TABLETS IN EDUCATION

TOWARDS COMPETENCE-BASED LEARNING

SAMSUNG SMART SCHOOL

2016-17

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SAMSUNG SMART SCHOOL

2016-17

Presentation

Mar Camacho, PhD.

As mobile technologies reach a higher level of penetration in our lives, opportunities to impact the students' educational experience increase. Anytime and anywhere learning is slowly permeating the realities of today's educational centers, creating new scenarios that transcend classrooms, walls and even entire buildings, and facilitating - in turn - learning strategies that open windows to curiosity, emotion and knowledge development.

In this context, technology, an indispensable element in our students' day-to-day life, offers infinite possibilities for personal development and academic growth and becomes a catalyst for change.

Thus, while modern societies and economies are changing as a result of globalization progress, a fundamental transformation of education is needed to provide the knowledge and skills necessary for growth, employment and participation in education. Rethinking learning and innovating education to meet the demands of a society in constant change is one of the major challenges that education systems are facing today.

Many international organizations such as The Future Institute (2017), The Pew Research Center (2017), the World Economic Forum (2016), CEDEFOP (2016) or OECD (2014) insist on the need to provide citizens of the future with skills-based training that will enable them to adapt to an uncertain labor market and ensure optimal conditions for inclusive economic growth (Rainie and Anderson,2017). In a context of lifelong learning, they conclude that these skills include digital competence, intercommunication and learning to learn, and others such as critical thinking, problem solving or collaboration are mentioned.

In this sense, the European Commission is working with EU countries to reinforce the key competences of their citizenship, that is, the knowledge, skills and attitudes that will help students to their personal fulfillment and, later, to find work and participate in society. These key competences include 'traditional' skills such as communication in the mother tongue, foreign languages, digital skills, literacy and basic skills in mathematics and science, and other 'horizontal' skills such as learning to learn, social and civic responsibility, entrepreneurship, cultural awareness and creativity.

The recent European Digital Competence Framework for Citizens, also known as DigComp 2.0 is a tool to improve citizens' digital competence for work and employability, learning and participation, and it classifies the dimensions of such competences into five areas: information literacy and data, communication and collaboration, digital content creation, security and problem solving.

In order to be globally competitive and contribute to the development of committed citizens, schools must harmonize key competencies for the 21st century with the learning experience of their students.

According to the Horizon Report of 2017, the omnipresence of mobile devices is changing the way people interact with their environment. As smartphone, smartwatch and tablet capacity increases, Mobile Learning, is consolidated as a relevant educational strategy within the framework of 21st century education, as it enables students to access knowledge anytime, anywhere, fostering deeper and more meaningful learning approaches, and creating opportunities for personal growth and development. In this context, the use of the tablets continues to be a revealing promise in the educational field due to several fundamental aspects: (i) improvement in academic performance, (ii) collaborative, inclusive and participatory capacity, (iii) (iv) potential for personalizing and regulating learning (v) increased commitment and motivation, and (vi) attractive and motivating effect on student satisfaction.

The growth of interest towards Mobile Learning around the lies in the fact that mobile technology becomes a catalyst for change and breaks down barriers: information can be accessed anytime, anywhere, and, therefore, opportunities to learn can be generated. Within the field of education, Mobile Learning involves the creation of authentic learning experiences to solve real-life problems. Mobile devices are affordable, do not require start-up time, and are easy to use (Mÿllari et al., 2011).

Mobile Learning fosters learning in its own context, and students can greatly customize their learning (Chou, Bloc and Jesness, 2012), teachers can easily update educational materials and share them with students in a timely manner using active learning strategies. Finally, the use of mobile devices encourages student participation, the generation of knowledge networks and the emergence of creative and innovative educational practices.

At the international level, many countries, such as Korea, Malaysia, India, Lebanon, Finland, the Netherlands, France, Northern Ireland or Scotland, among others, have tried to incorporate large-scale mobile technologies, often as part of a initiative to make education more in line with the canons of the 21st century. However, such deployment is not without its challenges, and in many countries, including the United States, Turkey, Thailand or South Africa, these plans have been delayed or even canceled (Clarke and Svanaes, 2015).

In addition to these developments, the impact of mobile technology on teaching and learning is being carefully assessed from the university. However, in spite of these efforts, there is currently a lack of evidence of the direct impact of learning on learning (Fullan et al., 2014, Haßler et al., 2017, 2015, Lewin et al., 2010). These authors argue that this lack is partly caused by the fact that research does not take into account the context in which technology is used, or the preparation of teachers. The work of Haßler et al. (2016), one of the most complete in the recent scientific literature, analyses 23 international studies on the use and impact of tablets in learning, being the samples not very significant as they did not exceed the number of one hundred subjects. Thus, in the absence of scientific evidence of large-scale implementations, it is increasingly necessary for educational leaders to have access to impact assessments and case studies that demonstrate successful experiences with the use of mobile technologies in education with larger samples.

The Samsung Smart School project in its 2016-2017 edition has accompanied 32 primary schools in all 15 autonomous regions of the state, as well as Ceuta and Melilla, in a process of digitalization of the classrooms through the use of tablets by students and faculty. This process, initiated in 2014, has progressed to consolidate itself as a reference project in the field of Mobile Learning, given the representativeness of its sample (an average of 800 students per course) and the results of impact achieved.

It is important to highlight the social and inclusive value of technology and the achievement of a change that goes far beyond the classroom.

The publication contains three differentiated parts, the first one offers the results obtained from the research that has been carried out during the academic year 2016-17. The second part provides a panoramic view of the 13 projects developed in a collaborative way by the 32 schools involved in the Samsung Smart School project in the last academic year 2016-17, in which they had a specific impact on the work of the three aforementioned competences, to finish with a third and final part, in which, to illustrate key ideas and recommendations, examples of innovative practices by participating schools are included. These projects stand for their innovation or the transformative capacity that they have generated in the schools, always made possible by the effective use of technology.

Presentation

Mr. Félix Serrano Delgado

Director of the National Institute of Educational Technologies and Teacher Training Spanish

In 2017, the Samsung Smart School Project, an example of collaboration between Samsung, the Spanish Ministry of Education, Culture and Sport, and the Autonomous Communities, accomplishes three years of fulfilment since its inception, and we can consider that it has entered a phase of full maturity.

Maturity is not equivalent to old, but to productivity and results. Since its inception, the project has been designed taking educational results into consideration, something very necessary at this time in which the effectiveness of technology in education is doubted.

The project counts with three essential human elements: experts in the design, manufacture and support of technology, experts in the correct use of the application of technology in education, and the true protagonists, teachers who use and apply the resources, experience, learn and teach from the ground.

Through an accompanying process and a series of scientific studies on learning with technology, the results of the project have improved year after year, and an inertia that allows the project to function by itself has been acquired, requiring less external support. This, undoubtedly, demonstrates the suitability of the proposal.

This year we have learned a lot, again. This study reflects this achievement.

Presentation

Mr. Francisco Hortigüela

Director of Public Affairs, Corporate Citizenship and Communication of Samsung Electronics Iberia

Education is EVERYTHING and EVERYONE is part of it, each one of us has the responsibility and the duty to train and prepare the new generations for a better future, a future in which they will be the protagonists.

The best legacy we –as parents, governors, companies or citizens- can leave is to have contributed to improve the education and training of the children and young people that tomorrow will be responsible for creating a fairer and richer society , not only economically but also socially and culturally.

At Samsung we believe that technology is a means, not an end. An indispensable means in the education of the XXI century, but it is a means that must be used in the correct ways. Our efforts in the Samsung Smart School program have been directed in that direction, using technology as a means to improve the learning process. Its results are reflected in this study.

Technology facilitates access to knowledge, it also makes it easier for us to contrast knowledge and share it, and most importantly, it helps us to "learn to learn."

It is essential that we learn to learn, that we enjoy learning and that we do it in a continuous way throughout our lives, because we can always learn new things.

In addition to knowledge, today's children and young people need to learn and develop basic attitudes for 21st century society, such as collaboration, communication, creativity and flexibility, and it is here that well-applied technology, ie. without protagonism but using all its potential, plays a key role. All this would not be possible if it weren't for the figure of the teacher, they are the real responsibles and protagonists for this change to take place.

We must all strive and make every effort to achieve this change.

Our highest responsibility to society is education.

Foreword

Mr. Carlos Magro Mazo

Vice-president. Educación Abierta Association.

Technology has always been important in education.[1] Our current school organization, with its disciplined curriculum; cycles, courses and levels; its more or less homogeneous groups of students and the spatial arrangement of classrooms, owes much to what has been the most efficient educational technology tool of all times, the textbook. As Mariano Fernández Enguita[2] recently reminded us, "the textbook made possible to mass-scale schooling: prescribed and homogeneous contents, measured and sequenced learning, interchangeable teachers, comparable students and all this with an easily manageable instrument (in every way), and at a reasonable price". The history of education is full of technology.

In any approach to the subject of education and technology, it is important, therefore, not to be carried away by amnesia[3], so habitual in our educational world, and not to forget that there has always been a close relationship between education and technology. Technology has often been considered as the perfect ally for educational change and, at least in the last 100 years, every time a new information and communication technology emerged (film, radio, TV, personal computers, tablets), it has been seen as an opportunity and a privileged lever for change and educational improvement. In the history of educational change, there has always been a lot of technology. It should also be remembered that in the last decades numerous governments around the world have implemented ambitious technology implementation programs, investing substantial economic and material resources in equipping and training schools, classrooms and teachers. Investments that, far from producing the expected changes, have in many cases strengthened the more traditional approaches to teaching[4]. It is important to remember that, despite the great investments and the high hopes placed on technology as a lever for change, it has not fulfilled the expected role. The desired and necessary educational change through technology has so far been an unfulfilled promise.[5] The history of educational technology is filled with futures that have never been present.

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[1] Desde el ábaco a la pizarra, pasando por el libro de texto introducido por Comenius a mediados de 1600 representan ejemplos de esta intensa relación que siempre ha existido entre tecnología y educación.

[2] Mariano Fernández Enguita. La larga y compleja marcha del clip al clic. Escuela y profesorado ante el nuevo entorno digital. 2017. Ariel. Fundación Telefónica.

[3] Langdon Winner. Information Technology and Educational Amnesia. Policy Futures in Education. Vol.7 nº6. 2009. Disponible en http://journals.sagepub.com/doi/pdf/10.2304/pfie.2009.7.6.587

[4] Larry Cuban. The Lack of evidence-based practice. The case of Classroom Technology. 2015. Disponible en https://larrycuban.wordpress.com/2015/02/05/the-lack-of-evidence-based-practice-the-case-of-classroom-technology-part-1/

5 Neil Selwyn. Distrusting Educational Technology: Routledge. 2014

To be aware of this history, with its lights and shadows, should not lead us to be pessimistic about the transformative potential of technology in education nor, of course, to abandon the pretension of educating with and in technologies. Especially when these, far from being simply a toolbox, are defining a new learning environment that, among other consequences, is expanding the concept of literacy, modifying our relationship with content, teaching and learning forms and blurring the boundaries between the classroom and the home, the formal and the informal.[6] As Marshall McLuhan said, "every technology tends to create a new surrounding world for humankind".[7] The debate on education and technology is probably more necessary and relevant than ever. Our challenge is to redefine education for this new world.

There are also several reasons to think that this time the situation may be different. The last decades have allowed us to better understand the processes of educational change and school improvement, highlighting the importance of schools as units of change, and the need to build and develop their internal capacity for change, involving teachers, management teams and families.[8] It has also greatly increased our knowledge on learning processes, understanding that learning has a lot to do with attitudes, beliefs, emotional tolerance and values. Understanding that learning has a lot to do with fostering trust, believing that challenges can be solved, managing calmly the uncertainty surrounding any relevant problem in life, not being discouraged when things do not go as we thought and maintaining the efforts.[9] In this sense, in the last 10 years practically all countries have reoriented their curricula towards the development of competences, which imply profound changes in the ways of teaching, changes in which technology has much to contribute. Nowadays technologies have nothing to do with the very different technologies of our predecessors of the last century, mainly because of their multifunctionality, interactive nature, connectivity, availability, presence and social use. It seems that, at last, we have the external impulses, the knowledge and the technologies that Seymour Papert demanded to give a second opportunity to those pedagogies centered on the student and oriented towards an integral formation of the person, who at different moments of the last century called for a profound transformation of education.These favourable conditions should not make us forget that every technological choice we make has implications and that what we need to know about technologies, as Neil Postman[10] argued, is not how to use them but to understand well how they use us. We must never forget that technology always involves a cost; that there are always winners and losers; which always has epistemological, political or social effects; that their consequences are always large, often unpredictable and largely

[6] Mariano Fernández Enguita y Susana Vázquez Cupeiro. La larga y compleja marcha del clip al clic. Escuela y profesorado ante el nuevo entorno digital. Fundación Telefónica. Ariel. 2017. p.152

[7] Marshall McLuhan. La Galaxia Gutenberg. Génesis del *homo typographicus*.

[8] David Hopkins (ed). The Practice and Theory of School Improvement. International Handbook of Educational Change. Springer. 2005

[9] Guy Claxton. Expanding Young People's Capacity to Learn. British Journal Of Educational Studies. Vol. 55, No.2, June 2007, pp 115-134

[10] Neil Postman. El fin de la educación. Octaedro. 1999

irreversible; and that, too easily, we tend to turn it into something mythical and therefore unquestionable. To avoid this, Postman himself proposed to make technology an object of inquiry, problematizing both its acceptance and use as its rejection and ignorance. Or, as Neil Selwyn[11] has recently written, we must assume that in order to get the best of technology we must be prepared to think the worst.

There is a long history in educational research that insists on the difficulty of assessing the effectiveness and impact of any educational innovation. Especially in the area of innovation with technology where all kinds of social, cultural, economic and political variables are intertwined that make it really difficult to design experimental studies that allow us to analyse and causally determine the influence of the use of technology in learning. Something that should not be missed due to the very complexity of the task of educating. Complexity, which far from diminishing, has continued to grow in recent years, both because of the growing diversity we find in society and in our classrooms, and because of the demands associated with the transit of a pro-educational and selective educational model to another inclusive and oriented to the integral formation of people.[12]

In this new learning environment, education is oriented, and will be increasingly oriented towards the acquisition and mastery of generic and transversal skills and competences that foster the integral development of

the person. We are no longer satisfied with acquiring knowledge. The result of the learning process should not only be to master knowledge but to be able to transfer it and use it to understand the world and be able to act upon it. The school must help develop a set of skills and competences that allow us to act effectively in concrete situations, mobilizing and combining real-time intellectual and emotional resources.[13] Competences and skills such as language proficiency, digital competence, learning to learn, lifelong learning and skills such as critical thinking, collaboration, curiosity, creativity, flexibility, management, diversity, innovation, individual trust and resilience, among others.

When considering the impact of technology on learning, ODCE published in 2015 a report arguing that, at least in those com petencies measured by the PISA report (achievements in reading, mathematics and science), no apreciable improvement was evident between those countries that had invested heavily in technologies for education and those that did not.[14]

[11]Neil Selwyn. The Dystopian Futures. pp. 542-556. Chapter 28 en Nick Rushby & Daniel W. Surry (eds). The Wiley Handbook of Learning Technology. 2016

[12]Antoni Zavala Vidiella. La práctica educativa. Cómo enseñar. Editorial Graò. 2000. p. 47

[13]Philippe Perrenoud. Cuando la escuela pretende preparar para la vida. ¿Desarrollar competencias o enseñar otros saberes? Graó. 2012

[14]OECD. Students, Computers & Learning. Making the connection. 2015

On the contrary, students who used the technologies in a moderate way tended to obtain better results than those who did it with a high frequency.[15] Also in 2015, Haßler, Major and Hennessy[16], after analyzing in detail 23 studies on the impact of tablets on learning found that 16 showed positive, 5 neutral and 2 negative results, making them positively conclude about the impact of these to improve learning, but also to state that, despite growing efforts which are being carried out by evaluating the impact of information and communication technologies on teaching and learning, we still lack solid evidence to allow us to offer generalizations about how or why their use may or may not improve learning. For each study or meta-study that concludes that the use of technology may be associated with improvements, there is another that finds no difference or finds a negative relation.[17] In this sense, we must value the effort demonstrated by the Samsung Smart School Program from its beginnings when trying to measure and seek evidence on the impact of technology on learning and academic performance, particularly in this third edition, the effort to focus in measuring the effects on three key competences such as language proficiency,

digital competence and competence to learn to learn, constructs that are -in themselves- difficult to measure.

Challenges are great. Developing the same activities always with technology or without it does not allow progress towards a higher quality and equity of education.[18] The reality today is that technologies must still change the traditional[19] forms of teaching that have permeated classrooms for years. Technology can serve to perpetuate and strengthen, without changing, these approaches or to introduce methodological changes. It can serve to maintain an education centred on the transmission and acquisition of contents or to serve for the development of competences and a comprehensive education of people.

It can reproduce and even expand the traditional educational inequalities brought about by cultural, social and economic capital, generating greater educational inequity or can be used with the aim of minimizing these inequalities to the utmost. It can serve to make the processes of control, audit and evaluation of schools more efficient, or to empower students, teachers and schools in their work and to attend diversity and differential characteristics of each student.

Pedagogical practice is not a result of technology and does not change as a result of the introduction of new technologies.[20] Technology can

[15]OECD. Students, Computers & Learning. Making the connection. 2015
[16]B. Haßler, L. Major & S. Hennessy. Tablet use in schools: a critical review of the evidence for learning outcomes. Journal of computer Assisted Learning. 2016, 32, 139-156
[17]Neil Selwyn. Education and Technology. Key Issues and Debates. Continuum. 2011. p. 96 1
[18]Francesc Pedró. Tecnologías para la transformación de la educación. Fundación Santillana. 2017
[19]TICSE 2011. ¿Qué opina el profesorado sobre el Programa Escuela 2.0? https://ampaipse.files.wordpress.com/2012/01/informe_escuela20-prof2011.pdf
[20]Osborne, J., & Hennessy, S. (2003). Literature review in science education and the role of ICT: Promise, problems and future directions (No. 6). Bristol: Nesta FutureLab

amplify great teaching, but great technology cannot replace poor teaching.[21] The challenges of educational technology are as great as the challenges of education itself. Solving the challenge of integrating technology in education requires us to solve the challenge of education.

It requires us to question, both individually and collectively, both at the classroom and school level, about what our educational efforts should try to achieve. It requires us to question what the ends of education should be.

In education, and especially in educational technology, we have focused heavily on methods and have forgotten goals. We have left positions and we have lacked debate. The change in educational practices is not only technical. It is a change of mentality (expectations, values, goals, conceptions) and, therefore, to change what is done in classrooms, with or without technology, must change before what students and teachers understand to learn and teach. The challenge is not easy. As research shows, there is a large gap between the beliefs held by teachers and the educational use they actually make of technologies.[22]
It is not surprising to find teachers who claim that technologies are good tools for designing learning environments that are student-centered but then continue to maintain traditional content centric forms of teaching in their daily practice.[23]

In the end, the most important element remains the teacher, his/ her practice in the classroom, and the relationships he/she establishes with his/her students.
In the last decades and in a pendular way, two antagonistic positions on educational change could be grouped under the dicotomy control versus commitment. In the 1980s, coinciding also with the "first" massive incorporations of technology in schools, a first wave of reforms took place in which education administrations took control of change in a hierarchical way, imposing educational policies, which were centered mainly on curricular reforms, governance and control over schools. This was followed by a second wave in the 1990s, which was more horizontal and directed towards the decentralization of curricular policies and the autonomy of school, but which left aside changes aimed at improving the teaching and learning processes of students.[24]

Today, once these two positions have been largely overcome,[25] it is clear that any process of educational improvement must be accompanied by a clear objective that implies the improvement of daily practices within the classroom.

[21]OECD. Students, Computers & Learning. Making the connection. 2015
[22]Carlos de Aldama & Juan Ignacio Pozo. How are ICT used in the classroom? A study of teachers' beliefs and uses. Electronic Journal of Research in Educational Psychology, 14(2), 253-286. no. 39
[23]Louis Major, Bjoern Haßler, and Sara Hennessy. Tablet Use in Schools: Impact, Affordances and Considerations. Chapter 8 in Handbook on DIgital Learning for k-12. Springer International Publishing. 2017.
[24]Joaquín Gairín Saillín y Javier Goikoetxea Piérola. La investigación en organización escolar. Revista de Psicodidáctica, vol. 13, núm. 2, 2008, pp. 73-95
[25]Las mejoras educativas aunque puedan ser prescritas no se convertirán en cambios reales si no son reapropiadas por los propios centros y docentes, también lo es que la autonomía y la descentralización no generan cambios por sí solas.

There is no improvement possible if student's learning doesn't increase, and when it is measured in terms of competence. Any process of transformation that does not pursue as a final goal the improvement of students' results and learning will be useless, as Gairín and Goikoetxea have argued: "The best plans for improving schools are those that understand improvement as a a long, constant and evolutionary process that focuses its concrete and realistic goals of improvement mainly on the enrichment of student learning and classroom practices and proposes strategies for evaluation of learning processes and outcomes rich and diverse, always depending on the training of teachers and the organizational conditions of each school.[26] Change cannot be prescribed, nor are there any unique recipes. There are no magic levers. Technology will never be a solution in itself, it's more reliable to act simultaneously on different dimensions.

School improvement can only occur when schools use the strategies that best fit their own context. Consequently, any process of school improvement, also with technology, must start from a previous analysis of the situation of the school (strengths and weaknesses, data, school culture, context) that allows us to identify the needs and areas for improvement and change and school improvement insists on the need to build and develop the capacity for change within the school, which in turn leads us to pay special attention to the processes of training and how collaboration processes are promoted and developed within each school and between schools. It seems clear that the school cultures that are most conducive to school improvement are those that are collaborative, foster collegial working relationships, and generate a favorable climate for change.[27]

To accept that the unit of change is the school or the network of schools should not be used by competent administrations to evade their responsibilities. On the contrary, they must ensure the necessary conditions and resources that enable these processes, always guaranteeing equity within the system. Conditions that, in the technological area, are translated to ensure that all schools have adequate support and training; connectivity and the necessary infrastructures; (specialized personnel) and materials (replacement and

[26]Joaquín Gairín Saillín y Javier Goikoetxea Piérola. La investigación en organización escolar. Revista de Psicodidáctica, vol. 13, núm. 2, 2008, pp. 73-95. p.77

[27]Alma Harris. School Improvement. What's in it for Schools. RoutledgeFalmer. 2002. p.12

maintenance of technologies and open educational resources) necessary to generate processes of technological appropriation and deploy comprehensive projects of educational change with technology. Conditions that in the last years far from increasing or staying have been slowed down.

To conclude, technology entered schools a long time ago, but with the exception of those few schools in which they are part of their pedagogical model, they have in most cases done so in an "uneven, fragmented way, from a narrow and limited conception" slightly modifying teaching processes".[28] Today, in a great majority of our schools, we find technologies in offices and classrooms (computers, electronic whiteboards), in the administrative processes and in the communication with. Teachers use technology to prepare their classes and students to look for information. We even find them as curricular content (digital competence, programming, robotics ...) but, in most of our classrooms, they remain outside the core of the teaching-learning process. We continue to lack didactic skills related to technologies. It seems clear that we need a new approach to get all the transformative potential that technologies can have in school.

The positive side is that, at last, it seems that we have moved away from the discourse of the platforms and devices and that the idea has been generalized, among all the actors involved, that to speak of the incorporation of technologies in education is not to speak of hardware, software, data, analytics, and efficiency, but rather has to do with practices, contexts, cultures and uses, that is, what we could call the human aspects of technology and education.[29]

Like any other technology, educational technology is intrinsically linked to the social, cultural, economic and political aspects of society and, therefore, the challenge we face is to build a shared vision of better education for our students in a changing, uncertain and digital environment. It is not so much about technifying classrooms as of about schooling technologies. It is not so much a matter of automating processes as of humanizing them.

We need to find more effective ways to integrate technology into teaching and learning processes; doing so in a way that guarantees equity and equal opportunities so as to provide teachers with learning environments that support the pedagogies of XXIst century and the students with the skills needed to live fully in tomorrow's world.[30]

[28]Mariano Fernández Enguita y Susana Vázquez Cupeiro. La larga y compleja marcha del clip al clic. Escuela y profesorado ante el nuevo entorno digital. Fundación Telefónica. Ariel. 2017. p.148
[29]Neil Selwyn. Education and Technology. Key Issues and Debates. Continuum. 2011 p.19
[30]OECD. Students, Computers & Learning. Making the connection. 2015

A successful use of technology must be accompanied by simultaneous changes in other aspects such as school organization, school culture, curriculum, assessment, teacher training and professional development.[31] It's vital to rethink education with technology.

We need a global change that focuses on learning objectives, curricula, teaching strategies, didactics and evaluation.

The Samsung Smart School Program, now in its third year, is a good example of how to develop technology projects in schools, and on how to include different relevant stakeholders: Samsung, the Ministry of Education, Culture and Sports, all the Spanish autonomous communities plus the autonomous cities of Ceuta and Melilla. Its success also lies in its multidimensional approach, combining technology (devices and connectivity) with specialized teacher training, educational resources, counselling and research.

It is a good example due to its systemic approach to educational change with technologies affecting school organization and culture, leadership, teaching and learning methodologies, infrastructures, evaluation and impact on the environment.

It is a good example because the project firstly focussed on students, on improving learning and linking this improvement to the development of competences. It is also a good example for its success at promoting the construction of networks and collaborative work between teachers and schools, a key aspect for the necessary transformation of education.

No one said that transforming education was easy, the question is, as Paulo Freire said, how to transform difficulties into possibilities.[32]

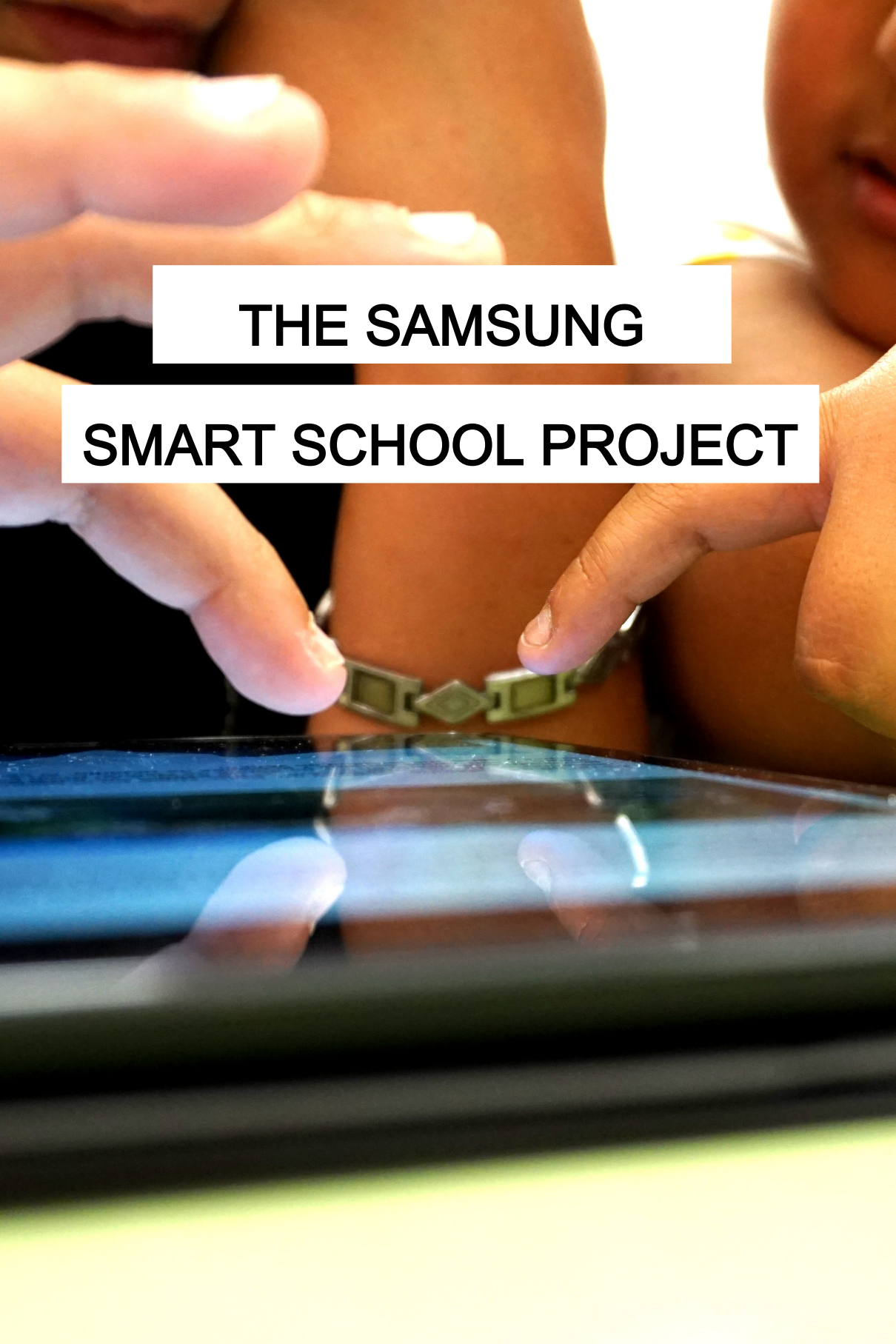
[31]Francesc Pedró. Tecnologías para la transformación de la educación. Fundación Santillana. 2017

[32]Paulo Freire. A la sombra de este árbol. El Roure. Barcelona. 1997. p.63

INDEX

01
The research

- THE SAMSUNG SMART SCHOOL PROJECT
- PARTICIPANT SCHOOLS
- EQUIPEMENT
- THE RESEARCH
- OBJECTIVES
- METHODOLOGY
- SAMPLE
- INSTRUMENTS
- RESEARCH PROCEDURE
- RESULTS
- KEY FINDINGS


THE SAMSUNG
SMART SCHOOL PROJECT

The Samsung Smart School project

The Samsung Smart School Project began in the 2014-2015 academic year as a result of a collaborative agreement between the Samsung Corporate Citizenship Department, the Ministry of Education, Culture and Sport and the Autonomous Communities.

As part of its Corporate Citizenship strategy, Samsung wants to accompany the study and configuration of a proposal for educational methodological change, based on the use of 21st century digital tools and aligned with Digital Education. In it, technology acts as an integrating, inclusive and reducing element of the digital divide, and the exchange of experiences becomes a tool for a greater and faster acceptance and use of technologies by teachers; all for the benefit of students and the creation of collaborative practices and digital content with resources in the cloud.

Samsung and the Ministry of Education, Culture and Sport, in addition to 15 autonomous communities, have signed since June 2014 a collaboration agreement for the didactic application of technologies according to the model of the Samsung Smart School project, aimed at public primary education schools, located in areas with special needs and with the aim of promoting learning through better use of technology; in order to verify the importance of the use of technological resources in the education system and to reduce the digital divide.

Under the Samsung Smart School program, according to the aforementioned collaboration agreement, which was joined by 13 autonomous communities for the 2014-2015 and 2015-2016 academic years and up to 15 autonomous communities for the 2016-2017 academic year, Samsung has implemented a total of 74 technology classrooms in 32 Spanish public schools until June 2017 under the patronage law criteria.

During this period, an average of 350 teachers and 800 students participated each academic year and teacher training was offered in:

Project-Based Learning

<< 2014/2015 academic year >>

Learning with mobile devices.

<< 2015/2016 academic year >>

Collaborative learning with resources digital images.

<< 2016/2017 academic year >>

Participant Schools

Andalucía	CEIP El Olivo
Aragón	CEIP Ntra. Sra. Del Pilar
Asturias	CP Rioturbio
Baleares	CEIP Juniper Serra
Canarias	CEIP Chimisay

Cantabria	CEIP Mª Sanz de Sautuola
Castilla la Mancha	CRA Guadiela
Castilla y León	CEIP Blanco de Cela
Cataluña	Escola Joan Sallarès i Pla
Ceuta	CEIP Vicente Aleixandre

Extremadura	CEIP Reyes Católicos
Galicia	CEIP Viñagrande-Deiro
La Rioja	CEIP General Espartero
Madrid	CEIP Clara Campoamor
Murcia	CEIP Purísima Concepción

Melilla	CEIP Hipódromo
Navarra	CEIP Teresa Bertrán de Lis

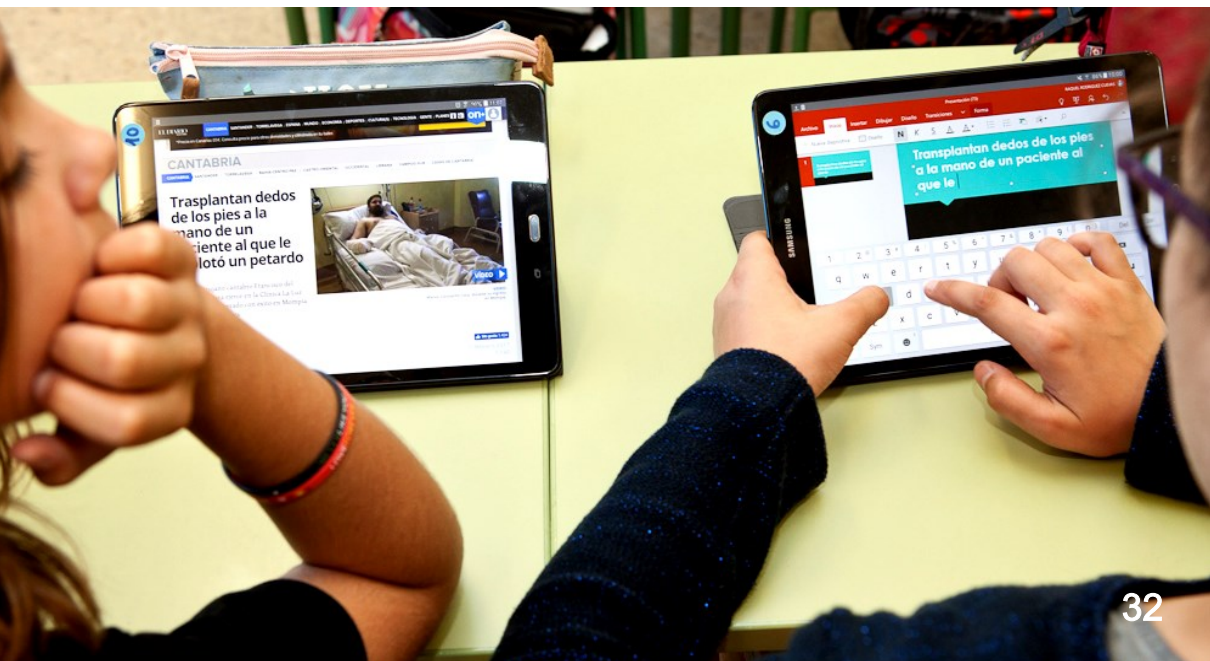
Equipement

At the technological level, all the schools that are part of the program have been provided with the hardware and software necessary for the successful development of the Samsung Smart School project.

In terms of devices, schools have been equipped with tablets with Pen S Pen that allow to work on literacy, and improve creativity and productivity in the classroom, screens that allow devices to connect wirelessly, and project their content in the development of projects, covers for tablets, and freight and storage trolleys.

All tablets are controlled by Samsung Knox, a platform that guarantees the safe use of tablets in school environments, and allows remote management of the tablets in a centralized way, allowing to define the list of applications both general and specific that teachers and students have installed for access.

At the educational level, the project includes online and classroom training activities for teachers, advice and follow-up visits by the Ministry of Education, Culture and Sport and the Autonomous Communities, as well as the I and II Samsung Smart School national teacher meetings.



The Research

The study presented below is part of a longitudinal study initiated during the 2015-16 academic year under the Samsung Smart School program and aims to evaluate the impact of tablets on students academic performance.

This research study, that accompanies the implementation of the Samsung Smart School project in schools of 15 Autonomous Communities, Ceuta and Melilla, began during the 2015-16 academic year. During that year, the research focused on analyzing the impact of the use of mobile technology on student learning.

In order to do this, the different agents involved (students, teachers and family) and different techniques of data collection (questionnaires, content analysis, interviews and focus group) were collected and studied. Results showed that as this technology was being implemented, it produced changes in key aspects considered as precursors of learning (motivation, attention or classroom climate). According to the results, technology is part of the daily lives of children and adults, both inside and outside the classroom and it has to be taken into account.

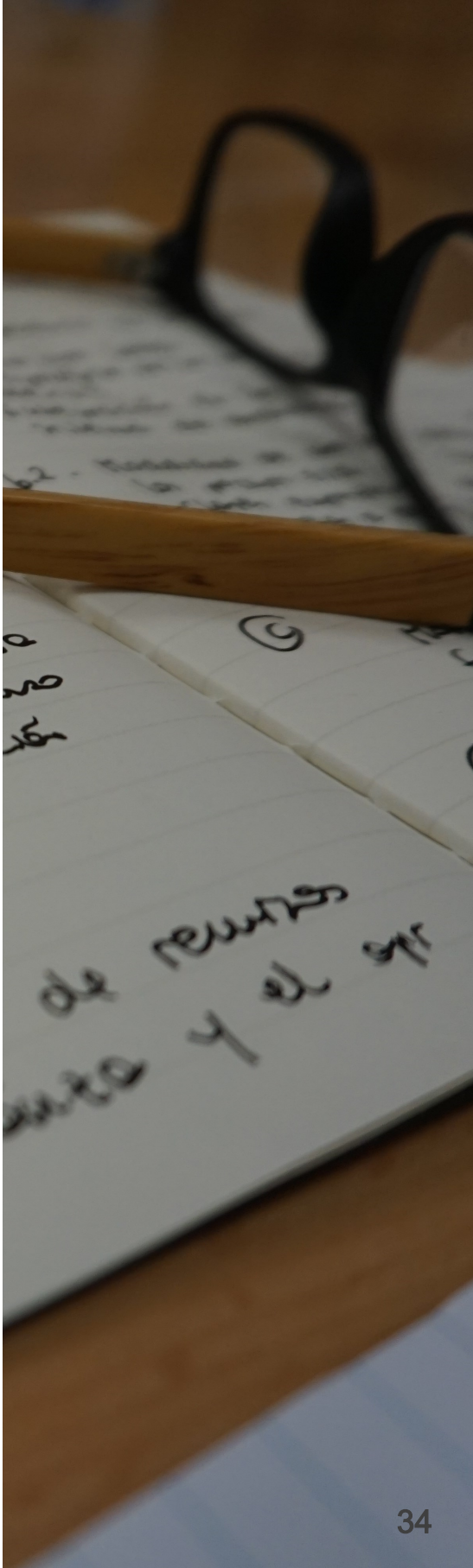
In the school context, results showed that technology, in this case through a continuous use of the tablets, allowed the development of more active and collaborative methodologies, favoring the development of transversal competences - initiative, creativity, self-management, teamwork - as well as specific, linked to the different subjects.

In the second year, 2016-2017, based on the results obtained in the previous year, three key competences were identified to focus the intervention area and specifically to analyze progress in their acquisition and improvement by the students. The choice of these competences was given by the results obtained in the research carried out in the previous course, which showed a notable improvement in the acquisition of these competences by the teachers participating in the project

On the other hand, the research focused not only on analyzing the impact on learning - which usually occurs within the classroom - but extended to the whole school. In order to do this, both training and follow-up processes were aimed at analyzing inter-school collaboration projects, with technology being a key factor in the union of different, diverse, and physically separated realities.

Through questionnaires, content analysis and systematic observation of cases, we continued to deepen the analysis of how this technology affects the direct impact on student learning, and how the realities of the different schools (according to their experience in the program and/or their particularities) allow us to take advantage of all the potential that these digital tools offer.

This section aims to disseminate the main results obtained in the research.



Objectives

Taking into account the results obtained in the research project carried out the 2015-16 academic year under the Samsung Smart School program, the main objectives and purpose of the study for the 2016-17 course are:

O1. **To analyze the impact of the Samsung Smart School program** on students' academic performance, and in particular on the development of the: (a) communicative and linguistic competence, (b) competence to learn to learn, and (c) digital competence , as well as in the transformation of the school culture.

O2. To **link training to research**, so that the impact of the teacher training on the program can also be evaluated, thus obtaining significant data regarding student learning.

O3. **To provide evidence-based information** on the use of the educational use of mobile technologies at (1) content, (2) didactic methodologies and (3) evaluation.

O4. To **propose practical initiatives** addressed to the different educational agents related to the mentioned key points.

Methodology

The present research is situated under a qualitative approach, that is to say, part of the study of a concrete reality in its own natural context (the center and classrooms), and tries to interpret the facts according to the meanings that the own people involved, ie. the educational community (Rodríguez-Gómez et al., 1999).

For this reason, a wide variety of materials and evidences are used, from the opinion of the agents involved to the external vision of experts or the analysis of the products created by teachers and students, using strategies and techniques, such as questionnaires, interviews or the observational records. Observation allows us to obtain information about a particular fact or phenomenon as it occurs, this information is mainly collected by specialists, and is complemented and triangulated with the vision of different agents to obtain a more global and polyhedral vision.

Analysis Criteria: Dimensions

The research design, in line with its objectives, focuses mainly on the analysis of: (D1) the impact on learning and the development of competencies; (D2) the value of the training received by teachers; and (D3) the evidences on the uses of devices from the products made by teachers and students.

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D1	IMPACT UPON LEARNING	Key Competences Communicative competence Learning to learn competence and Digital competence.
D2	TRAINING	Analysis of objectives, development and satisfaction
D3	USES AND PRODUCTS	Use of the devices (products and best practices): Content, methodology and evaluation.

Table 1. Dimensions of the research

Dimensión 1: Impact on student learning

Based on the results of the previous research and the international reference documents (European Commission, OECD, UNESCO and Ministry of Education), 3 key competences of the curriculum are selected:

1. Linguistic communication; a result of communicative action within certain social practices, in which the individual acts with other interlocutors and through texts in multiple modalities, formats and supports. 2.- Learning to learn; ability to initiate, organize and persist in learning. That is, the ability to motivate oneself to learn, and to know and control one's own learning processes.

3.- Digital competence; creative, critical and secure use of information and communication technologies to achieve objectives related to work, employability, learning, use of leisure time, inclusion and participation in society.

Evidence of such learning will be extracted and analyzed, as well as evidences of determinant related factors, such as performance, active participation of students in the classroom and their level of satisfaction.

Dimensión 2: Impact and value of training

In this second dimension the progress of the program and its impact on student learning will be analysed, specifically: (a) the objectives of the program, (b) the development (planning, methodology, etc.), (c) the satisfaction of the participants, (d) the program's sense of usefulness, and perceived impact on learning and development of students' competences.

Dimensión 3: Uses of mobile devices from products

.This third dimension will analyze the educational use of mobile technologies in classrooms based on the analysis of the products created. Specifically we will analyze:

- Contents: contents about the disciplines and subjects that are intended to teach and learn, from selection, sequencing, to presentation.
- Methodologies: selection of learning objectives and results, available resources, didactic methods, training activities, etc.
- Evaluation systems: after planning and design, teachers select and provide mechanisms for the evaluation and monitoring of their students.

Sample

The total number of students who participated in this research was of 711 students, of whom 340 are girls (49%) and 353 are boys (51%),and whose ages range from 10 to 12 years. The sample includes participants from the 15 autonomous communities, Ceuta and Melilla, who participated in the Samoung Smart School project in 2016-17.

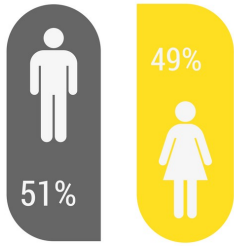


Figure 1. Student gender (%)

The research participants are detailed below, according to their relation to the data collection instrument

				Case studies
	Competence questionnaire (CC)	Numerical evaluation Language (EN)	Teachers interview (EP)	Interview school leaders and teachers (EEP)
Teachers	n=40	n=38	n=26	n=22
School leaders				n=10
Total	40	38	26	36

Table 2. Participants in the research

Instruments

The research was carried out under a pluralistic methodological framework and the following techniques were used to collect data:

☐ Initial and Final Questionnaire

An instrument that allows massive data collection through a series of questions that limit the information we want to get. The questionnaire was distributed to the teachers in the Initial and Final phases of the research and the data to be obtained were the accomplishment levels of the students in the following competences: (a) Communicative; (b) Learning to Learn; and (c) Digital Competence

☐ Initial and Final numerical evaluation

Collection of the numerical qualifications of students in the area of Language. The process was carried out in the Initial and Final phases of the research, ie at the beginning and end of the academic year.

☐ Interview

Dialogue process, organized and planned, between the researcher and the teacher, to collect the subjective information of the latter in relation to their perception of the development of the project. In the case of teachers, each interview lasted approximately 15-20 minutes, the main subjects were: (a) Questions about training; (b) Questions about the use of tablets (what contents are worked on, what methodologies are used and how they are evaluated); and (c) Questions about impact on competencies. Regarding the interviews with the management teams, their approximate duration was of 20 - 30 minutes and the questions addressed focused on the impact of the competences regarding school transformation.

☐ Content analysis

Technique to collect systematic information from documents already written, in this case from the transcription of the interviews done to the teachers.

Research procedure

In the following step we can observe the research design, with its respective phases:

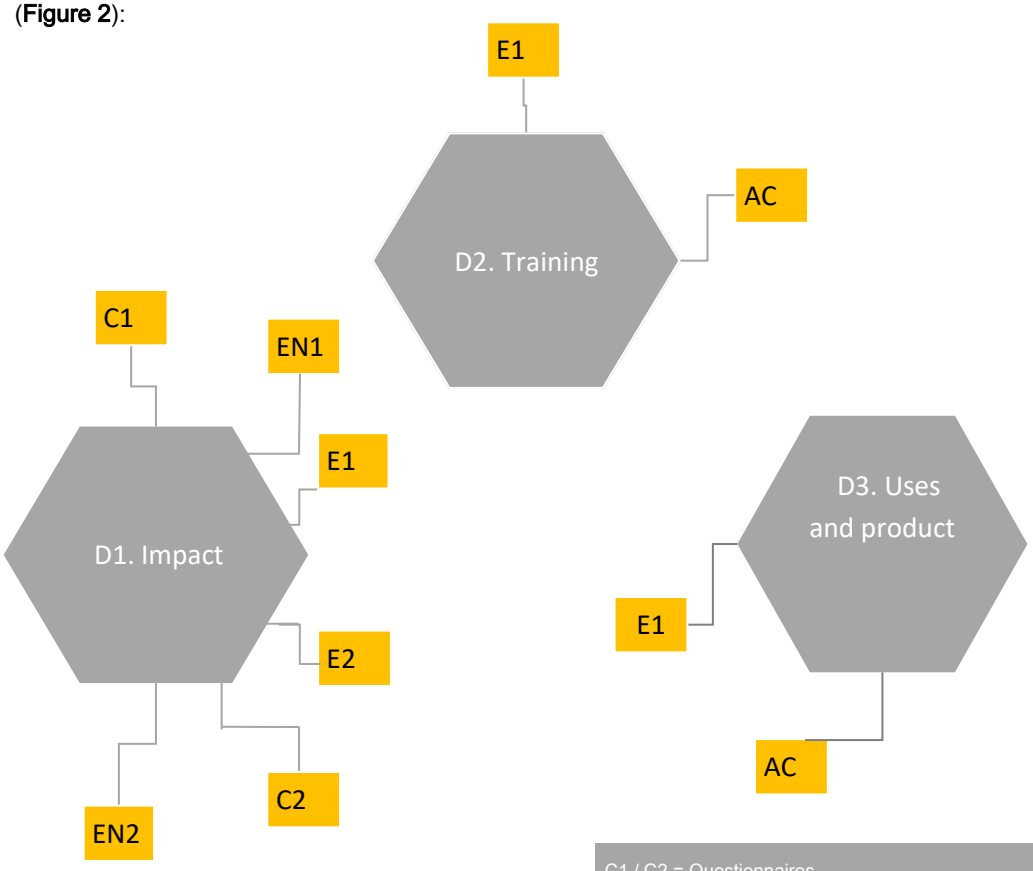
1. Preliminary Phase: In the first phase the methodological design of the research was carried out, determining the specific objectives, participants, instruments and procedures for collecting and analyzing the information. These activities were also sequenced and planned over time and a Monitoring Plan was drawn up as a result.

2. Diagnostic Phase: Once the participants were already determined, the access routes and contact with them were established. An initial questionnaire that was administered to the teachers was analyzed and the initial numerical evaluation of the students in the Language area was collected.

All this was gathered in an Initial Technical Report, which served to depict the participants and to evaluate the state of the art.

3. Implementation Phase: In this central phase of the research, teachers were interviewed individually and the content of these interviews was analyzed. A case study was also prepared, in which the management team and the teachers of some schools were interviewed. This information was collected in a technical follow-up report.

Relationship instruments-dimensions (**Figure 2**):



As can be seen in the table above, information related to the use of mobile devices from the products (D3) and to the impact and value of the training (D2) was analyzed by means of two instruments. On the one hand, through interviews with teachers (E1) carried out during February and March 2016, and on the other hand with the content analysis of educational projects (E2), carried out in the month of April 2017. Information on impact on learning and competence development (D1) was analyzed longitudinally from the competency assessment questionnaire (C1 and C2) and the numerical evaluation of the area of language (EN2), the two instruments distributed in the initial and final phase of the research (December 2016 and between May and June 2017).

During the development phase, the impact was analyzed from interviews with the professors (E1) and interviews with the management team (E2), both instruments applied between February 2017 and May 2017.

Results

Competence level

The data obtained on the level of the students in the competences analysed show an increase of the average score in the three competences: +0.28 in the Linguistic Competence, +0.3 in the Competence of Learning to Learn and +0,45 in the Digital Competence.

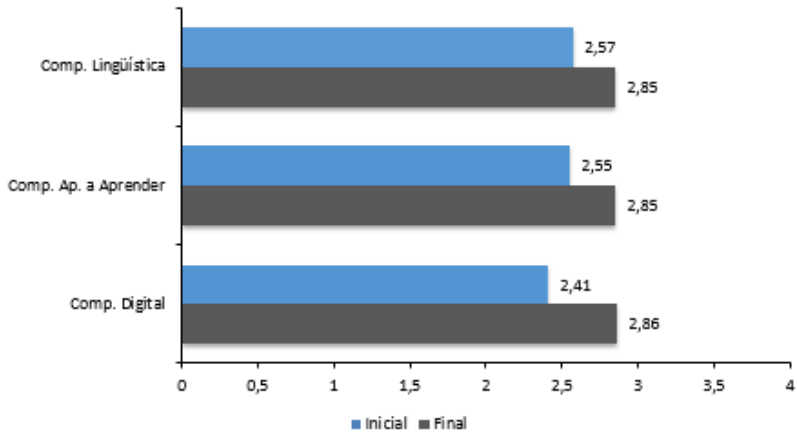


Figure 3 Initial and final comparison of the competence level

Distribution by competences

Communicative Linguistic Competence

With respect to the level of competence development according to the components that conform the Communicative Linguistic Competence, in general the improvement has been similar in all areas, in which an increase in the average score between 0.25 and 0.29 has been obtained.

The area that has increased the most is the personal one, CCL5, with a difference of +0.32 points.

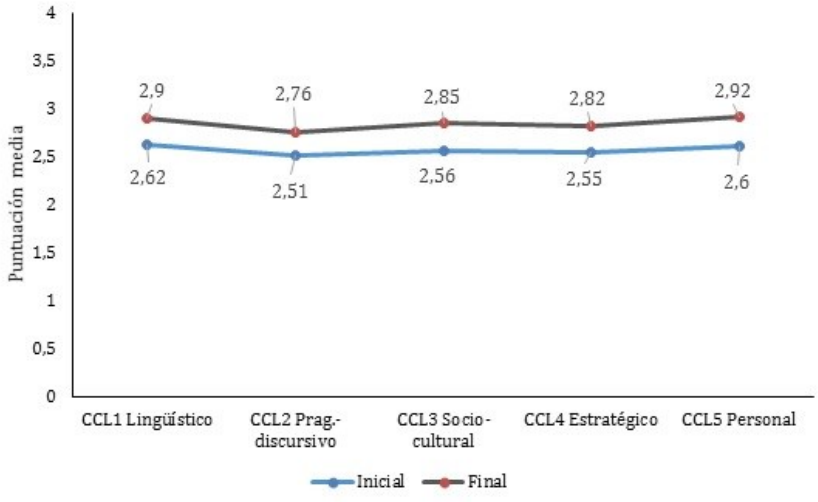


Figure 4. Initial and final comparison of the Communicative Competence

Regarding the level of development of all the components that conform the Learning to Learn competence, all the areas have augmented in an average score.

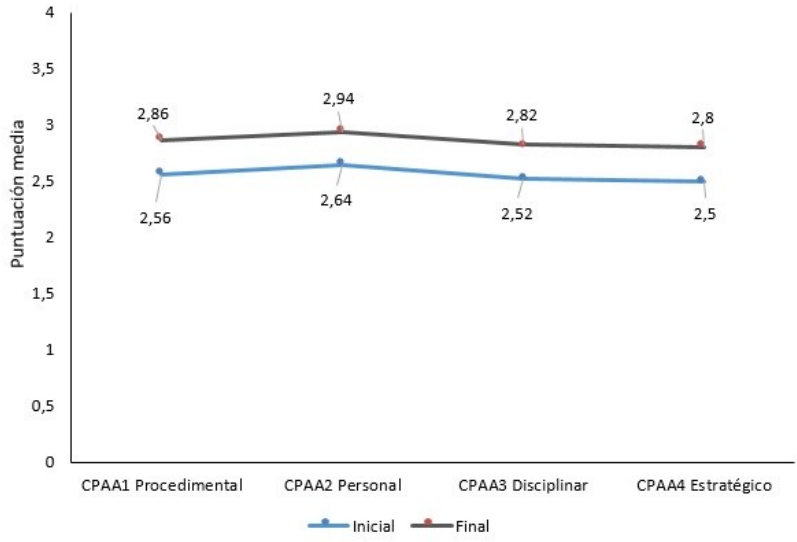


Figure 5. Initial and final comparison of the learning to learn competence

In reference to the level of competence development according to the components that conform the Digital Competence, data show that CD3 area is the one that has increased the most with +0.47 points. In the remaining areas the increase varies between 0.43 and 0.45 points.

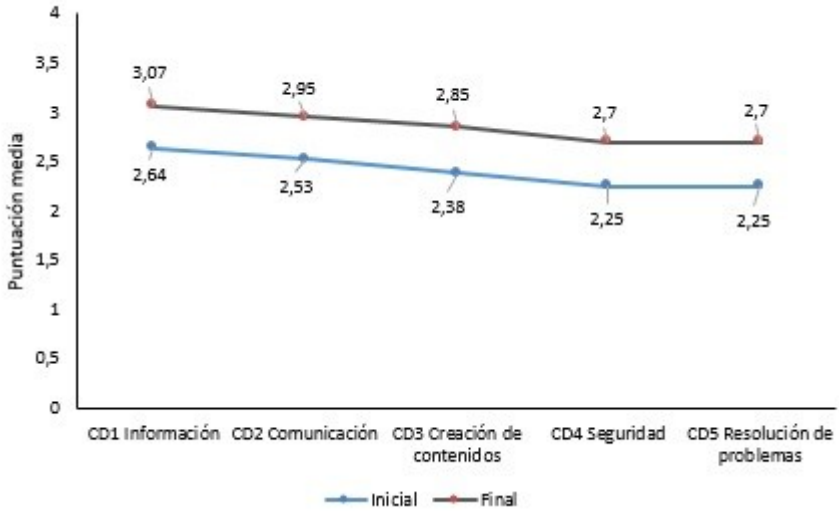


Figure 6. Initial and final comparison of the Digital Competence

Competence level according to age

With respect to the level of competence according to age, there is a clear increase of the three competences in all ages. The students with the highest score in the three competences are those who are 11 years old (2.99 Linguistic Communicative Competence, 3.02 Learning to Learn Competence and 3.07 Digital Competence).

If we compare the initial and final data more comprehensively, we can deduce that: 10-year-olds are students who have entered the SAMSUNG program this year, this may be the reason why they achieve a considerable increase in their level (+0.61; +0.54;+0.73). In the same way,12 year-old students markedly increase their levels in the three competences because some pupils who were 11 years old at the initial stage have now become 12 years old .

Competence level by gender

In relation to the level of competence according to gender, both boys and girls have obtained an increase in all three competences. The greatest changes are found in the Linguistic Competence, in which the increase was +0.48 in girls and +0.43 in boys. In the Learning to Learn Competence the increase was +0.34 for girls and +0.28 for boys, and in the Digital Competition +0.31 for girls and +0.26 for boys.

As can be seen from the data obtained, girls have obtained in all competitions a greater increase with respect to boys.

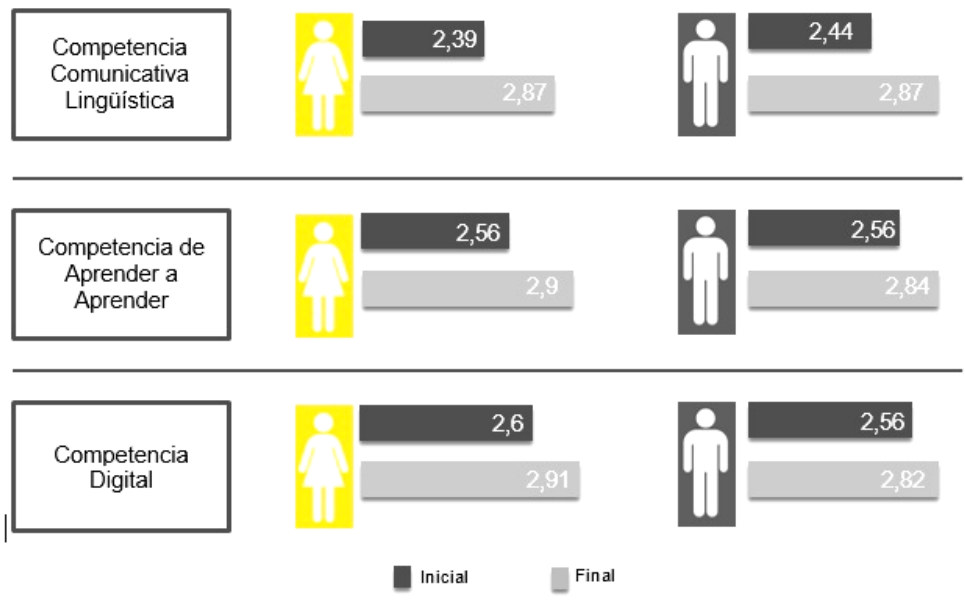


Figure 8. Initial and final gender comparison in relation to competences

Assessment analysis in the area of Language

Basics descriptors on the numerical evaluation

As for the analysis of the initial and final numerical evaluation of the students in the area of Language, the results obtained reflect an improvement of +0.51 points between the two evaluations.

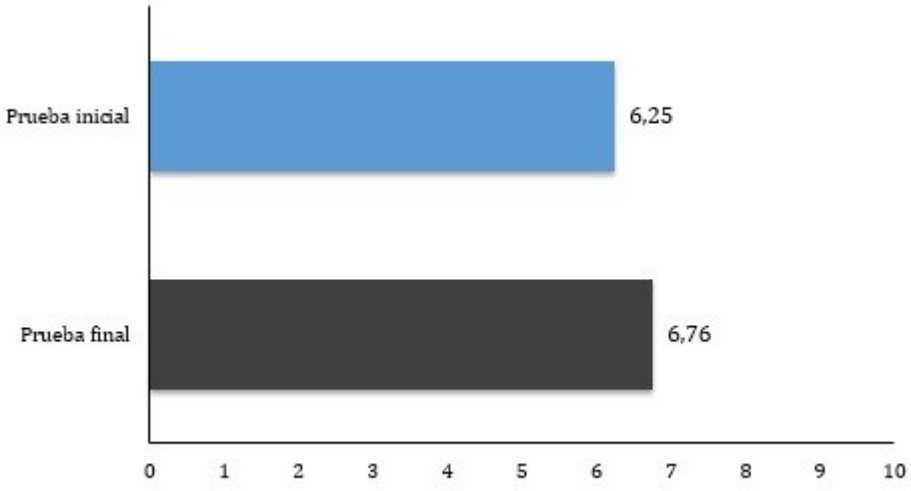


Figure 9. Comparison of the results in language at the beginning and end

Interview analysis

In total, 26 teachers, which belong to the following schools of the Samsung Smart School program participated in the online interviews: CEIP Chimisay, CEIP Hipódromo, CEIP Inmaculada Concepción, CEIP Júniper Serra, CEIP Las Cañadas, CEIP María Sanz de Sautuola, CEIP Nuestra Señora del Pilar CEIP Pedro de Estopiñán, CEIP Plurilingüe Vilar de Barrio, CEIP Santiago Ramón y Cajal, CP Rioturbio, CEIP San Donato de Etxarri, CEIP Joaquín Costa, CEIP Purísima Concepción, CEIP Nuestra Señora de los Remedios , CRA Sexma de Sierra, CEIP Son Quint, CEIP Vicente Aleixandre, CEO Luján Pérez de Guía, CRA Guadiela, CRA Villayón, CEIP Blanco de Cela, CEIP San Francisco, CEIP Reyes Católicos and CEIP Clara Campoamor.

The results obtained in the interviews regarding the impact on student learning are presented below.

Communicative linguistic competence

Regarding the impact on the Communicative Linguistic Competence, in general teachers have observed an increase in the competence level of the

ID2: *"At first with the 5th graders who have started this year with the tablets I do not think this competence will increase too much, but when they are already accustomed to using the tablet, for example with the current sixth grade students who already come from the previous course , it is noticed."*

ID3: *"With the tablet we have worked on some adaptation of Don Quixote that is even above its level and we are almost finished with it."*

ID16: *"Linguistics itself has improved because you work a lot on oral presentations. Almost everything we do we try to record it, whether it's a debate or if they provide spontaneous expositions.*

ID7: *"They create the script with the tablet and then expose in front of the tablet, that is with the camera, and express themselves orally. I want a complicated and tense solution, and it is clear that they are developing this competence."*

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ID1: *"Yes, of course, they do have it in all areas, both orally and in writing.(…) "*

applications for the production of texts allows to work on creativity:

ID4: *"With applications like Storytelling or Storybird they create their own stories. When it comes to creating, that is, inventing the story, they are given the opportunity to work on creativity. "*

ID5: *"In many tasks they have to comment among themselves. Most of the time in a Google Drive document, what we do is to specify what they have to do, so they have to talk with their colleagues about what they have been looking for, they talk and communication is very fluid. "*

ID8: *"They're much more in touch with me. From their homes with the tablets, they do not have them, but with their computers they keep in touch with me to send things by mail. "It should be noted that the schools had the possibility of allowing students to take the tablets to their house, although not everyone allowed it.*

ID11: *"I've seen an incredible improvement. (...) The mere fact of searching, for example once looking for the darkest places on the planet on tablets, gave rise to an oral discussion of what they had found. "*

ID12: *"Working with tablets they communicate. They write their texts and read, comment and express them in front of the class. Sometimes we also work with collaborative documents in which each one is contributing with his/her little creation to make a presentation, or they are also keeping the materials that they find*

In addition, it is emphasized that the students who in the past participated Little in class activities, nowadays intervene more:

ID5: *"Most of the time, they have to expose the work and children who did not speak in class and who did not participate at all, now they do it and take it normally."*

ID17*: "Especially in the communicative part. They express themselves when working with tablets, they are no longer so timid.*

There is also evidence of a greater acquisition of vocabulary by the student

ID20: *Yes, especially since they get a lot of new vocabulary. (...) In their research work on the Middle Ages they have learned a lot of vocabulary. Things that maybe I have not explained with the book and they have looked for information about the Templars and suddenly they have started talking about the Illuminati or the temple order. That is, they have acquired a vocabulary of things that are much broader than the ones that appear in books. "*

ID22: *"They expand vocabulary because there is a vocabulary of your own that you use with tablets and apps."*

The development of this competence is also reflected in the activities where students from two schools located in different localities are communicated at a distance through an application, in order to work together

ID18: *"We are collaborating with another school through eTwinning and one of the tasks is to put a hangout on them and let the groups talk to each other to set up a presentation. If you could see how they are distributing the work and how they discuss ... before, the videoconferences didn't take place so often, and now students experience them so naturally.*

We organize the hangout and they start to talk and say to each other: "Look, we've thought to do it this way, and you have to think about it ... and they have freedom, the activity is not directed."

Competence of Learning to learn

With respect to the development of the Learning to Learn Competence, the teachers that were interviewed point out that a more autonomous learning takes place. Their personal autonomy develops up to levels in which sometimes the same students teach the teachers.

ID1: *"They are much more autonomous and sometimes even more than we are. They are not afraid to use them and that makes them pull forward. They are never afraid of them. "*

ID5: *"They are being their own teachers, I have noticed a giant change. Before I told them and they copied ... now it is they who have to pull the boat. "*

ID8: *"I'm seeing that they are rather more autonomous. Many times they help me so much, sometimes they tell me: if you do it like this you'll see how you find it or you get it. "*

ID14: *"The fact is they learn more than we do and sometimes they explain to us. (...) Many times I have to ask how they have done anything (for example, how to share the screen) and they explain it to you directly. Yes I have noticed that they improve a lot. "*

The ability to connect to the Internet imminently leads to a methodological change in the search for information, this means that students can develop their research skills and data selection:

ID4: *"The issue of Anglo-Saxon measures has come up, it would take less than I to search for information, but not all. A very high percentage of students would have the ability or the competence to look for information like that, they would almost have the competence of an adult. "*

ID6: *"I'm always insisting on the subject of security, minimum two sources to contrast and if the two tell me different things I'm going to a third one, It's a continuous crunching process, but they do not have much trouble finding their way. "*

ID15: *"Many activities are aimed at finding information on the Internet. The first few months they were quite lost, they did not know what to do, how to look or how to move. As the months go by and one year after another they go to work and say they already have a methodology. "*

ID7: *"At the moment we send information on the Internet about an author or someone is selecting critical information. They have to read comprehensively and have to infer in what contents, that is to say, that I select or that I do not select and from there, deduce.*

ID12: *"They are becoming more autonomous and are looking for information instead of depending so much on us. I remember that at first I was asked a lot what this word means or what this means and I told them to look it up on the Internet or in the dictionary of the Real Academia Gallega. Now, many times they do not know a word and no longer ask me, they directly seek it."*

ID15: *"They are more mature and above all learn very fast. As it is quite intuitive, the second time that they find a similar activity they already know how to act. These are some skills they have. "*

ID22: *"The Tablet stirs initiative and helps develop it. I am to be consulted, they have to organize and develop the activity. I have noticed a lot of difference from last year. They are very intuitive and perform very well. "*

ID24: *"You practically tell them the tool and you do not need to say anything "*

As indicated by the teachers interviewed, technological applications become tools that promote the development of this competence :

ID11: *"We have a lot of applications that are very useful for creating schemas. For example I use one of sketches that is very basic and is very useful for making drawings or drawings related to the subject you are giving, all that is learning to learn. "*

ID7: *"We have a lot of applications and a lot of tools that precisely help the development of this competence."*

ID8: *"In many things they help me, they tell me you have to do it this way or the other way."*

ID13: *"They teach me a lot."*

ID18: *"In the digital competence we could already state that they surpass many teachers, and that makes us scared on this subject."*

It has been observed that the use of mobile devices promotes spaces of collaborative work where students help each other.

Digital Competence

Finally, in terms of Digital Competence, teachers point out that it is the competence in which there has been a greater increase in the level of students: to the extent that students can help the teacher if he or she needs it:

ID5: *"We have three or four students who know a lot and I used to tell them how they had to do it and now I ask them who can help the partner."*

ID19: *"There is a child who is repeating the course. One of them said that he did not know how to do it and I told him to look for a partner. They help each other. "*

ID25: *"We've done peer tutoring. In two days they have taught themselves how to use the Tablets.*

The autonomy provided by the tablets to students promotes a search for alternatives to the difficulties that may arise and the choice of a pattern of work in accordance with the needs of the student:

ID5: *"I tell them the task to be done and I let them look for it, each one uses different applications. The important thing is the product of each one, they do their best to feel more comfortable. "*

ID4: "When they want to send me the activity and for any technical reason they can not do it, they look for a way to make it work and I receive it. That is, sometimes they can not send it to me in the mail, because they upload it on some platform and send me the link. That shows that they are really good at finding solutions. "

ID6: "I give them instructions and some of them instruct the rest in one way, others otherwise, all different. Since there are different ways of doing this, it turns out that I no longer have to say what application to use. I tell them to work with whatever they are comfortable with. "

ID13: "They are looking for different alternatives toget what you propose. "

ID16: "They are super autonomous with all the technology and sometimes we come to them and they help us with any doubts. A group tells you: look, teacher, we have solved it this way. Then another group tells you: for we have made it of this other. Mine is a surprising face.

Concerning safety and the possible risks of network connectivity, the introduction of these devices into the classroom means that students have to become aware of their responsible use. For this reason, some schools organized safety talks and workshops, which improved student training:

ID13: *"Everyone knows what the right behaviors are on the network. Because no matter how skillful they are in the network, they are immature, and we work with the police and pedagogues. "*

ID3: *"Next month we are going to do workshops on Internet security. As they are going to be more competent, they need to be informed about cyberbullying, sexting,.. because soon they will enter social networks. As they are becoming more capable they have more skills, but sometimes they are not sufficiently mature to use them. "*

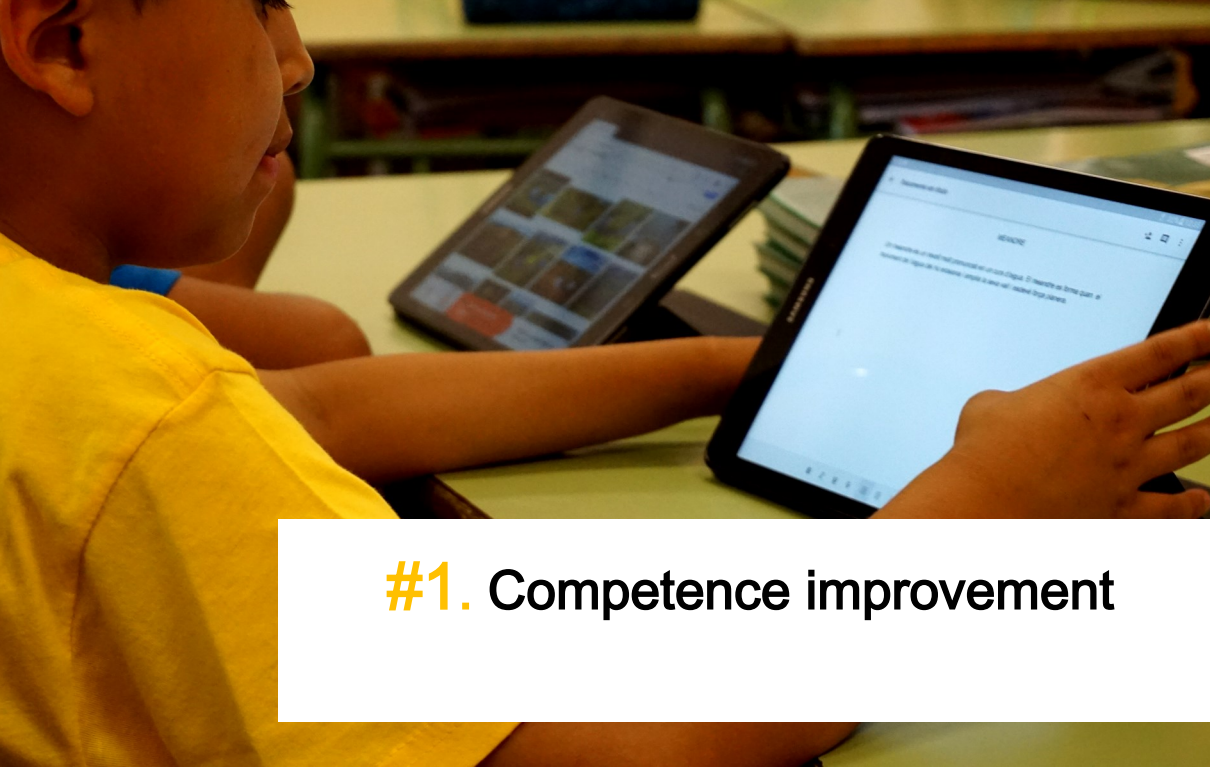
To conclude, it is considered that the development of the Digital Competence is fundamental for the integral growth of the student.

The following table presents a summary of the results obtained in the teacher interviews:

Impact on student's learning	
Communicative Linguistic Competence	*-Oral expositions and recording favor an increase in the level of competence.* *- Higher communication between student - student and student - teacher.* *-Increased participation.* *-Development of creativity.* *-Colaboration between students of different schools*
Learning to learn competence	*-Autonomous learning* *-Development of skills in the search and selection of information.* *- Student's learning personalization..* *-The use of applications promote the development of this competence.*
Digital competence	*- The competence in which ther has been more increase* *-Development of collaborative workspaces.* *-Look for alternatives to difficulties.* *-Ability to choose the application with which to work better.* *-The introduction of the tablets in the classroom means that some schools educate their students about network security.*

Table 3. The impact of competences on student learning

Key Findings



#1. Competence improvement

According to the results obtained after the evaluation of the competences, there is a clear improvement in the three competences analyzed (linguistic competence, learning to learn, and digital competence) throughout the course. After the training sessions and the development of the projects with tablets an increase of between 0.3 and 0.5 points of average in the different competences is observed, being especially remarkable the improvement in the digital competence, and reaching in all of them final scores of around 2.85 out of 4 (+19%) .

If we review in detail these three competences we can observe some nuances depending on the different components that make them up. For example, aspects such as the personal area (the influence of individual motivation and attitude on communicative interaction) in the case of the community competence, or the area of content creation (the ability to create and edit multimedia content, from the previous knowledge) in the case of digital, were the components with a greater improvement. In the case of learning to learn, all areas of this competence experienced a similar improvement, emphasizing on the part of the teachers the personal autonomy.

Likewise, there are aspects to be highlighted in the competence improvement according to the age of the children, especially for those who are new to the program, since they have developed the whole program (12 years). It should also be noted that although the improvement of competences occurs in both genders, it is worth noting the increase in the case of girls in the three competences.

#2. Self-directed, cooperative and inclusive learning,

According to different authors, mobile devices promote personal autonomy, as well as the culture of cooperative work. Tablets encourage students to interact and cooperate with each other, while allowing them the flexibility to go different rhythms and help each other.

"They are much more autonomous. They are not afraid to use them and that makes them succeed. They are never afraid of them "

Throughout the research we have been able to emphasize these two aspects, the increase of self-directed work, which promotes the search for alternatives to the difficulties encountered, as well as a cooperative learning, in which numerous help, guidance and peer tutoring, leading to true inclusive education took place.

"We have three or four students, they know a lot and I used to tell them how they had to do it and now I ask them who can help the partner"

This fact, as we can observe with the results of the evaluation of the competences, has not diminished the learning but it has allowed a global improvement of competence. All the skills evaluated have improved their results after the project, resulting in different ways of working and learning in the classroom, as we see in the following contribution of one of the teachers: "I give them instructions and some will do them in one way, others in another, all different. As there are different ways to do it, it turns out that I no longer have to say which application to use. They look for different alternatives to get what they want. "As Saccol et al. (2010) state, cooperative and inclusive learning is one of the keys to true competence development.

#3. Inter-school collaboration for change and advancement

The collaborative projects carried out have required a close level of communication and collaboration between schools.

In the evidence collected, skills required to work in the 21st century are observed, such as teamwork and creativity through an integrated use of digital technology, as well as specific activities directly linked to the three skills under analysis in research: communicative and linguistic competence, competence to learn to learn, and digital competence: "The Project is helping us to work in a different way. We put forward a global project between an educational team, which we have to carry out. It will serve to us to implement it in the rest of groups in the next courses".

Likewise, it is important to highlight the variety of topics chosen, related to the knowledge of the immediate environment of the students and topics with a strong social content. Thus, the different inter-center collaboration projects include examples of values in citizenship for a global world: collaboration, solidarity, coexistence, tolerance, multiculturalism, sustainability and intergenerational communication, among others.

On the other hand, one of the factors that teachers have valued better has been the involvement and satisfaction of the students, the main protagonist of the project and the work in collaboration between the different centers, work to which they are not very accustomed.

At the level of methodological transformation, within the framework of the project, and always linked to the training received, schools emphasize learning by discovery, work among peers through collaborative tools, motivation and the use of active methodologies (Flipped Classroom, ABP, etc.)

Finally, collaborative projects have helped to move learning beyond the classroom and to take advantage of learning opportunities available outside the school, favoring teacher-student, teacher-teacher and student-student communication.

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#4. The impact on the environment

The impact on the environment has also been one of the great milestones of the project, so Samsung Smart School has not only contributed to the transformation of schools internally, but has also had an impact outside of it, in the houses and families of participating students: "Always positive for them and therefore for the family. In addition to learning on new technologies, which will be the tools for the development of their professions, it favors relations between students and tutors, something important to soften the current extreme competitiveness and favor solidarity between partners with one goal"

The impact of the project in the area of influence of the schools has also been glimpsed. In this context, there have been collaborations with city councils, government representatives, associations, cultural entities , etc., which have positively impacted in the improvement of the image of schools and valuing their work before the society. On the other hand, there have been schools that have become a reference "not only in the environment but also at the regional level " and also for other schools: "Our use of tablets in the classroom is being "copied" by other schools around us to understand that they can improve the teaching processes for teachers and also the learning processes in students. This last year they have requested the services of our teachers to train other professionals from schools around us. "

Finally, some of the schools have received relevant prizes and have appeared in the media, both local and international, disseminating the work done within the framework of the Samsung Smart School project.

#5. The transformation of schools

After three years of implementation, the Samsung Smart School project, in its 2016-17 edition, has been notable for its impact on learning, but also for the transforming power of educational reality and the impact the schools have had on the implementation of the project. Depending on their level of implementation and the year of their participation, the results of the research show substantial changes in schools at different levels:

☐ **Changes in classroom methodologies:**

Use of emerging trends and models such as the ABP, Flipped Classroom, discovery learning, incorporation into research practices...Always emphasize the teacher's role change and attitude towards the use of the tablets: "And we ... I do not know what we would do if they were taken (tablets), we have already become accustomed, "" Even if I took the tablets, my teaching would be different. would be the same as before.

Greater knowledge of teachers regarding the use of specific applications for competence development.

Changes in the assessment of competencies. Use of evaluation rubrics to replace exams.

☐ **Design of spaces:**

Changes in space management: redesigning classrooms and converting them into learning environments.

Transformations in the architecture of the educational center.

☐ **School Culture:**

Redistribution of time to dedicate one hour a week to the collaborative work of the center, facilitating collaboration and work interniveles.

Incorporation of interdisciplinary and inter-level work sessions.

☐ **Innovative Practices:**

Coexistence of tablets with other emerging technologies in education: augmented reality, virtual reality, robotics, 3D printing ...

☐ **Incorporation of emerging trends in education:**

"From the educational centers we have to move forward with society."

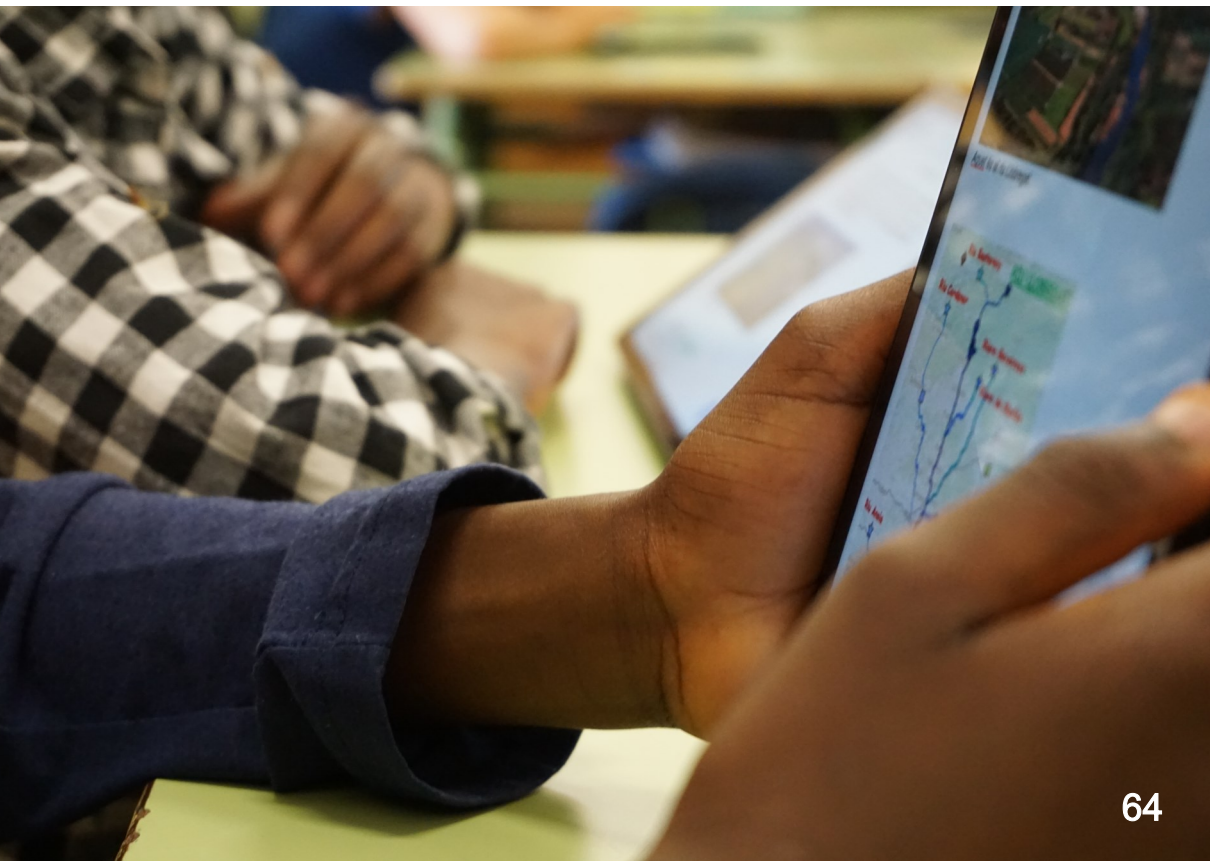
Any change that happens in society and that is worthy to enter the school, must be present, that is why we consider incorporating neuro-learning and emotional education, as well as emerging trends in technology. "

Image of the school:

☐ **Valorization of the image** of the schools due to their work.

☐ **Increased enrollment** in some cases.

☐ **Schools gaining visibility in local and national media** of good practices related to the project.



02

Inter-school Collaborative projects

- PRESENTATION
- PARTICIPANT SCHOOL & PROJECTS
- THE PROJECTS

Presentation

The Samsung Smart School project in its 2016-2017 edition has accompanied 32 primary schools in 15 autonomous communities, Ceuta and Melillam in the process of digitizing classrooms through the use of tablets. The training process lasted 7 months. It began on October 4th 2016 and ended on April 27th, 2017. It counted with the participation of 313 registered teachers.

The first phase of the training took place from 4th October to 15th December 2017. This phase consisted of an online training of three months culminating in the proposal of a project from each center. This first phase was carried out on the Moodle-INTEF platform. The second phase took place from 15th December to 27th April. At this stage the 32 centers regrouped their proposals into 13 inter-center collaboration projects. This second phase was carried out mainly on the E-Twinning platform.

As mentioned above, two of the project's objectives are: - To analyze the impact of the Samsung Smart School program on academic achievement, and in particular on the development of (a) communicative and linguistic competence, (b) the competence to learn to learn, and (c) digital competence, as well as in the transformation of school culture.

Another objective was to link the project with research so that the impact of the program can also be evaluated, obtaining meaningful data regarding student learning.

First of all, it is worth noting the high degree of involvement of all the schools in the projects carried out, especially the collaborative projects. These have required a close level of communication and coordination.

Secondly, it's important to emphasize the quality of the projects presented and the learning they entail. In the evidence collected, skills required to work in the 21st century are observed, such as teamwork and creativity through an integrated use of digital technology, as well as specific activities directly linked to the three competencies under analysis in research: communicative and linguistic competence, the learning to learn competence, and digital competence. Also, it is worth highlighting the variety of topics chosen, related to the knowledge of the immediate environment of the students and with themes of deep social content.

Thus, the different inter-center collaboration projects include examples of values in citizenship for a global world: collaboration, solidarity, coexistence, tolerance, multiculturalism, sustainability and intergenerational communication, among others.

Finally, one of the factors that the teachers have valued better has been the involvement and satisfaction of students, the main protagonists of the projects and the work in collaboration between different schools.

Participants Schools and projects

01. Alimenta TV	CP Rioturbio (Asturias) CRA Villayón (Asturias)
02. From North to North. In search of new horizons	CEIP Pedro de Estopiñán (Melilla) CEIP María Sanz de Sautuola (Cantabria)
03. Document yourself: From past to present	CEIP San Donato de Etxarri Aranatz (Navarra) CEIP General Espartero (La Rioja)
04. Little Prince: Solidarity and Art	CEIP Vicente Aleixandre (Ceuta) CEIP El Olivo (Andalucía) CEIP Inmaculada Concepción (Extremadura)
05. Shall we meet?	CEIP Hipódromo (Melilla) CEIP Chimisay (Canarias)
06. Our Medieval Fair	CEIP Clara Campoamor (Madrid) CEIP Júniper Serra (Baleares) CEO Luján Pérez de Guía (Canarias)
07. On Sustainability	CEIP Ferrer y Racaj (Aragón) CEIP Plurilingüe Vilar de Barrio (Galicia) CEIP Son Quint (Baleares)
08. Recetablets: a gastronomic biography	CRA Sexma de la Sierra (Castilla la Mancha) Escola Joan Sallarès i Pla (Cataluña)
09. Online journal: Esparradeiro	CEIP Purísima Concepción (Murcia) CEIP Viñagrande-Deiro (Galicia)
10. School Press	CEIP Teresa Bertrán de Lis (Navarra) CEIP Nuestra Señora del Pilar (Aragón) CRA Guadiela (Castilla la Mancha)
11. Walking and collaborating. A Pilgrim's route	CEIP Nuetra Señora de los Remedios (Murcia) CEIP Reyes Católicos (Extremadura) CEIP Blanco de Cela (Castilla y León)
12. UNI 3 Television	CEIP Joaquín Costa (Madrid) CEIP Santiago Ramón y Cajal (Ceuta) CEIP San Francisco (La Rioja)
13. We travel and get to know each other	CEIP Aguanaz (Cantabria) CEIP Las Cañadas (Castilla y León)

Projects

01. ALIMENTA TV

Topic	Healthy eating habits TV Channel	**Subjects**	Spanish, Maths, Natural Sciences, English
Schools	CP Rioturbio y CRA Villayón		
Length	6 months	**Web**	http://bit.ly/alimenta-tv

Competences

☐	Mother Tongue	☐	Learning to Learn
☐	Languages	☐	Social and Civic Sciences
☐	Entrepreneurship	☐	Maths
☐	Digital	☐	Cultural Expression

Objectives and expected final products

Objectives

Encourage healthy eating habits.

Presentation of the students: students prepare a video in which they introduce themselves.

Use collaborative learning to obtain final products.

Use the units of measurement in everyday situations.

Use ICTs with critical sense.

Product

Video channel on healthy eating and organic products.

Work process and activities

Presentation of students: the students make a video.

The Project Storyboard: Creating a Project Presentation Storyboard.

We know each other: This activity aims to make the students of the two participating schools meet each other physically.
In addition, the possibility of this interaction will allow us to use the resources offered by eTwinning Live and Twinspace. The idea is to hold a meeting between all the members and to record the sesion.

First script of the pilot program: The initial script on the first program is drawn up. Students work in groups.

Recording and editing the pilot program Alimenta TV.

Apps

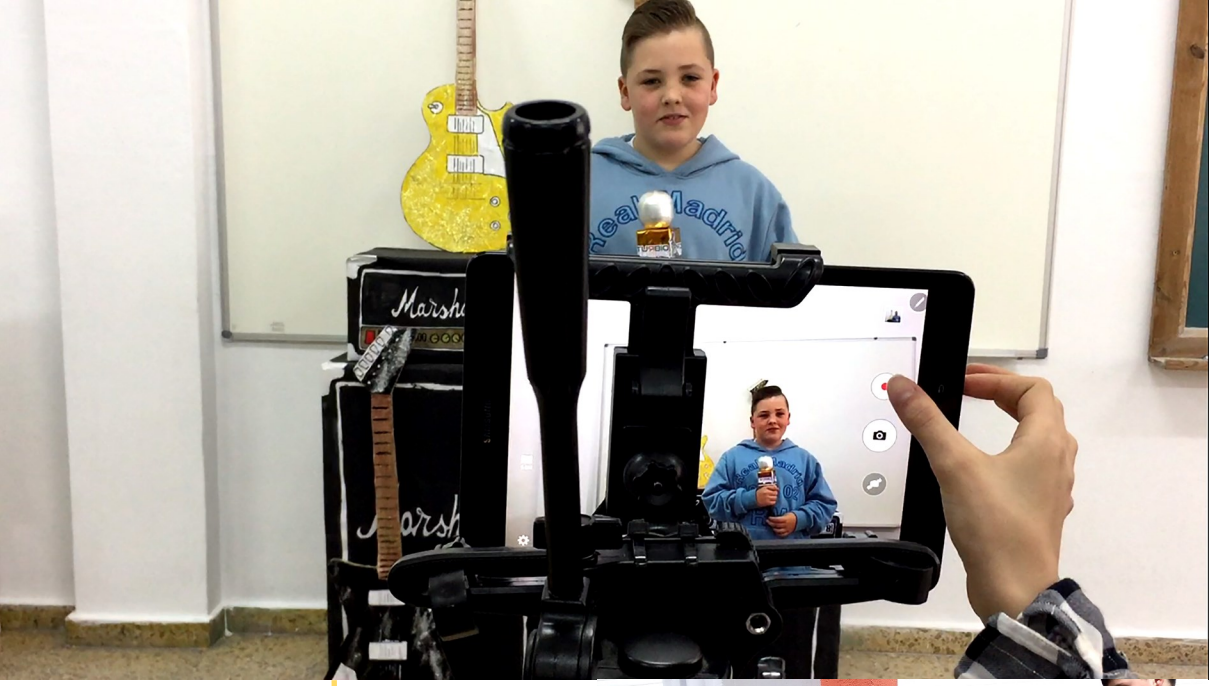
eTwinning platform
Google Drive.
Samsung Tablet camera
Video editor
Twitter
Padlet
Youtube
Google
Facebook
Skype

Evaluation

- Of the project: development of the project and final product through a rubric for students, families and teachers.
- Of the learning: to evaluate through learning standards and the evaluation criteria of the 5th and 6th grade primary courses, extracted from the curricular concretions.

Monitoring and dissemination

Twitter, Facebook, Youtube and eTwinning.



02. FROM NORTH TO NORTH

Topic	Cultural and linguistic exchanges, gastronomy, and art	**Subjects**	Languages Maths Conocimiento del Medio Natural and Social Sciences.
Schools	CEIP María Sanz de Sautuola y CEIP Pedro de Estopiñán.		
Length	Academic year	**Web**	http://bit.ly/

Competences

	Mother Tongue	☑	Learning to Learn
	Languages	☑	Social and Civic Sciences
☑	Entrepreneurship	☑	Math
☑	Digital	☑	Cultural Expression

Objectives and expected final products

Objectives

Know, understand, respect different cultures, equal rights and opportunities for men and women, and non-discrimination.

Develop Basic Mathematics Competency to apply it to daily life.

To know the fundamental aspects of Natural Sciences, Social Sciences, Geography, History and Culture.

Use different representations and artistic expressions and get started in the construction of visual and audiovisual proposals.

Respect difference and use Physical Education and sport as a means to promote personal and social development.

Product

The products that we want to obtain with our project are a tourist brochure and murals in which the activities are illustrated.

Work process and activities

Each student should write a physical description of himself and share it with his / her teacher. The teacher of each school will send to his counterpart the descriptions made by the students and a list with the photos and names of their students. We play "Who's who?". The photos of the students will be presented and a description will be distributed to each student. Students should guess who their peers are from the other school

Once paired, each student will be given the email address of his or her counterpart in the other school. Each student will send an e-mail to his / her partner, introducing himself / herself and aspects of his / her personal life. Students will be encouraged to contact their peers at the other center at least once every 15 days.

Teacher will divide the students into groups so that they can work on one of the following topics related to their city or CCAA: gastronomy, traditional games, artistic and sporting manifestations, costumes, cultural and linguistic exchanges.

Once finished the work on the subject they share it with their partners from the other school. With all the information received, an exhibition will be held to let the school and the city information available to the other school. Students will prepare a battery of questions that will be sent to the other school.

Apps

Kizoa
Canvas
Google Drive
PowToon
Pixton
Genially
Prezi
StoryBoardThat
Kahoot
Twinspace

Evaluation

- Anecdotal record
- Diary doary
- Self-assessment
- Control lists
- Questionaires
- Portfolios
- Observation scales
- Individual tests
- Rubric

Monitoring and dissemination

From the web site, Google Drive, Procomún, Skype, eTwinning Platform, TwinSpace, Vídeos, Youtube and Blog.


DE NORTE A NORTE BUSCANDO
NUEVOS HORIZONTES
(MELILLA)
6º A
1.8

03. DOCUMENT YOURSELF. FROM PAST TO PRESENT

Topic	Past and present	**Subjects**	Spanish Maths Natural Sciences Social Sciences Cultural expression Physical education
Schools	CEIP San Donato de Etxarri Aranatz y CEIP General Espartero		
Length	January-March (3 months)	**Web**	http://bit.ly/documentate

Competences

☑ Mother Tongue	☑ Learning to Learn
☑ Languages	Social and Civic Sciences
Entrepreneurship	Maths
☑ Digital	Cultural Expression

Objectives and expected final products

Objectives

- Use digital applications with Samsung mobile devices.
- Work on written and oral expression as well as comprehension.
- Educate in the respect and the adequacy of the relationships with other people, especially with older people.
- Encourage collaborative learning and appreciate its benefits
- Develop the ability of students to synthesize to promote the competence of Learning to Learn.
- Know the differences between present and past

Product

- Trunk that brings memories of the past to enjoy and value the present.

Work process and activities

In the forum of Twinspace teachers propose tests to be carried out in the gymkhana. It is agreed to do 6 tests: one on mathematical measures, another on vocabulary of the area, 2 traditional games, a tongue twister and a cantinela (for example, to jump to the rope). The proposed activity is explained in each classroom and it is determined what kind of test each group in the class should produce.

Once the test is awarded, each group works on the selection of the game, tongue twisters, measures, vocabulary or song that it proposes as a test to the other center. After preparing the explanation, audio or video of the test, each group generates a QR code ".

Once the test is awarded, each group works on the selection of the game, tongue twisters, measures, vocabulary or song that it proposes as a test to the other school After preparing the explanation, in audio or video of the test, each group generates a QR code ".

Photographic rally of all participants. They can only submit one per student or teacher. they vote the best 6. In addition, a piece of music is prepared.
A responsible for each center will maintain correspondence with the other school.

Apps

Qr Droid Private
Snote
Genial.ly
Plickers
Padlet
Tablet voice recorder
Story Board
Thinglink
Kahoot
Tablet camera

Evaluation

- Rubric
- Google forms
- Tests from the gymkhana
- Plickers y Kahoot

Monitoring and dissemination

From the website of the schools, classroom blogs and blogs of the Samsung project.
Also, through the house of culture (Etxarri Aranaz) and local media centers.

04. THE LITTLE PRINCE: SOLIDARITY & ART

Topic	Collaboration	**Subjects**	Languages Natural, Social and Cultural sciences Art
Schools	CEIP Vicente Aleixandre, CEIP El Olivo y CEIP Inmaculada Concepción		
Length	January-March 2017 (three months)	**Web**	http://bit.ly/elPrincipito

Competences

☐	Mother Tongue	☐	Learning to Learn
☐	Languages	☐	Social and Civic Sciences
☐	Entrepreneurship	☐	Maths
☐	Digital	☐	Cultural Expression

Objectives and expected final products

Objectives

- Strengthen the spirit of solidarity that will lead us to help and collaborate with others.
- Encourage a taste for art and artistic productions.
- Develop digital skills.
- Use reading as a source of pleasure and reflection.
- Improve oral and written comprehension.

Product

The end result will be the recruitment of the largest possible number of marrow donors and collaborators with NGOs. Theatrical representation based on "The Little Prince" that includes the treated principles. QR codes of the process of elaboration of the products.

Work process and activities

Reading, understanding and analysis of the book. Making of materials and decoration that we will publish and share on the Internet.

Talks about the marrow donation process

Drafting of the adapted script of the episode of "The Little Prince". Essay, representation, recording and online sharing.

Sale of products made in a final event in which the entire educational community will participate, in order to raise funds to donate to ONGs

Apps

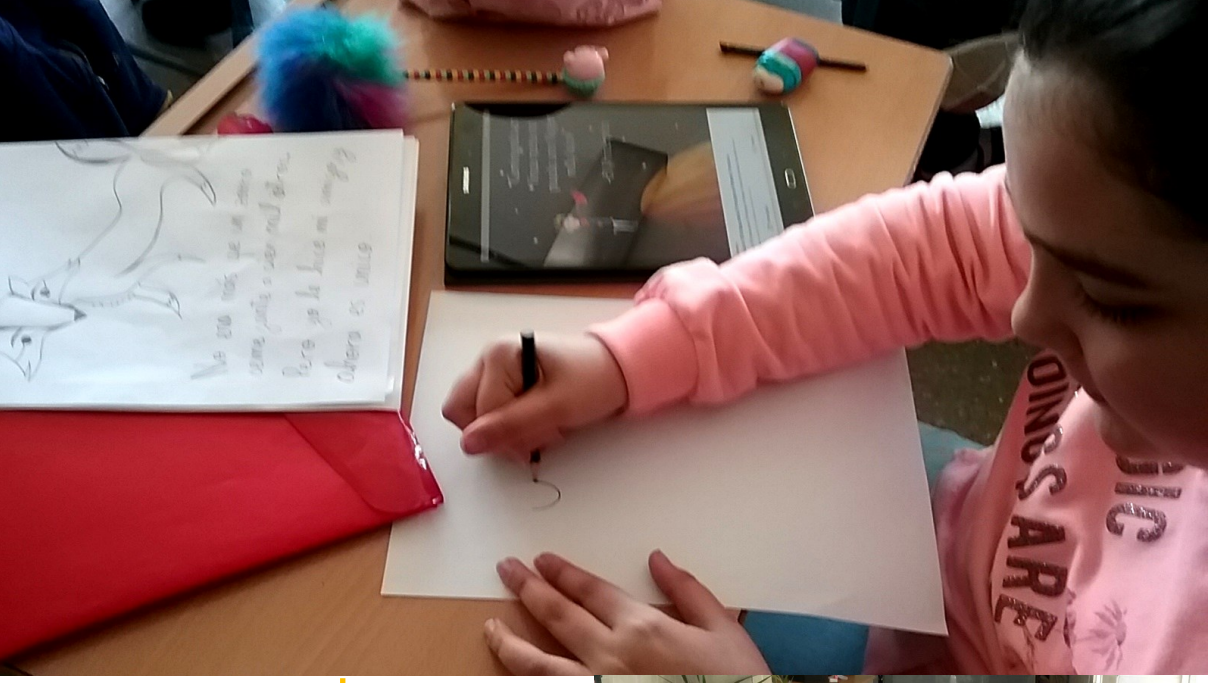
Kahoot
Socrative
AnswerGarden
Snote
Comics
Padlet
Genial.ly
StoryBoardThat
Pow Toon
Photos and video

Evaluation

- Self-evaluation
- Evaluation through rúbrics and apps
- Coevaluación
- Satisfaction survey

Monitoring and dissemination

From the media, social networks, QR codes, families and Storify.



05. SHALL WE MEET?

Topic	Know the culture of the partner	**Subjects**	Languages and Literature Natural, Social and Cultural Sciences Physical education Religion
Schools	CEIP Hipódromo y CEIP Chimisay		
Length	3 months and a half	**Web**	http://bit.ly/nos-conocemos

Competences

☐	Mother Tongue	☐	Learning to Learn
☐	Languages	☐	Social and Civic Sciences
☐	Entrepreneurship	☐	Maths
☐	Digital	☐	Cultural Expression

Objectives and expected final products

Objectives

Get to know other cultures

Use new technologies individually.

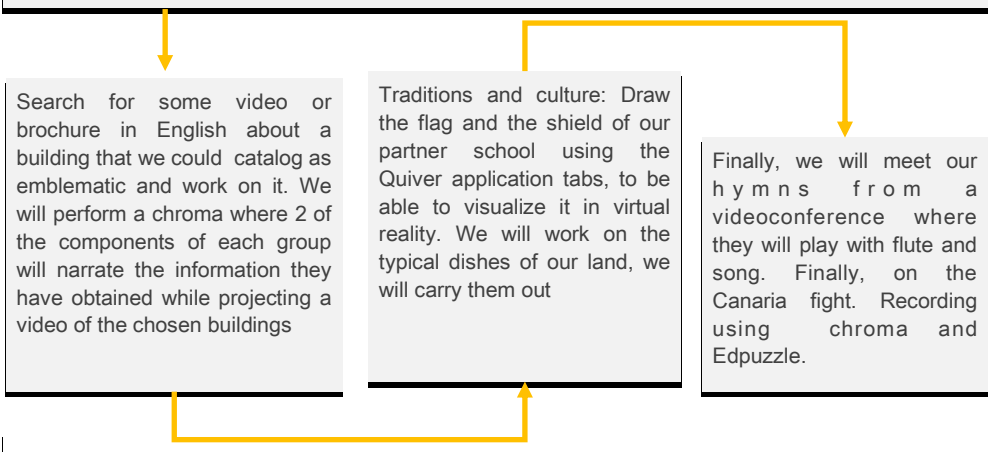
Use new technologies in a collaborative way.

Product

The final result will be a nexus map (presentation), a recipe book (gastronomy), an interactive video (flag), an interactive image (4 religions), a timeline, the hymns of our cities and know ledge about our monuments.

Work process and activities

Presentation: We will carry out a presentation activity with various tasks so that the children can get to know each other and establish a beginning of friendship. Historical and Cultural Tour: Students will draw a timeline from their Tablet using the Timeline app and point out the year and historical event of both cities. We will know in broad outline the four religions present (temples and some characteristics) in the City of Melilla and the Cathedral (temple of Christian worship) present in Santa Cruz de Tenerife.



Apps

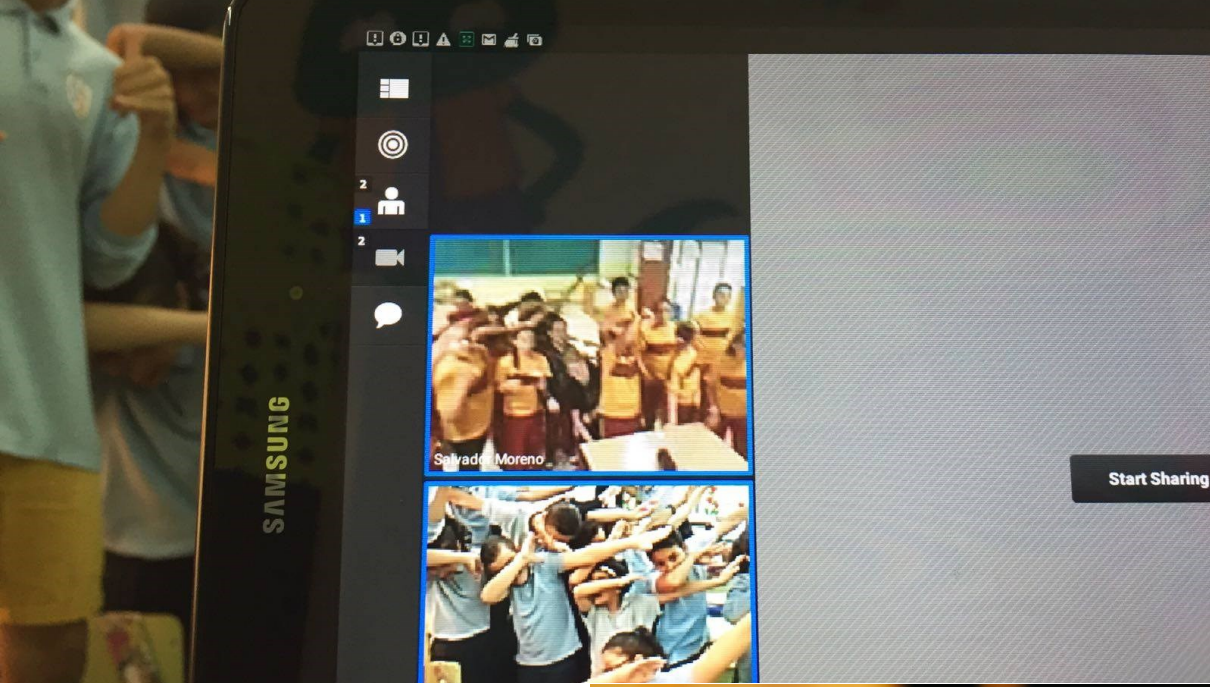
Quiver
Mentimeter
Mindomo
Thinglink
My cookbook
Adobe Premiere Clip
Genial.ly
Timeline

Evaluation

- [ ] Presentation
- [ ] Iteractive videos
- [ ] Survey
- [ ] Gastronomy: rubric
- [ ] Timeline: rubric

Monitoring and dissemination

Finally, we will meet our hymns from a videoconference where they will play with flute and song. Finally, on the Canaria fight. Recording using chroma and Edpuzzle.


SAMSUNG
Salvador Moreno
Start Sharing


LUCHA CANARIA
Samsung Smart School
Queremos que nuestros nuevos compañeros conozcan La Lucha Canaria, nuestro deporte autóctono.


MÁS VÍDEOS

06. OUR MEDIEVAL FAIR

Topic	Medieval Ages	**Subjects**	Spanish Maths Social Sciencies Art Physical Education
Schools	CEIP Clara Campoamor, CEIP Júniper Serra y CEO Luján Pérez de Guía		
Length	Three months	**Web**	http://bit.ly/feria-medieval

Competences

☐	Mother Tongue	☐	Learning to Learn
☐	Languages	☐	Social and Civic Sciences
☐	Entrepreneurship	☐	Maths
☐	Digital	☐	Cultural Expression

Objectives and expected final products

Objectives

Research and learn from our past and promote our center in our environment.

Expand our knowledge and experience on the use of mobile devices in and out of the classroom.

Immerse students in the use of ICT in a playful way.

Working with Linguistic Competence, Learning to Learn Competence and Digital Competence

Product

The final result will be a medieval fair, but also a flashmob, castles geolocation, games of the time, juggling and acrobatics (acrosport), theater, music and dance.

Work process and activities

Search for information about shields and elaboration of one per student according to his last name.Video about historical characters. Micro theatrical performances. In Canarias, representation of the discovery of America and the minstrels. Research on different aspects of the Middle Ages (map with the geolocation of medieval castles, murals with information on different aspects).

Development of costumes, calligraphy research, acrosport, instrument-making workshop and soap production. Research on the astrological translations that were made in Toledo.

Investigate possible stone remains of ancient civilizations in the vicinity of your center, to complete the field work they will do in Canaries. During the duration of the project we will encourage our students to play table games of the time.

Dissemination of the project (flashmob, posters, etc.) and collection of evidence. Realization of "Our Medieval Fair": workshop of calligraphy, Acrosport, Flasmob, exhibition of soaps and instruments and elaboration of cariocas.

Apps

Lino-it
Google Classroom
Emaze
Google Maps
Meme
Padlet
Genial.ly
Corel Draw
Thinglink
Kahoot

Evaluation

- Rubrics for each of the outcomes
- Thatquiz
- Kahoot
- Google form

Monitoring and dissemination

Publication in local magazines, internet, whatsapp, stations and local television network, eTwinning, Google Apps and Blog Center.

07. ON SUSTAINABILITY

Topic	On Sustainability	**Subjects**	Spanish, Maths, Natural, Social y Cultural Sciences, Art
Schools	CEIP Ferrer y Racaj, CEIP Plurilingüe Vilar de Barrio y CEIP Son Quint.		
Length	January-April 2017	**Web**	http://bit.ly/con-la-sostenibilidad

Competences

	Mother Tongue	☑	Learning to Learn
☑	Languages	☑	Social and Civic Sciences
☑	Entrepreneurship	☑	Maths
☑	Digital		Cultural Expression

Objectives and expected final products

Objectives

Work collaboratively with our project partners.

Foster the critical spirit of sustainability in our environment.

Use the technological means to develop useful products collaboratively.

Reflect on our relationship with the environment.

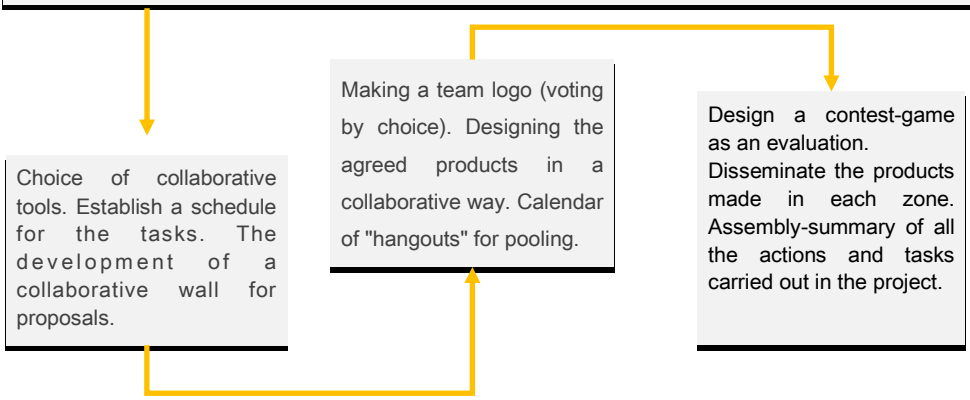
Develop creativity in the production of products.

Product

The final product will be a logo of the association, interactive posters, videos with the most frequent errors and rap of sustainability.

Work process and activities

Presentation of the project in each center, followed by the creation of inter-center groups. Later on the day of online presentation between schools and mixed work groups and the distribution of tasks and distribution of products by group.



Apps

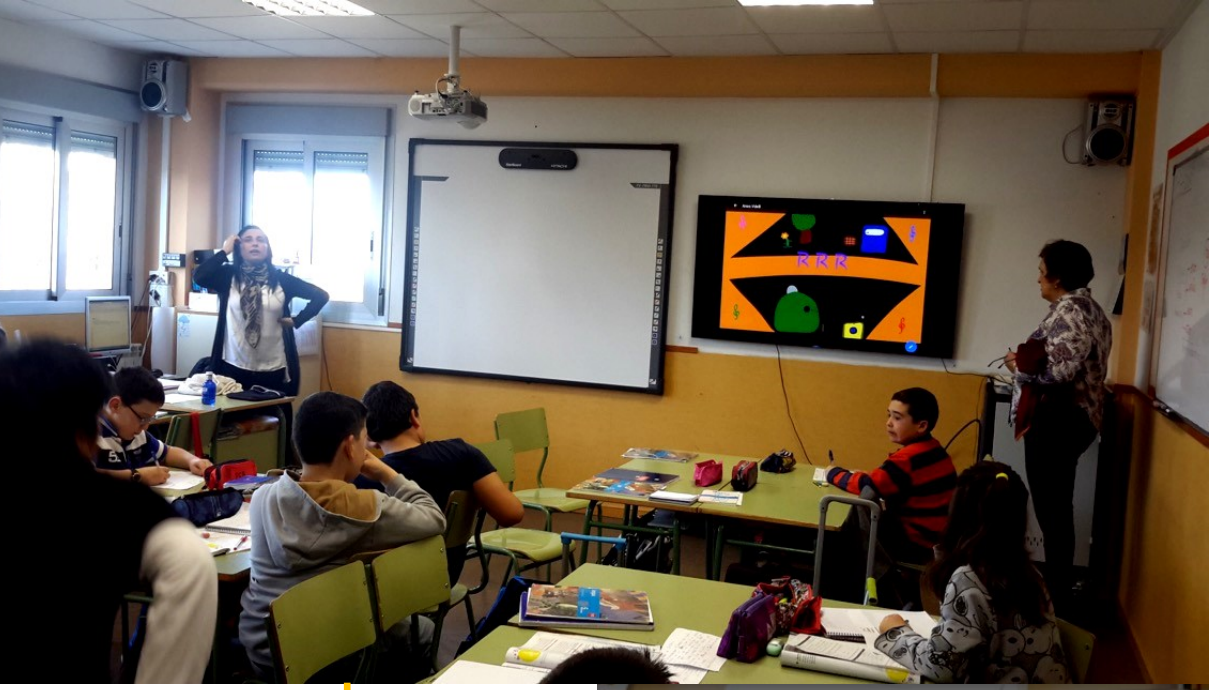
Wevideo
Spreaker
Kahoot
Unitag
Twitter
Padlet
PicsArt
Aurasma
Thatquiz
eTwinning

Evaluation

- Rubrics for teamwork Evaluation
- Kahoot Thatquiz

Monitoring and dissemination

Publication of the work on the blog, on the eTwinning platform and on Twitter with the hashtag of the project.

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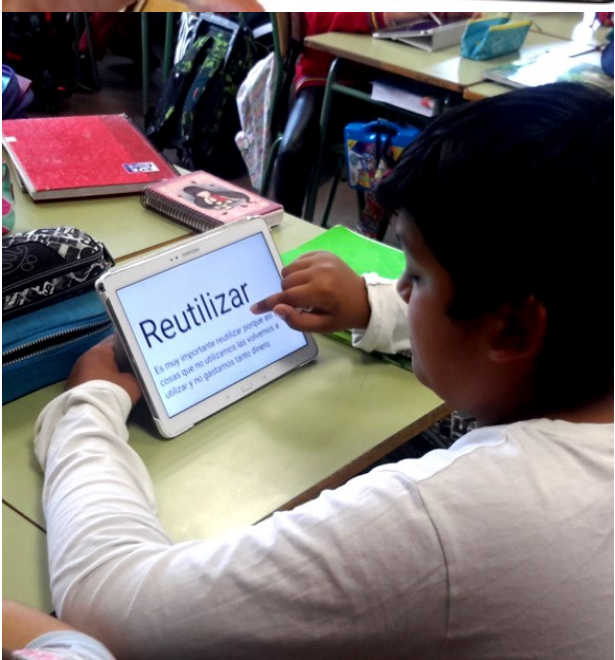

Reutilizar

08. RECETABLETS

Topic	Gastronomy of our surroundings.	**Subjects**	Languages Maths Natural, Social y Cultural Sciences
Schools	CRA Sexma de la Sierra y Escola Joan Sallarès i Pla		
Length	10 weeks	**Web**	http://bit.ly/recetablets

Competences

☑ Mother Tongue	☑ Learning to Learn
☑ Languages	☑ Social and Civic Sciences
☐ Entrepreneurship	☑ Maths
☑ Digital	☑ Cultural Expression

Objectives and expected final products

Objectives

Knowing and valuing the gastronomic richness of the surroundings of our centers, both the traditional and the own of the different cultures that coexist in it.

Investigate and consult different sources to make our recipes and share

Reseach and consult different sources to make our recipes and share them with other centers.

Elaborate the recipes generating the videos that will later be published on the collaborative wall.

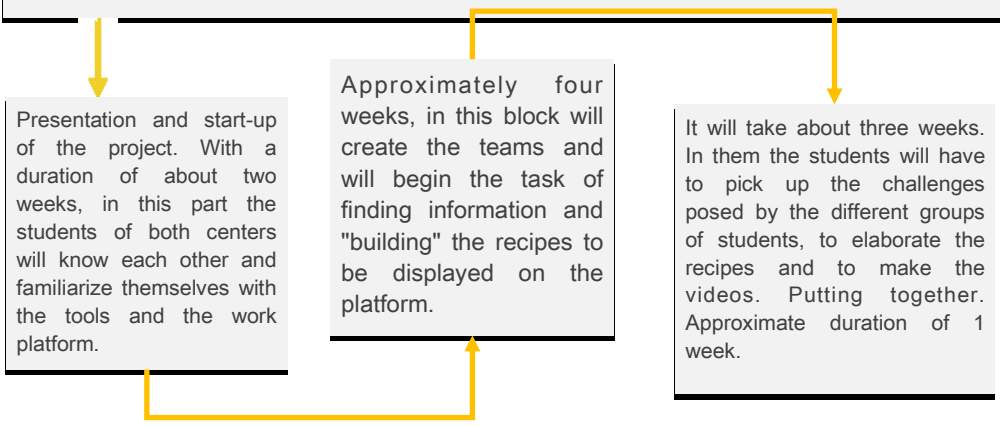
Appreciate the value of collaborative work between different schools.

Product

The final result will be a gastronomic biography composed by the recipes made by the two schools (text and videos of the elaboration).

Work process and activities

The collaboration between the schools will be carried out through the tools provided by the eTwinning platform, as well as other applications provided by Google; Gmail, Google Drive, etc. The project will last approximately nine weeks in the months of January, February and March.



Apps

eTwinning Platform
Google Drive.
Docs.
Google presentation.
Gmail.
Padlet
Genial.ly
StoryBoardThat
Pixton
Movenote

Evaluation

- Self-evaluation and co-evaluation rubrics
- Product evaluation
- Kahoot survey to evaluate knowledge on healthy habits.

Monitoring and dissemination

Publication of the gastronomic biography in our eTwinning space and dissemination in ebook format (text, photographs and videos) to show our work and our gastronomic diversity.

09. ONLINE JOURNAL ESPARRADEIRO

Topic	Creation of an online journal	**Subjects**	Languages Maths Applied knowledge French Physical Education
Schools	CEIP Purísima Concepción y CEIP Viñagrande –Deiro		
Length	From January to April 2017	**Web**	http://bit.ly/revista-esparradeiro

Competences

☑	Mother Tongue	☑	Learning to Learn
	Languages	☑	Social and Civic Sciences
☑	Entrepreneurship		Maths
☑	Digital	☑	Cultural Expression

Objectives and expected final products

Objectives

Carry out an online journal in a collaborative way between two geographically separated schools.

Encourage students' creativity and motivation through cooperative work and the use of communication technologies.

Improve written expression through the conduct of the journal.

To relate the contents of the curriculum to the environment.

Exercise the leading role as a journalist mixing the writing technique with the interests of students.

Product

Digital magazine developed in a cooperative way between teachers and students of two centers through the eTwinning platform.

Work process and activities

Presentation of the students by videoconference. Choosing a logo. Using the CANVA web tool, children will make various logos designs. Determine sections of the magazine online. The sections will be selected from the interests of our students. Radio program to present the localities. The students of both schools will record podcasts to indicate aspects of location, history, economy, gastronomy and folklore of Vilanova de Arousa and Puerto Lumbreras. App Spreaker.

For Carnival, our students will exchange eight images of the typical carnival of the autonomous community. We make a comic. The children in each center will choose a theme and elaborate six vignettes on the Tablet with the app

Make triptychs presenting the locality. We prepared a kitchen magazine. Each school chooses three recipes typical of its autonomous community. Students take photos of the spring in their surroundings

We performed an interactive image to work with traditional music using the Genially tool. We developed a magazine of traditional games with the Canva tool. The students of each school choose eight proverbs typical of their community. We make a video, the children of Deiro in Galician and those of Esparragal in Castilian. We work virtual reality in the magazine.

Apps

eTwinning platform
Socrative
Windows movie Maker
Canva
Atavits
Easily
Rubistar
Timeline
PicCollage
KineMaster

Evaluation

- Rubrics
- Online evaluation questionnaires

Monitoring and dissemination

Publication through the eTwinning platform and dissemination through social networks and email.


EL ESPARRAGAL
LA ESTACIÓN
24 HORAS

10. SCHOOL PRESS

Topic	Creation of a digital journal	**Subjects**	Languages Maths Natural, Social y Cultural Science Religion and civic values. Music
Schools	CEIP Teresa Bertrán de Lis, CEIP Nuestra Señora del Pilar y CRA Guadiela		
Length	From January to March 2017	**Web**	http://bit.ly/school-press

Competences

☑	Mother Tongue	☑	Learning to Learn
☑	Languages	☑	Social and Civic Sciences
☑	Entrepreneurship	☑	Maths
☑	Digital	☑	Cultural Expression

Objectives and expected final products

Objectives

Improve oral and written comprehension and expression.

Use mobile devices to promote autonomous learning.

Value the main elements of the physical, social and cultural environment of the community and other communities close to their own.

Develop attitudes of cooperation and teamwork, respecting and accepting the differences of people, cultures, ideas and contributions.

Promote active methodologies such as ABP, Flipped Classroom, etc.

Product

The end result will be the collaborative digital magazine

Work process and activities

Teaching collaboration: Videoconferences between the partner schools to determine the tasks to be performed. Tools to use for collaboration with partners: Google Drive, WhatsApp, Hangouts, Gmail, eTwinning, Skype, etc.

Student participation: Video presentation of students and collaborating centers. Regular meetings through Hangouts.

Share files (texts, images, videos, audios, etc.) through Google Drive, email and Twinspace. Communication through web messaging.

Apps

Snote
PicsArt
Audacity
Joomag
Soundtrap

Hangouts
Slidedhare
Genial.ly
Spreaker
Souncloud

Evaluation

- Observation
- Control list
- Rubrics

Monitoring and dissemination

Publication on Twitter, Facebook, Procomún, webs and blogs of schools and Edmodo.

11. WALKING AND COLLABORATING. A PILGRIM'S

Topic	Pilgrim's route.	**Subjects**	Languages, Physical Education, Geography ICT,History and Citizenship
Schools	CEIP Nª Señora de los Remedios, CEIP Reyes Católicos y CEIP Blanco de Cela.		
Length	February-March 2017	**Web**	http://bit.ly/ruta-de-peregrinación

Competences

☐	Mother Tongue	☐	Learning to Learn
☐	Languages	☐	Social and Civic Sciences
☐	Entrepreneurship	☐	Maths
☐	Digital	☐	Cultural Expression

Objectives and expected final products

Objectives

To investigate about the gastronomy, the cultural tradition and the monuments of our route through the greenway.

Know the basic aspects for the preparation of a hiking route (physical preparation, equipment and materials, accommodation, planning stages, etc.).

Use of mobile devices.

Know and exchange information from other environments.

Work collaboratively with project partners.

Product

Creation of a blog or a virtual space with all the material made, for example a blog traveler with interactive map.

Work process and activities

ÁreasThematic areas: 1- The organization of a hiking route (stages, accommodation, materials, etc.). 2- The most important monuments of the 3 zones and 3- The typical gastronomy of the 3 zones.

Activities: A guide-triptych comparing the organization of the 3 routes with photos and comparative tables of prices of accommodation and materials.
Analysis of monuments using QR codes.
Videos channel kitchen to explain the typical dishes of each area.

First phase of student organization: we will establish groups of 5 or 6 students who will be in charge of developing each of the proposed topics.
Second phase of research, in which the groups will investigate on the proposed subject both using digital resources and others.

Third stage of elaboration of plastic, visual or digital creations. Fourth phase of viewing of own final products and other centers. Fifth phase of cooperative competition with other centers.

Apps

Videoshow
Comicstrip
Timeline
Audacity
Unitag
Kahoot
SNote
Thinkling
Pixl
Spreaker

Evaluation

- Rubric
- Socrative
- Kahoot

Monitoring and dissemination

Publication on the web, social networks and eTwinning.

12. UNI 3 TELEVISION

Topic	Mass media	**Subjects**	Languages Maths Natural, Social and Cultural Sciences Art
Schools	CEIP Joaquín Costa, CEIP Santiago Ramón y Cajal y CEIP San Francisco.		
Length	March-April 2017	**Web**	http://bit.ly/uni3-televisión

Competences

- ☐ Mother Tongue
- ☐ Languages
- ☐ Entrepreneurship
- ☐ Digital
- ☐ Learning to Learn
- ☐ Social and Civic Sciences
- ☐ Maths
- ☐ Cultural Expression

Objectives and expected final products

Objectives

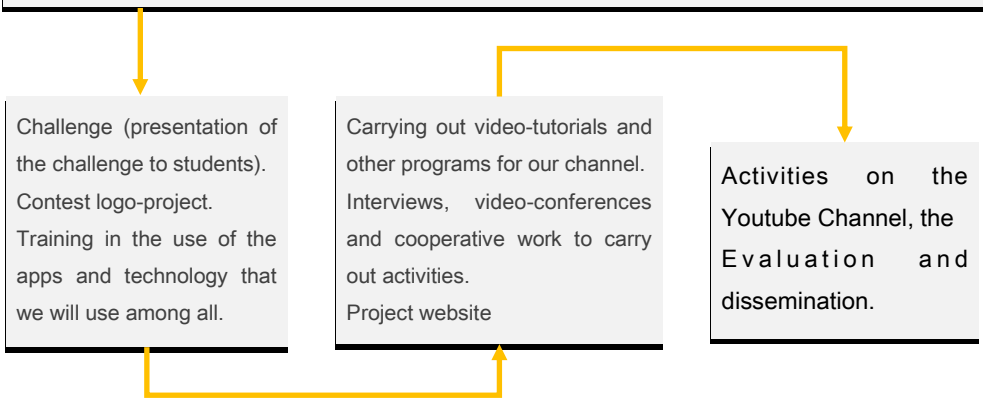
Elaborate collaboratively educational content on video. Edit and upload those videos to a YouTube channel as a television with various content.

Product

The final result will be a YouTube Channel with educational and Wix content of the project.

Work process and activities

Creation of educational contents in video publishable in a channel of YouTube with capacity for various themes (sports, tutorials, contest programs, documentaries, short films and animation, etc.) giving the form of an Internet TV channel.



Apps

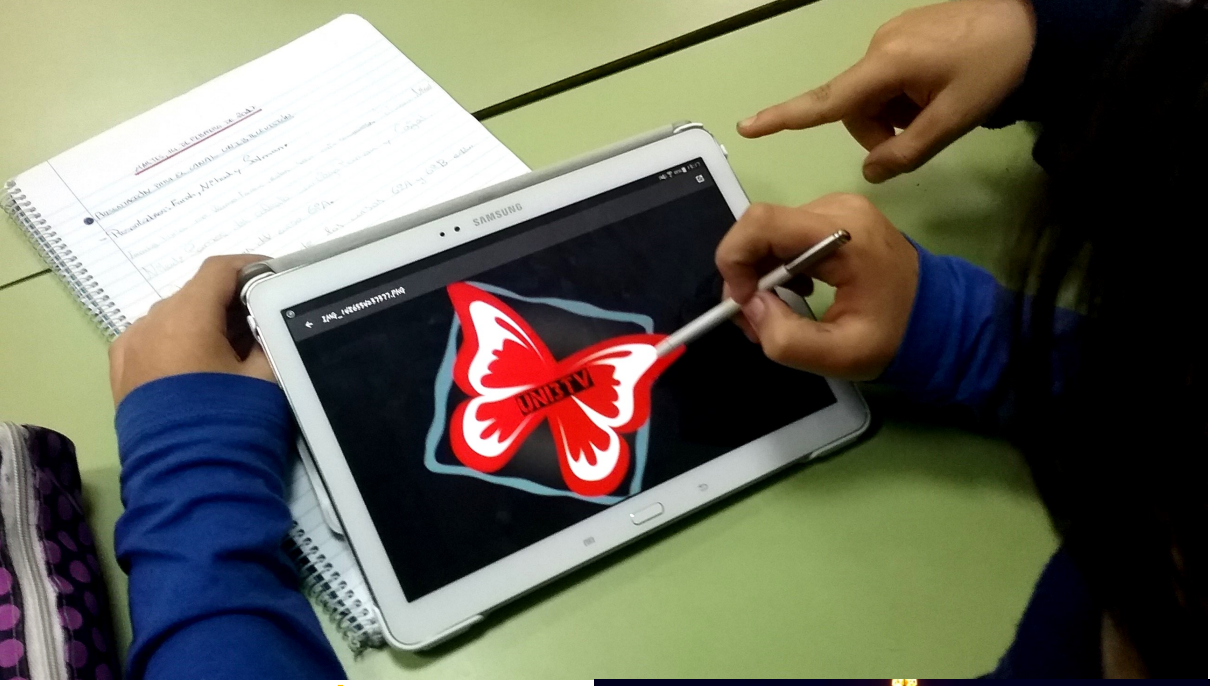
Wix	Drive
Gmail	hangouts
Kahoot	Youtube
Video editor	Audacity
Gnial.ly	Snote

Evaluation

The evaluation will be continuous, through apps like Kahoot and through a rubric that we will elaborate collaboratively.

Monitoring and dissemination

The follow-up will be continuous and we will rely on the tools of Google so that communication is seamless among the members of the project.
The diffusion from the web page of the project, the websites of participating educational centers and the Youtube channel.


SAMSUNG
UNITY

13. WE TRAVEL AND GET TO KNOW EACH OTHER

Topic	Knowledge and promotion of the environment	**Subjects**	Language Natural, Social and Cultural Sciences
Schools	CEIP Aguanaz y CEIP Las Cañadas		
Length	Three months	**Web**	http://bit.ly/viajamos-conocemos

Competences

☐	Mother Tongue	☐	Learning to Learn
☐	Languages	☐	Social and Civic Sciences
☐	Entrepreneurship	☐	Maths
☐	Digital	☐	Cultural Expression

Objectives and expected final products

Objectives

Valuing and respecting their natural, artistic, cultural, social environment and being able to transmit their respect and admiration towards other people.

Be able to design and organize different days, activities, visits, etc., to know the environment directly and transmit it.

Relate to peers from other places and send them the message of re-

Establish teamwork relationships both in person and at a distance through cooperative work with digital media.

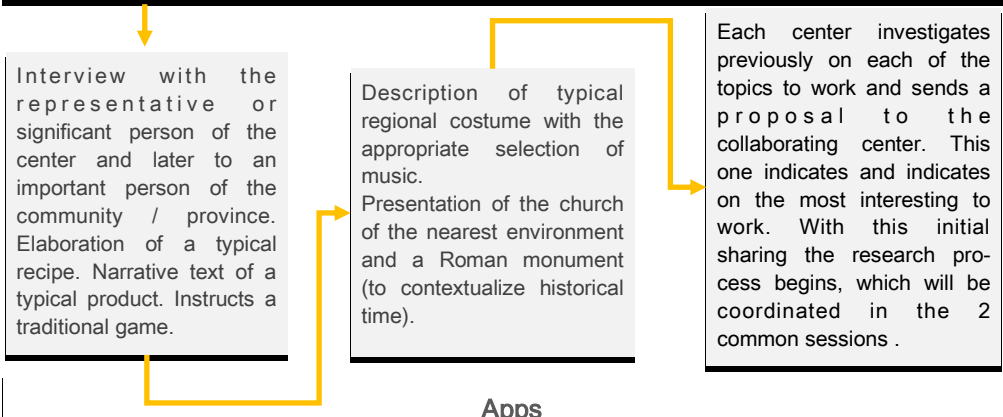
Perform effective searches across the network and traditional media.

Product

Composed of by-products such as presentations of expository and narrative texts, interviews, short films, etc.

Work process and activities

Our Project wants to start from our center and expand its vision to the community, thus deepening our knowledge of the closest (center) to more distant aspects of our community or province. We would work from the area of language different typologies such as the interview, the narrative, the instructive text, etc. Initial pooling between the two centers. Video presentation of the center and later videoconference.



Apps

Padlet	Youtube
Google Maps	Audacity
Viva video	Powtoon
SlideShare	Goodle Earth
Audio record	Ofiice 365

Evaluation

We will use the Kahoot at the beginning of each activity and at the end of it. Our students will have a rubric from the beginning of the Project, where they will know the aspects to be evaluated. The teachers in charge will have the same heading.
Students will perform a self-assessment and hetero-evaluation of the group. Likewise, the teacher will carry out an evaluation of each of the groups of the same rubric.We will also count on the evaluation of the partner centers, also carrying out a co-evaluation.

Monitoring and dissemination

Publication of the collaborative blog, Twitter, press and local radio. Visit the president of Cantabria, to publicize the project.


Se escribe con
ga gato
go gorro
gu guante
gue , gui
Se escribe con "b"
palabras con:
bra , bre , bri , bro , bru
bla , ble , bli , blo , blu
bruma , blusa , bravo
NEW

03

M-learning: transformative educational practices with mobile devices

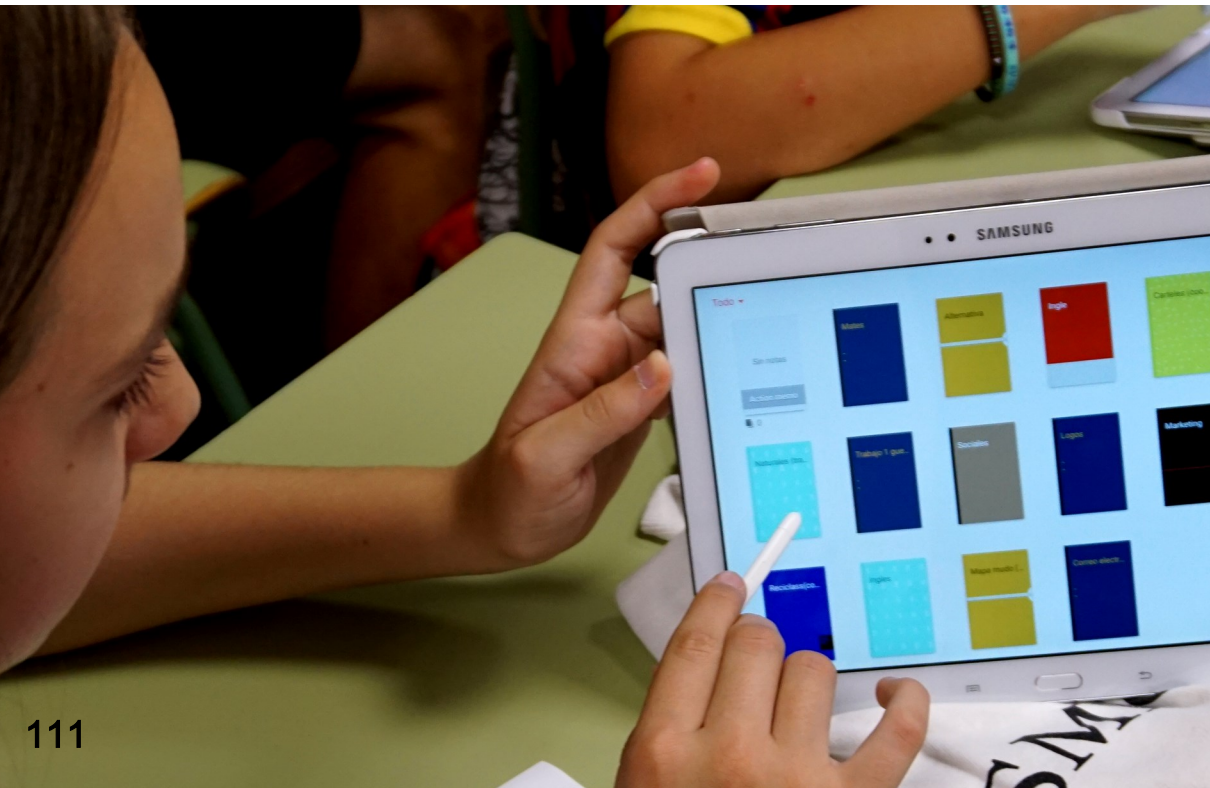
- 10 APPS FROM THE SAMSUNG SMART SCHOOL PROJECT
- TRANSFORMATIVE POTENTIAL OF THE PROJECT AND SCHOOL IMPACT. CASE STUDIES
- PROJECT-BASED WORK FOR COMPETENCE DEVELOPMENT
- PENDING TASKS AND FUTURE CHALLENGES

10 apps from the Samsung Smart School

A part of the potential offered by mobile devices is conditioned by the type of application we use. Currently there are a variety of applications for education, some of which have already gained a name in the market and others compete to create such a space.

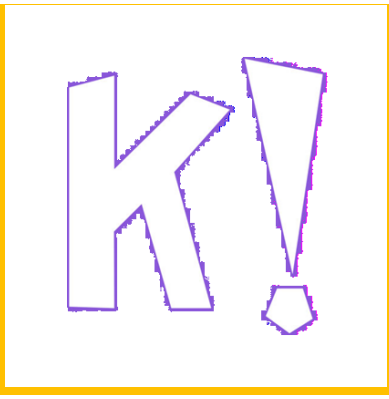
In the face of such variety, it is important to analyze which applications best fit the characteristics of our students so as to ensure the good development of the experience.

The following section shows the 10 most commonly used applications in the Samsung Smart School 2016-2017 project. Likewise, 10 applications are presented to work specifically on the three competences in which the program has been focused: Communicative Linguistics, Learning to Learn and Digital



1 Kahoot

Aplicattion used to gamify processes in the classroom and generate immediate and massive response surveys. Among its educational uses, it is used to introduce new concepts, to evaluate prior knowledge or to assess the acquisition of concepts or processes once they have been completed.



Google Drive 2

Google Drive is a safe place to store all your files, that can be accessed from any smartphone, tablet or computer. Backup files stored in Drive (such as videos, photos, and documents) are backed up so you never miss them.

Once you upload a file or folder, it is very easy to invite others to view, edit or add comments.

3 Gmail

Gmail is an easy-to-use email tool that saves time and keeps the messages safe. Get your messages instantly through push notifications, read and respond online and offline, and quickly find any messages.

4 Padlet

Padlet is like a paper for your screen. Start with a blank page and then put whatever you want into it. Upload a video, record an interview, take an auto photo, write your own text messages or load some documents, and watch as your Padlet comes to life. Once others add files to it, the page will be updated in real time.

5 Youtube

YouTube is one of the most successful social networks and most users in the world. For the educational field in the network we can find a multitude of video "tutorials", quality videos, thematic channels, etc. One highlight of this great communication tool is its unlimited possibilities for the creation of contents that enhance creativity and imagination.

6 S Note

View and edit the notes created on the tablet and synchronize them with other devices. It is an ideal tool to capture ideas at the moment. It allows you to create folders, organize them, include customizable templates, add voice notes to the note, etc ...

7 Mindomo

Mindomo is a very useful app to create concept maps, which allows you to organize ideas and thoughts, plan projects, define objectives ... Mindomo enables you to work on multiple facets, such as spatial intelligence, the ability to synthesise and organize ideas ... You can generate presentations in a collaborative way, with all the advantages that this entails. It is very useful for the visual or graphic representation of knowledge and for project work.

8 Pixton Comic Maker

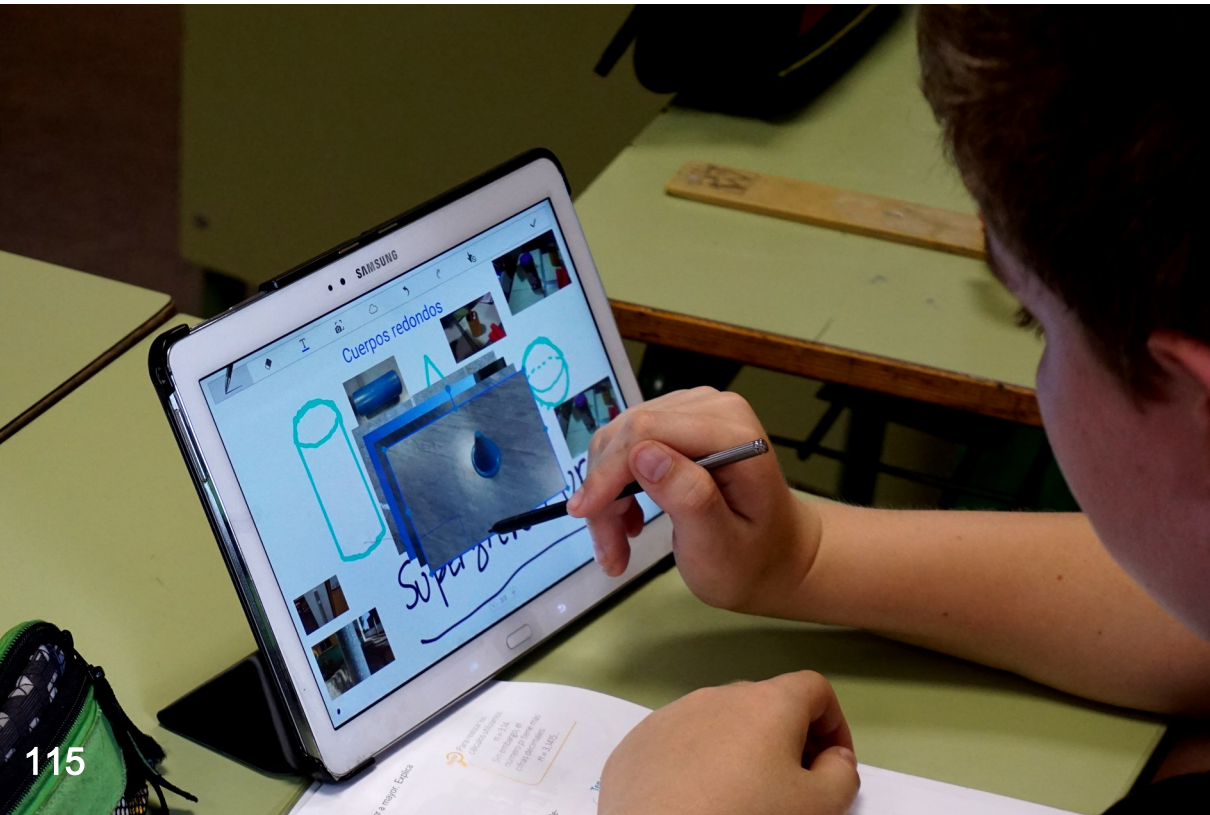
Pixton is an application that allows to create comics easily. Create a script, choose a background and characters, add text balloons and you will have your comic drawn. You can also use Pixton in advanced mode to control each element of your comic, and so limit the expressions of the characters, customize the texts and dialog bubbles, add your own images, etc. You can also create comics collaboratively and share your productions instantly.

9 Storyboard That

StoryboardThat is the perfect tool for creating powerful storyboards, graphic, visual and active organizers for use in education, business or personal fit. The application includes 7 designs and hundreds of characters, scenes and search elements. Once a storyboard is created, the user can submit through PowerPoint or Google Slides, or you can submit the storyboard, post on social media or embed in a blog. Storyboards are stored in the users' account to access anywhere, from any device, without downloading.

10 RWT Timeline

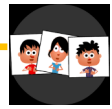
The RWT Timeline application allows students create a graphical representation of an event or process, showing the elements sequentially along a line. RWT Timeline can be organized according to the time of day, date or event, and the tool allows users to create a label with short or long descriptive text. It allows adding an image of each tag, which creates a more visually appealing timeline.a aplication.



Apps for competence development

S Note

Comic Strip Creator



Spreaker Studio

Emaze

Lino-Sticky&Photo Sharing

StoryBoard Maker

Hangouts

Joomag

Movenote

Quick

Apps for competence development

Google Maps

Aurasma

DrawExpress Diagram Lite

Wix

Linkedin SlideShare

Googe Earth

Soundtrap

ThatQuiz

Socrative

Quizlet

Apps for competence development

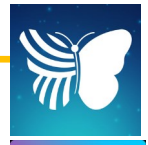
Codi QR Generator

Pixlr

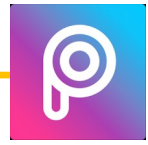
Video Editor

QR Code Scanner

Quiver-3D Coloring App



PicsArt Photo Studio&Collage

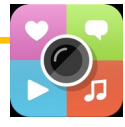


FaceQ

VivaVideo:Free Video Editor

Soundcloud

Thinglink



Project-based work for competence development

As we have seen above, the projects carried out in the Samsung Smart School program were designed with the aim of improving students' transversal skills through the use of active methodologies. The contents of each project were worked from different areas, which allowed the development of competences from an interdisciplinary approach.

However, despite the transversal treatment of the contents, it should be noted that each project focuses on the development of a specific competence, a pesar

☐ Communicative and Linguistic

MAIN COMPETENCE	ACTIVITY	THUMBNAIL
From North to North. **In search of new horizons**	Creation of a tourist brochure explaining the characteristics of your locality (gastronomy, traditional games, artistic and sporting events, customs, cultural and linguistic exchanges). For this purpose, a process of searching and processing of information, oral content presentation and transmission of information between students of different centers every 15 days via e-mail was developed.	

MAIN COMPETENCE	ACTIVITY	THUMBNAIL
Document yourself. From past to present	Project to know the differences between the past and the present. Interviews were conducted with older people on different aspects of the past (such as school, work, lifestyle and festivities). In order to do this, we investigated what elements are necessary to make an interview, the questions were selected, the script was created and the information obtained was analyzed. With all the information that was obtained, a virtual presentation was developed, evidencing the knowledge learned.	
Our medieval fair	Creation of a medieval fair. During its creation, various forms of expression and communication were accomplished as they were in medieval time such as literary compositions, a performance "Las astucias de Genisillo", creation of poetry,micro-narratives), creation of a storyboard of the project itself, preparation of promotional posters on the fair, etc.	
We travel and get to know each other	In order to know and promote their environment, the students interviewed different celebrity people from their land: the president of the Autonomous Community of Cantabria Miguel Ángel Revilla, the director, screenwriter and editor David Pinillos, the cook Jose Maria Ruiz, among others. The historical monuments of the city, as well as costumes and traditional music, were also described.	

☐ Learning to learn

MAIN COMPETENCE	ACTIVITY	THUMBNAIL
Alimenta TV	Recording and editing of a video channel on healthy eating and organic products, in which students learned how to cook and developed a critical sense of food and	
Online journal: **Esparradeiro**	Creation of a digital magazine collaboratively developed between two schools. The students themselves chose the sections they wanted to include in the magazine and through different apps they achieved a great variety of products: recording podcasts for a radio program through Spreaker, making a comic strip comic strip, presenting three recipes of his own Autonomous Community with Canva, elaboration of interactive images with Thinglink., virtual reality to introduce the sections of the magazine, etc.	
The Little Prince: Art and solidarity	Marrow donation campaign, which is developed from the story "The Little Prince". Different activities were carried out to promote the campaign and obtain donations. Among all the activities, it is worth mentioning the participation of lectures in different entities (police corps, university students, etc.), the sale of products made by the students themselves, where the profits were destined to NGOs, of the project on radio stations and	

MAIN COMPETENCE	ACTIVITY	THUMBNAIL
On Sustainability	Awareness-raising project on recycling, reuse and reduction of waste. Different products were deloped to foster the critical spirit of sustainability in our environment: a decalogue on recycling, an epub with videos on eco-advises and a rap about sustainability that was put on the virtual network.	

☐ Digital competence

MAIN COMPETENCE	ACTIVITY	THUMBNAIL
Recetablets: a gastronomic biography	Recording and editing a video feed channel. Likewise, a gastronomic biographyand different app's were used to represent the project (Padlet, StoryBoard That, etc.). in digital book format was elaborated	
Walking and collaborating: a Pilgrim's Route	Project that revolves around the pilgrimage routes of three cities. Different activities were set up to work on the characteristics of the three routes, in which knowledge and skills were developed in relation to the use of information technologies: creation of videos for the kitchen channel located on Youtube ; recording and editing video, creating QR codes and research and selection of information on the network.	

MAIN COMPETENCE	ACTIVITY	THUMBNAIL
School Press	Creation of a digital magazine in collaboration between the centers. Different sections (culture and traditions, hobbies, reports, music and literature) were established and different app's were used to complete them: Educaplay to create hobbies, Soundtrap to record a podcast, Noteflight to create a score collaboratively, Voki to do literary criticism, creation of QR codes, etc.	
Shall we meet?	With the main objective of knowing the culture of the partner school, each school elaborated different products to expose the main characteristics of its city. In every activity, different apps were used to facilitate the presentation: use of the Croma technique in the presentations, virtual reality with Quiver to display its flag, location of the monuments on Google Maps, creation of a digital magazine on the recipes typical of each land, direct musical collaboration through	
Uni 3: **Television**	Creation of a television channel with educational content. The students presented different themes (sports, tutorials, competitions, documentaries, shorts, etc.) with the use of the chroma technique and were responsible for recording, editing and uploading to the Youtube platform all the videos.	

Transformative potential of the project and school impact. Case studies.

The Samsung Smart School project, in its 2016-17 edition and after three years of implementation, stands out for its impact and transforming power of reality and day -to-day life of children, teachers, educational centers, families and the environment.

Four case studies highlight the work of different schools that are in different stages of the project implementation. They are shown because of their singularity and casuistry: CEIP Ferrer and Racaj (Aragón), Escola Sallarès i Pla (Catalunya), CEIP Aguaazaz (Cantabria), CEIP Viñagrande de Deiro (Galicia).

These schools, like many others, are an example of how their participation in the project has impacted them at different levels and for different causes: deep transformations in the school's architecture, redesign of learning spaces, changes in classroom methodologies, introduction of rubrics for the evaluation of competencies, etc. On the other hand, the impact on the environment has also been one of the great milestones of the project.

Thus, the project has not only contributed to the transformation of the schools internally, but it has had an impact outside them, in the houses and families of the participating students, ans also in the area of influence of schools.

In this context, there have been collaborations with city councils, solidarity associations, cultural entities, etc., with a positive impact on improving the image of the schools and valuing their work with society. Finally, some of the schools have received relevant awards and have appeared in the local and national media, publicizing the work done within the framework of the Samsung Smart School project.

CASE STUDY #1

CEIP Aguanaz (Cantabria)

☐ School description

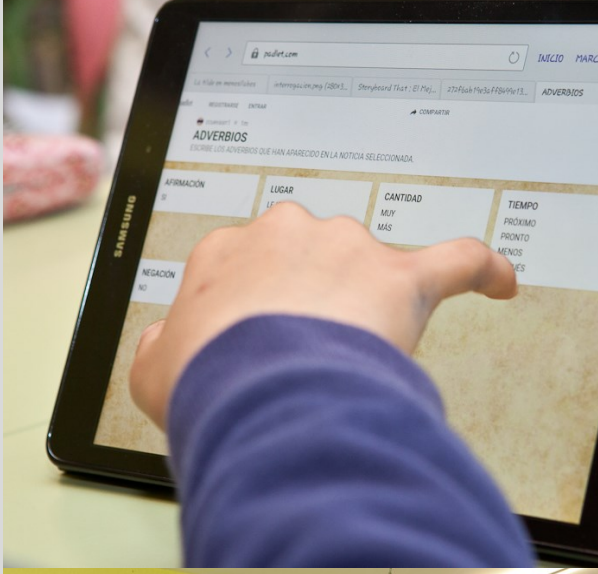
Center of year 3, CEIP Aguanaz de Entrambasaguas is a school for Early Childhood and Primary Education, located in a rural environment of a medium socio-cultural level. It is a school that consolidates the double line, with 8 units of Infant Education and 13 units of Primary education. At present, 400 students from 7 distant and geographically dispersed locations attend the school. In order to serve these students, the teaching staff is made up of a group of 36 teachers and young teachers, and has an interim teaching staff of 40%, a fact that entails a great organizational effort to coordinate joint actions and give stability to the staff. CEIP Aguanaz was one of the schools selected as pioneers to participate in the project Samsung Smart School. Throughout these last three courses it has implemented the use of tablets and new technologies in his 5th and 6th grade of Primary School, carrying out a digitization process that has undergone a series of important improvements to transform the school into a 21st century school.

☐ **Impact of the project**

The project has had a considerable impact on the school level of students. Beyond the numerical qualifications, which present similar results to previous years, there has been a significant improvement in the three competencies analyzed in the project. In addition, the use of the tablets has achieved a greater involvement and motivation in the students. The involvement of the faculty is also a fact to be highlighted. Greater cohesion and, consequently, better organization has been observed. Working with tablets has also meant a change of methodologies by teachers. Much more use is made of active methodologies such as cooperative learning, gamification, research and problem solving. Also, thanks to the new devices, teachers have the possibility of incorporating digital materials into their classes, which allows them to work with infinite options and new tools for the day to day in the classroom.

☐ **To be highlighted**

The students participating in the project who finished their studies in 2015-16, when they started their studies of Secondary Education, showed an improvement in their qualifications compared to those obtained in Primary Education. From the Institute where they are currently studying Compulsory High School (1st ESO) they contacted both the school and their families to congratulate them on their academic performance and the skills they demonstrated in terms of managing their own learning. From the direction of CEIP Aguanaz, it was attributed to the project and the results of working in the classroom differently that these boys and girls evidenced such an improvement. In addition to the good grades obtained, even better than those obtained in Primary Education, they highlighted their high level of competence in learning to learn.



CASE STUDY #2

CEIP Ferrer y Racaj (Aragón)

A step further towards competence-based

☐ School's Description

CEIP Ferrer and Racaj is a public school located in the municipality of Ejea de los Caballeros, Zaragoza. It has 1 line and 9 units, distributed in such a way that 3 belong to the stage of Early Childhood and 6 to Primary Education. In the school study a total of 192 students, of which 22% are immigrants. With respect to the teaching staff, 14 of its 17 teachers have a definite post in the school.

This situation facilitates the composition of a coordinated, stable and motivated team that cares about the school and strives for the optimum development of its students. Among the characteristics that make up its own identity, it is important to highlight its policy with the use of ICT. Twenty years ago, they introduced the first computer in school and from that moment on it was clear that technology had to be inside their classrooms. Since then, they have had different spaces and technological resources (computer room, media library and portable computers) to the use of Tablets, the current technological tool most used in the school.

The development of projects with the use of ICT has allowed them to obtain different awards and recognitions of innovation

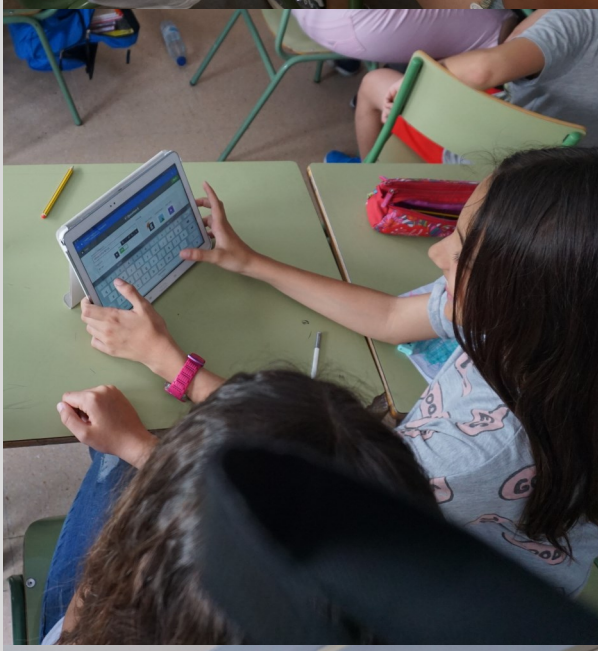
☐ Impact of the project

At the outset, it should be noted that, within the educational community, the use of tablets has mainly affected students. Teachers have seen an important improvement in their level of competence, especially in digital competence.

Another aspect that has increased positively is the attitude of the students in relation to the tasks, since any activity that they do with the mobile devices find it attractive. As for class development, most activities where tablets are involved are carried out through cooperative work. This fact, together with the possibility of seeking and obtaining immediate information offered by these devices, gives the teacher some liberty to offer more attention to diversity.

With regard to the faculty, the program has increased the number of meetings to organize, share different points of view, evaluate, programs, etc.

The tablets have involved more collaboration and, consequently, greater team cohesion. Finally, the project has also impacted outside the walls of the school. Different media, both local and autonomous, have been interested in the project and have published various news and interviews with members of the school.



CASE STUDY #3

CEIP Viñagrande de Deiro (Galicia)

☐ School Description

CEIP Viñagrande-Deiro is a school for Early Childhood and Primary Education of public character located in Vilanova de Arousa, municipality of the province of Pontevedra. With a 9-line format, 15 teachers and a total of 125 students, it is a small school that has undergone a remarkable transformation in recent years towards an educational practice different from traditional schools.

The involvement of teachers in the school is total. The realization of training programs, constant updating, exchange of experiences and the introduction of new technological proposals to give a service to the community are only some characteristics that reflect such educational commitment. All this with the aim of integrating the latest technology in the social and educational fields.

In relation to the educational project, students are not grouped into age courses that comprise a single year as happens in the vast majority of school, but are grouped by cycles. The most used methodologies are those that position the learner as the protagonist of his own learning by means of project-based learning, cooperative learning, problem-finding and solving, etc.

☐ Impact of the project

The Samsung Smart School project has had a very positive impact on the schoolr, since it has allowed them, year after year, to develop new strategies that, to this day, are a reality that no one can doubt.

In spite of being aware that the impact generated by the project has to be analyzed from a long term prespective, in the only two years in which the school has participated in the project the number of students with failed subjects has been reduced, as it has the number of students that are repeating the same academic course.

On the other hand, there has been a considerable change in key competences such as Digital Competence, Basic Competence in Science and Technology, Linguistic Competence or Competence of Cultural Expressions. As the school says, this project has had an extraordinary educational impact for teachers. Not only from the didactic point of view in improving their teaching processes, but also in approaching students, families and the technological evolution of society itself.

The impact of the project has also been noticed in the environment. The school has served as a model for many centers in the surrounding area, since it is understood that the use of Tablets allows to improve the processes of teaching for the teaching staff and also the learning processes in the students.

CASE STUDY #4

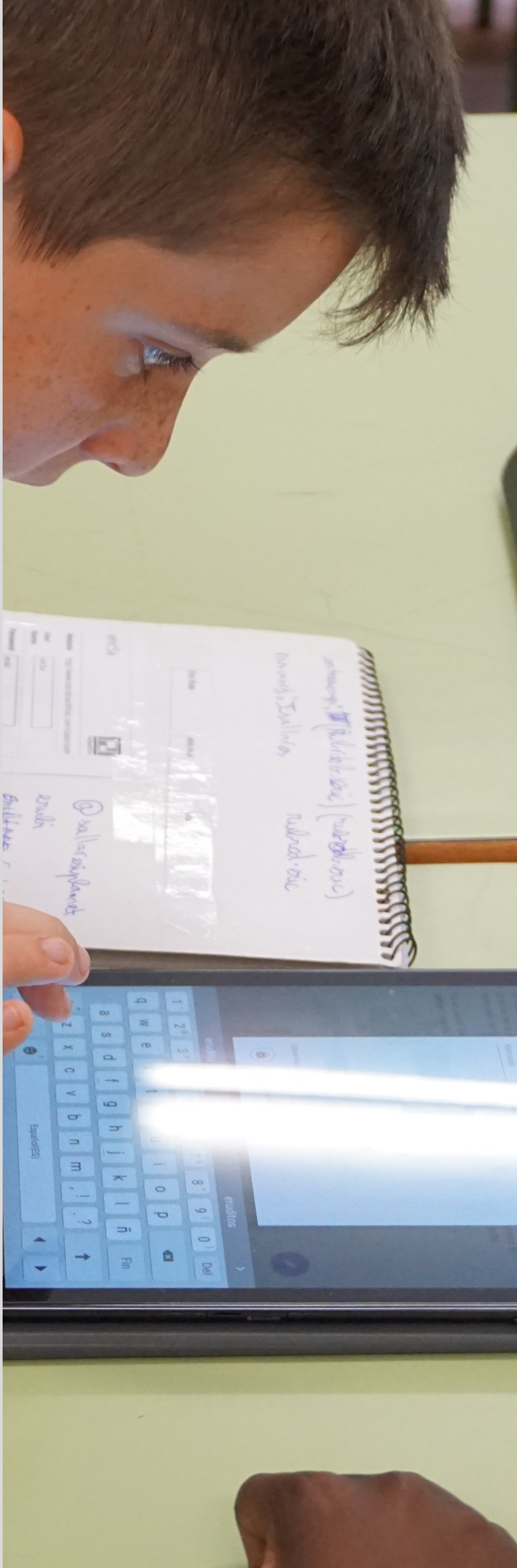
Escola Sallarès i Pla (Catalunya)

☐ School Description

Sallarès i Pla School is an educational center located in the city of Sabadell that entered the Samsung Smart School program during the 2016-17 academic year. The vast majority of their families come from working-class neighborhoods, where the general socio-economic level corresponds to that of the working class. At present there are a total of 320 students in the school, more than 70% of whom are of immigrant origin and some of them are at risk. Given this diversity, the center has a special interest in working on integrated social cohesion for innovation projects.

The school staff is constantly undergoing a process of retraining. This fact has meant that its teaching-learning methodology undergoes a process of continuous change. Previously, textbooks had a great deal of weight in teaching, an aspect that has been changing until its use has diminished considerably, and even in some areas it has been dispensed with. As for their policy on the use of ICT, their socio-economic circumstances have never prevented them from penetrating the use of technology.

The 2004-2005 academic they year began a project in which a computer was introduced in each classroom, all of which were obtained thanks to the collaboration of different companies and entities. Nowadays, after introducing Raspberry Pi digital boards and low-cost computers, the most widely used technology tools are tablets.

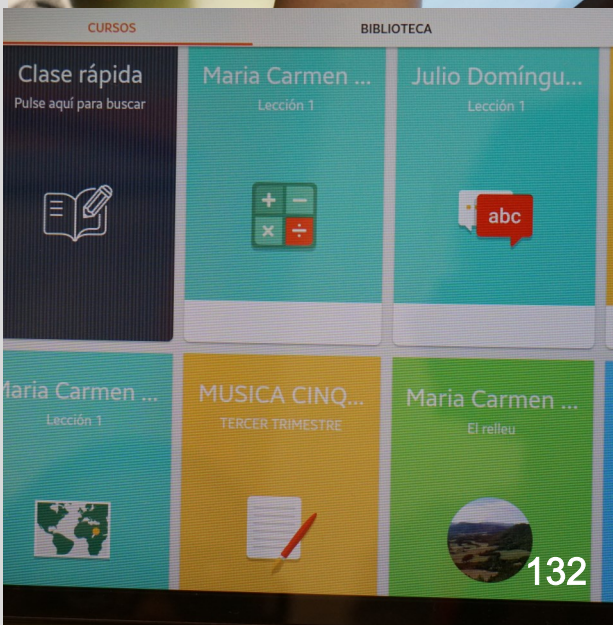


☐ Impact of the project

The condition of being a school that has been incorporated in the project the present course 2016-2017 limits the number of evidences in the learning of the students. However, the educational community notes a series of indicators where the impact of the project has been very positive. The attitude of the students towards the sessions has undergone a transcendent change. Any task in which the tablets are involved is a significant increase in student motivation.

In this sense, it has been observed that students who did not attend classes in a usual way have increased their attendance in order to, thus, work with mobile devices. Another aspect to highlight is the collaboration that takes place between students when they work with the tablets. Through the connection to virtual spaces, the learners collaborate in a synchronous and asynchronous way, searching, sharing and creating content.

With respect to the teaching staff, the training they have done has meant an impact on the development of the sessions. In the classroom, a wide range of technological applications are used, many of them previously unknown to teachers and with a great teaching power, such as Thinglink, Aurasma or StoryboardThat, among others.



Conclusions

The Samsung Smart School project in its 2016-2017 edition has accompanied 32 primary schools in 15 autonomous communities, and the autonomous cities of Ceuta and Melilla, in a process of digitizing classrooms through the use of tablets by the students and teachers. This project is consolidated as a reference project in the field of Mobile Learning, given the representativeness of its sample (an average of 800 students per course) and the results of impact achieved.

The research carried out has as main objective to evaluate the impact that the use of the tablets has on the academic performance of the students, in particular in the improvement of three competences identified as key for the XXI century: the linguistic and communicative competence, the digital competence and the competence to learn to learn.

Since its inception, the Samsung Smart School project has stood out for its transformative potential and catalyst for change in the educational and human reality of the people who have participated in it.

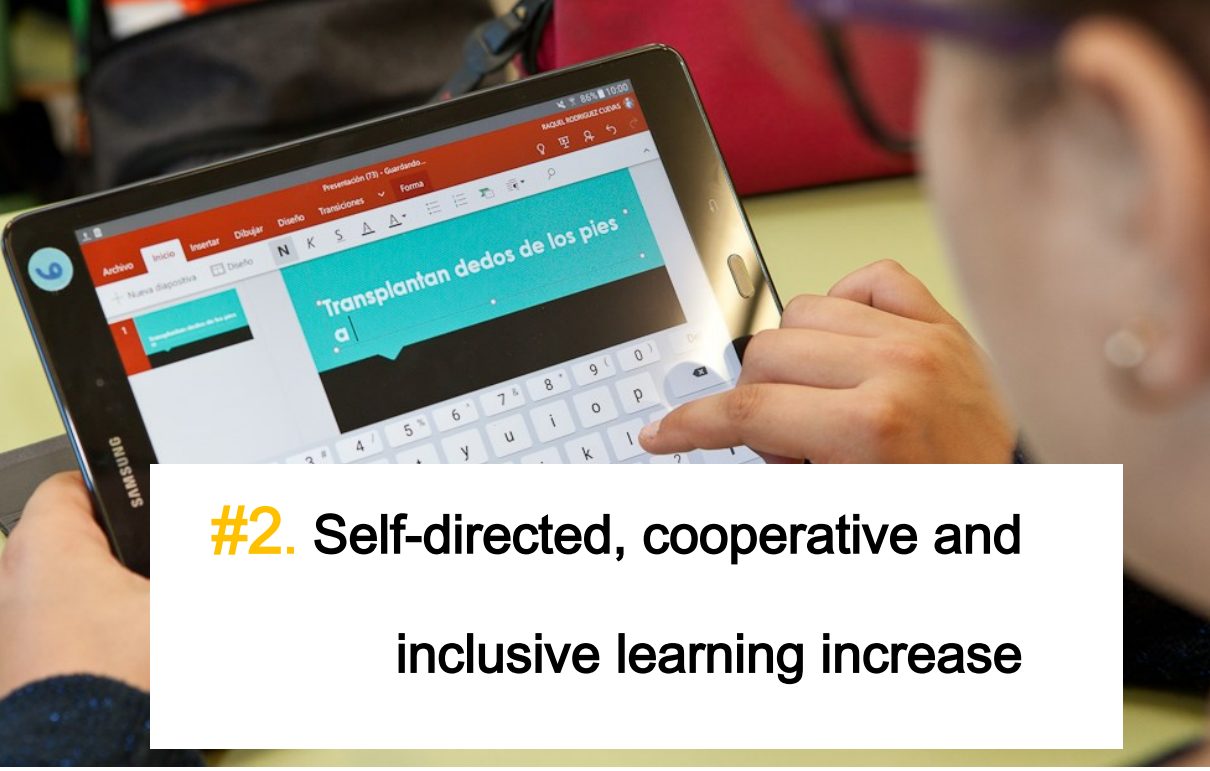
Thus, this potential has had an important impact not only on students, but also on teachers, schools, families and the environment, highlighting the social and inclusive value of technology and the achievement of a transformative change that goes much further beyond the classroom.

The main conclusions of this research and the main ideas obtained from the results are the following:

#1. Competence improvement

According to the results obtained after the evaluation of the competences, there is a clear improvement in the three competences analyzed (linguistic competence, learning to learn, and digital competence) throughout the course. After the training sessions and the development of the projects with tablets an increase of between 0.3 and 0.5 points of average in the different competences is observed, being especially remarkable the improvement in the digital competence, and reaching in all of them final scores of around 2.85 out of 4 (+19%)

It should also be noted that although the improvement of competences occurs in both genders, it is worth noting the increase in the case of girls in the three competences.



#2. Self-directed, cooperative and inclusive learning increase

There has been an increase in self-directed work, which promotes the search for alternatives to the difficulties encountered and the resolution of problems. Likewise, there has been an increase in cooperative learning, in which there have been many support, guidance and tutoring practices among peers, leading to a true inclusive education.

All competencies evaluated have improved their results after the project, resulting in different ways of working and learning both inside and outside the classroom.

#3. Inter-school collaboration as catalyst for change and social impact

The inter-school projects carried out have required a close level of communication and collaboration between schools.

In the evidence collected, skills required to work in the 21st century are observed, such as teamwork and creativity through an integrated use of digital technology, as well as specific activities directly linked to the three competences that are the subject of research analysis.

Also, it is worth highlighting the variety of topics chosen, related to the knowledge of the immediate environment of the students and with themes of strong social content.

#4. The impact of the project

The impact on the environment has also been one of the great milestones of the project, so Samsung Smart School has not only contributed to the transformation of schools internally, but has also had an impact outside of it, in the houses and families of participating students: "Always positive for them and therefore for the family. In addition to learning on new technologies, which will be the tools for the development of their professions, it favors relations between students and tutors, something important to soften the current extreme competitiveness and favor solidarity between partners with one goal"

The impact of the project in the area of influence of the schools has also been glimpsed. In this context, there have been collaborations with city councils, government representatives, associations, cultural entities , etc., which have positively impacted in the improvement of the image of schools and valuing their work before the society.

#5. The transformation of schools

After three years of implementation, the Samsung Smart School project, in its 2016-17 edition, has been notable for its impact on learning, but also for the transforming power of educational reality and the impact the schools have had on the implementation of the project. Depending on their level of implementation and the year of their participation, the results of the research show substantial changes in schools at different levels: (i) methodological level, (ii) school culture, (iii) innovation and (iv) school valorization.

On the other hand:

- **Mobile technology helps organize learning around the challenges of the real world**, using a wide variety of devices and resources to show competence with complex concepts and content.

☐ The exploration and research practices used in the project contribute to instilling a **lifelong learning mentality**.

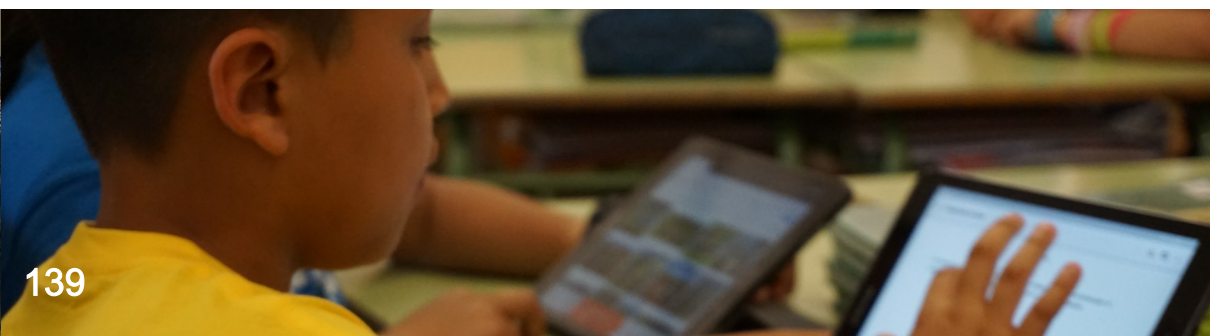
☐ The project has provided students with **empowerment learning experiences** in both formal and informal environments that have enabled them to be active and creative participants in a globally connected society

☐ The use of the tablets has allowed students to **personalize their learning** from attractive and relevant experiences.

☐ Collaborative projects have helped move **learning beyond the classroom** and take advantage of opportunities available outside of school.

☐ When the access to technology is equitable it can help **bridge the digital divide** and make transformational learning opportunities available to all students.

☐ **Families value very positively the training in the use of the tablets** as a tool that will be useful for the future of their children.



Thank you very much!

We are very grateful for the collaboration and involvement of Samsung and the Ministry of Education, Culture and Sport, Spain, as well as the autonomous communities that have supported and monitored the project. Likewise, we would like to highlight the dedication and enthusiasm of all schools, teachers, students and families that have made this project possible during the 2016-2017 academic year.

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Departament d'Ensenyament

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