26] M17 = 6.66 M16 = 6.52	V = 1155 p < .001 Cohen's d = -0.40	M23 = 7.58 [7.21, 7.95] M17 = 5.94 M16 = 6.07	V = 2775 p < .001 Cohen's d = 1.02	–	–
LIFE Competence & PCTO (LCaP)	M23 = 7.19 [6.73, 7.66] M17 = 6.89 M16 = 7.18		–	–	–	–
PCTO Satisfaction/Quality (PCTOQ)	M23 = 6.21 [5.65, 6.76] M17 = 3.9 M16 = 3.89	V = 2469 p < .001 Cohen's d = 0.96	M23 = 7.59 [7.29, 7.89] M17 = 6.18	V = 2490 p < .001 Cohen's d = 1.08	M23 = 7.18 [6.93, 7.42] M17 = 4.55	V = 21130 p < .001 Cohen's d = 1.48
PCTO Management (PCTOM)	M23 = 6.53 [5.98, 7.09] M17 = 4.03	V = 1761 p < .001 Cohen's d = 1.14	M23 = 7.45 [7.14, 7.76] M17 = 6.61	V = 2181 p < .001 Cohen's d = 0.64	M23 = 7.03 [6.77, 7.30] M17 = 4.59	V = 12415 p < .001 Cohen's d = 1.43
PCTO Relevance (PCTOR)	M23 = 6.08 [5.50, 6.65] M17 = 3.99	V = 1372 p < .001	M23 = 7.48 [7.13, 7.82] M17 = 6.16	V = 2128 p < .001	M23 = 6.99 [6.68, 7.30] M17 = 4.88	V = 11330 p < .001

				Cohen's d = 0.91		Cohen's d = 1.08
		Cohen's d = 0.25				
Orientation Initiative Quality (OIQ)	M23 = **6.20** [5.66, 6.74] M17 = 5.33 M16 = 5.93	V = 1832 p < .001 Cohen's d = 0.92	M23 = 7.55 [7.25, 7.85] M17 = 7.36 M16 = 7.26		M23 = **6.98** [6.74, 7.21] M17 = 6 M16 = 6.48	V = 10257 p < .001 Cohen's d = 0.58
Personalized Learning (PL)	M23 = 5.14 [4.65, 5.63] M17 = 5		M23 = 7.14 [6.81, 7.48]		M23 = **6.57** [6.33, 6.82] M17 = 4.56	V = 19720 p < .001 Cohen's d = 1.12
Support to Excellence Development (SED)	M23 = **6.44** [5.96, 6.92] M17 = 5.74	V = 2707 p < .001 Cohen's d = 0.33	M23 = **7.49** [7.13, 7.86] M17 = 6.21	V = 2486 p < .001 Cohen's d = 0.81	M23 = **7.10** [6.85, 7.35] M17 = 5.48	V = 18192 p < .001 Cohen's d = 0.92
Efficacy of Support to Students with Learning Difficulties (ESSLD)	M23 = 6.18 [5.68, 6.68] M17 = 6.16 M16 = 6.62		M23 = 7.35 [7.02, 7.68] M17 = 7.28 M16 = 7.02		M23 = **7.12** [6.89, 7.35] M17 = 6.61 M16 = 6.28	V = 12479 p < .001 Cohen's d = 0.31
Learning Continuity Assurance (LCA)	-	-	M23 = 7.61 [7.33, 7.88]		M23 = **7.32** [7.11, 7.52] M17 = 6.38	V = 20722 p < .001 Cohen's d = 0.61
Smartness: Social interaction						
Classroom Social Climate (CSC)	M23 = 6.94 [6.51, 7.37] M17 = 6.84 M16 = 7.05		M23 = 7.52 [7.20, 7.84] M17 = 7.27 M16 = 7.11		M23 = **7.29** [7.08, 7.51] M17 = 7.65 M16 = 7.13	V = 12006 p < .001 Cohen's d = -0.20
Students-Teachers Relationships (STR);	M23 = 6.83 [6.20, 7.06] M17 = 6.47 M16 = 6.45		M23 = 8.44 [8.17, 8.81] M17 = 8.15		-	-
Students/Teachers-ATA Relationships (SATAR/TATAR)	M23 = **7.36** [6.99, 7.73] M17 = 6.82 M16 = 7.06	V = 3400 p < .001 Cohen's d = 0.29	M23 = 8.09 [7.79, 8.39] M17 = 7.97 M16 = 7.06		-	-
Teachers-Parents Relationships (TPR)	-	-	M23 = 7.45 [7.09, 7.80] M17 = 7.28 M16 = 7.43		M23 = **7.49** [7.29, 7.70] M17 = 6.96 M16 = **8.04**	V = 29755 p < .001 Cohen's d = 1.18
School Initiative about Diversity (SiD)	M23 = **6.69** [6.28, 7.10] M17 = 6.04 M16 = 6.25	V = 2898 p = .01 Cohen's d = 0.32	M23 = **7.61** [7.31, 7.92] M17 = 7.07 M16 = 7.09	V = 1811 p = .04 Cohen's d = 0.41	M23 = **7.36** [7.17, 7.55] M17 = 6.38 M16 = 6.81	V = 26117 p < .001 Cohen's d = 0.63
School Inclusion Action (SIA)	M23 = **6.98** [6.57, 7.39] M17 = 6.38 M16 = 6.18	V = 3246 p < .001 Cohen's d = 0.30	M23 = 7.58 [7.23, 7.93] M17 = 7.46 M16 = 7.20		M23 = **7.65** [7.47, 7.83] M17 = 7.17 M16 = 6.88	V = 20452 p < .001 Cohen's d = 0.33

Support to Student Social Interaction (SSSI)	M23 = 6.35 [5.92, 6.79] M17 = 6.25 M16 = 6.39		M23 = 7.58 [7.33, 7.83] M17 = 7.27	V = 1919 p = .02 Cohen's d = 0.28	M23 = 7.02 [6.81, 7.22] M17 = 5.36	V = 28962 p < .001 Cohen's d = 1.01
Peer Relationships Quality (PRQ)/ Affinity for Students/Parent (PeA)	M23 = 7.01 [6.60, 7.42] M17 = 7.20 M16 = 6.93		M23 = 7.74 [7.40, 8.08] M17 = 7.29 M16 = 7.19	V = 2053 p = .005 Cohen's d = 0.30	M23 = 6.97 [6.78, 7.16] M17 = 6.68 M16 = 7.17	
Social interaction: Community Pact Related Factors						
Support to Territorial Social Interaction (STSI)	M23 = 6.34 [5.94, 6.74] M17 = 5.82 M16 = 5.76	V = 3284 p = .002 Cohen's d = 0.28	M23 = 7.73 [7.44, 8.02] M17 = 7.22 M16 = 7.11	V = 2838 p = .004 Cohen's d = 0.41	M23 = 7.12 [6.92, 7.33] M17 = 6.05 M16 = 5.68	V = 24756 p < .001 Cohen's d = 0.65
Utility of Territorial Virtual Community Development (UTVCD)	M23 = 6.09 [5.66, 6.51] M17 = 6.09 M16 = 6.23		M23 = 6.95 [6.58, 7.31] M17 = 6.47 M16 = 6.51	V = 2159 p < .001 Cohen's d = 0.30	M23 = 7.22 [7.02, 7.42] M17 = 6.50 M16 = 6.74	V = 21225 p < .001 Cohen's d = 0.46
Parents Involvement in School Activities (PISA)*[also organizational factor]	M23 = 5.52 [5.05, 5.98] M17 = 5.51 M16 = 5.17		M23 = 6.87 [6.46, 7.27] M17 = 6.51 M16 = 6.58		M23 = 6.85 [6.60, 7.10] M17 = 5.40 M16 = 6.86	V = 18059 p < .001 Cohen's d = 0.81
Smartness: Safety						
Internal Safety at Work (ISeW)	-	-	M23 = 7.38 [7.03, 7.73] M17 = 5.69	V = 2711 p < .001 Cohen's d = 1.11	–	-
Internal Safety (generic) (ISe)	M23 = 7.98 [7.63, 8.32] M17 = 7.19 M16 = 7.22	V = 3601 p < .001 Cohen's d = 0.46	M23=7.47* [7.12, 7.82] M17 = 6.91 M16 = 7.52	V = 2223 p < .001 Cohen's d = 1.17	M23 = 8.27 [8.10, 8.44] M17 = 7.64 M16 = 7.85	V = 23185 p < .001 Cohen's d = 0.46
External Safety (ESe)	M23 = 6.23 [5.76, 7.70] M17 = 5.77 M16 = 5.61	V = 3030 p = .02 Cohen's d = 0.19	M23 = 6.54 [6.12, 6.96] M17 = 6.91 M16 = 6.15		M23 = 6.37 [6.13, 6.62] M17 = 5.65 M16 = 5.23	V = 22666 p < .001 Cohen's d = 0.36
Smartness: Food						
Food Service Adequacy (FSA)	M23 = 6.87 [6.42, 7.31] M17 = 5.79 M16 = 5.83	V = 3717 p < .001 Cohen's d = 0.48	M23 = 6.50 [6.07, 6.94] M17 = 4.75 M16 = 6.04	V = 2610 p < .001 Cohen's d = 0.91	–	-
Smartness: Mobility						
Internal mobility (IMo) External for parents (Emo)	M23 = 7.47 [7.05, 7.89] M17 = 7.37		M23 = 7.56 [7.22, 7.90] M17 = 7.38		M23 = 7.50 [7.27, 7.73] M17 = 6.99	V = 24020 p < .001 Cohen's d = 0.28

Smartness: Environment					
Environmental Care (EnC)	M23 = 5.89 [5.53, 6.45] M16 = 6.04 M17 = 5.64		M23 = 6.26 [5.85, 6.68] M16 = 6.54 M17 = 6.19		M23 = 6.89 [6.69, 7.09] M16 = 6.90 M17 = 6.08	