GREENER GREEN

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Country: Spain

Partner responsible: Blue Room Innovation and Escola Bell-Lloc

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Content

1. Introduction

1.1. Objective and scope of the research

The aim of Greener Green project is to follow up the learning that children have about sustainability and sustainable practices from their childhood. Choosing as main beneficiaries of the project the students of primary education, their teachers and their families.
Nowadays, in Europe, it is difficult to find a single definition of what a "green", "eco" or "sustainable" school is or should be, and this is one of the reasons why every country enforces the laws and programs that it considers necessary in order to involve citizens in matters of sustainability. It is also difficult to have a consensus about when to use the term environmental education or education for sustainability.
Faced with this case, Greener Green wants to provide to the groups named before, a tool that allows schools to discover how sustainable their institutions are, activities and methodology to help the school on being more sustainable (through a training platform digital) and create a motivating ecosystem where good practices are rewarded, and somewhere to share the challenges achieved.
But first, it is important to know in depth what are the educational needs of the students in terms of sustainability, what is their level of knowledge about digital tools, and how we can help teachers and families in order to educate in sustainability at the schools and at their homes so as to make the little ones able to apply the knowledge acquired in their daily bases.
This document describes the current situation of education for sustainability in Spain and goes deep into the region of Catalonia, through:

- An accurate online research on the current situation (desk research).
- Surveys of students, parents and teachers.
- Conclusions drawn from focus groups and reflection made by students, parents and teachers.

The final conclusions, will help to detect the needs of the country, in order to contribute to the construction of the evaluation tool that will allow us to know the degree of sustainability of the schools, the training needs, and how to create a motivating space/ platform for students, parents and schools to meet each other.

1.2 Methodology

The following document details the results of the investigation and provides the data and the conclusions obtained from the following actions:

- An internet search has been done using a trusted sources of the reality in the country (desk research). In this research, the current and forthcoming legislation has been studied, also the different initiatives available in the country have been sought and the existing organizations or groups that work to educate in sustainability have also been researched. The investigation has been conducted between May and June 2022, and the sources consulted can be found in section 5 of this paper.
- Thanks to two forms prepared by the consortium that were managed by Google Forms tool, it has been possible to work with the opinion of almost 200 students and 25 teachers. The form for teachers and students were different and focused on deduce the best conclusions for each of the groups. Both forms have a section on digital skills, a section on knowledge in sustainability, and how sustainability is perceived in school. The forms were answered during the month of May 2022 and the schools that participated, are part of de region of Girona (see all schools in section 3.1. of the document).
- Afterward, groups of teachers, students and parents (separately) were organized. Each group took one-hour sessions, these were led by one or two moderators, and different questions related to sustainability in the schools and homes were asked. The results of the discussion that was created in each of the questions, are summarized in section 3.2. of this document. The working groups were held at the Bell-Lloc school during the second half of June 2022.

Section 4 details the final conclusions and recommendations in order to develop the assessment tool for schools, the educational platform and to follow up the actions taken by schools and families.

2. Desk Research Results

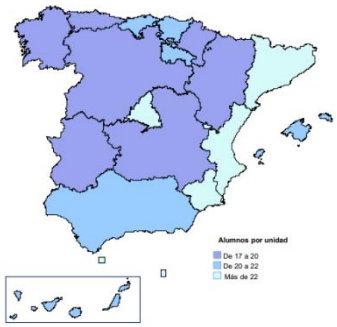
2.1. Country "Green schools" of profile

The population and schooling in Spain

Spain is a country with a population of 47,450,795 inhabitants, according to data from the statistical yearbook of education figures in Spain[1], published in December 2021 and that has indicators for the 2019-2022 academic year. Of this population, 17% (8,286,603) are students who are receiving non-university education. Finally, of the total number of students in non-university education, almost 3 million are studying primary education. As can be seen in the following graph, there are 13,894 schools where this primary education is studied, Catalonia, Madrid and Andalusia being the autonomous communities with the highest volume of schools.

	Centros que imparten	Unidades		Alumnado	Número medio alumnos por unidad
		Primaria (exclusivamente)	Mixtas (1)		
TODOS LOS CENTROS					
TOTAL	**13.894**	**131.963**	**1.170**	**2.907.214**	**21,7**
Andalucía	2.576	25.045	181	559.846	21,9
Aragón	401	3.784	190	78.771	19,8
Asturias, Principado de	287	2.407	50	48.008	19,5
Balears, Illes	329	3.273	10	71.859	21,9
Canarias	696	5.434	93	116.107	21,0
Cantabria	185	1.645	8	33.078	20,0
Castilla y León	818	6.234	337	122.605	18,7
Castilla-La Mancha	757	6.577	102	130.389	19,5
Cataluña	2.322	20.737	0	486.022	23,1
Comunitat Valenciana	1.401	13.982	1	313.402	22,4
Extremadura	469	3.417	67	61.945	17,8
Galicia	872	6.865	58	136.166	19,7
Madrid, Comunidad de	1.391	18.040	7	431.741	23,9
Murcia, Región de	505	4.868	21	109.014	22,3
Navarra, Comunidad Foral de	218	2.155	18	43.175	19,9
País Vasco	541	6.046	5	130.041	21,5
Rioja, La	86	890	22	19.714	21,6
Ceuta	23	289	0	7.409	25,6
Melilla	17	275	0	7.922	28,8

[1] https://www.educacionyfp.gob.es/servicios-al-ciudadano/estadisticas/indicadores/cifras-educacion-espana/2019-2020.html



The ratio of students per class in primary school is scattered according to the different regions of Spain, Extremadura has the lowest ratio, and it rises above 23 students per class in communities such as Catalonia, Madrid, Valencia, and Murcia. The average number of students per class in the state is 21.7. The fact that a region concentrates more students is not related to the increase in the ratio in class, since communities such as the Basque Country or Andalusia have lower ratios than Murcia, but in the other hand, the autonomous cities of Ceuta and Melilla are those that concentrate higher ratios.

Teacher profile

The country has 231,576 teachers in exclusive primary education schools, and 66,207 in canters that provide primary and secondary education. Andalusia is the autonomous community with the most primary school teachers followed by Catalonia, the Valencian Community and Madrid.

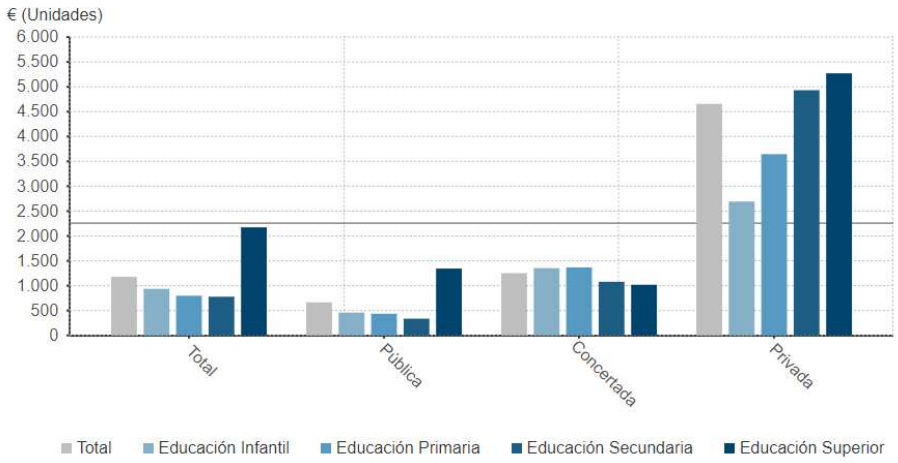
	TOTAL	Total Cent. Régimen General no univer-sitarios	Centros E. Infantil	Centros E. Primaria	Centros E. Primaria y ESO	Centros ESO y/o Bach. y/o FP	Centros Primaria, ESO y Bach./FP	Centros especí-ficos E. Especial	Centros especí-ficos E. Distancia	Actuaciones/ FP Básica/ Otros programas formativos
TODOS LOS CENTROS										
TOTAL	**904.347**	**725.085**	**56.599**	**231.576**	**66.207**	**258.949**	**101.699**	**8.918**	**744**	**393**
Andalucía	159.095	132.507	12.750	41.524	12.028	52.485	12.740	879	101	0
Aragón	27.472	21.298	1.224	7.107	2.204	7.888	2.484	305	0	86
Asturias, Principado de	17.130	14.232	823	4.736	1.287	5.632	1.474	280	0	0
Balears, Illes	21.654	18.972	1.328	6.216	2.458	6.297	2.386	191	69	27
Canarias	35.482	30.073	1.327	9.940	3.179	12.674	2.481	322	150	0
Cantabria	11.877	9.871	163	3.637	866	4.036	970	162	15	22
Castilla y León	45.522	34.601	1.191	11.977	2.979	13.244	4.725	485	0	0
Castilla-La Mancha	38.700	34.397	2.136	14.656	1.911	13.399	1.777	518	0	0
Cataluña	147.698	115.803	10.141	36.938	11.461	38.096	17.211	1.805	131	20
Comunitat Valenciana	97.401	77.019	4.989	24.768	6.325	29.743	10.246	914	34	0
Extremadura	21.991	18.487	947	7.118	896	8.087	1.158	258	0	23
Galicia	48.358	39.966	4.006	11.710	5.284	14.934	3.623	409	0	0
Madrid, Comunidad de	127.123	95.902	11.664	23.537	6.645	24.306	27.872	1.644	126	108
Murcia, Región de	31.424	25.865	987	9.985	2.816	8.686	3.073	318	0	0
Navarra, Comunidad Foral de	15.352	11.615	717	4.189	691	4.295	1.553	119	0	51
País Vasco	44.816	36.104	1.609	10.444	4.465	12.263	7.048	157	118	0
Rioja, La	6.191	5.173	403	1.753	504	1.693	746	74	0	0
Ceuta	1.714	1.620	51	648	163	602	83	43	0	30
Melilla	1.717	1.580	143	693	45	589	49	35	0	26
Universidades no presenciales	3.630	-	-	-	-	-	-	-	-	-

Primary school teachers are mostly women of different ages, and no ages stand out above the rest.

	TOTAL	EE. RÉGIMEN GENERAL (no universitaria)						
		Total	Centros E. Infantil	Centros E. Primaria	Centros E. Primaria y ESO	Centros ESO y/o Bach. y/o FP	Centros Primaria, ESO y Bach./FP	Centros especificos Especial
TODOS LOS CENTROS								
TOTAL	**67,1**	**72,4**	**97,7**	**82,1**	**72,4**	**59,6**	**67,9**	**81,6**
Andalucía	64,9	69,2	97,3	78,5	69,9	56,7	62,0	73,9
Aragón	66,9	72,0	99,2	81,8	73,9	59,6	66,9	86,2
Asturias, Principado de	69,0	73,8	98,5	82,6	70,6	64,5	68,5	83,9
Balears, Illes	70,6	74,0	98,6	84,1	73,3	60,7	69,7	82,2
Canarias	67,8	71,6	98,2	81,5	70,1	61,5	69,9	85,7
Cantabria	67,9	72,5	95,1	85,2	70,6	62,5	64,2	76,5
Castilla y León	65,5	71,2	98,7	83,4	70,4	60,1	63,6	82,7
Castilla-La Mancha	67,4	70,3	98,5	78,9	68,6	57,0	64,7	79,9
Cataluña	69,0	75,5	98,2	86,0	76,4	61,1	70,1	84,1
Comunitat Valenciana	65,8	71,2	97,8	81,9	69,4	59,2	67,4	80,4
Extremadura	67,6	70,7	96,3	80,2	67,2	60,9	61,7	73,3
Galicia	68,2	73,4	96,9	82,5	73,2	61,1	67,7	81,9
Madrid, Comunidad de	67,4	74,8	97,4	83,4	72,9	61,8	69,3	83,5
Murcia, Región de	66,0	70,9	98,1	79,8	70,7	57,9	69,6	79,6
Navarra, Comunidad Foral de	64,6	71,9	98,6	82,3	71,8	59,8	65,4	73,9
País Vasco	69,2	73,7	95,4	85,6	77,6	59,9	72,6	83,4
Rioja, La	68,8	71,6	98,5	80,8	69,4	59,1	63,8	87,8
Ceuta	68,3	69,0	96,1	78,9	71,8	56,8	56,6	81,4
Melilla	69,3	70,9	98,6	77,8	64,4	55,3	81,6	91,4
Universidades no presenciales	51,3	-	-	-	-	-	-	-

Schools and their characteristics

In 2020, 67.4% of students in general were enrolled in public schools. In Castilla-La Mancha, for example, the percentage was 81.7%, in contrast to the Basque Country or Madrid where the percentage is around 50%. In general, the minimum expenditure per student in the primary education stage is € 500 in the case of public education, € 1,500 when we refer to charter education, and more than € 3,500 for private schools. This analysis[2] encompasses the enrollment and class costs, dining service, extracurricular and support activities, and other complementary services.

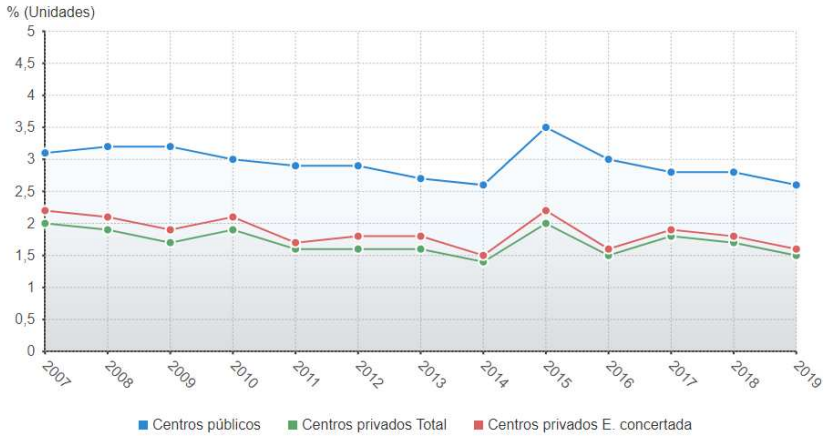


[2] https://www.epdata.es/datos/alumnos-matriculados-profesores-otros-datos-estadisticas-curso-escolar-1990-2019/437

The % of foreign students enrolled in the state represents about 10% of the total number of students regardless of the cycle. This percentage has remained stable over the last two years after a decline in 2014, 2015 and 2016.
The number of students enrolled in special education schools has increased year after year, reaching 38,662 in 2020.

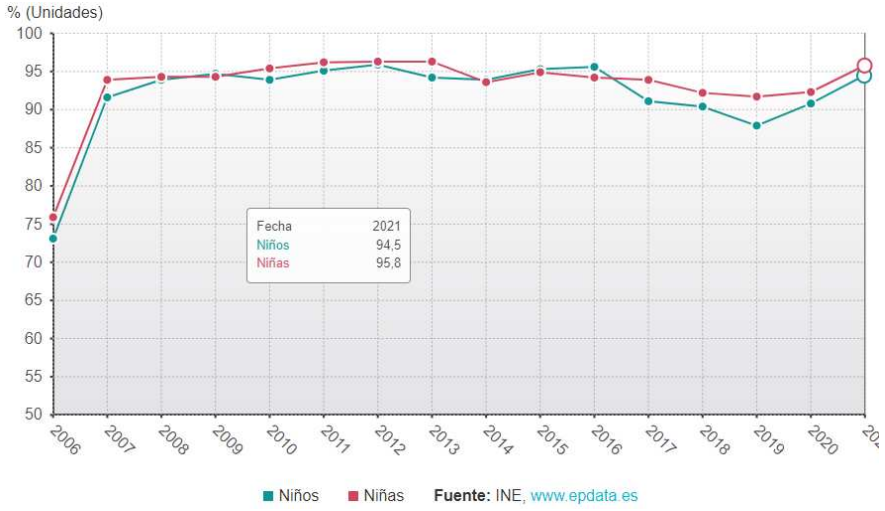
School success in primary school

In 2019 the percentage of students who repeated the course in primary school was between 2.6% and 1.5% with a slight variation between public, private and charter schools.



Use of student computers

The use of computers exceeds 90% of children between 10 and 15 years, and it has a slight difference between boys and girls.[3].



[3] https://www.epdata.es/datos/educacion-espana-mundo-datos-graficos/274

History on education for sustainability and environmental education (EA)

From the White Paper on Environmental Education to the SDGs, through the MDGs

There are no major reports on the actual situation of education for sustainability and the environment in Spain in general. Event though, there are evaluations of specific environmental education programs, the results are not clear and it is not possible to make a diagnosis of what is the environmental and sustainability education starting point.

On the other hand, the Spanish state has prepared 8 different guides and strategies to promote it. The first major mention and milestone in environmental education dates to the 1999, when the newly created Ministry of the Environment promoted the development of the *White Paper on Environmental Education in Spain*. After a decade and a half of work by diverse individuals, groups, organizations, and institutions that had created initiatives, programs, publications, and facilities for EA, they created the guide. And this became a strategic reference for stimulating educational actions. An action framework, a basic objectives and principles were established to encourage the administrations, the education system, the companies and the trade unions to act. The document contains strategic reference proposals that were the basis for developing tasks of EA during the last days.

Subsequently, the economic crisis of 2008-2014 brought down many of the environmental education actions that were initiated years ago. At that time, EA was no longer a a priority and the resources it nurtured were shifted to social emergencies. At the beginning of this decade, this led to the disappearance of traditional EA programs that were well established in large and small organizations. Even entire departments that assumed these functions were vanished.

Organizations and entities were forced to rethink their programs and look for new ways to survive, as well as they needed to consequently adapt to an environment that never stopped changing. The entities began to organize their self in different coordination platforms such as REAS- *Network of alternative and solidarity economy* or platforms that were more thematic, such as the *Network of Agroecological Farmers of Catalonia*. Reports from the sector, and the opening of new communication channels and communication spaces were also promoted. In short, a complete transformation to reach the citizen in a very different way from how it had been done so far. On the other hand, numerous initiatives and movements as well as citizen science studies have been poured as a way to engage the citizenship of the effect of human actions on the environment.

At the same time, UNESCO began to revitalize the *Millennium Development Goals - MDGs (2000-2015)* which sought to reduce the global poverty and reduce the differences of the living conditions between poor and rich countries. For more than a decade, a whole series of suggestions and interventions were developed to overcome certain sufferings that had a high social impact, those were especially addressed to the countries that have least fortunate in social and collective well-being. It cannot be denied that some successes were achieved, but it has been in consideration if this were sufficient or not.

The approval in September 2015 of the new *Sustainable Development Goals and the Global Action Plan 2030,* was a new attempt to establish a frame of reference for improving the collective health of the planet. There was a conceptual and methodological evolution from the *Millennium Development Goals to the SDGs*

(Sustainable Development Goals), which integrate social, environmental and economic goals, aimed at the planet, the people and the living beings of this planet. The MDGs define 8 objectives: 6 social, 1 environmental and 1 related to the cooperation. The 17 new SDGs incorporate 7 social objectives, 5 environmental, 5 welfare and quality of life (with an economic component) and 2 for cooperation and peacebuilding. Another fundamental change between the two agendas is that the first was aimed mainly at poor countries and the second is aimed at all kinds of countries, although each has the opportunity to choose their priorities and how they want to solve their problems, according to with the agreed common framework of the SDGs. Although these have their shortcomings and also their criticisms, they represent a profound change in the conception of the diseases that are destroying the planet. The SDGs have been very well received by all administrations and entities, and they are valued worldwide, for example with the SDG Index & Dashboards, prepared by the Sustainable Development Solutions Network, in our country Red Española para el Desarrollo Sustainable (REDS).

The new Environmental Education Action Plan for Sustainability (2021-2025)

Twenty years after the publication of the White Paper and a decade after the onset of the economic crisis, the need to drive new efforts, clarify priorities and coordinate initiatives is very visible. The confluence of different factors, including the creation of the SDGs, and the emergence of new laws that incorporate education in sustainability in the educational curriculum, has helped on the launching of a new process of strategic reflection, which has culminated in the *Plan Environmental Education Action for Sustainability (PEEAS).* This plan includes a series of actions for all actors carry out before the end of 2025.

Environmental education in the educational environment

At present, we do not have global studies that claim us which kind of incorporations of sustainability practices are into the programs of the schools. We can venture to say that, in general, the improvement in these issues is a reality, considering the messages received during a large period of time in a big part of the schools in Spain. There have also been many institutions that have done eco-audits about paper, water, energy, waste management, etc. Finally, there are specific programs that guarantee certain quality and accreditation criteria, as is the case with the Green Schools program[4].

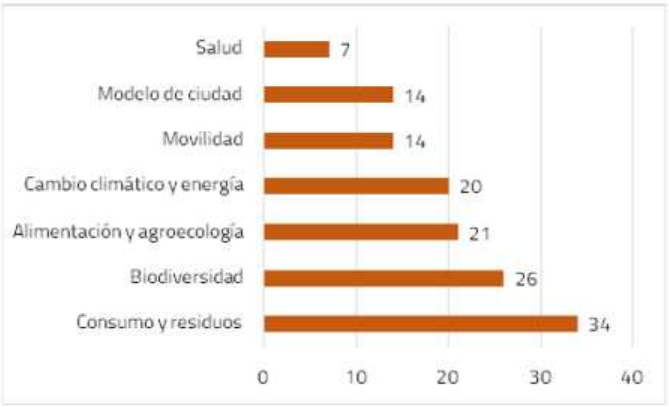
Regarding to the surveys, the most significant one found it during the research has been the ***Environmental Education Survey, led by Ecoembes[5],*** the Spanish non-profit association that is responsible for promoting the recycling of packaging. The survey was conducted in 2019, surveying a group of 349 teachers from all stages of non-university education, from all the regions of Spain, and from public, private and charter schools. The analysis of the participant already indicates that there is no record or list of teachers who specifically say that they are linked to an environmental education task, and the need to evaluate how environmental education is being applied in the classroom (considering that there are not specific subjects).

4 https://mediambient.gencat.cat/ca/05_ambits_dactuacio/educacio_i_sostenibilidad/educacio_per_a_la_sostenibilidad/escoles_verdes/el_programa_escoles_verdes/

5 https://www.magisnet.com/pdf/Ecoembes_EncuestaAmbiental.pdf

- In the survey the worst score collected is the one related to specific training in environmental education issues. An assessment that would correspond to the absence of a curriculum or an itinerary for these contents, which makes it very difficult to plan their teaching on this subject, and even less, to share or certify their contents and didactic methods.
- As a result, Spanish teachers surveyed in 2019 believe that they do not have the training resources needed to teach environmental education content in schools, and there is a lack tools to be better prepared.
- Almost all of them share a considerable interest in the formula of the online platform, which would allow them to have immediately agile and interactive resources on up-to-date teaching on the environment.
- Environmental education is perceived as a particularly suitable subject to learn with these methods, because they promote teamwork, solidarity, critical thinking, horizontality..., values that in the case of EA cannot be separated from the merely academic skills. A large majority opts to reflect the EA in a transversal way during the academic itinerary, but without dismissing the creation of a specific subject that ensures its presence.
- It is almost unanimous opinion among respondents that outdoor activities constitute a very suitable medium for this matter. Contact with nature is perceived as a need to maintain the integrity of EA, in the line of maintaining the balance between skills and the emotional and values component.
- The personal initiative (motivated teachers) or of each school, through their educational project, explain almost by themselves the remarkable development of the EA in the Spanish schools.

In the report *Towards an Education for Sustainability, 20 years after the White Paper on Environmental Education in Spain*[6], an analysis has been done on how present the EA is in the communication and program of different municipalities. It has been observed that the activities designed to be included in the curricular programs of the primary and secondary education institutions are the most present in the town halls analysed. It is important to highlight the initiatives that are part of the School Agenda 21 and the Green or Sustainable Schools programs, which we will discuss later. This shows that local bodies are very present in schools and are the basis for fomenting the EA in municipalities.



Current legislation, school curriculum

[6] https://www.miteco.gob.es/es/ceneam/recursos/materiales/hacia-educacion-sostenibilidad_tcm30-496569.pdf

A Spain Royal Decree 157/2022, of March 1, has recently been approved, establishing the organization and minimum teaching of Primary Education[7].In the presentation of this document, it is specified that it is the responsibility of the different Autonomous Regions to establish the program based on the minimum teaching established in the Royal Decree.

Going deeper into the document, it is observed that the word sustainability appears about 100 times. Here are some important quotes where it is mentioned:

- It is named the responsible consumption and the sustainable development as a pedagogical principle. *"5. The way doesn't matter, all areas will promote equality between men and women, education for peace, education for responsible consumption, for sustainable development and education for health, including affective-sexual education. "*

- It is also mentioned within mathematical competence and competence in science, technology and engineering (STEM).

  "Mathematical competence and competence in science, technology and engineering (STEM competence) involves understanding the world using scientific methods, mathematical thinking and representation, technology and methods. Of engineering to transform the environment in a committed, responsible and sustainable way. Competence in technology and engineering includes the application of the knowledge and methodologies of the sciences to transform our society according to the needs or desires of people in a framework of security, responsibility and sustainability.

- And within the competition on citizenship.
  Citizen competence contributes to students being able to exercise responsible citizenship and participate fully in social and civic life, based on an understanding of social, economic, legal and political concepts and structures, as well as knowledge of events, and active commitment to sustainability and the achievement of global citizenship. It includes civic literacy, the conscious adoption of the values of a democratic culture based on respect for human rights, critical reflection on the great ethical problems of our time and the development of a sustainable lifestyle in line with the Objectives. of Sustainable Development raised in the 2030 Agenda.
- Regarding education in civic and ethical values.

  Education in Civic and Ethical Values in the Primary Education stage includes the development of four fundamental areas of competence that have been reflected in the four specific competencies in this area. The first is related to the self-knowledge and the development of personal autonomy. The second encompasses the understanding of the social framework of coexistence and the commitment to the democratic principles, norms and values that govern it. The third refers to the adoption of compatible attitudes with the sustainability of the environament, from the understanding of our relationship of interdependence and ecodependence with it.

[7] https://www.educacionyfp.gob.es/prensa/actualidad/2022/03/20220301-realdecretoprimaria.html

This new regulation must be implemented the first years of the cycle (first, third and fifth years of primary school) for the 2022-2023 school year and for the second, fourth and sixth years of primary school for the 2023-2024 school year. Given that the powers to apply school programs are transferred to the Autonomous Regions, this research also shows how Catalonia does this. Catalonia has been chosen because the schools participating in the Greener Green project are part of this region.

It should be noted that at the time of writing this document the *Government of Catalonia* is processing the new curriculum to adapt the Royal Decree 157/2022. This regulation is not yet in force and is expected to be applied in the coming months, as mentioned above, students in certain courses will have to see the specifications of this royal decree reflected next year.

The new law will replace the Catalan decree 119/2015, of 23 June, of the planning of the primary education teachings[8], which already includes sustainability and the environment as learning in the area of environmental knowledge. These are some specifications of the Decree 119/2015 that has been in force until the course 2021-2022:

- Learning must be competent, contextualized and aimed at interpreting experiences, it has to be direct and indirect, close in time and space, and meaningful in order to be able to establish cognitive and affective relationships. Knowledge of the environment must allow students to influence the improvement of their environment and make sustainable use of it.

- Contents of the area of knowledge of the social and cultural environment middle cycle (3rd and 4th). Where one of the points of the curriculum is: Identification and design of responsible actions oriented to the sustainable use of the environment.

- Methodological guidelines, where detailed: In the learning process will also be important the time spent teaching students to become aware of their own learning, to structure and synthesize them so that they can remember them when they need them. Finally, the work dedicated to the attitudes and skills that enable children to act, taking into account their level and knowledge learned, in the promotion of a healthy lifestyle and a sustainable use of the environment and, in general, in situations of citizen participation and defense of human rights.

The big difference between the law that has been in force until now and the new one is that the term sustainability is already incorporated in other subjects beyond the learnings acquired in the area of knowledge of the environment. For this reason, it is expected that in both Catalonia and Spain in the coming years will increase knowledge on sustainability.

8 https://educacio.gencat.cat/web/.content/home/departament/publicacions/collecciones/curriculum/curriculum-ed-primaria.pdf

2.2. Parents & Children

In Spain and Catalonia, there are a large number of primary schools that are organized to carry out sustainable school projects. Networking is encouraged and good practices are shared among all the schools that are part of different groups.

ESenRED association

On this matter, the ESenRED network[9](Schools towards Network Sustainability) stands out. ESenRED is a state network, of network structure with common interests and goals, which is configured as a community of practice where all its members can act and take responsibility on an equal footing by generating cooperative networking.

Non-university sustainable educational schools are included and it is promoted on the initiative of public administrations (Autonomous Communities, Town Councils, Provincial Councils...). The entity has the collaboration and support of the National Center for Educational Innovation and Research (CNIIE) and the National Center for Environmental Education (CENEAM).

Its objectives are:

- Facilitate the meeting, exchange, collaboration and dissemination between the different networks of actions, resources, materials and ideas.
- To promote reflection, evaluation and innovation on one's own practice in order to collectively build knowledge in reference models.
- Develop common or shared projects through networks that look for the continuous improvement of the competency learning of the students, through their participatory role, as well as the permanent improvement of the professional competence of teachers.
- Establish contacts, relationships, and common projects with other international networks of schools towards sustainability.

Spanish networks that are part of ESenRED:

- **Andalusian Network of Ecoschools (Andalusia):** The Andalusian program of Schools aims to promote environmental education in the life of schools, involving their entire environment; as well as creating a network of schools where exchanges and cooperation are encouraged.
- **Network of Schools for Recycling (Asturias):** Since the 2005/06 academic year COGERSA organizes, in cooperation with the Ministry of Education, the Network of Schools for Recycling, a space for training, environmental awareness and the exchange of pedagogical experiences on the correct management of waste. The thematic axis of all the activities is summarized in the culture of the Three Errors: Reduction, Reuse and Recycling.
- **RedECOS (Canary Islands):** The Canary Islands Network of Education Schools for Sustainability is a community of practices and inter-institution coordination that enables joint work and the exchange of experiences using a common methodology, school eco-auditing.

[9] https://esenred2030.blogspot.com/

- **School Agenda21 (Castilla-La Mancha):** In the province of Albacete, a Provincial Working Group advises and supports schools in implementing School Agendas 21 to guide the various steps to be taken.
- **Schools for Sustainability (Castilla y León):** Program promoted by the Palència Council, with the collaboration of the Provincial Directorate of Education, which supports primary schools that want to work in School Eco-audits.
- **Network of Schools for Sustainability -XESC (Catalonia):** In 2009, the XESC was born, formed from the network of Green Schools and local networks that promote education programs for sustainability aimed at schools in Catalonia. It is, therefore, a network of schools that develop education programs for sustainability.
- **Education Institutions for Sustainability (La Rioja):** Is a school eco-audit that seeks a long-term implementation of sustainability habits in schools, integrating environmental conferences. It is developed by the Ministry of Education, Culture and Tourism and the Ministry of Agriculture, Livestock and Environment of the *Government of La Rioja.*
- **Network of Sustainable Schools of the Community of Madrid -RESM (Madrid):** Formed by the schools of Primary and Secondary Education of the Community of Madrid, where Projects and Plans of Environmental Action are developed that involve the educative community in the attainment of the objectives of environmental, social and economic sustainability. The RESM Program is developed by the Environmental Education Program of the General Directorate of Innovation, Scholarships and Education Grants of the Ministry of Education, from where the training aspect of teachers is strengthened throughout the first three years, and the inclusion of these environmental plans in educational projects and classroom programming is also promoted.
- **Network of the program "Educate today for a more sustainable Madrid" (Madrid)**: The Network of Sustainable and Environmental Institutions of the municipality of Madrid is made up of educational institutions that participate in the *Educate today for a more sustainable Madrid"*, whose purpose is to green the schools, addressing environmental issues in a holistic and inclusive way. Educating today for a more Sustainable Madrid, is part of the set of environmental actions promoted by Madrid City Council, to improve the school, local and global environment and make Madrid a sustainable urban ecosystem and a city with a quality of life.
- **Sustainable Schools in Red (Murcia):** The Network of Sustainable Schools Region of Murcia (ESenRED Murcia) wants to be a space for meeting, exchange, collaboration and dissemination of experiences and educational programs related to sustainability.
- **Network of Sustainable Schools of Navarre (Navarra):** Network of Navarrese schools that incorporate and promote sustainability and the participation of the educational community in environmental projects.

School Agenda 21 (Basque Country): Environmental education program for the sustainability and quality of the school, based on community participation and trying to collaborate with the sustainable development of the municipality. Its purpose is to develop knowledge, skills, attitudes, motivation and commitments to take part in solving environmental problems.

XESC Association, network of Sustainable Schools of Catalonia

For more than 10 years, the *Government of Catalonia* and different municipalities have been carrying out environmental education and sustainability education programs aimed at schools, while promoting the participation and involvement of the entire educational community. All these programs have their coincident goals. Therefore, the *Government of Catalonia* and a group of town halls, have agreed to cooperate, so between the coordination and the sum of efforts, these environmental initiatives aimed at the educational community, take some of this institutional collaboration. In this framework, in 2009, the Network of Schools for the Sustainability of Catalonia (XESC) was born.[10], a network of schools that develop education programs for sustainability.

The XESC currently brings together 16 municipal networks and 2 supramunicipal networks. This represents ¼ of the educational schools of Catalonia. (1427 institutions). The supramunicipal ones are the Network of Green Schools and the Network of Cities and Towns towards Sustainability of the Diputació de Barcelona.

In the Xesc, experiences, resources and educational proposals are exchanged between networks and members of other even larger networks, establishing connections between the educational community, environmental entities and administrations.

The objectives of the XESC are:

- Encourage connection between networks and create alliances with other agents.
- Discuss education for sustainability in education.
- Promote exchange and training among all members of the network.
- Promote improvements in policies in education for sustainability.
- Represent and participate in Catalan schools within ESenRED, the network of state networks.

Among the tasks it carries out, the ones that stand out are

- Establish coordination mechanisms that facilitate collaboration between the member networks.
- Encourage internal debate to advance the conceptualization of education for sustainability in the schools.
- Create spaces for exchange and training among XESC members.
- Promote the exchange between the schools of the different networks.
- Collaboration between networks and other agents in the teacher training.
- Share and develop educational resources.

10 https://mediambient.gencat.cat/ca/05_ambits_dactuacio/educacio_i_sostenibilidad/educacio_per_a_la_sostenibilidad/xesc/

- Promote research and evaluation in Education for Sustainability.
- Promote the formation of local networks where don't exist, as well as help consolidate those that are already formed.
- Establish links with networks in other territorial areas (regional, European...).

They are part of the XESC:

- Argentona City Council: Environmental education program.
- Badalona City Council: Badalona School Network for Sustainability.
- Barcelona City Council: Schools + Sustainable.
- Castelldefels City Council: Castelldefels Schools for Sustainability.
- Cornellà de Llobregat City Council. Network of Schools for the sustainability of Cornellà.
- Gavà City Council: Gavà Network of Schools for Sustainability.
- Igualada City Council: Network of Sustainable Schools of Igualada.
- L'Hospitalet de Llobregat City Council: L'H Escoles Sostenibles.
- Lleida City Council: School Agenda 21.
- El Prat de Llobregat City Council: In El Prat, schools + sustainable.
- Sabadell City Council: School Agenda 21.
- Sant Boi de Llobregat City Council: Network of schools for the Sustainability of Sant Boi.
- Sant Cugat del Vallès City Council: School Agenda 21.
- Sant Feliu de Llobregat City Council: School Agenda 21.
- Terrassa City Council: Network of schools for the sustainability of Terrassa.
- Vic City Council: Vic Network of Schools for Sustainability.
- Vilanova i la Geltrú City Council: Environmental education.
- Barcelona Provincial Council: Network of cities and towns towards sustainability (XCPS).
- *Government of Catalonia* : Green Schools Program.
- Barcelona Education Consortium.

Needs to be part of the XESC?

Local institutions that dynamicize and promote a local network of schools that develop an education program for sustainability, share the objectives of the XESC, and also want to actively participate in it can be part of the organization. Also, those who want to collaborate with other networks that are part of the XESC to 16exchange initiatives, experiences, and want to promote the performance of shared projects, can also be part of XESC.

The local networks that form part of the XESC offer the following services to schools:

- Advice and continuous monitoring of education programs for the sustainability, in each of the schools.
- Organization of the places where the exchange of experiences takes place, and training actions for the teaching staff of the schools that form part of this local network.
- The coordination and the spred at the same time of the educational proposals that are organized within the framework of the XESC.

Membership of the XESC is formalized by an agreement signed between the local body (city council, County Council...) and the *Government of Catalonia.*

2.3. List of relevant Stakeholders in Spain

Below, there is a list of relevant organizations related to the sustainable education. The list of school networks is in section 2.2, and the ones that are explained in more detail are in section 2.4.

Name of the institution / entity	Place of contact	What offers	Target
REDIAM (Andalusian Environmental Information Network)	https://www.juntadeandalucia.es/medioambiente/portal/acerca-de/quienes-somos	It is responsible for guaranteeing access to environmental information and citizen participation. It has quality content, agenda of activities, reports and much more.	Local, regional administrations, schools and education schools.
CENEAM (National Center for Environmental Education)	https://www.miteco.gob.es/es/ceneam/quienes-somos/	It is responsible for guaranteeing access to environmental information and citizen participation. It has quality content, agenda of activities, reports and much more.	Local, regional administrations, schools and education schools
CEIDA (Reference Center for Environmental Education in Galicia)	http://www.ceida.org/es	It promotes environmental education in all social sectors, as well as scientific and cultural exchange. Working on finding solutions to environmental problems and encouraging good citizen practices in this field.	Local, regional administrations, schools and education schools.
Meteoeduca	http://www.aemet.es/es/conocermas/meteoeduca	Leisure and entertainment resources on climate and meteorology.	Teachers and families
CREAIB - Environmental Education Resource Center of the Balearic Islands	https://www.caib.es/sites/creaib/ca/	Its mission is to collect information related to environmental education in any media or form ,and spread it.	Local entities, teachers and families
TriECO	https://trieco.es/quien-somos/asociacion/	TriECO is a non-profit association that uses environmental education as a tool to meet goals, such as raise awareness and create social awareness, in order to evolve individually and collectively sustainable and environmentally friendly form of consuming.	Local entities, schools and families that can participate in the activities

2.4. Good practices

The fact that many of Spain's sustainable schools are organized in networks is already a very good practice, as it allows us to share experiences and make faster progress in education for sustainability. Some of them or some of the actions that they do, have been selected in order to show good and specific practices:

Network of green schools in Catalonia

The Department of Education and the Department of Territory and Sustainability of the *Government of Catalonia* promote the Education Program for Sustainability. The aim is that all schools in Catalonia incorporate the objectives and actions that promote the necessary learning in their educational projects, in order to achieve the basic skills in the field of environmental education and sustainability. This has to be in accordance with the principle guiding of the education system that is established by law.

Catalan schools have been developing environmental education initiatives for many years. In 1998, an initiative of the Departments of Territory and Sustainability and Education, started the Green Schools Program as a specific environmental education program. This program, and the general process of environmental awareness, has help on growing the number of schools committed to environmental education during the recent years . There are various initial training courses, self-managed seminars, exchange spaces and thematic training related to sustainability.

In the 2021-22 academic year, 782 schools were part of the Green Schools Network, of which 702 have the Green School Distinction and 80 are undergoing initial training. In addition, 157 more schools have been added that were already part of other Catalan networks, therefore, in the 2021-22 academic year, the total number of schools in Catalonia with the Green School badge has been 859.

The objectives of the Green Schools Network are:

- Help schools to incorporate the values of education for sustainability in all areas of school life (curriculum, management, relationships with the environment, etc.).
- To promote the participation and active involvement of the educational community in the improvement of its environment.
- Encourage exchange between institutions that share the same objectives.

The objectives of the training course of the Green Schools program are:

- Identify key concepts in education for sustainability and curricular and educational importance.
- To promote the initial and continuous evaluation of the center, this has to be related to the 4 contexts of action of the Green Schools Program: curricular development, management of the

center, involvement with the environment and the participation of the educational community in the development of the project.

- Help schools to set medium and long term goals related to education for sustainability, for its incorporation into the educational management documents of schools.
- Provide spaces and tools to share and improve the education actions for sustainability that the different schools develop in their Annual General Programs.
- Promote learning through the exchange of experiences and networking.
- Analyze educational resources that can help the development of actions

How can a school be part of the green schools program and when should renew the membership of the program?

- In order to join the program and initiate the change process, the first think a school has to do is the initial diagnosis or evaluation, through a participatory process, and taking into consideration the four contexts of action of the program.
- Once the starting point has been known, and the objectives that the school have been defined, the strategic lines that must be followed (regarding the progressive greening of the centre's educational project) are defined and prioritized. These strategic lines, which take into account the four contexts of action of the program, constitute the Education Plan for Sustainability (PES), which is the frame of reference that will allow the institution, throughout the different school years to specify the improvement actions that the school intends to take.
- The Green School Program offers an initial training course in education for sustainability (ES), aimed at all schools in Catalonia that want to start developing the contents of the ES, and integrate them in a coherent way in the educational project of the school. During this training course, the team of professionals from each school prepares the PES, which includes: initial diagnosis, the objectives of the center, prioritization of objectives and action plans. All these contents must be reflected in the educational project of the school, and in the project on the management of the center. It also offers teachers tools to promote the participation of the educational community and the creation of an environmental committee, so that schools have a team that promotes and coordinates projects in terms of ES. The course lasts 2 years, and the training structure incorporates the planning, the experimentation and the evaluation of the action plan at the school on the topic that is being worked. It is aimed at teams of professionals from schools (between 3 and 5 people), where at least one person is part of the management team (or the person to whom he delegates). These people undertake to transfer the content of the training to other teachers.
- The recognition that the center is part of the Green Schools Network is made, for the first time, after having successfully completed PA and having obtained the certificate of the first center team seminar.
- Every 4 years, the center conducts a global self-assessment that involves a review of the Sustainability Education Plan (in public schools, this assessment coincides with the renewal of the management project).
- Every 8 years, the center updates the education plan for sustainability. In other words, it carries out a deeper global self-assessment, which involves a new diagnosis of the situation in which the center finds itself, identifies the new strategic objectives to be achieved and makes a new prioritization of these objectives. And finally, it specifies the Action Plan for the next school year.

Network of Cities and Towns towards Sustainability

The Network of Cities and Towns towards Sustainability[11] is an association of municipalities committed to the environment to move towards sustainable development. It was created on July 16, 1997, when 118 municipalities formalized their membership, and is currently a platform for cooperation and exchange where you can share an appropriate framework to discuss your problems, your concerns, your needs, your experiences. , and promote and carry out projects of common interest:

Promote local policies aimed at a model of sustainable development.

- Promote the development of Local Agendas 21 and define methodologies for implementing them.
- To constitute an instrument of cooperation and exchange of experience in the field of sustainable development.
- Encourage the participation of all the economic and social sectors of the municipalities in the process of developing the Local Agendas 21, and in the realization of projects that derive from them.
- Promote joint actions with other Spanish and European networks and associations working in the field of sustainability.
- Share resources and experiences for the development of plans and programs aimed at solving environmental problems.
- Increase the specific weight of medium and small cities and towns in Europe.

It is organized by groups to work on the 2030 agenda. These are one of the essential elements of this network and the 2020-2023 mandate, which proposes the creation of 7 working groups, made up of technical and political representatives of the registered municipalities in each group. They have a dynamic and flexible working methodology, but they have the Vision of the Network as a frame of reference. They are the reference spaces of information and knowledge, and the exchange participation of the members of the Network.

Here are some of the initiatives of this network aimed at families:

- **School agroecology.**The project also has the support of the *Government of Catalonia* and seeks to be a training tool on agroecology for children, their families and their teachers. It has a multitude of resources that helps to promote the food sovereignty of the educational community and society. At the same time as it helps in working on the program content in a global way and in context, starting from real and experiential situations and experiments.http://album.setmanabio.cat/
- **Sostenible.cat.**The magazine, promoted by the network, focuses its attention on the innovations generated by the cities and towns of Catalonia related to sustainability, taking care to highlight the main policies applied by the Catalan, state and European governments. Periodically, more than 4,500 subscribers receive magazine headlines in their email.
- **Other resources.**The network have good resources available to teachers and families, many of them publicly accessible and arranged on its resource website according to ODS.

[11] https://www.diba.cat/es/web/xarxasost/xarxa

https://www.diba.cat/es/web/xarxasost/matexarxa

Ecoschools Program, promoted by the Board of Andalucía

The set of Andalusian educational schools that form part of this project, carry out a plan for the environmental improvement of their own facilities, and do an educational rethinking of their teaching practice, constitute the Network of EcoSchools of Andalucía[12]. It is an international program coordinated by the European Foundation for Environmental Education (FEE) and developed in Spain by the Association for Environmental and Consumer Education (ADEAC).

Its purpose is to raise awareness, train and educate about the importance of sustainable development, making individuals more participatory and aware, by improving the environmental management of schools. Learning and action make it an ideal tool for schools to be involved in an effective process of improving the environment in their school and their local communities, in order to influence the way of living boys, girls and adolescents, center staff, family, local authorities...

The objectives of Ecoschools are:

- Make the school, a project to change and improve, in ecologically and socially, consistent with the principles of environmental education and driven by its own educational community.
- Raise awareness, train and educate on the importance of sustainable development, making individuals more participatory and aware, through the improvement of the environmental management of schools.
- Create a network of schools where exchanges and cooperation are encouraged.

The schools develop a process of environmental improvement through self-analysis and subsequent correction of the deficiencies detected, which also involves an improvement in educational practice.

The four basic elements of its work are water, materials and waste, energy and the physical and human environment. And the methodology for investigating these issues is structured in four phases: awareness, eco-audit, action plan and code of conduct. This process follows a series of steps that allow for environmental coherence and educational quality. The duration of the complete process will be adapted to the specific needs and characteristics of each institution, estimating that at least three school years may be necessary if the four cores of work are addressed.
In recognition of those schools that achieve certain levels of improvement, EcoSchools contemplates giving an award for a period of three years of a distinction: the international award Green Flag of EcoSchool . A flag with the logo of the program, will identify the institutions as they have a a quality education model because of their benchmark for environmental coherence.

On its websites can be found many resources in different formats like videos, documents...

[12] https://www.juntadeandalucia.es/educacion/portals/web/aldea/proyectos/ecoescuela/el-proyecto

- Explanation of how some schools have worked in different areashttps://www.juntadeandalucia.es/educacion/portals/web/aldea/proyectos/ecoescuela/recursos
- Infographics:https://www.juntadeandalucia.es/educacion/portals/web/aldea/proyectos/ecoescuela/infografias

Teachers for Future Spain

Teachers for future[13] is a group of teachers concerned about the state of climate emergency that we live. They carry out concrete actions to change the management of schools and to develop environmental education and foster contact with the nature of students. The origin of this organization is an outreach blog on environmental education (El Guiño Verde), in which teachers share educational initiatives since 2017. Nowadays, more than 2000 teachers across the state contribute with their knowledge and with good practices in this ecosystem. A group of them have developed a program proposal for eco-social education in the face of climate emergency. This program details what course by course what skills and knowledge should the students get. It could be considered a good reference document for planning activities in elementary, in childhood as well as secondary education.

PRIMARIA. 2º y 3er. ciclos ÁREA: Planeta Tierra y ser humano
Bloque: Geografía. Planeta Tierra y su preservación - LA AGRICULTURA SOSTENIBLE

Saberes básicos	Saber ser	Saber hacer	Situaciones de aprendizaje competencial	Competencias implicadas	Criterio de evaluación
- El tiempo en la naturaleza: las estaciones y la producción natural. -La producción y la transformación sostenibles de los alimentos. - Manejo básico de una huerta. Los momentos en la producción hortícola. - La producción de frutas y cereales. - Ciclos agrarios anuales. - El papel y la protección del suelo y el ecosistema en la producción alimentaria. - Herramientas y maquinaria agrícola. - La agricultura ecológica. - El comercio justo de productos alimenticios. -El papel de los tratamientos químicos en la agricultura para combatir enfermedades o para la obtención de un producto estéticamente perfecto.	- Asunción de la agricultura como actividad básica para el sustento de la humanidad. - Puesta en valor todos los factores que intervienen en la producción alimentaria (ecosistema, demás plantas y animales, suelo, atmósfera…). - Considerar imprescindibles las formas de producción alimentaria sostenibles (comida de temporada, proximidad y tratamientos ecológicos en su ciclo productivo).	- Planificar una producción hortícola básica en el ámbito escolar o familiar. - Iniciar, mantener y sacar provecho de una iniciativa hortícola. - Producir compost a partir de restos de comida. - Aplicar medidas agroecológicas sencillas para el cuidado de la iniciativa hortícola (abonado del suelo, fomento de fauna auxiliar, medidas de protección de las plantas…). - Organizar, cooperativamente, la planificación, seguimiento y divulgación de la experiencia.	- Acometer una iniciativa hortícola en el Centro Escolar (huerta, bancales, jardineras o tiestos), con aplicación de las destrezas y conocimientos aprendidos, seguimiento de la evolución de las plantas y divulgación de la experiencia entre los compañeros y compañeras, las familias y el entorno del barrio. - Crear un mercado con los productos recogidos de la cosecha en el que se tenga en cuenta la calidad del producto obtenido y un precio justo por los distintos productos. Con la recaudación plantear una donación a alguna institución ambiental/social de interés.	- Sostenibilidad y Clima - Lingüística - Matemática y básicas en ciencia y tecnología - Digital - Aprender a aprender - Sociales y cívicas - Iniciativa y espíritu emprendedor - Conciencia y expresión culturales	- Ser capaz de desarrollar todo el ciclo de un proyecto hortícola práctico y básico, en cooperación con sus compañeros y compañeras, y dar a conocer, en el entorno escolar y social cercano, el proceso y los conocimientos adquiridos con respecto a las técnicas y los criterios de sostenibilidad.

PERFIL DE LA PERSONA QUE ESTAMOS FORMANDO a través de esta propuesta educativa

- Consciente
- Informada
- Proactiva
- Responsable
- Colaboradora
- Comprometida
- Emprendedora
- Resiliente

[13] https://teachersforfuturespain.org/acerca-de/

In addition to this document, they differentiate for the multitude of resources (on many of the topics they develop in the program) for teachers that can be downloaded from their website. Videos, explanations and school experiences are shared so that they can be reused and applied by any teacher.

They are also a great source of official documentation or consensus among members for teachers, highlighting for example access to:

- The guide to educational resources on climate change:https://www.miteco.gob.es/es/ceneam/recursos/materiales/guiacc_alta_tcm30-510802.pdf
- The resource guide for environmental education 2021:https://www.miteco.gob.es/es/ceneam/recursos/materiales/guia_recursos_educacion_ambiental_2021conisbn_tcm30-375733.pdf
- Environmental calendar:https://teachersforfuturespain.org/calendario-medioambiental/
- Eco-audit for schools:https://teachersforfuturespain.org/ecoauditoria/

Climate shelters - schools in Barcelona

Since 2019, some schools in Barcelona have been participating in the project "Adapting schools to climate change through green, blue and turns[14]. This initiative is part of a European project funded by Urban Innovation Action (UIA) and seeks to incorporate into schools measures to improve water management, school green spaces and improve buildings to make them more sustainable.

It is a good example of the integration of the school environment with the municipality, given that all the modifications and measures proposed for the schools are made available to residents and citizens so that they can also enjoy them. Also participating in the project are entities from the political, educational and health fields: Barcelona City Council, the Barcelona Education Consortium, Barcelona Cicle de l'Aigua, SA (BCASA), the Agència de Barcelona Public Health (ASPB), ICTA-UAB, the Barcelona Institute of Global Health and the Vila Olímpica school. The results of these school adaptations are assessed by experts and teaching schools in terms of climate health and comfort.

It is important to note that the project has been integrated and rooted in schools since its inception in 2019. All students, teachers and families have participated in different actions to define how they wanted their school while learning about sustainability in a cross-cutting project that involves the whole school and its environment. Schools have also been involved in the monitoring process, and have been able to understand how an evaluation process helps to know which measures work best, and which ones are worse for the

[14] https://www.barcelona.cat/barcelona-pel-clima/ca/escoles-refugi-climatic

expected goals. The results of the questionnaires highlight that after the intervention, 8 out of 10 boys and girls value very well the new spaces created in the school.

The project also develops pedagogical material that includes a guide on climate change and a pedagogical suitcase for both schools that have been part of a control group and those of the pilots. All this with the aim of being able to continue working on climate change. Over the next few years, it is already proposed to include the climate shelters project in the municipal programs of Barcelona, in order to transform annually 10 schools and create new sustainable educational spaces.

3. Field Research Results

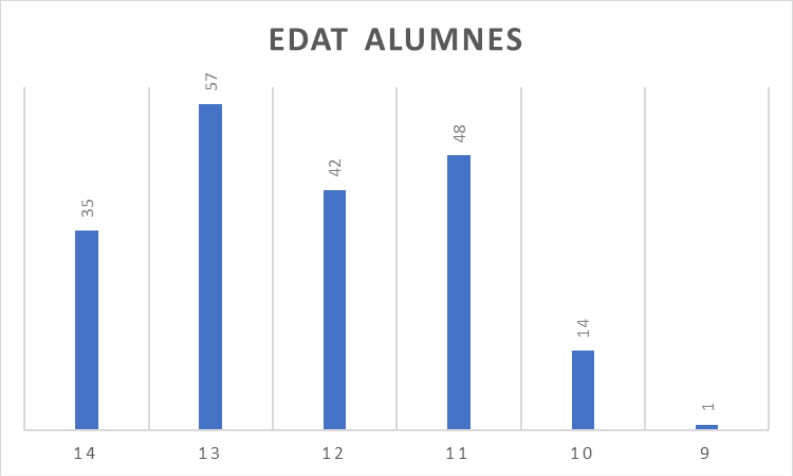
3.1. Report from Surveys' results

3.1.1. Student surveys

Ages

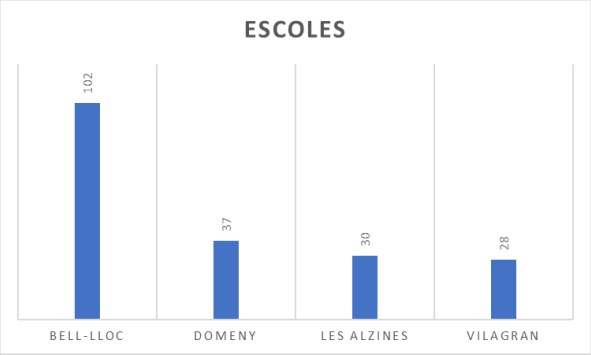
200 students between the ages of 9 and 14 responded to the survey, and the average age of the group is 12. The age of 13 is the one that has more children, followed by the 11 years. There are 4 erroneous answers, which did not correspond to a real age. Example: numbers of more than 2 digits, 0, or letters.

There has also been the participation of some students from the first course of secondary school from the Bell-Lloc school, understanding that they are students who last year were part of the primary and can evaluate correctly according to their experience in this phase.



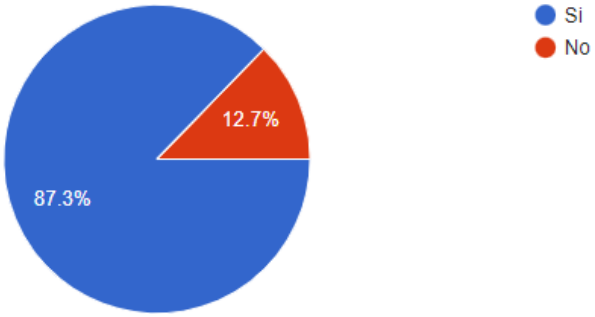
Schools and country of residence

Students from four different schools in the province of Girona (Catalonia, Spain) responded to the survey. The schools have been: Bell-Lloc school, Domeny school, Les Alzines school and Vilagran school. The school that has accumulated more than 50% of the answers has been Bell-Lloc, finding the rest of the answers distributed among the remaining 3 schools. The surveys were conducted between 15 and 29 May 2022.



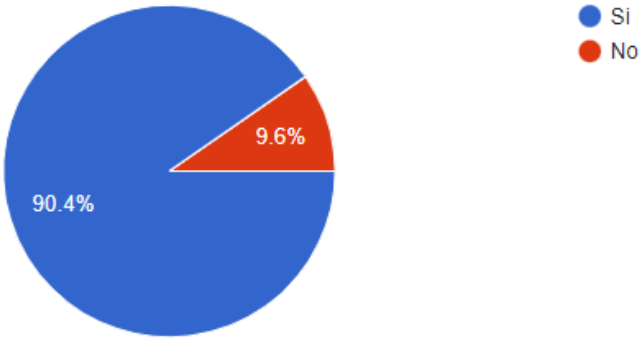
1. Do you use a computer to prepare or to do your tasks for school?

87.3% of students use the computer (172 students). The remaining 12.7% indicate that they do not use it. Analyzing the 25 students who represent this 12%, they are not concentrated in a specific school or have a specific age. There is no notable pattern. We could highlight the variety of social backgrounds of the schools surveyed. The percentage that comes out on this issue match with the proportion of students with special educational needs of a socio-economic project that is presently in Girona's schools (around 11%).



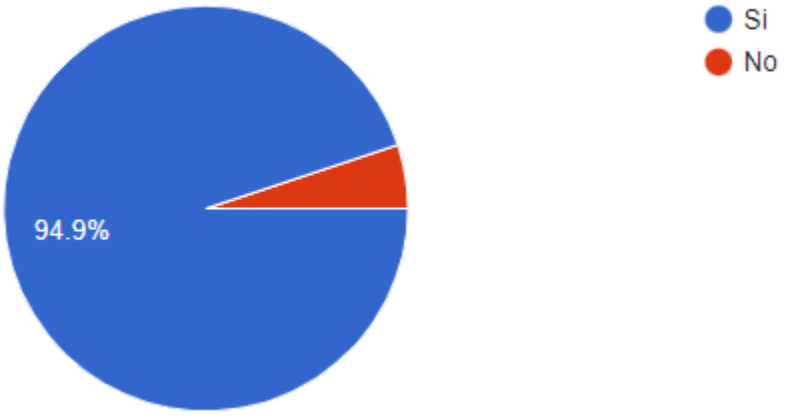
2. Do you use the internet to search for information for your courses or tasks?

In the use of the Internet, 90.4% (178 students) use it to search for information. This represents 6 more students than those who have indicated that they use the computer in the previous question and use other devices such as mobile or tablet. 19 students have indicated that they do not use the internet to do homework. It relates to the above. According to information provided by the school, some families without resources use the mobile phone of a relative to make some arrangements demanded by the school.



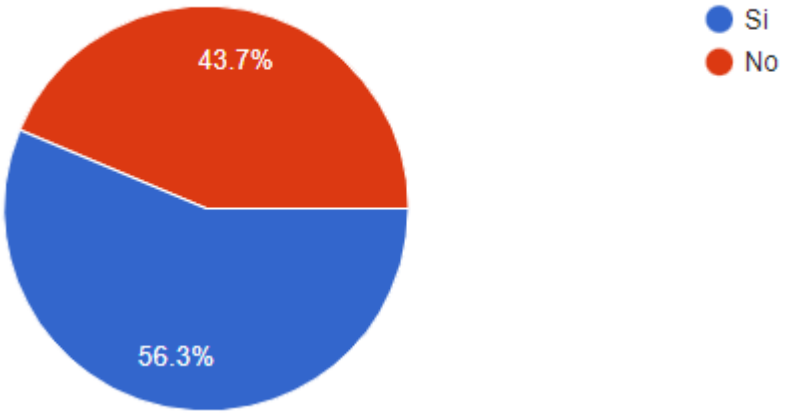
3. Are you comfortable writing on a computer?

Almost all students, 94.9% of them, feel comfortable typing on a computer. The 5 of the 10 students who does not feel comfortable belong to the age group between 10 and 11 years of the Bell-Lloc school. The remaining 4 are older and are distributed between Bell-Lloc and Les Alzines.



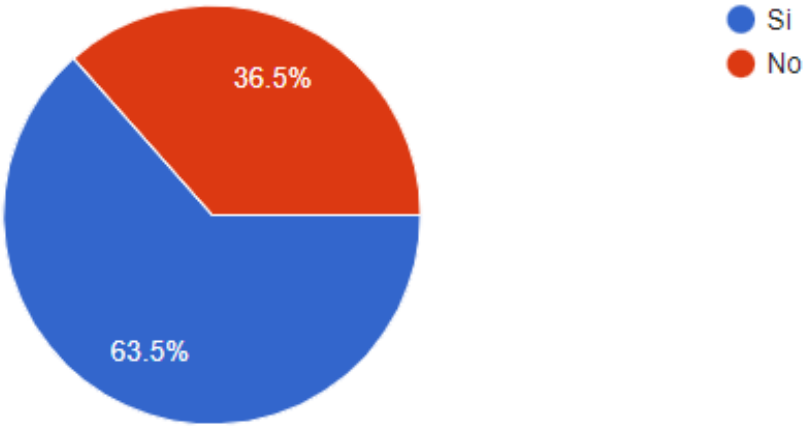
4. Are you comfortable filling out a spreadsheet with a computer?

When we refer to spreadsheets, 43.7% (86 students) of the total number of students have selected the answer NO. 56.3% feel comfortable using the spreadsheet. Ages and schools are more varied in this case than in the previous question.



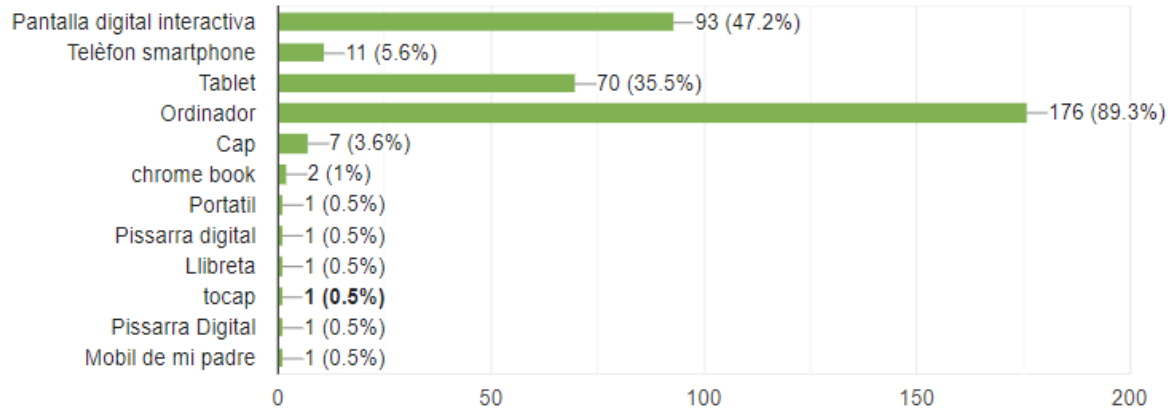
5. Do you use a computer during your recreational activities (gaming, video, photo editing, etc.)?

63.5% of students use a computer to carry out leisure activities compared to 36.5% who do not use it. Ages and schools are also very scattered and no relevant pattern is detected. In future occasions it is recommended to include other devices or consoles such as the PSP, surely many children would have answered yes to this question.



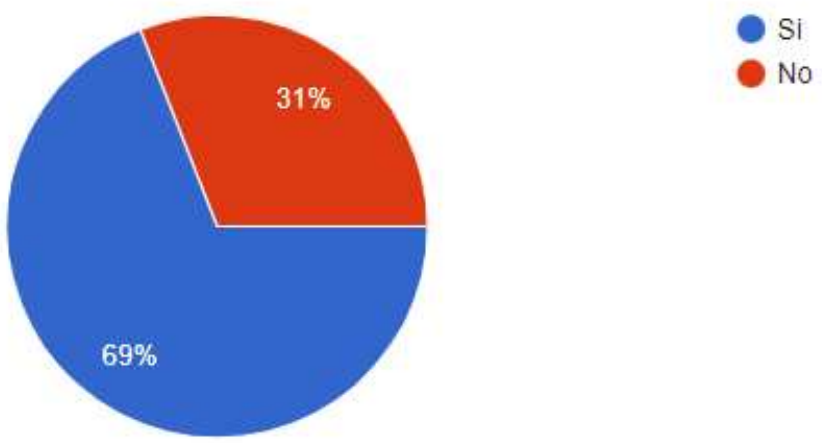
6. Which kind of digital media do you use at school as part of your courses (you can choose more than one): Of the 4 tools proposed (digital screen, phone, tablet or computer) the answer with the highest score was the computer. 89.3% of students report using a computer at school. The next was the digital screen (47.2% of students) followed by the tablet (35.5% of students). The appearance of the phone is residual and only 7 students indicate not to use any of the proposed tools. No extra tools were detected in the proposed ones beyond the Chromebook, mentioned by 2 students.

Analyzing whether they use only one or more of them, 55 students responded that they only use a computer at school, 46 a computer and digital screen, 29 a computer and tablet and 27 a tablet and digital screen. That is, 60% of students use more than one digital tool in school and if they only use one, the predominant one is the computer.



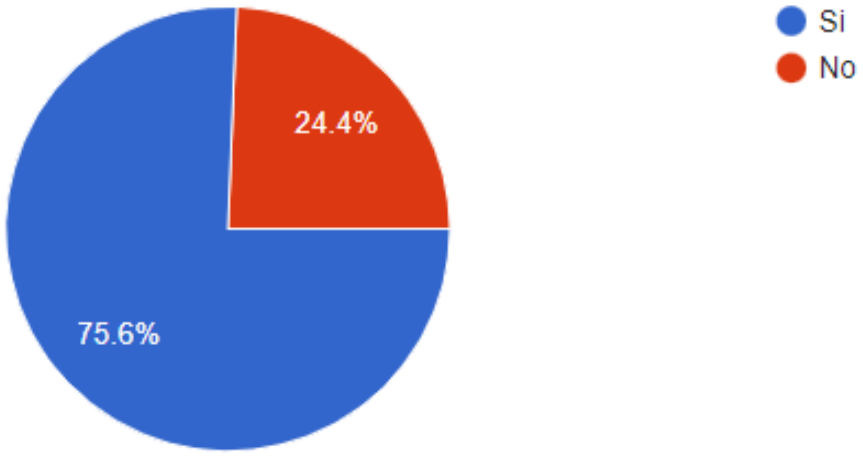
7. Does your school have a learning program or course dedicated to digital skills (skills to use for digital devices, use of the internet etc.)?

69% of students indicate that their school has a learning program or class dedicated to digital skills. 31% explain that they do not have one. No trend is detected by age or by school. Students from the same center give opposite answers to this same question, suggesting that the question was possibly too ambiguous.

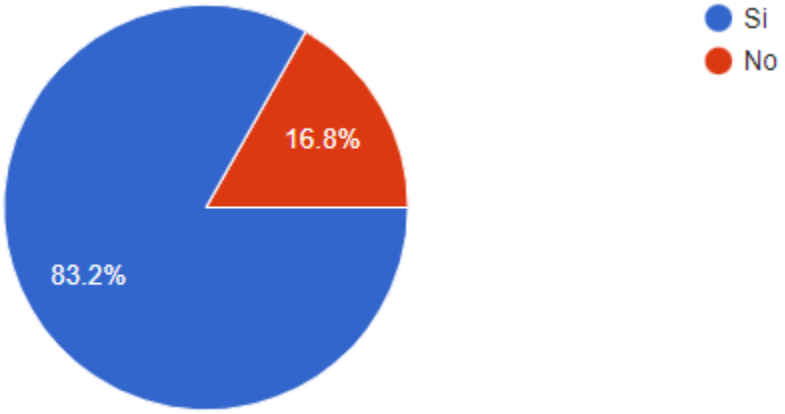


8. Do you use educational mobile applications or collaborative digital learning platforms in your course?

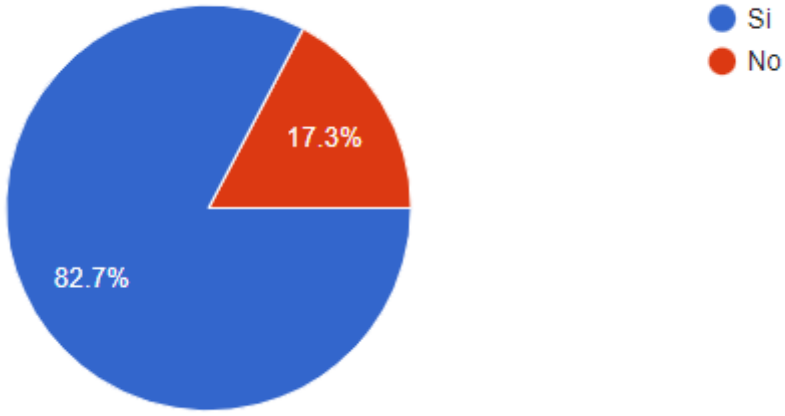
75.6% (149 students) do use collaborative digital learning platforms in class, compared to 24.4% who do not. They are concentrated on the school Les Alzines.



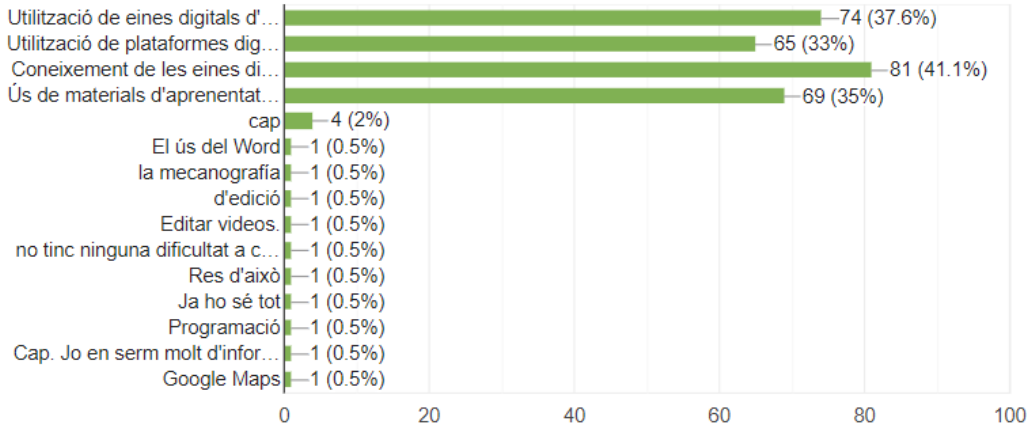
9. Are you comfortable using mobile applications or collaborative digital learning platforms at school?
In this case, 83.2% indicated that they felt comfortable, compared to 16.8% who did not. This question is related to the above and highlights that in this case the% of students who respond feel comfortable is higher than the% if they use them.



10. Does your school use a digital platform to inform and communicate with your parents?
163 students out of the 197 respondents have expressed knowledge that their school communicates with a digital platform with parents, which represents 82.7%. No clear trend is detected between schools and ages.

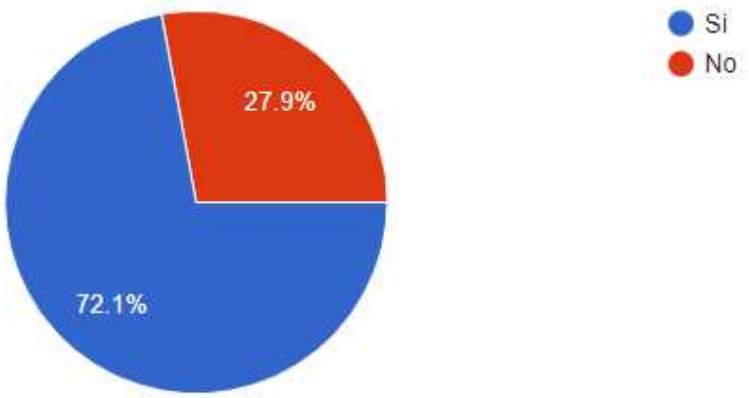


11. In what areas do you feel you don't know enough things and you could use some training? (You can state more than one)
Of the 4 tools proposed, 41.1% of students would find it useful to learn about digital educational tools, 37.6% would like to learn more about writing tools and spreadsheets, 35% use digital learning materials and 33 % digital platforms of learning. There is no other area proposed by the students.



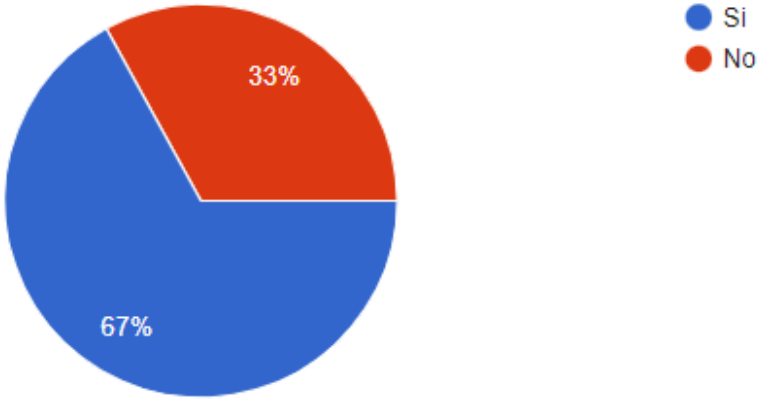
12. Would you like to learn about ecology and pollution and know how to protect the planet with online digital media?

142 students have expressed that they would like to learn about the terms mentioned with digital tools. 27.9% of students (55 students) do not find it interesting. No relevant patterns are detected between the ages of students and schools.



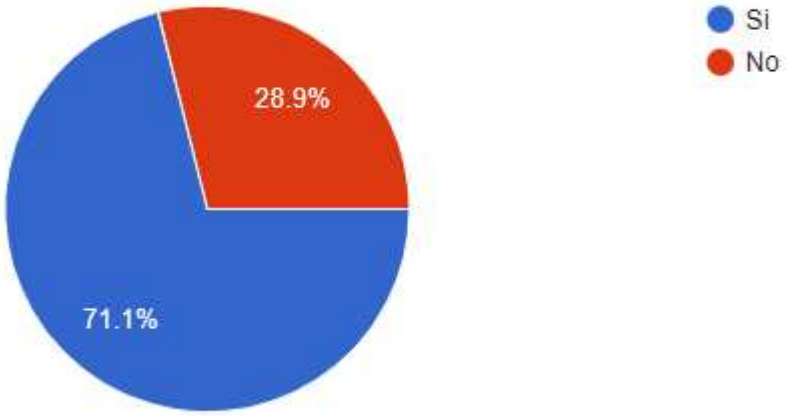
13. Is your school generally litter free (You recycle everything like paper, food packaging etc.)?

67% of students indicate that their school is generally free of rubbish compared to 33% which reflects the opposite.



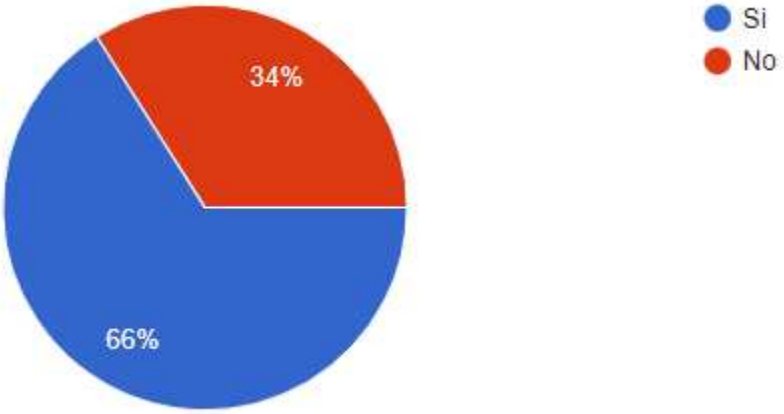
14. Are there recycling bins in your school?

71% indicate that if there are bins to recycle at school, 28.9% of students indicate that they do not. The Bell-Lloc school concentrates a large part of the answers that indicate "No".



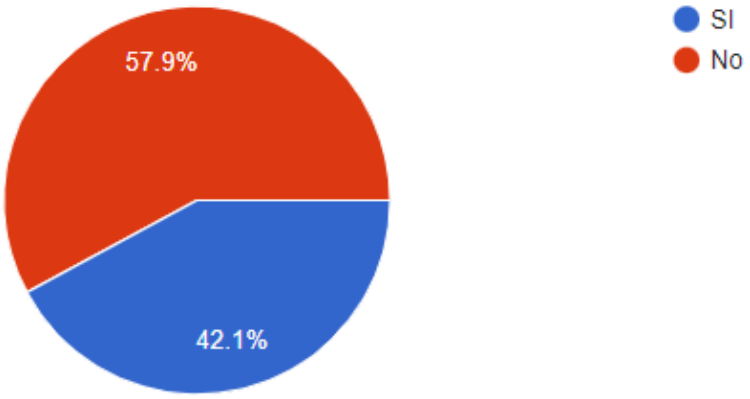
15. Are there enough recycling bins at your school (easy to find and use)?

In reference to whether recycling bins are sufficient, easy to find and use, 66% of students indicate yes, and 34% say no. In this case, we find students from three of the schools surveyed.

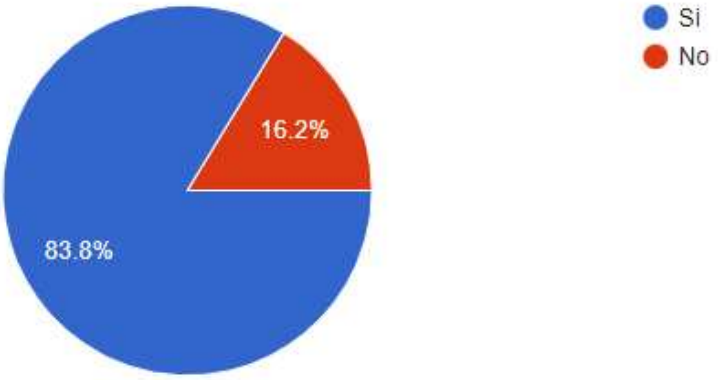


16. Do the recycling bins always have the right things in them (plastic in the bin for plastic etc.)?

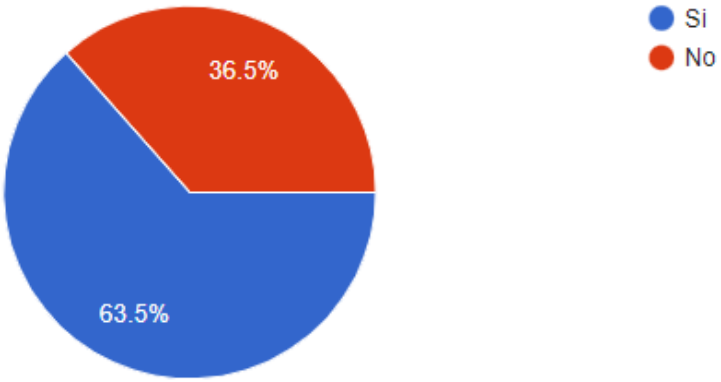
57.9% of students (144 students) refer to not always throwing things in the correct bin / bin. 42.1% indicate that it is thrown correctly. No trend is detected between schools. Question 16 does not relate to the answers to questions 14 and 15 as they are answered independently. Those who have indicated that there are no bins in the school are not excluded.



17. Do you know/learn at school the problems caused to the environment and wildlife?
83% of students know and learn about the problems that occur in the environment and wildlife. The answers are distributed among all schools and age.

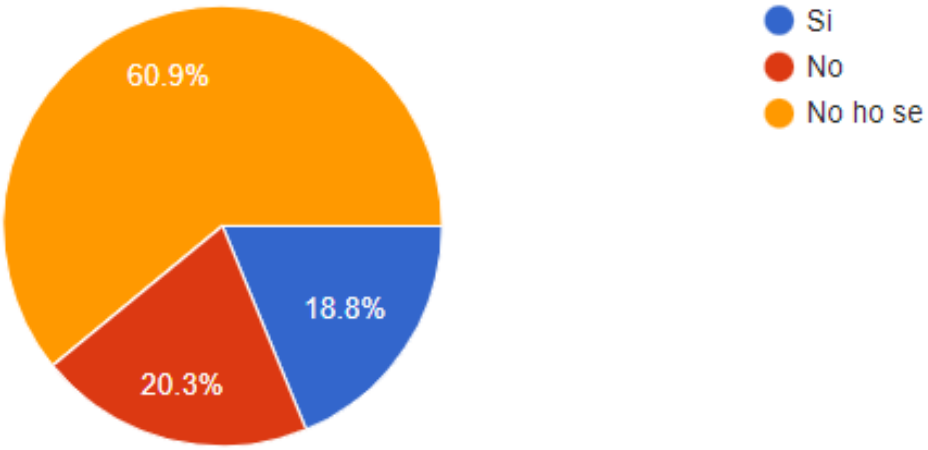


18. Do you think your school does enough on litter issues?
63.5% of students state that the school makes enough effort to improve waste management. 36.5% indicate that they do not. There is no trend between schools and ages.



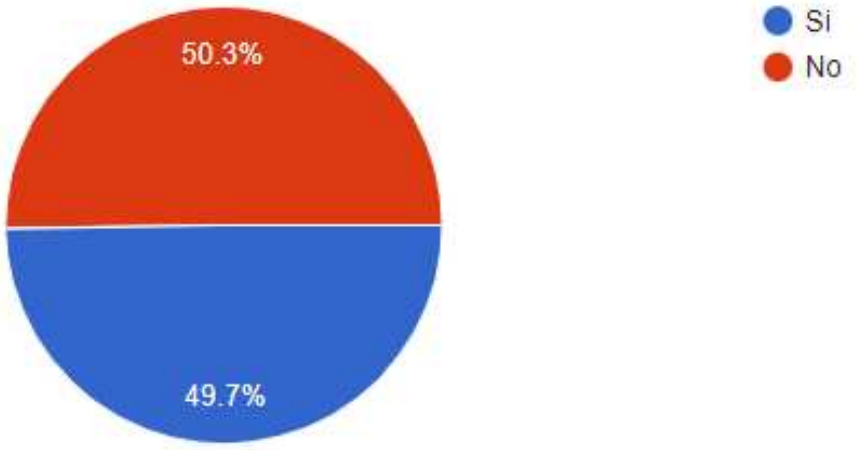
19. Does your school use recycled paper (for printing and homework assignments)?

It is notable the number of students who do not know if recycled paper is used in their school, 60.9% of the students surveyed. Of those who know it, 20.3% are aware that it is not used and 18.8% know that it is used.



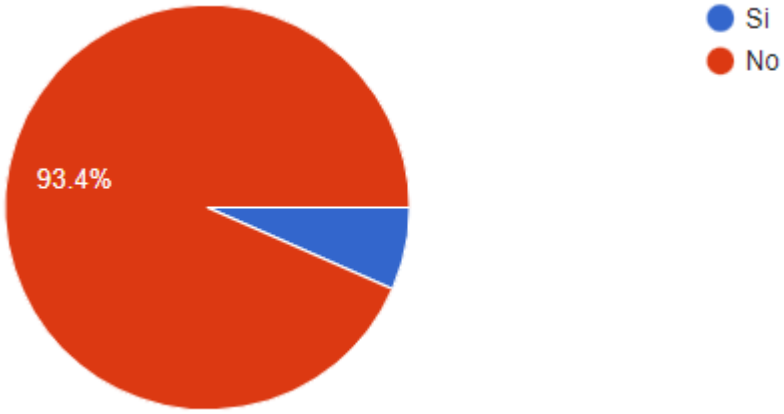
20. Is your school community acting enough to save energy?

Half of the students consider that their community acts to save energy and the other half that it does not. No differences are detected between schools and ages.



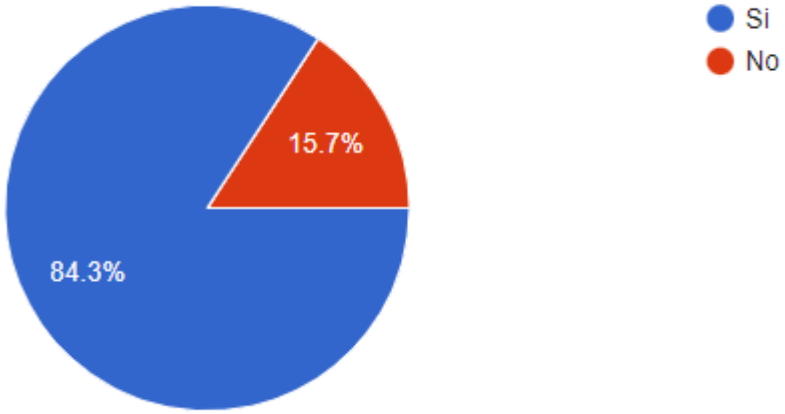
22. Do you know how much energy is being used/saved by your school?

93.4% of students are unaware of the energy used or saved in their school.



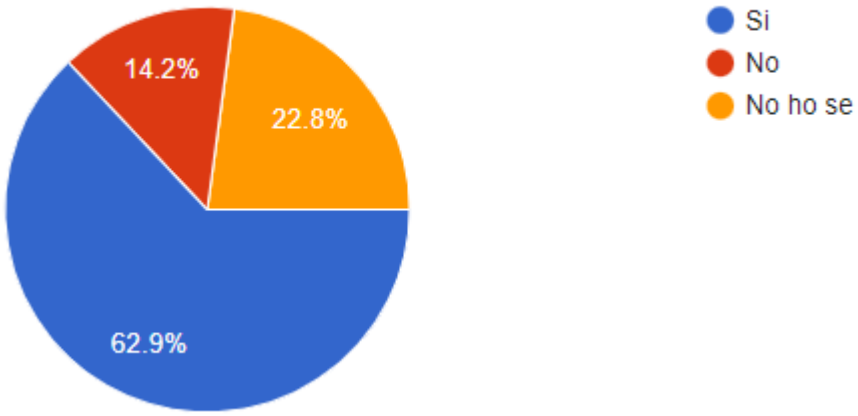
23. Does the school have trees in the grounds?

166 students say they have a playground with trees at their school. Students who answered no, representing 15.7%, are part of the Vilagran school.



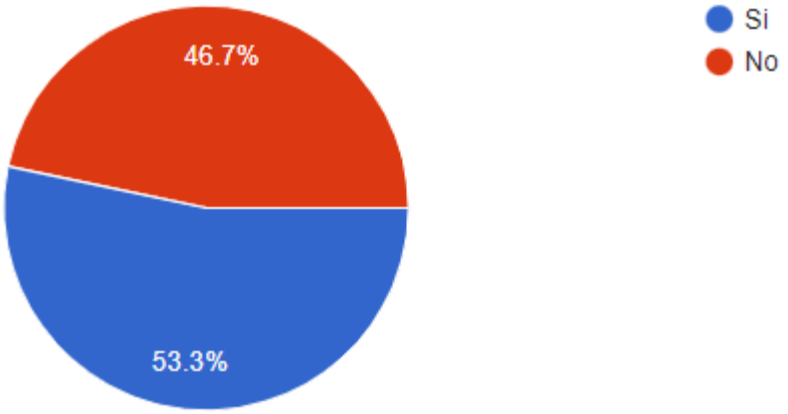
24. If yes, is there a variety of native trees/plants? If no, select again no answer.

62% of students say they know that there are a variety of plants and trees in the area. 22% say they do not know. No trends are detected between school and age, beyond already knowing that the answers corresponding to the "no" are from Vilagran students.



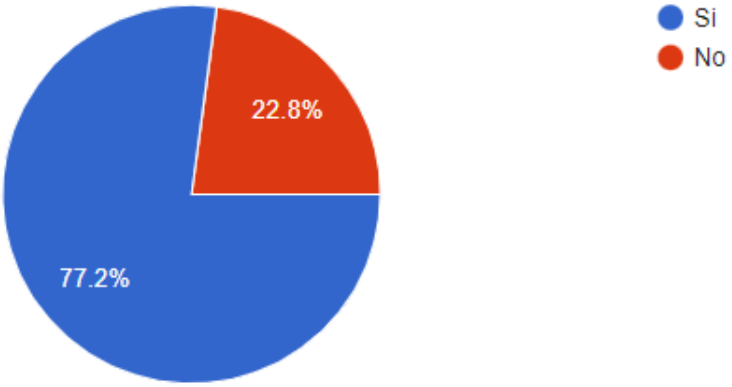
25. Is biodiversity (the diversity of plants and animals) being used for education purposes (learning outside the classroom through fieldtrips)?

53.3% of students consider that biodiversity is used for educational purposes. 46.7% consider that no. No significant differences are detected between schools and ages.



26. Are you interested in acting more at school to protect the planet?

152 students are interested in taking more action in school to protect the planet, representing 77.2% of respondents. The remaining 22.8% have no interest.



27. If yes, what do you think you need to do for that? If no, select again no answer.

61 students would like more information on tools and ways of acting (31%), 43 students would like more information on environmental (24.4%) and climate literacy, 29 students (14.7%) would like to know the best practices of other schools.

Other student responses include:

Making a subject especially for this kind of problems we have in the world, we are taught many things that do not interest us (but they are good for knowledge), but it would be good for us to be informed about what is happening in the world, and to give us tools to improve it instead of 37assume that at home we are already being informed of these things "

"The school must force more students to throw things in the trash (even if there is no recycling)."

CONCLUSIONS STUDENT RESPONSE

The group of primary school students surveyed has been quite diverse in order to be able to analyze different ages. Also, the fact of being able to have students from different schools allows us to see if it is something in general or is something from a specific school.

Regarding the use of tools in school, the use of the computer and the digital screen stands out. The use of the internet is also essential for doing research on any Device, and the students generally feel comfortable using the computer, but it is true that when they go deeper, they find it difficult to use tools like the spreadsheet. It would be helpful to ask ourselves if it has been meaningful to ask specifically for a tool like the spreadsheet and whether the terminology is understood by students.

Not all students use other tools like video editing, photographs, or games in their spare time, just about a third of the students. This fact seems to be more tied to the appetite of each student, as they later do not state that they would like to learn about how to use these tools.

Most students consider that they do training in the digital field, although 30% of respondents do not state this. Also, most of the respondents state that they use digital educational tools in school, and that they feel comfortable with them. On the other hand, schools also digitize their relationship with parents in most cases and students are aware of it.

Students would like to learn about digital educational tools, writing tools, and spreadsheets, as well as they would like to know how to use different digital learning tools. It is necessary to think about if whether students can differentiate between digital educational tool and digital learning tool. On the other hand, it is not surprising that they want to learn about spreadsheets, because of their previous answer whish was said that they don't know anything about it. It is possible that this question has been too guided and with terms that are difficult and confusing for the students.

Nearly three-quarters of students surveyed find it interesting to learn about ecology, pollution and respect for the environment with digital tools. Those who are not interested may not be interested in doing so digitally or may not be interested in learning it in any way.

In terms of recycling, it is detected that the situation in schools is not excellent. There is a considerable volume of students (33%) who considers that the school is not free of rubbish. Many of them indicate that there are not enough buckets / containers or that they are not easy to find. On the other hand, not all students may use the bins properly, as many of them feel that the waste is not separated properly. The perception of whether the school is doing enough to improve on waste, is proportional to the number of students indicating that the school is not free of garbage. Recycling is a concept that students understand correctly, and it is an improvement of the classroom education and the creation of an ecosystem that allows it, and makes the students understand that the school is aware of the cause. Is there enough "marketing" at school?

The degree of knowledge about measures to save resources such as energy is quite low, as well as knowledge about whether if recycled paper is used in school. In the case of energy, half of the students

indicate that energy-saving actions are being carried out at the school and almost all respondents are unaware of how much is being used or saved. If actions related to these two areas are being carried out in schools, more communication is needed by students so that they know it in depth.

Most of the students have a playground in the school where they 39nvir that there 39nvironam but many of them do not know if the flora is native to the area. It is also necessary to assess whether those who indicate that the flora is native are really aware of the matter. Only half of the students consider that the biodiversity of the area is used for learning for educational purposes. These two facts could show that the school 39nvironament needs to be further explored for environmental educational purposes.

There is interest in carrying out actions in school, especially they want to know tools and ways to act and know good practices from other schools. Therefore, providing information to students so they can know what they can do is very important. They have the interest!

3.1.2. Surveys of teachers

Teacher profile

The survey was answered by 25 teachers, almost all of them from primary to 4 who also teach in secondary school. Among them, we can find teachers who are also part of the management team, holding positions such as director and head of studies. On the other hand, some teachers, in addition to teaching the subjects in class, lead areas such as entrepreneurship guidance, or are tutors of some class. All schools are in Catalonia, in the provinces of Girona and Barcelona. The surveys were conducted between 15 and 29 May 2022.

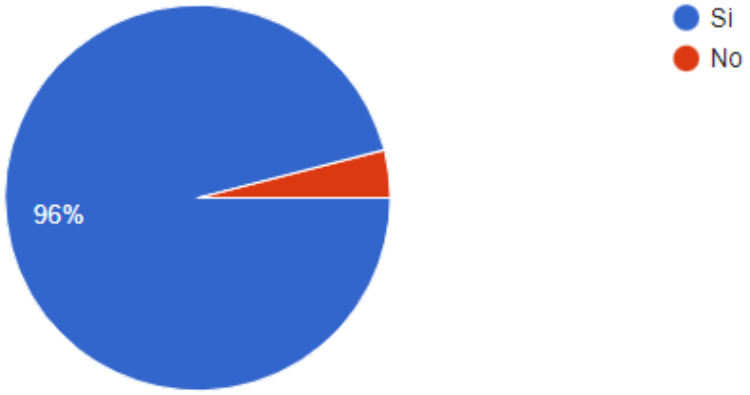
Teachers' school

The teachers who answered the survey belong to 7 different schools:

- Bell-Lloc School
- Domeny School
- Les Alzines School
- Our Lady of Montserrat, Albada Foundation
- Camp Joliu School
- Pineda School
- La Farga School

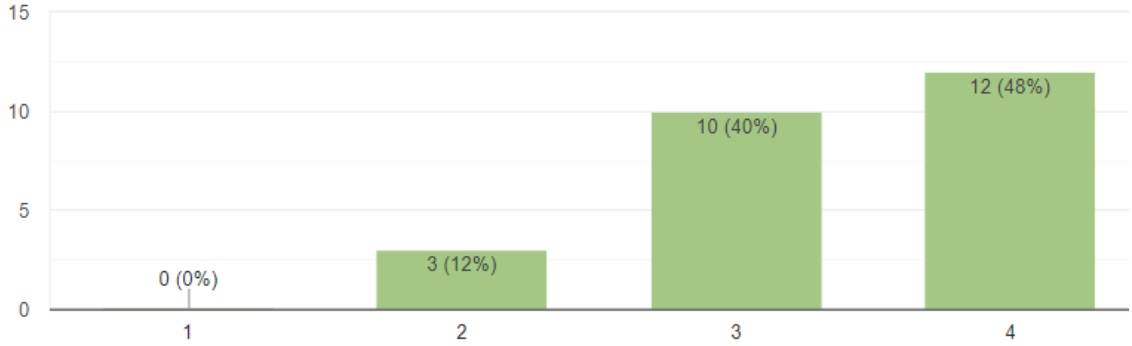
1. Do you use computer equipment to prepare or teach your class?

All but one of the teachers who answered the survey indicated that they use computer equipment to prepare their class.



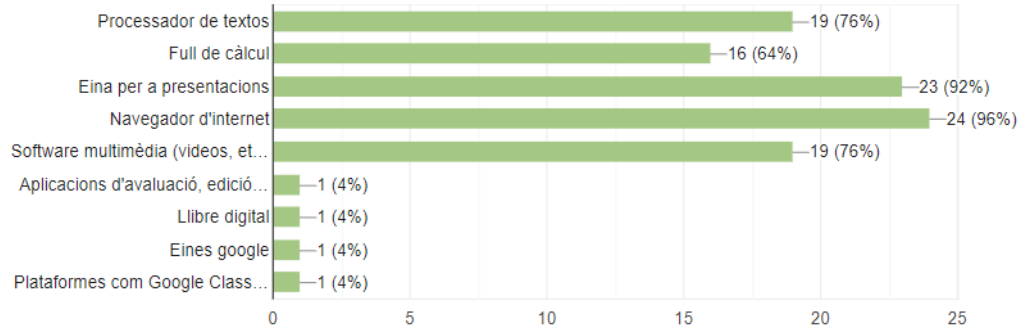
2. Indicate the extent to which you have skills to use a personal computer?

Almost 100% of respondents indicate that they have high skills to perform tasks on a personal computer. There are 3 teachers left who do not feel so prepared and answer this question with 2 points. Remember that on the scale from 1 to 4, 1 indicates few skills and 4 highest skills.



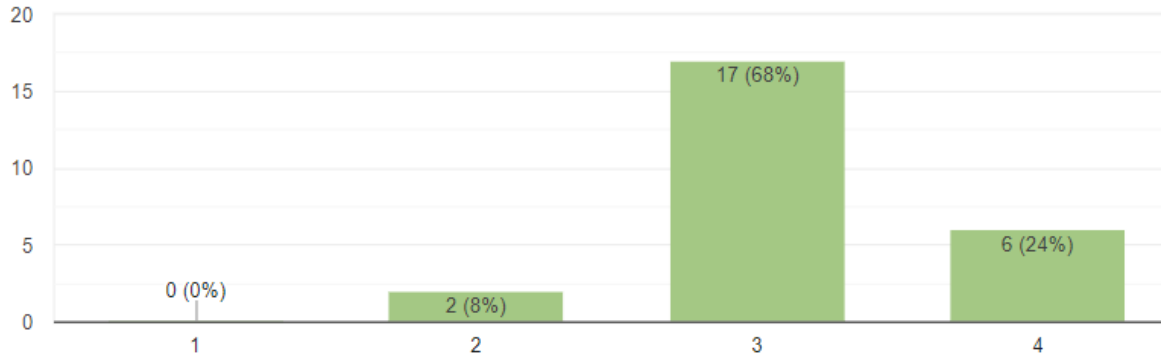
3. 3.What computer programs do you typically use to prepare or teach your class (you can chose more than one)?

The software most used by teachers is the internet browser followed by tools for making presentations. In both cases almost 100% of the teachers. To a lesser extent, but also in a very representative way, teachers use high-level tools such as word processing, other multimedia software and spreadsheets. It does not highlight any other tool other than those mentioned. Mention is made, for example, of the digital book, the Google Suite or the Google Classroom.



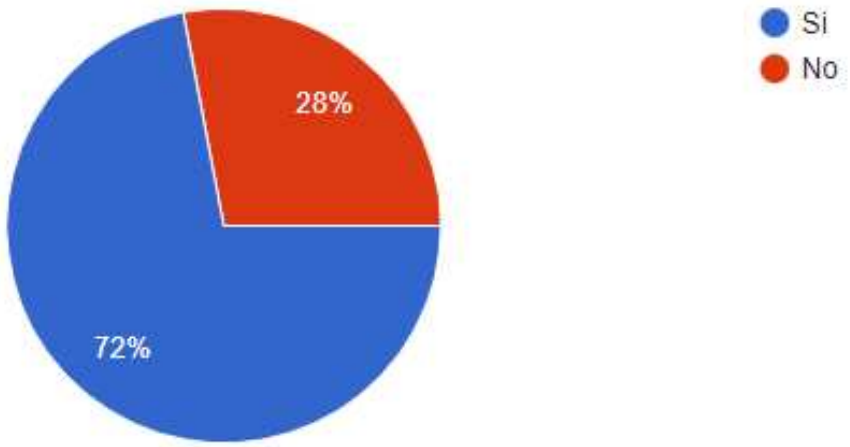
4. Indicate to what degree you have the skills to use office software (word processor, spreadsheet, presentations, multimedia, etc.)

Almost 100% of respondents indicate having high skills to use office software. In this case, the predominant answer is not 4 as in the question of skills to use a computer, but 3. This indicates that they feel they have less capacity in general.


20
15
10
5
0
0 (0%)
2 (8%)
17 (68%)
6 (24%)
1
2
3
4

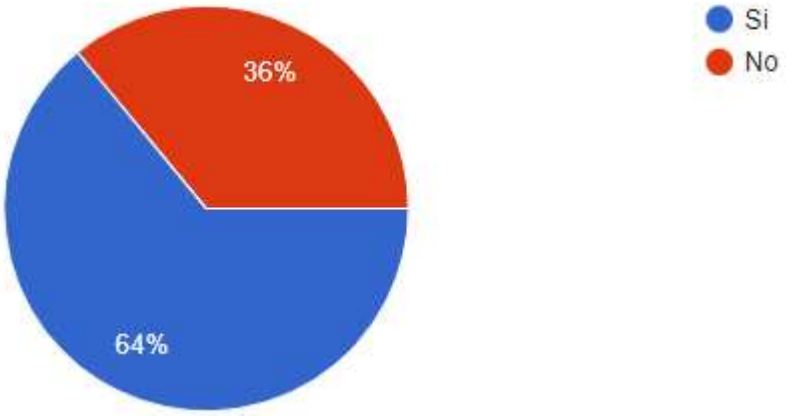
5. Does your school have a digital learning program in place for students?

18 of the 25 teachers surveyed answered that their school does have a digital learning program for students, which represents 72% of respondents. At this point, it is noted that within the same schools some teachers indicate YES and others NO. This is because depending on the stages and the area they teach they may or may not use the software. For 43example, in Naturals and Mathematics at Bell-Lloc School, a specific software is used.



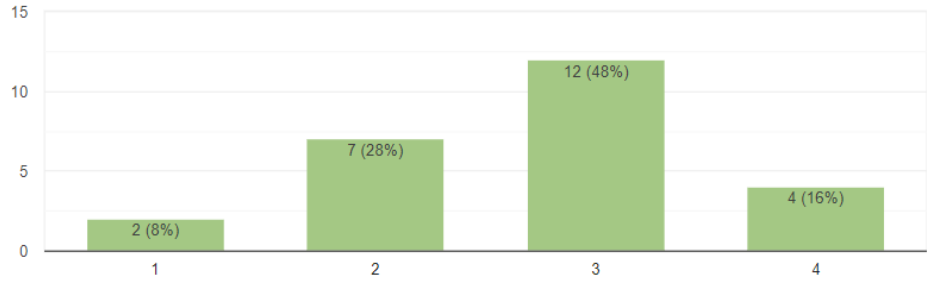
6. Do you use educational mobile applications or collaborative digital learning platforms in your course?

16 teachers (64%) use applications and collaborative learning tools in class while 9 of them do not. In all schools there are teachers who say yes and teachers who say no.



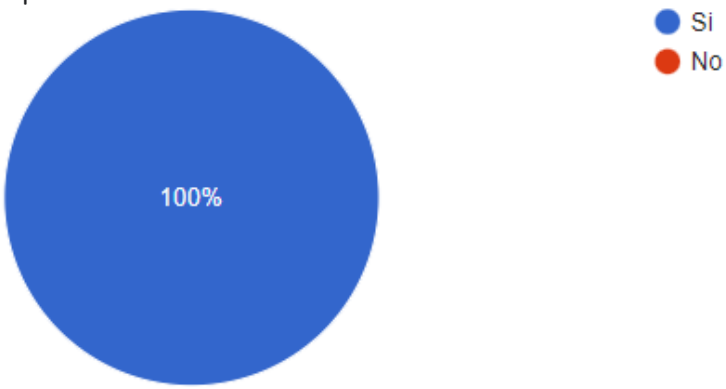
7. Indicate to what extent you have skills to use educational mobile applications (classcraft, kahoot), create learning situations on digital platforms (moodle, etc.)?

The degree of skill with these tools is scattered. Only 16% of respondents have high abilities to use them. 48% have capacities, 29% not masses and 8% mark this option with a 1.



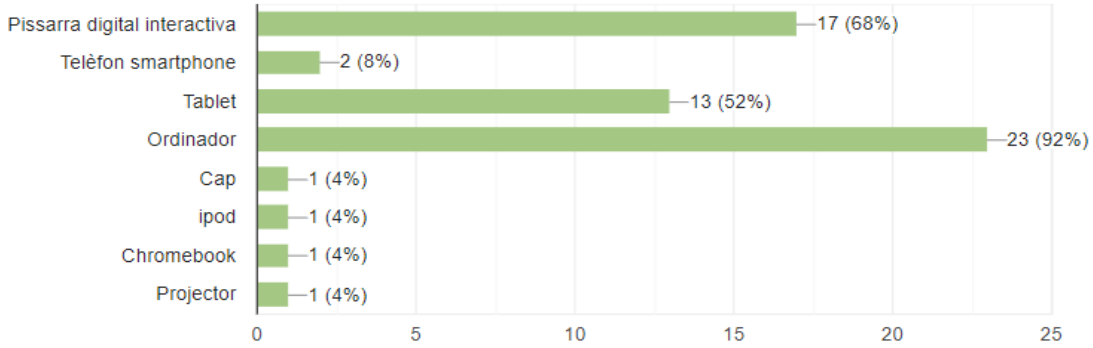
8. Does your school use a digital platform to inform and communicate with parents?

All teachers who responded to the survey confirm that their school uses digital platforms to communicate with parents.



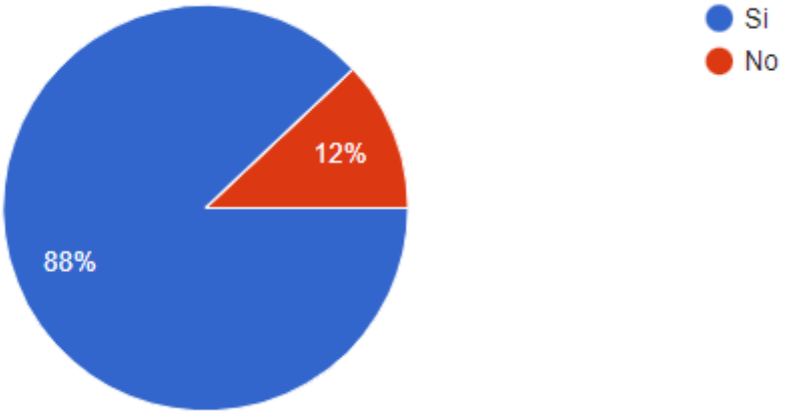
9. Which kind of digital media do you use with students :

Acording to the surveys, the computer is the quintessential. Almost 100% of them use it. Next we find the digital whiteboard and to a lesser extent the tablet or smartphone. Other tools mentioned: Chromebook or projector, without them standing out.



10. Have you attended a training program dedicated to digital skills as part of your teaching/professional duties?

22 teachers, 88%, have attended a digital skills training program about 12% who have not.



11. Please indicate the extent to which you support training for each of the following methods?

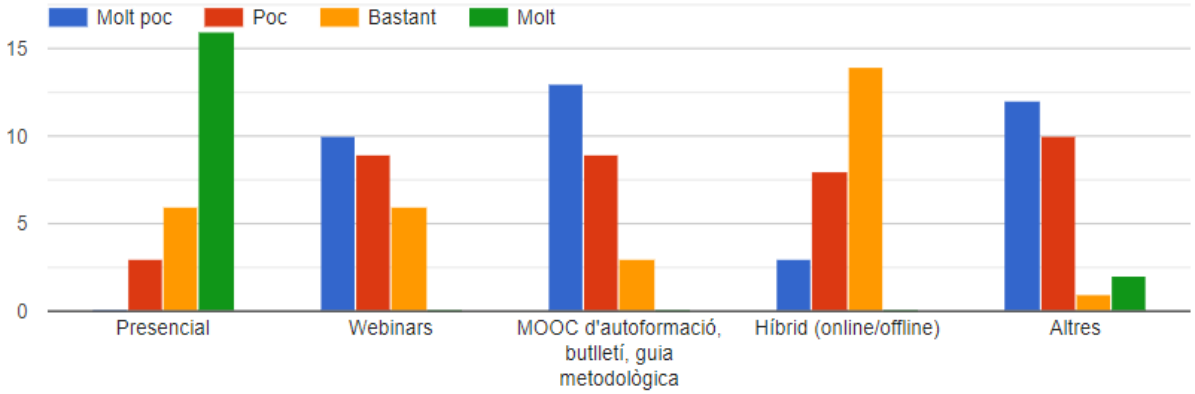
22 teachers out of 25 indicate that attendance is very important to give support while the training. Face-to-face is the method that stands out most with the "VERY" answer (green).

Regarding the webinars, 19 teachers indicate that they almost never use it (blue) or they use it sometimes (red).

MOCS is the least popular support tool as 13 teachers almost never use them, and 9 of them use MOCS sometimes.

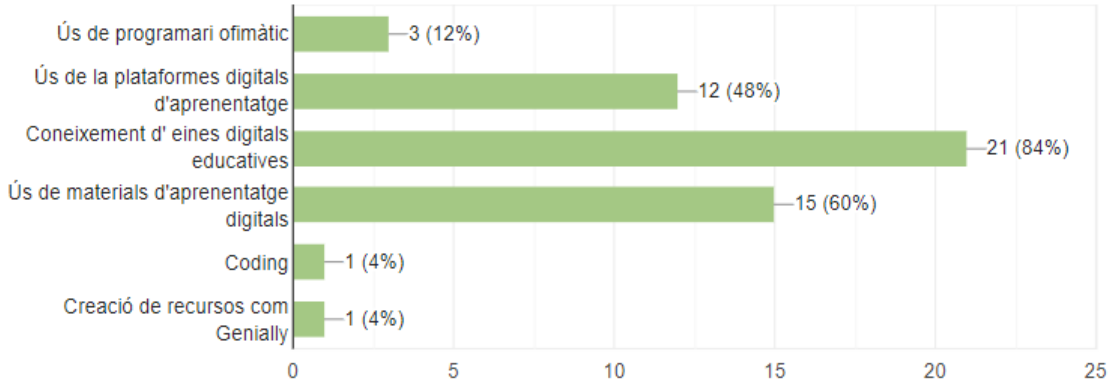
Hybrid training, face-to-face and online, stands out for being the one that most teachers use it quite a bit (orange).

It is not uncommon for many teachers to use tools other than those mentioned in the question.



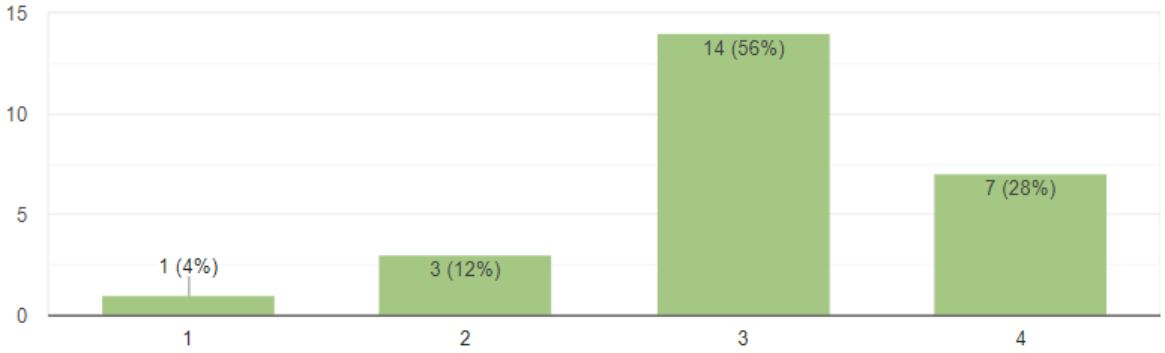
12. In what areas do you feel you need training?

84% of teachers consider that they would like to have more knowledge about digital educational tools. Then 60% would like to know more about the use of digital learning materials. Digital learning platforms are also interesting for them to continue training. Teachers generally consider that they already have enough training in office software. Some more software is specified such as coding or resource creation tools such as Genially.



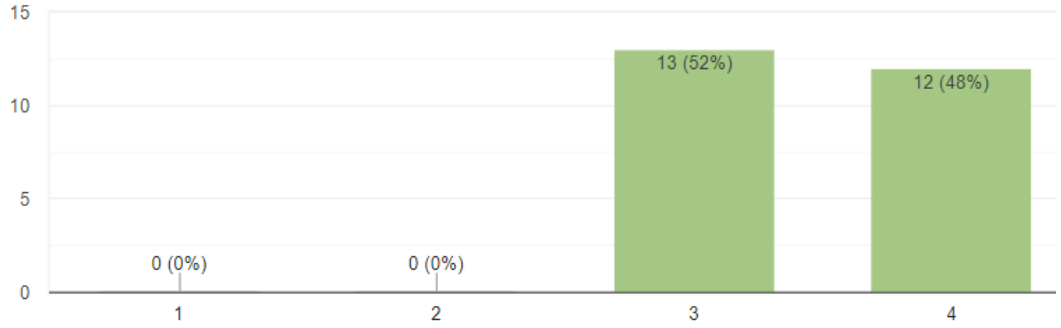
13. Indicate the extent to which you would be in favour of using a digital platform to evaluate and track online your educational best practices and achievements to make your school greener (environmental audit, performance tracking, "greener" progress level?

84% of teachers are very much in favor or quite in favor of having a digital platform to evaluate and monitor practices and monitoring to make the school more eco-friendly.



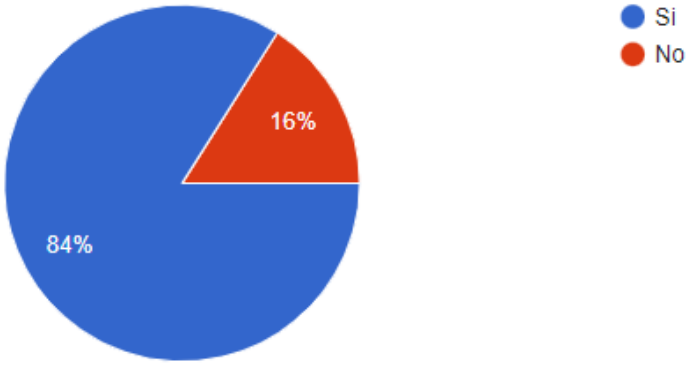
14. Are you familiar with the term sustainability?

100% of teachers are very or fairly familiar with the term sustainability.



15. Are you involved in any ecological activities ?

In fact, 84% (21 teachers) are involved in sustainable activities. There are 4 teachers left who indicate that they are not involved.

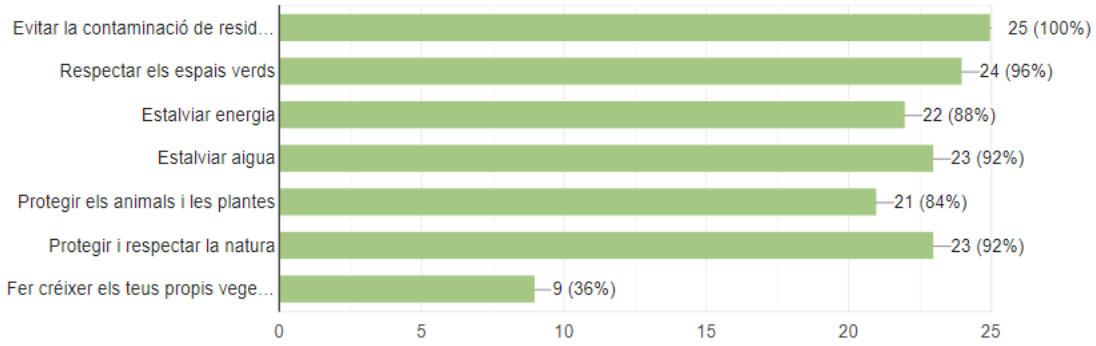


16. Here are some Green practices, which practices are familiar to you ?

All teachers are aware of the good practice of avoiding pollution in the field of waste.

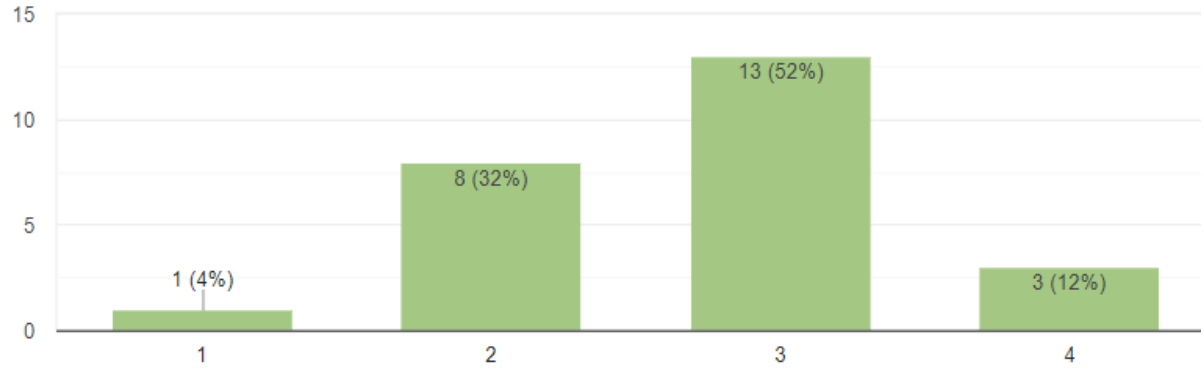
Almost all of them also know the good practice of respecting green spaces, saving energy and water and protecting and respecting nature.

The practice of growing their own vegetables is the least known by teachers, only 36% of respondents know it.



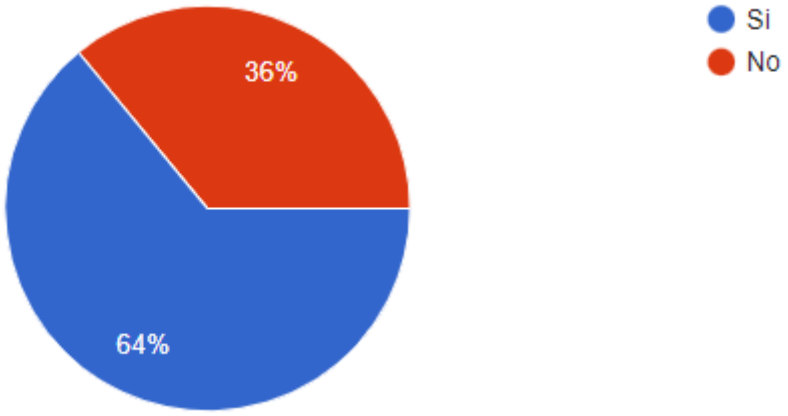
17. Faced with the challenges of climate change and the objectives of preserving the environment in a sustainable manner, please indicate to what extent your school is committed to solutions and preparing future generations?

52% consider that the school is committed but do not indicate the maximum score. Only 3 teachers give the highest score. It is noteworthy that there are 8 teachers who are beginning to consider that the school is not too committed and one that indicates that it is not very committed. These 9 answers are not concentrated in a single school but are distributed in 4 different schools.



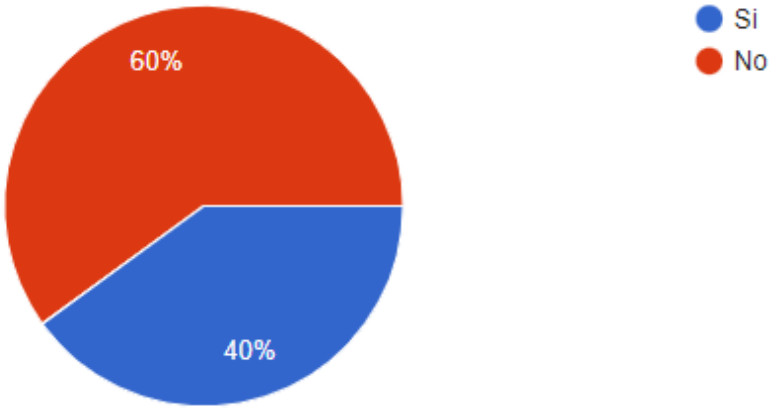
18. Is your school involved in an ecological project ?

64% of teachers consider that their school is involved in a sustainable project compared to 36% who consider that it is not.

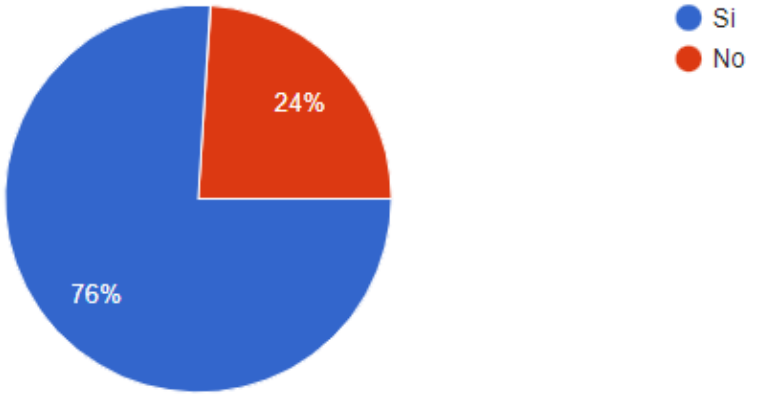


19. Does your school have any sorting measures in place?

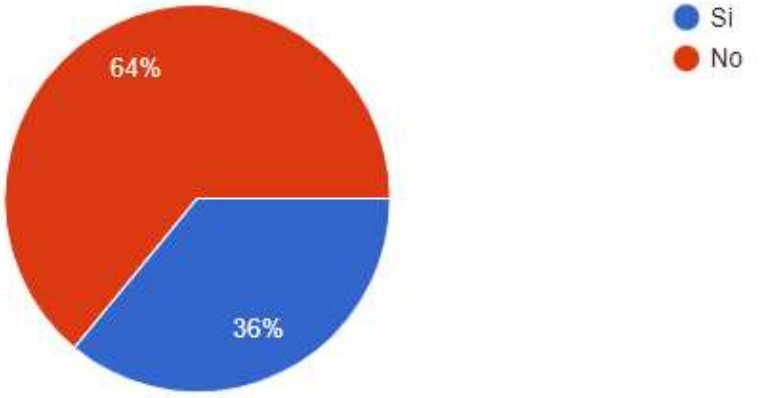
Regarding the measurement of sustainability in schools, only 40% of teachers indicate that there is a tool to measure towards 60% who indicate that they do not. The percentage of "NO" answers is higher than in the previous answer. The perception seems to be that you want to do something but that it does not materialize.



20. Has your school implemented any waste reduction measures (paper, packaging, disposables)?
19 teachers, 76% of them, consider that some measure has been implemented at the school to reduce waste. 24% do not consider it. This answer may be in line with the APILO project that has been carried out throughout the second term of the course.

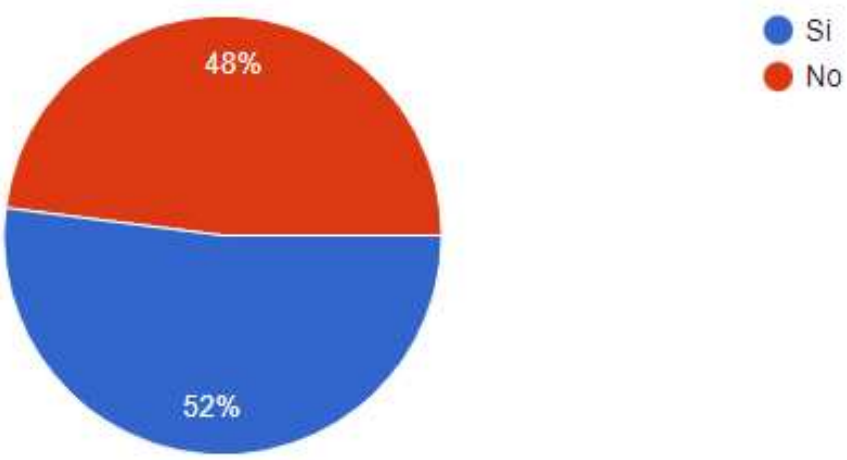


21. Does your school have an ecological purchasing policy for school materials and equipment (eco-labels)?
64% of teachers indicate that their school does not have a policy of purchasing ecological school supplies and equipment.



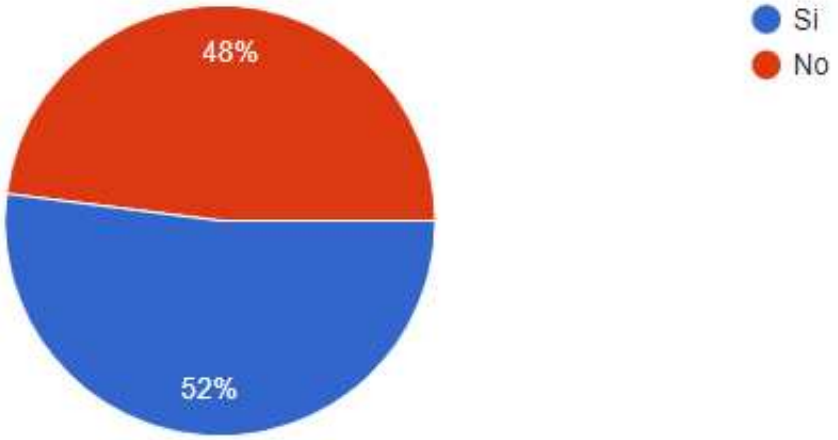
22. Does your school offer food with local, seasonal, environmentally friendly, Fairtrade, Ecolabel products?

A little over half of the teachers consider that the school offers seasonal and respectful products. The other half does not. As we commented on the day of the meeting we should see if we really know which are the seasonal products.



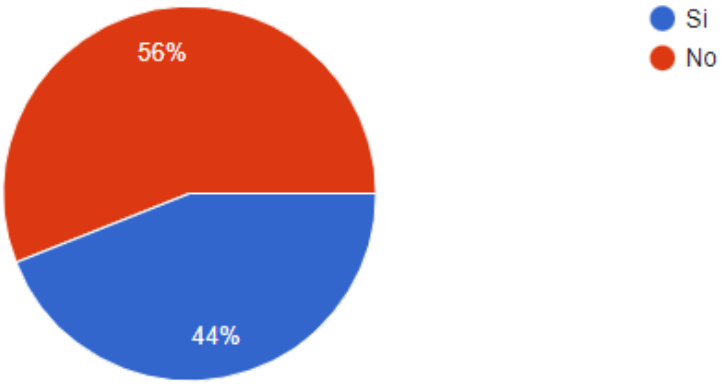
23. Has your school implemented energy conservation measures?

As in the previous question, just over half of teachers believe that energy-saving measures have been implemented in the school.



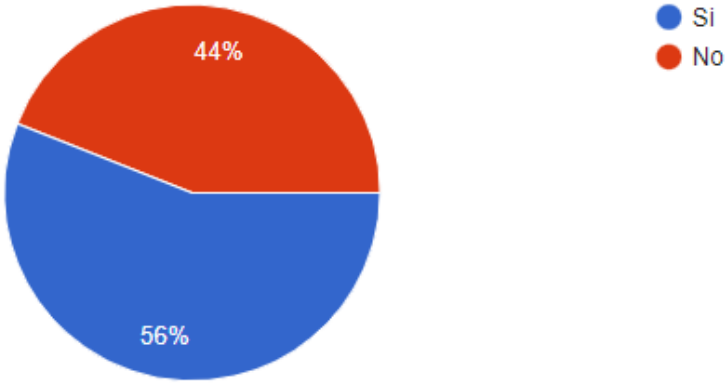
24. Has your school implemented any water-saving measures?

In the case of water, 44% of respondents believe that measures are being taken to save it. On the other hand, consider 56% of teachers, that they are not.



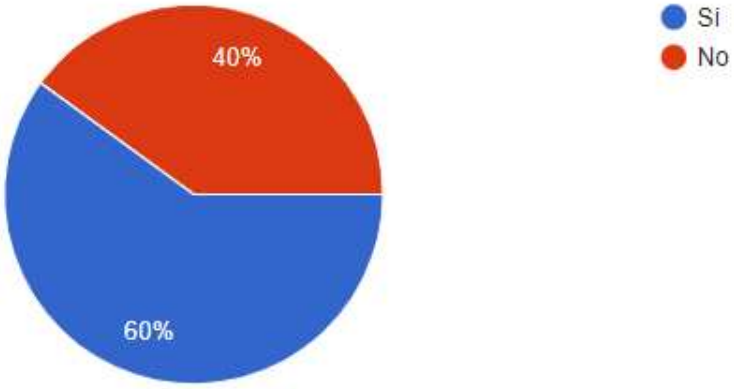
25. Does your school have measures in place to limit food waste?

14 teachers (56%) consider that measures are being implemented to reduce food waste. 44% of teachers indicate no.



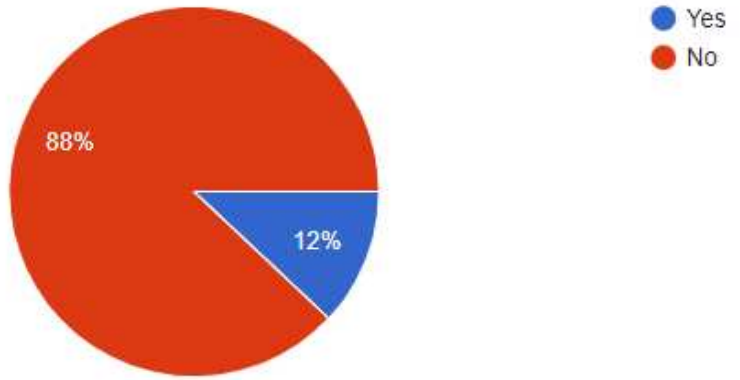
26. Does your school take action to preserve biodiversity, nature and improve the living environment?

60% of teachers consider that actions are being taken to preserve nature and the environment compared to 40% who consider that they do not.



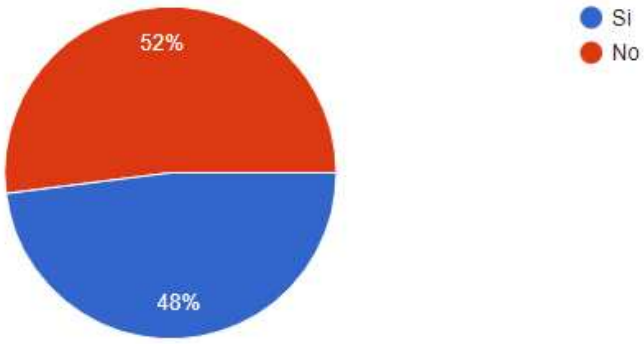
27. Has your school ever conducted an impact assessment (environmental audit, carbon footprint, environmental diagnosis, etc.)?

Many of the teachers surveyed mention that their school has never conducted an audit on the school's environmental impact. Only 12% (3 teachers) mention that yes. Coincidentally, these three affirmative answers come from people who are part of the management team.



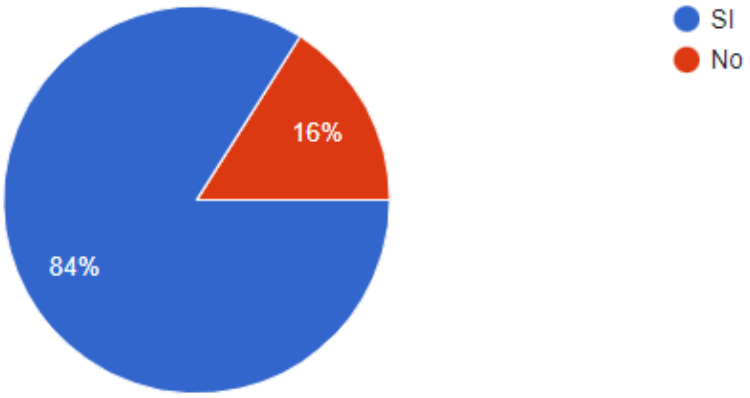
28. Does your school follow up its resource consumption (water, energy, paper, sustainable meals)?

Half of the teachers surveyed consider that the consumption of resources is not monitored while the other half consider that it is.



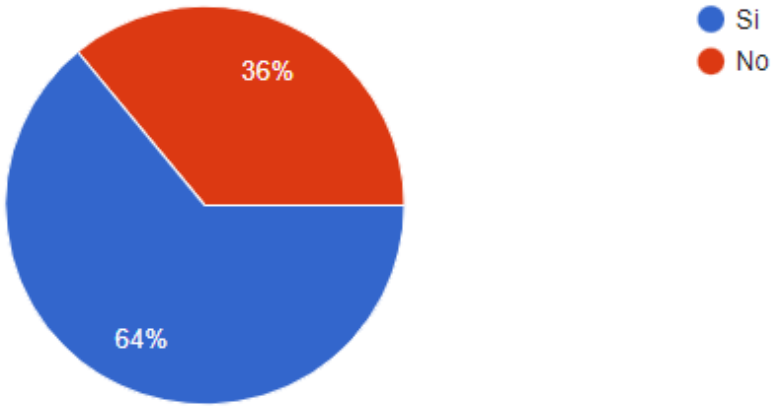
29. Does your school have measures in place to promote healthy lifestyle among students and others?

21 out of 25 teachers report that their school takes steps to promote a healthy lifestyle. The remaining 4 indicates that their school doesn't have measures about this topic.



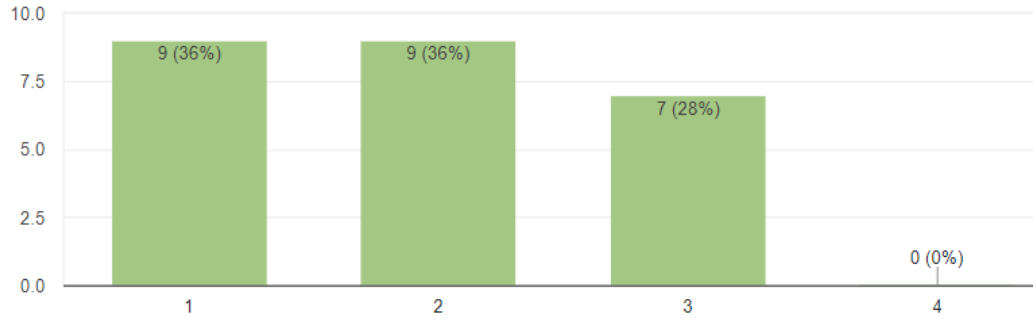
30. Does your school organise student participation in decision-making and achievement to protect the environment?

More than half of teachers (64%) indicate that students are allowed to participate in the decision making and achievement of goals to protect the environment. The remaining 36% indicate no.



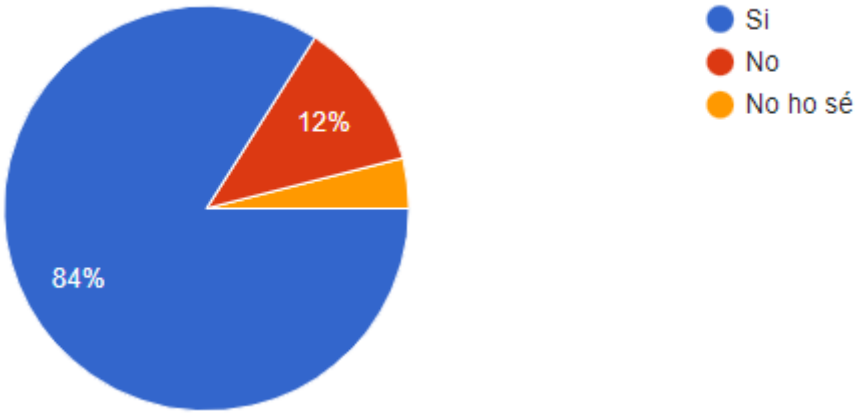
31. Indicate how involved are your students in decision making and achievement of green practices at your school.

72% of teachers consider that students are involved in making decisions about the achievement of eco practices in school.



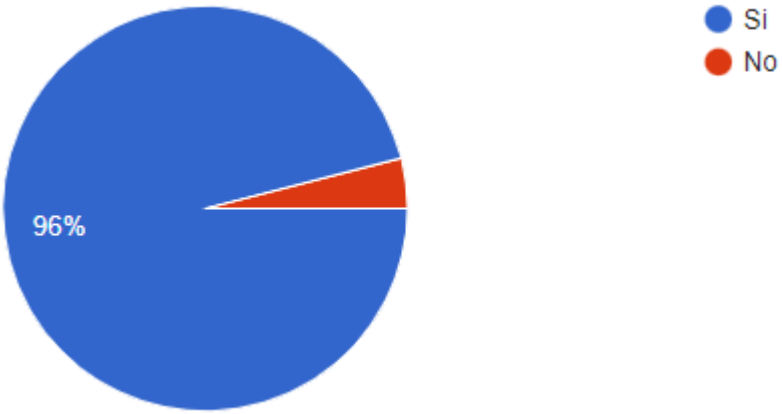
32. Is your school familiar with active teaching practices?

84% of teachers say that their school is familiar with active teaching practices, compared to 12% who say no.



33. Does your school organise interdisciplinary activities or projects?

Almost all teachers mention that their school carries out activities or projects in an interdisciplinary way.



34. Indicate to what extent you believe, your school's environmental education projects and practices affect the following skills (knowledge/expertise/know-how) of your students:

- Abilities to develop critical thinking: environmental education practices in school in general greatly enhance critical thinking.

- Abilities to be creative: they also affect quite or much the ability to be creative, in this case, the answer is far above that in critical thinking.

- Ability to solve problems and evaluate actions on the green pact: It also highlights the response quite a bit and goes down a lot. On the contrary the answer increases little. In general, we could say that this ability gets worse data than the two that precede it.

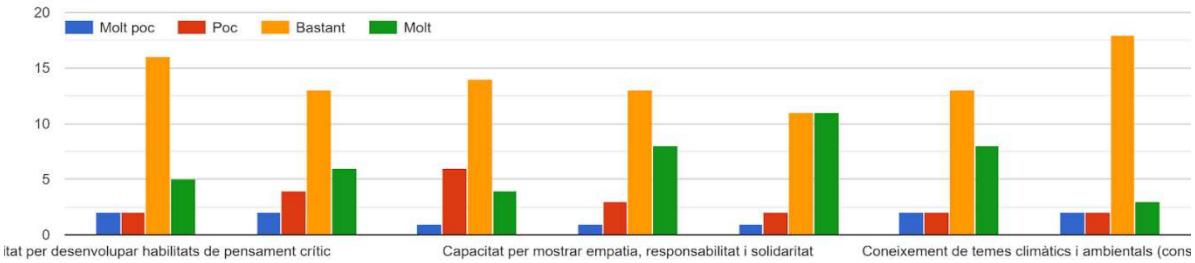
- Ability to show empathy, solidarity and responsibility: The answers stands out a lot, being this the ability that gets more votes in this score.

- Ability to act and work in a team: The scores on this skill is also high. Highlighting the answer, no and quite.

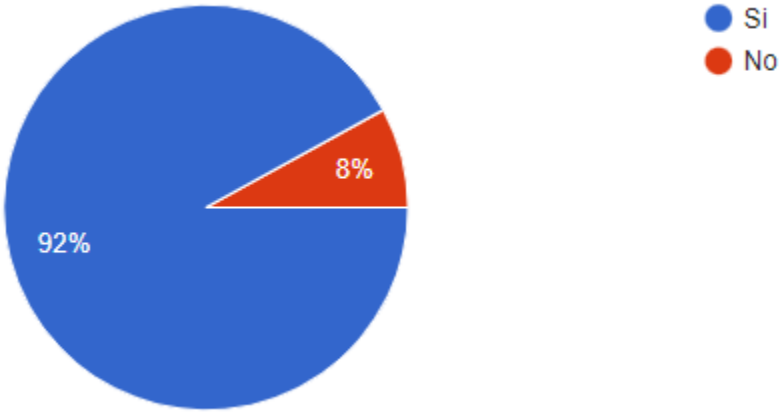
- Communicate, discuss values and principles: Highlight the answer quite a lot but is generally in a good ratio of quite a lot.

- Knowledge of climatic and environmental issues: in this skill it stands out that there are many teachers who indicate the answer quite a bit and very few the answer a lot. It is the skill where fewer teachers have scored a lot.

34. Indica fins a quin punt creus que els projectes i pràctiques d'educació ambiental de la teva escola afecten les següents habilitats (coneixement/expertesa/saber fer) dels teus alumnes:



35. Does your school have measures in place to facilitate and promote in-service teacher training? In general, the schools that the teachers surveyed belong have measures to facilitate and promote continuing education.



36. Indicate the level of importance of your training needs regarding better environmental skills:

- Project management: 23 teachers indicate that project management is an important or a very important training need.

- Management and holding of meetings: 19 teachers indicate that it is an important or a very important training need. In this case, there are more teachers who do not consider it important.

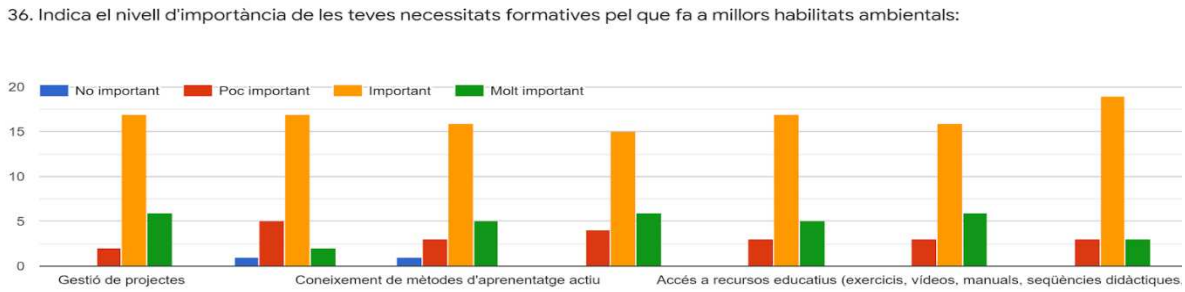
- Knowledge of active learning methods 21 teachers indicate that it is an important or very important training need.

- Specific knowledge to address climate change and the state of the environment : 21 teachers indicate that it is an important or very important training need. No one has indicated that it is not important.

- The Knowledge of solutions, best practices and greener projects: 22 teachers see it as very important or important.

- Access to educational resources: 22 teachers think that it as very important or important.

- The Knowledge of good mobilization and communication practices: it is curious the answers because 19 teachers have chosen this answer. Finally, 3 teachers consider it very important.



37. Indicate the degree of importance of the obstacles you may encounter in supporting your project to make the school :

When we analyze the obstacles we find that:

- Teacher participation: it is not too important an obstacle (adding answers from 15 teachers).

- Institutional support (management, bureaucracy): 12 teachers consider it is not that important while 9 consider it is quite important, and 4 very important.

- The involvement of students: It is not a major hurdle. Only 4 teachers indicate that it is important and 3 that it is very important.

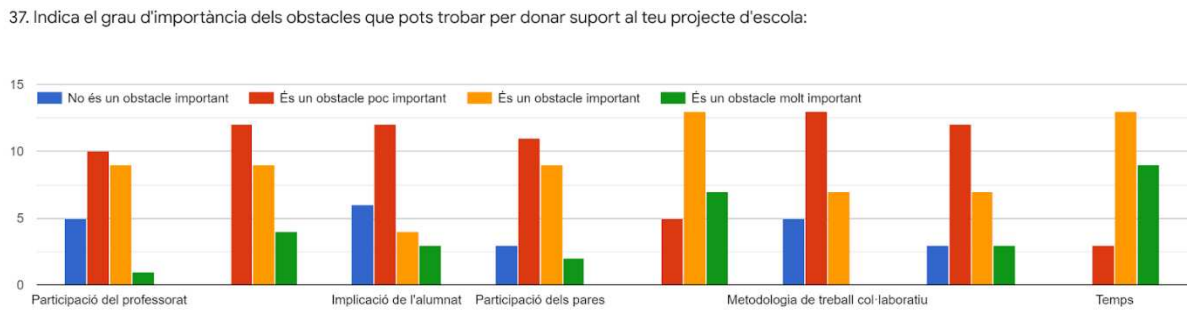
- Parental involvement: For 11 teachers it is an important or a very important obstacle.

- Financing for improvement measures: For 20 of the teachers it is a major or important obstacle.

- Collaborative work methodology: 18 teachers consider that there are no obstacles or there are just a few. 7 teachers indicate that it is important and none of theme indicates that it is very important.

- Knowledge and shared knowledge about the green pact: 15 teachers do not consider it a big obstacle. The remaining 10 are divided between an important and very important obstacle.

- The weather: It is considered the most important obstacle, ahead of funding. Accumulates 22 responses from teachers who consider it is important or very important.



38. Do you have any suggestions for your professional or school's support needs to make you more ready for the transition to a more environmentally conscious status?

The following answers were remarkable:

- It is necessary to provide time to do these activities, or integrate them into other existing projects or activities.

- There is a lack of serious awareness of ecological and "green" issues by the school principals, and they implement it together with the whole school community.

- Awareness that this is a global need for all the School, and not just an effort of a department like Science.

- Give more importance to the topic.

- Information and training for teachers and students.

- Create a commission or working group with teachers from the three stages.

- Maybe we should create a driving team that proposes small new steps each year.

- Support and involvement of the entire educational community.

- In the questionnaire, in certain questions, I found the "I don't know" option missing.

- I have recently been incorporated into the school, but many steps are being taken in order to be a green and sustainable school.

CONCLUSIONS TEACHER RESPONSE

The sample of teachers has been very varied, including professionals from 7 different schools, from very different subjects and with different positions and ages of students. This fact allows to study the data with a heterogeneous sample perspective and where different realities and perceptions will be reflected.

Regarding the digital skills of teachers, no difficulty has been detected by using computer equipment or software in particular. In the classroom, the most used are the computer and the digital whiteboard. Also tools for making presentations and internet browsers. When more specific tools such as mobile educational applications or other different multimedia tools are named, there is a slight decline in teachers who consider themselves to be proficient and use it (we include tools such as Kahoot, webinars, MOOCs ...). Teachers have already indicated this in their answers when asked where they would need more training. It does not emphasize the use of computer software, but learning in digital educational tools, digital learning materials and platforms.

72% of respondents consider that students receive training on digital learning and everyone knows that their school uses digital tools to communicate with students. We could say that they do not consider that the school is not making efforts to digitize itself. In addition, almost all teachers have attended training on digital skills and would also be willing to use digital platforms to make the school greener.

Teachers are 100% familiar with the term sustainability and are mostly involved in educational tasks to promote sustainable practices. They are aware of what a sustainable practice means, in fact about those mentioned in the survey almost everyone knows them all. In conclusion, teachers are aware.

On the other hand, there are doubts of if there is or not an extreme conviction about the good practices in sustainability that are carried out in teachers' schools. Between 50% and 60% do not consider it is clear. On the other hand, 60% indicate that the impact of the actions carried out or the consumption of resources is not measured. The difference of the answers between teachers who are part of management teams and those who are not part, highlight the lack of internal communication regarding the measures taken in the school for sustainability.

If we focus on the evaluation of specific actions, it is observed that waste recycling is the best known and applied in schools, while energy saving, food waste, the purchase of local products or the water savings are present to a lesser extent. On the other hand, the respondents consider that in the school, actions are being taken to promote healthy habits. Not all teachers consider that actions are being taken to preserve nature, conserve the environment and biodiversity. These data show that even more actions can be taken, measured and can communicate the impact.

Although it is generally considered that students have a voice in the actions that are carried out in terms of sustainability, and that they are involved, the number of teachers who consider that students do not participate enough or that not all they are involved is still high. This participation must also continue to be encouraged. In addition, facilities are available because the respondents are trained in active teaching practices, and at the school projects are worked in an interdisciplinary way. Measures are offered and put in place to facilitate and promote in-service teacher training.

Teachers consider important to have more knowledge about project management, active learning methods, specific knowledge in matters of sustainability as well as consider an important obstacle the lack of financial resources and lack of time to support the sustainable project of the 'school. The involvement of parents, students and school could be even greater but in all of them they are considered to have a similar involvement, so it is important to take action to improve the involvement of all three profiles.

GENERAL CONCLUSIONS

The data analyzed are a varied sample of the regions of Girona and Barcelona, although not all teachers belong to the schools where the students answered the survey. This allows for a very varied sample, but makes it more difficult to look for relationships between student and teacher responses.

At the very least, there are different questions where teachers and students share almost the same answer. Regarding digital tools, the computer and the digital whiteboard are the most used and both students and teachers are aware that the school does its best to digitize, provide training and communicate with parents with digital methods. Students would like to know more about everyday tools such as word processing or spreadsheets, while teachers have already mastered these tools and need to know more about digital platforms, tools and materials to apply in their classes.

There is a difference in the perception of recycling in schools between the opinion of students and teachers. While students believe that there is still a lack of involvement on the part of the school, teachers are much clearer that actions are being taken to improve it. By reviewing students responses, it is possible that this answer it is due to the actions that are actually being taken are not enough, are not being communicated properly, or there is no strict monitoring that the material made available to the student is being used correctly.

Regarding energy saving, water saving and the use of sustainable materials in school can be greatly improved, as the two groups surveyed refer to it as something to work on in depth. As well as establishing measurement tools that allow us to know how the actions are being carried out, and to what extent and to what extent they are being improved.

There is interest on the part of students and teachers to improve in terms of sustainability in the school. They all feel that some action is being taken, but no excellent ratings have been achieved, so we need to keep working to get a more involved school and make them really proud of everything they are doing. Establishing a school project for the teachers and students can be a very good initiative.

The school project must be created by students and teachers, which will certainly not be difficult for schools already indicate that students tend to intervene in decision-making and that multidisciplinary learning is encouraged. Teachers, despite knowing some points related to what is a sustainable practice, require further training tools to transmit sustainable knowledge as well as specific knowledge in the field. That will allow them to transmit concepts with agility and depth, with the same security and certainly as they do it with the subjects that they are already experts.

3.2. . Report from Focus groups' results (pupils + teachers + parents)

3.2.1. Students who have participated

Organization	First name	Surname	Course
Bell-Lloc School	Lluc	Batllori	6.B
Bell-Lloc School	Pau	González	6.A
Bell-Lloc School	Grau	Pagà	6.C
Bell-Lloc School	Oriol	Fornells	5.A
Bell-Lloc School	Lluc	Bayer	5.C

Questions and discussion

1. What is your first name and your grade?
Pau of 6th, Lluc of 6th, Grau of 6th, Lluc of 5th, Oriol of 5th.

2. Do you like nature and to play outside?
Students like to play outside, in nature. Some point out that they like to be outside with the pet and others also mention that a combination between inside and outside the house is also good.

3. What is your favorite place for an excursion or vacation?
Some students are more about traveling to the beach and others about traveling to the mountains. These two spaces stand out as the favorite destinations for going on holiday or going on an excursion.

4. Do you know what is climate change?
Students agree in their reflections that it is humans who pollute a lot who are responsible for climate change. They relate it to the hole in the ozone layer and to the greenhouse effect. They add that this causes the planet to heat up and get hotter and hotter, the planet to be drier, the dust to thaw and we have less and less water as a resource.

5. Do you have some ideas on how does it affect our daily life?
Students highlight heat and drought. They talk about how this can change their habits. As a result, they say that they will have to stay longer at home, that it will be hotter at school, that we will have less energy and that they will have to go on holiday to destinations where it is not hot.

6. Which factors do you think can improve environmental issues? The measures that the students have transferred are highlighted below.

- "Barcelona is not allowed to enter by car"
- "Use the books of students from other years, reuse them."

- "Improving recycling"
- "Not extracting so much oil just to get more people in the country"
- "Leaving the natural landscape undamaged"
- "Use digital tools not to cut down trees"
- "Do not use so many nuclear power plants and non-renewable energy"
- "The batteries of electric cars will have to see what will be done with them"
- "Use Chromebook in subjects"
- "Build electric cars"
- "Reduce plastic and paper"

7. Is your school participating to any sustainable program? Are you already applying any green activities or sustainable measures? Have you heard already about climate changes?

The initiative that they know is the one being presented to them, Greener Green. They explain that there is not much talk about economics and recycling, that they are taught some things, but that there is a lack of application. One of the students exposed that he asks their teachers, but the school does not show implication.

8. Have you participated in any program to develop your school green awareness?

Only one of the students remembers having done some homework related to recycling in early primary school. They highlight that there is an excursion related to the field (which began in 2018). The remaining students, do not remember participating in any program to develop green awareness.

9. Do you at home follow green practices to protect the environment?

Recycling is the practice that all students highlight. In particular, many of them talk about the door-to-door collection system of their municipalities. They explain in detail how they and their families participate and how the system works with great interest. At home they have separate containers.

Two students refer to saving water and energy and highlight some practices such as having a timer on the pool, lights or air conditioning to turn on only when needed.

The last practice they highlight is the consumption of tap wàter, and that they fill containers in order to not to use plastic bottles.

10. Do your parents talk to you about green practices or the problems of the environment? Can you give an example?

Students say they talk about it at home and give some examples as they talk a lot about solar panels and the news that appears on television.

11. What would be a fun way for you to follow green practices at school?

See question 12.

12. What would be a fun way to learn about the environment?

In answering these questions students have expressed their ideas to make the school more sustainable. They have not been able to differentiate between question 11 and 12.

They propose to put filtration systems to obtain good water of the river instead of buying it, also to put containers of plastic, glass... to classify waste. They would like to put solar panels in the school and make energy from it, and also by putting turbines in the nearby river so they can get energy from the school. One

of the students refers to the fact that a prize or gift could be given for recycling. The award proposes that it could be candy.

13. Do you like learning in nature or in the computer more? Or maybe both? Please explain.
Students would like a blended learning model that combines knowledge acquired through digital tools and hands-on applications. They emphasize that with visits to nature one learns well, but the computer can be helpful to deepen the knowledge, review it, look for solutions of the exercises... Having a technology environment in the school is good, but we have to learn what to do if we don't have it.

Other 62questions posed by the facilitators that have been considered interesting to ask, given the naturalness of the focus group students.

14. Now that we're done, do you want to add anything?
"The school could force students to wear tupperware instead of using aluminum foil, it would be difficult, but at the end students would wear it. Many students throw aluminum foil on the floor instead in rubbish "
"I would like more trees to be planted. There is a lot of sun in the school "
"I would put solar panels at the school, and ban aluminum foil at school for carrying a tupperware or bag."

15. How should we do this to ensure that school bins are used correctly?
The proposals have been very varied. In particular, they emphasize the importance of teaching students from the first years of primary school. Give directions to the little ones and encourage them to do well, and let them see it as a game. On the other hand, they propose to be able to compete between classes and to be able to win prizes. They would like than on the subjects of natural environment or social environment, to give them some time to learn this kind of topics, and then take a small exam to find out who does not know the theory, and then teach it to them. They also propose that those who do not have a good grade on this exam can be trained during break time, but not to present it as a punishment. Finally, a student proposes to put marks on recycling just as notes are put on the attitude. If you recycle you get a point. There are many people who want to get good grades and therefore propose to reward the good attitude towards sustainability.

16. How could school spaces be used more? Do you find information there?
Measures such as placing containers and adapting a space for recycling, installing natural grass on the football field and putting more trees to be able to take classes on how to take care of nature stand out.

17.Comment that you do door to door at home. When you separate leftover food, do you know what is done with it?
Students have little knowledge about composting. They know that it is crushed and something is done with it, something similar to sand for the plants and that worms are sometimes used. One student comments that he has a friend who has a compost bin at home and what he takes out, he uses it in the field or gives it to friends.

18. Do you know what it means that a fruit, a vegetable, a meat or any food is organic?
In this question the answers have been quite different but quite aligned with the concept. One student indicates that the initials KM0 means that a product is nearby from Spain, that it has not been necessary to take it by plane so it has spent less energy. Another student relates it more to grazing animals or eggs, which,

depending on whether they have been raised in one way or another the products are more environmentally friendly or not. On the other hand, two students point out that it is something that is not well known or talked too much in class, perhaps one time in the subject of social sciences. The remaining student refers to the fact that we should let plants and animals grow naturally, without fertilizer, so we would get better, quality products.

19. You mentioned earlier that first and second graders do some recycling projects and learn. When did you learn more?

They point out that during the pandèmic, they sought information because it interested them. Also on television, there is an animal documentary that at the end they put some reference where are you can look in order to see more information. They comment that nowadays there are many TV ads about recycling and more after covid. On the other hand, a student comments that he asks his parents why he is interested and wants to do better.

3.2.2. Teachers who have participated

Organization	First name	Surname	Course
Bell-Lloc School	Josep	Farràs	4t
Bell-Lloc School	Miquel Àngel	Lucena	6th
Bell-Lloc School	Maria Teresa	Mundet	2n
Bell-Lloc School	Norbert	Ros	5th
Bell-Lloc School	March	Garay	1r

Questions and discussion

1. What is your name, subject of teaching?

Norbert, upper cycle, 5th grade, mathematics, Catalan and social environment .

Maria Teresa, 2nd grade, Catalan, religion, mathematics and the natural environment

Miquel Àngel, 6th, mathematics and the natural environment

Josep, 4th, Catalan, mathematics and the natural and social environment

Marc, 1st, Catalan, mathematics, natural environment and physical education.

2. What kind of solutions do you think are more appropriate for schools in order to get greener?
School teachers put part of the focus on recycling more. Recycle more paper, recycle more in general, provide the utensils to be able to do so, etc. It is noteworthy that in the first year of primary school, a project on recycling is carried out, but sometimes it is no longer worked on in other courses. They comment that the uniforms are reused at school, but that those that cannot be worn could look for options to recycle their clothes.

Regarding the formation, they indicate that more training on sustainability in general would be needed for teachers, retraining and taking advantage of the school garden to do training. They also emphasize the importance of explaining not only the concept of recycling, but of reuse, for students and parents.

3. Is your school participating to any sustainable program? Are you already applying any green activities or sustainable measures? Have you heard already about climate changes?
All the teachers have heard about climate change. They give no further explanation to the question since it is a concept they know quite well. On the other hand, they comment that everyone knows the APILO project, a project that encourages battery recycling. They move that despite being a project focused on second grade, they feel that other courses in the school as 5th have also benefited from it thanks to an extra talk that was done. They also point out that even so, not all teachers and courses know him.

4. If yes, what worked well so far? What problems did you encounter?
Teachers would like the projects that are done to be explained in all the courses and for all the students to be involved. They emphasize that projects are made, materials are prepared and the theory is made but that when the project is finished it stops deepening in the subject. It is necessary to continue applying the projects during the course. They also rename the case of pans during the pandemic and aluminium foil as a practice that was requested during the pandemic and in which the whole school has participated.

5. Have you participated in any program to develop your school green awareness?
No professor amends having participated in an extra program to develop interest in sustainable practices. They also emphasize that at the time they are offered extra training to perform, and that they usually choose training related on teaching and methodologies more than on sustainability. They highlight the work of a teacher who picks up the paper of the school to recycle it.

One of the outcomes of the Greener Green project, will be a two training programs for schools & teachers, to develop their green & digital skills. We are considering including the following thematic units for the training program. What do you think of the topics below and what would you subtract or add? (Interviewer please make a note: Very important or Important or Not so important).

6. Introduction to Environmental & Climate changes. What is Climate change? How does it affect our daily life? How our consumption mode worthen or improve the situation? Which factors can improve environmental issues? How to stimulate interest for Green topics?
They consider it important to include these concepts. They emphasize that in the upper cycle of primary school, they talk about climate change and in the middle cycle talk about it when the attitudes are being studied. It is important to teach in school how this effects our daily life, to talk about how it affects habits, the economy, climate migration and to explain well the consequences in order to raise awareness. Explaining

how the situation worsens or improves makes students participate in the possibilities of change. With simple gestures such as turning off the tap or turning off the lights. It is also emphasized that care must be taken when explaining not to generate anxiety and not to focus everything only on recycling, but on encouraging responsible consumption. If the school teams act and are aware they will pass it on to the students.

7. Types of content, how to present the content to the student.

Storytelling has always been helpful for the school. Stories and fables are a good tool to start a project. Creating with images and words is also considered important to enhance students' creativity. And online digital media are also considered important. The tool stands out Science Bits, which is used by students of the last cycles. Related to Science Bits, they would like to see more of what is seen in this program in the classroom. Teachers have observed that when the student has an electronic device for himself more things can be done. They add other content as tools to present content or very practical exercise.

8. Organization of Green concept. Description of a Green environment, activities, tools enhancing a greener school. Brainstorming with Teachers, Parents & Pupils. A Digital Assessment Tool, how it works

The school could have containers and avoid the use of certain products. Also put solar panels, light sensors and enhance the care of green spaces such as grass. Take advantage of the species in the courtyard and tell their story, giving importance to the garden area that has Bell-Lloc.

Brainstorming is always welcome to receive proposals, as it is always a good idea to have measurement tools. Tools to evaluate yourself, receive feedback from families and increase their participation

9. Green techniques. How to transform our daily habits into a green reflex & good techniques. How to select and choose good ideas. Tackling global challenges and how to communicate them to pupils. Using Digital Assessment Tool to develop children's understanding of Greener Green goals

Teachers express the need to find innovative solutions to small challenges in school, and with older students consider that there are more possibilities to do so. You can take advantage of the experience in the dining room, and improve your gestures. It is proposed to improve a garden area that is not currently in order to regulate the temperature and regenerate it. Also, let there be some wilder space. Finally, they bring a new initiative, creating an artificial pond that complements the garden to create ecosystems in the school. They point out that the areas of bins are not sufficiently signposted.

10. Generate ideas in everyday life. How can we transform daily habits into good practices, how do we select good ideas? How do we communicate with students and how important can it be to use a digital tool to understand the needs within the Greener Green project?

They emphasize the importance of teachers and the school being promoters of the techniques. Do what is said to be done. They consider it important to have good selection criteria and put on the table both attitudes and previous work of reflection. Activities that have been successful in other schools could also be sought. Students should be involved in the decisions made in the school and address the challenges globally. They consider a tool like Greener Green important.

11. In Greener Green, we want to incorporate the following training materials. What do you think?

- Tests - Yes
- Footage - Yes

- Challenges - Yes
- Podcasts - Difficult, in any case they must be very short and for students in the last cycle of primary school.
- Illustrated stories - Yes
- Tips - Yes, learn from the advice given on hygiene in the pandemic
- Presentations - Yes, more in the upper and middle cycle, in the initial cycle, they like other things more such as stories or games.
- Examples of activities - Yes
- Twinning with a green school, hang out and explain what is being done. Open to other schools and have very clear projects.
- Short scenarios / examples with indicative questions to ask the children and start the discussion. - Yes
- Reflection questions - Yes
- Transversal projects- Yes

12. Extra, what topics do you consider important to address?

- Water
- Light
- Green spaces
- Recycling
- Food - responsible consumption of resources

3.2.3. Parents who have participated

Organization	First name	Surname	Course
Bell-Lloc School	Narcissus	Verdaguer	1st and 4th
Bell-Lloc School	Naomi	Churches	4t
Bell-Lloc School	Didac	Lopez	3r
Bell-Lloc School	Manel	Gorina	1st and 4th
Bell-Lloc School	Silvia	Freixas	6th

Questions and discussion

1. What is your name, how many children do you have and in which grade?

Narcissus - 6 children - between 4th, 3rd, 1st grade, p5, p3 and p0.
Naomi - 2 children - 4th grade. and 1st of ESO. He works in the waste sector.
Sílvia - 3 children - 6th, 1st baccalaureate and 2nd career.
Manel - 3 children - 4th, 2nd, 1st grade.

Didac - 3 children - t1r and 4t of ESO and 3r of primary.

2. Do you know what is Climate change?

Parents move that it is the disorder of meteorology around the world. Also that it is the changes that the earth undergoes due to external phenomena like the pollution, intensification of agriculture, changes in the feeding, etc. A whole set of factors that change the climate and atmosphere. They talk about global warming, higher temperatures and their consequences. It means an increase in the average temperature of the earth, the greenhouse effect, water melts from the poles and sea level rises. Humans have changed behavior, not everything is KM 0, consuming so many foods from outside is not normal. On the other hand, one of the parents moves the reflection that it is the first change that takes place by the action to the humans, and the relation of the humans with the Earth due to the economic activity, and that humans are not able to leave it like it was before all the climate consequences.

3. Do you have some ideas on how does it affect our daily life?

Parents have talked mostly about consumption. They explain that humans are not able to stop the consumption and are determined to continue consuming. There is a very strong dependence on energy, since it is used for everything: to move, to be at a good temperature and so on. Climate change affects the economy, and as a family it also affects, for example, of the difficulty of sleeping, how they relate to each other and on their character.

They consider that the solution is a change of habits, learning to think and reflect on everything that is done, although at the same time they say that people in reality do not feel much interest in learning and being informed. Stop buying that many online products and start buying more KM0 products could help.

They reflect that humans are looking for productivity, highly value the time-cost relationship, speed, and comfort. Day-to-day habits lead to consume more packaged products, manufactured outside, to reduce cost. On the other hand KM0 products are very expensive, for this reason policies should help the population to change their habits and manufacturers make more respectful foods. It is said that fines help and that at the same time it is necessary to promote awareness in the use. In short, the economy is linked to ecology.

4. Is your school participating to any sustainable program? Are you already applying any green activities or sustainable measures? Have you heard already about climate changes?

Parents answered questions 4.5 and 6 during the conversation. Therefore, the reflection and summary are moved together.

Parents are aware that during the pandemic different measures were taken at school such as not bringing aluminium fool to school. They also comment that at the end of the pandemic they believe that this has been lost but that at the same time the children have gained in knowledge about sustainability. They value the role of the teacher, if the teacher motivates the child himself he will explain it at home. They say that much often there is too much confidence that parents will be involved, but it is not always possible, however, the importance of parents knowing what is being worked on at school is emphasized. A mother, for example, say that she did not recycle and that it was the child herself who encouraged her at home. They know that their school has spatial moulds that can be appropriated and that actions such as the school uniform, which from now on can be reused by the students.

Some parents remember that in the first years of primary school there is a project about recycling, where students create things using recycled materials, and they also think that the green spaces of the school are a good place to transmit knowledge about sustainability. They emphasize that in other schools they have vegetable patch and even chickens. They value the projects that have involvement throughout the school, the power to have a global project such as APILO and replicate these projects in all courses. They are in favor of doing global and transversal projects. Also, to go out to natural beaches, do activities and competitions between children during the excursions, and replicate the good excursions each year.

7. Does your local community do anything for the environment (recycling, educational programmes, campaigns etc.)

They highlight that that the school is doing less than the could be doning. They would like more to be done and give some examples of what they could do at home or what they would do in the municipality.
The selective collection systems are a topic of conversation. The smart containers in the city center, the payment per generation and the door to door stand out. There is also talk that councils should do their part to communicate more, improve public spaces with LED lights, traffic, encourage the use of bicycles ...

8. Do you at home follow green practices to protect the environment and sustainability?

Parents highlight measures for saving water and electricity, aside from recycling that they have already highlighted in other questions. They comment that families now are very aware because the bills are more expensive than the previous months. A father, for example, comments that he plays with his children that whoever takes less time to shower has a prize.

9. Do you talk to your children about these issues?

It hasn't been said that there is a constant education about it, some punctual cases are explained. One mother has had to explain it to her son because she works in the waste sector, another has said that she talks about because of her son initiative. On the other hand, a father explains that he has a relative who makes clothes with recycled materials collected on the beach, and that the children are interested in the subject. Also, because of the drought, since it has come out a lot on television. They explain that the news is a good time to tell children more about what they see or little things they see in everyday life like the color of glass bottles.

10. What knowledge do you as a parent, think that you are lacking to support your children in protecting the environment?

Parents comment that they have knowledge, but that it is necessary to change habits and explain it more. Children sometimes explain what they do in school, but if parents don't see it in a paper or project it's hard to assimilate. It stands out to do more marketing in school and insist on it from the start. And the school could also say practical things to do at home.

4. Conclusions

Sustainability education has existed and has been working in Spain for many years, we could say that with insistence since 1999, when the first reference document in this regard was published. However, it has never been ahead of what European regulations have suggested. It has been advancing and transforming itself slowly and with great obstacles, such as the economic crisis of the years 2008-2014.

The role of schools, institutions and administrations has always been very important in stimulating the strategies resulting from regulations, but we note that today all these actors can still contribute much more to society. The creation of networks, associations and initiatives that have been analyzed one by one are very interesting. But at the end, when the population perceives how it is perceived, it is observed that the citizens would wait longer or do not finish reaching the concepts they are expected to know after participating in this fabric of initiatives.

If we evaluate the knowledge more specifically, it has been observed that clearly the concept that the participants in the educational environment (parents, children and teachers) know best is that of recycling. However, knowing them does not mean that they recycle properly or that they feel that this practice is well established in their environment. There is a positive assessment of the initiatives, but not of the fulfillment of the same. It is clear that there are not as many measures to encourage other aspects of the circular economy as reuse, reduction through responsible consumption or repairability. All this is surely the result of the strong work that has been done in society in general on recycling and not on other measures.
Saving resources such as energy or water is currently not so much linked to the concept of sustainability, but to the economic context in which we find ourselves. However, knowledge about climate change is high and it is known that human activity is what is causing it. Children and parents in particular highlight the rise in resource prices and that for this reason they are taking action and beginning to be more aware of their consumption.

In many schools, sustainability education is worked on through a specific project in a specific course or a syllabus in a specific course. There is no cross-cutting project that allows for awareness and learning throughout the school. During this report, we have been working with the Bell-Lloc School, which is not part of any network or program, so the importance of incorporating sustainable initiatives into the school's educational project is stated. Teachers knowledge of the subject and the desire and motivation for sustainability is vital for school projects to be successful.

The reality is that teachers are motivated by this tòpic, and are aware of its role in society, but show a lack of resources and time to teach it. Also that they have not participated in specific training programs in the field to feel safe with certain topics. Therefore, closed educational curricula or even lack of knowledge or tools for teachers are some of the tops.

The educational environment is increasingly digitalized and this means that the incorporation of digital initiatives to increase education in sustainability should not be a problem, well on the contrary, you can be an advantage because, from what we have seen in the focus groups, the students and the teacher are very familiar with it. Both students and the teacher want educational programs that combine the benefits of working with digital tools and doing fieldwork to see the practical application of what they are learning.

The pandemic has helped raise awareness among children, families and the environment of the need to care for the planet and to understand the concept of vulnerability. Children in particular are aware of the changes they have had to go through during this period and have received a lot of extra information in terms of sustainability and solidarity. Examples are local consumption or the use of reusable utensils such as plastic bottles, lunch boxes or masks.

We are therefore at a good time to promote education for sustainability in schools. Businesses, administrations and associations receive incentives and resources. On the other hand, will receive sanctions if they do not start taking action to take care of the planet. All this change will be experienced by children and their families in their environments, either because the measures to be taken will be applied in the home, in the work of parents or in the municipality in which they live.
The Greener Green project can be a good initiative to carry out a transversal project in schools that helps to create a culture of sustainability, that increases the knowledge and sensitivity of students, families and teachers in terms of sustainability.

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