

## SCHOOL CASE STUDY

### Agrupamento de Escolas Fernando Casimiro Pereira da Silva (AEFCPS)

School name	Escola Básica Integrada Fernando Casimiro Pereira da Silva-Agrupamento de Escolas Fernando Casimiro Pereira da Silva (AEFCPS)
Contributor's name	Paulo Almeida (Headmaster); Cidália Marques (Project Coordinator since 2013 to 2020); Patrícia Baeta (Specialist on Learning environments)
City and country	Rio Maior, Portugal
Website	<a href="https://aefernandocasimiro.wordpress.com/">https://aefernandocasimiro.wordpress.com/</a>
Age of students	6-15
Number of staff	124
Area of focus	Project-Based Learning Inquiry-Based Learning Coding and Robotics

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# Background, Context and Drivers to change

As one of the major educational pillars of the school cluster and inspired by the EUN's FCL initiative, the AEFPCS project emerged in 2013 through the training of 80 teachers, whose goal was to develop a proposal of a learning lab for the cluster. We started by defining the methodologies before having the spaces designed and teachers were trained in the pedagogical uses of learning spaces. These methodologies could be used in any classroom; however, we did conceive the first space, called ActiveLab to support all activities. Is located at the school cluster main school: Escola Básica Integrada Fernando Casimiro Pereira da Silva.

This innovative project made the school one of the first 10 in Portugal with an FLE. Over time, the educational community realized that the project should be remodelled adding educational spaces specialized in different knowledge areas, to support students' projects. With the search and support of local and technology industry partners, the school intended to create learning labs, spaces of innovation, for teachers and students. Those spaces were intended to promote the use of active methodologies, namely Project-Based and Inquiry-Based Learning.

ActiveLab project is based on the combination of three transformation areas, namely Space, Resources and Methodologies. Through the collection of some indicators at academic, social and socioeconomic levels, the school quality observatory made evident what the students felt, allowing building a project that fits the needs of students, teachers, and the educational community.

## Flexible/innovative learning environment

Regarding the space, it was necessary to make a change in its organization, taking into account the similarity between the classrooms of the early 20<sup>th</sup> to the present day, which presents few or any changes, despite the developments in technology. With differences in terms of furniture and equipment, the arrangement and organization of space, in the vast majority of schools, remained unchanged. The headmaster of the school cluster, Paulo Almeida, considers that the change of space should be in line with the reality of the school as well as in its context, assuming such organization as a predictor of change, contemplating characteristics relating to the level of flexibility, comfort and enabling the development of active learning.

Regarding the configuration and constitution of the internal elements of the space, in terms of lighting, acoustics, air quality and safety, no adaptations were made, once there were no significant issues on those matters; however, the colours of the room were chosen by the students after a research work carried out in the Visual Education subject. The **ActiveLab** has decorative elements on the walls, with paintings made by the school's students and staff helped with the works needed in the space. Regarding the temperature of the room, an automatic ventilation system was added. Of the technological and non-technological

equipment existing in the ActiveLab, tablets, laptops, interactive whiteboards and tables were the devices that had a particularly positive impact on the teaching and learning process.

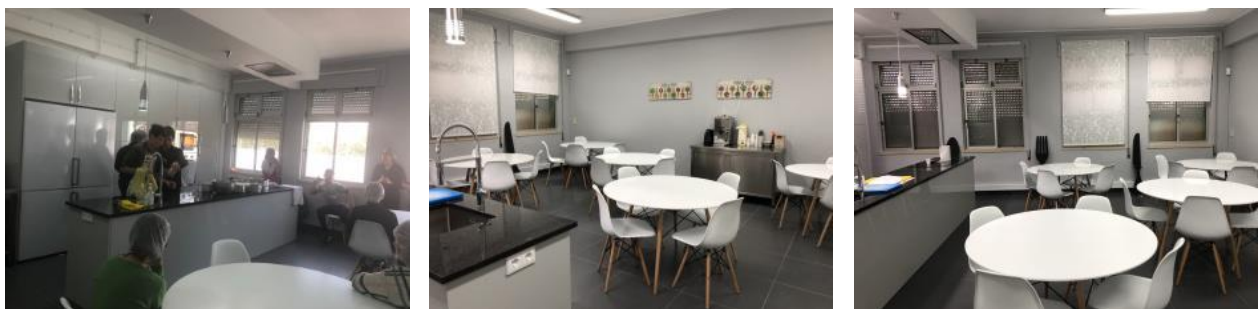


The AEFPCS contains other flexible learning environments (FLEs) in the head school, such as:

**MediaLab:** space that allows the group's students to experiment with new forms of communication using Multimedia resources;



**CookingLab:** space for practical classes and scientific experimentation;





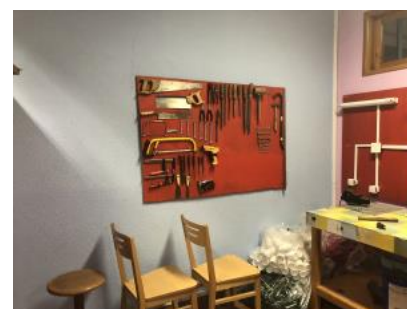
**MusicLab:** space for musical experimentation, support for Music Education classes and the Music Club;



**ParkourLab:** space for the development of extracurricular activities, namely the Parkour Club developed by the Physical Education teachers;



**FabLab:** space composed of a set of rapid prototyping tools, laser and vinyl cutting machines, as well as computers and respective computer programming tools;



**ArtLab:** space to support drama activities, namely all those that take place in Literary Dialogues and in the Drama Club.



The AEFPCS also contains two other ActiveLabs (with fewer technological resources) in the other schools from our cluster, where we have students from kindergarten and primary education.

## Student-centred pedagogy

Regarding methodologies, the school defends that the teacher isn't the only focus of the classroom and the only with knowledge, and that he, in the last century, assumes a more important role. Considered as the engine of the classroom, now the teacher's work, from an intellectual point of view, becomes much more demanding and exhausting. They need to plan, schedule and guide the students, who are effectively the ones learning - contrary to the traditional role, where the teacher is seen as the centre of learning and from all the knowledge comes.

In the ActiveLab, the work methodology places the student at the centre of learning, with the guidance of the teacher. In this scope, also the work performed in the different areas/space zones induces an active methodology, in which the students are invited to acquire control of their learning, while the teacher is a mediator/facilitator. The inherent component of the methodology contains features of high interest, namely involvement, personalization, collaboration, feedback and new forms of assessment. Before making all the changes needed for the implementation of the project, the AEFPCS had careful to focus its attention on the issue of training, as this should show results (through sharing and collaborative work among teachers).

Reaffirming the idea that all students should pass through the ActiveLab, from kindergarten to 9<sup>th</sup> grade, including students with special education needs, the activities in the space are done by request from the teachers, whose training provided by the cluster allowed them to outline the activities, through project work, applying it using the room. This was already a reality for the students of the clubs, particularly the Coding and Robotics Club, as they have been using the room since 2014. Regarding the type of activities developed in ActiveLab, the room is open to the development of project work, training sessions, workshops and for specific classes. In regard to the active teaching and learning methodologies used primarily in the activities developed with students, the following are indicated: Peer learning or tutoring; Inquiry-based learning; Project-based learning; Game-based learning.

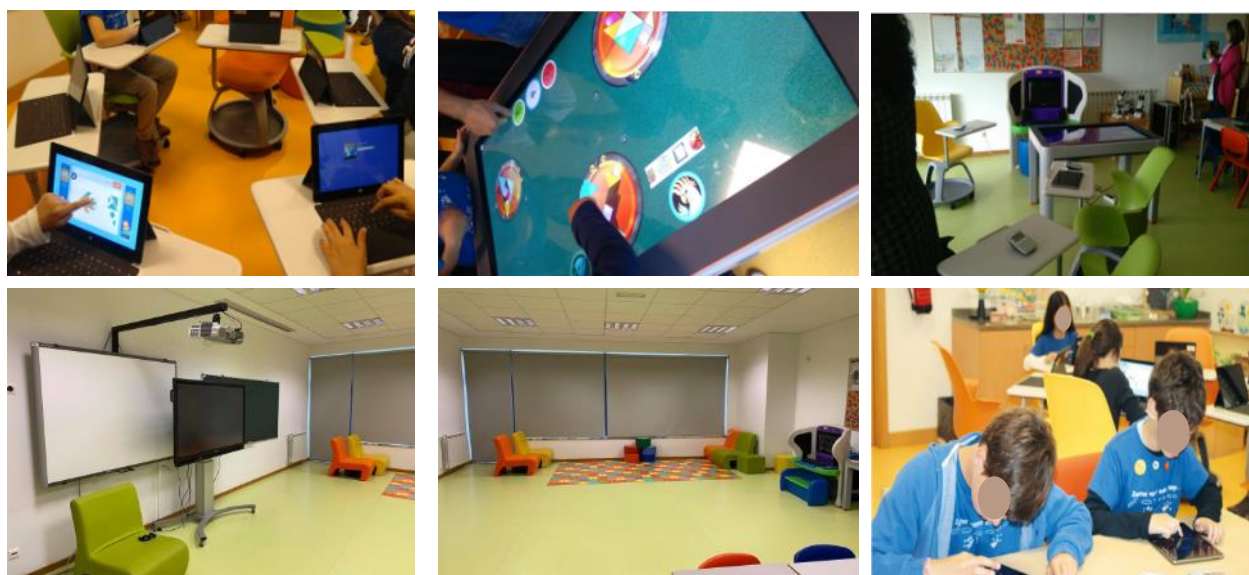
## Use of technology

It was important that the resources available to teachers were articulated with the other two major areas of modification, namely Space and Methodology. In this sense, the resources should meet some requirements and characteristics in terms of mobility, robustness and flexibility, since one of the goals was to facilitate their movement to other schools in the cluster. As a cluster that has several resources, in addition to the teachers specializing in the use of these resources, the students are also considered as experts in the use of the resources, something that from the school's perspective is based very much on the concept of the school-learner.

Through the six learning zones that divide the space (Present, Investigate, Create, Share, Interact, Develop), the ActiveLab has the following: Interactive whiteboard; Fixed and portable computers; Response equipment; Robotics sets; electronic sets; green sets, tablets; interactive table, 3D Printer. In this space the students can perform several activities, moving freely in the space, for the furniture and configuration of it allows them to do it.

Given the characteristics and variety of equipment and technological resources available in the FLE, the integration of technologies in the classroom space allows teachers and students to remain active throughout the teaching and learning process. In this context, the use of technology by students, specifically computers (fixed and portable), tablets, display technology (interactive screens) and smartphones, is essential to carry out the assigned tasks, also enhancing the development of multiple learning experiences.

Among the set of partners who supported the implementation of this project, we highlight the Calouste Gulbenkian Foundation- EMA Project, PT Foundation- Communication Technologies and Digital Accessibility, Promethean, Santillana, Steelcase Education, support from the local municipality, among others.





# Impact

## Benefits

- **Change from transmissive to active practices:** The space itself and the resources that constitute it make the class dynamics change, becoming more dynamic and interactive, with the teaching and learning process occurring from the centre to the whole room;
- **Increased collaborative work:** The furniture and the dynamics implemented favour the development of collaborative work, between students-students and students-teacher;
- **Increased cooperation and sharing of ideas:** As a result of collaborative work, there is an inherent increase in cooperative work among the students and therefore in the sharing of ideas.
- **Promotion of curricular articulation (between subjects/teachers):** the space promotes the development of transdisciplinary activities, with the contents of different subjects merging
- **Increased motivation and interest (from students and teachers):** the attractiveness of the space and the resources it has at its disposal, make the students more motivated and interested in the contents, and therefore in the development of the tasks;
- **Increased use of information and communication technologies:** students and teachers become more motivated in the use of ICT and in the development of various tasks;
- **Increase/development of skills and confidence in using ICT:** students acquired skills that gave them autonomy in performing tasks and creating innovative products through the use of ICT.
- **Increase of skills like:** creativity, problem solving, interaction, communication, computational thinking, among others.

## Challenges

- **Mentality of some teachers regarding the use of ICT:** when ActiveLab was implemented, this was more noticeable, however, there is still some resistance regarding the adequate and knowledgeable use of technologies by teachers, however, this is a situation that is increasingly fading in the school context. Currently, teachers no longer feel the initial fears regarding the use and application of technologies in the classroom context
- **Appropriate and known use of ICT:** As described above, in addition to the integration of technologies, it is necessary for the application and integration to be properly understood and absorbed. Nevertheless, some difficulties still prevail in regard to this aspect, as many still reveal difficulties in using ICT
- **Noise generated by students:** the configuration of the space, the dynamics/practices implemented, and the collaborative work favour the increase of noise among students, which is a problem for teacher's, who want to feel in control of the class.
- **Problems accessing the Internet network (which sometimes affects the development of classes):** as one of the most frequently reported problems, there is also irregular and stable access to the Internet network, which sometimes hinders the development of tasks and the progress of the class.

## Other impact

Regarding the learning methodologies prioritized for the teaching and learning activities developed in the FLE, project-based learning is the most frequently used. Regarding the pedagogical dynamics implemented in FLE, it is noted that these arouse students' interest and motivation towards the thematic contents and tasks to be developed in the different classes, and that the instructional strategies adopted contributed to promote and maintain the active participation, positive attitude and involvement of students throughout the classes.

In the FLE, the adoption of more active and student-centred teaching methodologies is favoured, promoting collaboration, encouraging participation and sharing of ideas among students. The teacher adopts a role of facilitator and mediator, through the management and monitoring of the work, which in return requires more time to answer questions and provide regular and simultaneous feedback on the work developed by the students. In these kinds of spaces, it is verified that the pedagogical practices are not dissociated from their context. In this sense, and taking into account the characteristics of FLE, it can be seen that the use of different pedagogical dynamics promotes the development of new activities and learning scenarios, and encourages the exchange and sharing of knowledge among the class members (something hardly perceived in the context of traditional classrooms). In the context of the FLE, it was found that the space "shapes" the pedagogical practices and relationships developed in it, bringing benefits to both teachers and students.

In FLE, students spend less time involved in didactic instructional processes, giving preference to the practical component. In this context, students spend more time interacting with each other (mainly among group members) and with the teacher(s), through collaborative work on the various activities. Teachers should promote practical work through activities that engage and help students develop conceptual understanding, analytical thinking, and logical reasoning during instruction, rather than focusing solely on teacher-centred, purely expository, or student-centred teaching.



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