ASOCIACIÓN DE AYUDA A PERSONAS CON ALBINISMO

METHODOLOGICAL GUIDE FOR THE FUTURE CREATION OF BARRIER-FREE CLASSROOMS



Co-funded by the Erasmus+ Programme of the European Union

GOBIERNO DE ESPAÑA
MINISTERIO DE EDUCACIÓN, CULTURA Y DEPORTE
sepie
SERVICIO ESPAÑOL PARA LA INTERNACIONALIZACIÓN DE LA EDUCACIÓN

This guide is the result of the collection of theoretical and practical information and the experience lived directly at family and professional level by collecting, transmitting, sharing and debating with other parents, Mothers and education professionals who relate to boys and girls in secondary education.

We believe that it will be useful for professionals in the field of education and that they face the responsibility of providing answers to a diverse student body on a daily basis. Although its use can also be interesting for the development of the Diversity Care Plan and the inclusion of each school in which students with albinism and/or visual impairment are enrolled. The measures adopted in that PAD must respond to their educational needs as quickly and as inclusively as possible.

Our intention has been to develop an accessible guide that can be consulted by both family members and educational professionals when they assume the responsibility in secondary education of a student with the genetic condition of albinism and/or visual disability.

In the writing of the paper we have used the term «visual disability» indistinctly to that of «visual impairment». The reason is due to the great visual deficiency present in all people with the condition of albinism and that always entails a functional limitation in different degrees, that is, a disability.

We have paid special attention to the consequences of the visual disability related to albinism, as well as to possible measures to alleviate the functional limitation related to it. In this sense, we have not developed the problems related to the lack of pigmentation in the skin or the derivatives at a social level due to their physical appearance since the visual deficiency is the characteristic that can hinder the access to secondary education between the students with albinism, In addition to being constituted as the one to which the technology responds. However, we do not want this decision to lead to the mistaken belief that skin protection is not important.

In keeping with our commitment to the principles of equality, we have tried to draft this guide following some of the recommendations for the use of non-sexist language proposed by UNESCO in 1991 (for the Spanish language).

Although most of the graphic material is created by Ana Yturralde Arquiola (Ana Yturralde Photographer), pursuant to Royal Decree-Law 2/2018 of 13 April amending the recast text of the Law on Intellectual Property and transposing into Spanish law Directive 2014/26/EU of the European Parliament and of the Council of 26 February 2014, and Directive (EU) 2017/1564 of the European Parliament and of the Council of 13 September 2017 in its Article 31b.«accessibility for people with disabilities», we have not requested authorization from all holders of intellectual property rights. But we do refer to them because they are useful for a non-profit product and are directly related to disability; in our case, visual.

The true inclusion of students with visual impairment derived from albinism through technology will only be when the technological resources of the classroom are adapted to their needs.

This intellectual product is part of the Project «Methological guide to transfrom your classroom into the classroom without barriers of the future» co-financed by the Erasmus+ programme and the European Union [convention number 219-1ESO1-KA201-065782]. This project has been financed with the support of the European Commission. This publication is the sole responsibility of its author; the Commission is not responsible for the use which might be made of the information disseminated.

Co-funded by the Erasmus+ Programme of the European Union

GOBIERNO DE ESPAÑA
MINISTERIO DE EDUCACIÓN, CULTURA Y DEPORTE
sepie
SERVICIO ESPAÑOL PARA LA INTERNACIONALIZACIÓN DE LA EDUCACIÓN

NFFA

DFFA

ALBINIT

Oogvereniging

ALBA

www.albinismo.es

Asociación para la ayuda a personas con albinismo

EDITOR:(ALBA) ASSOCIATION FOR HELPING PEOPLE WITH ALBINISM

AUTHORS:

(ALBA) ASSOCIATION FOR HELPING PEOPLE WITH ALBINISM

Representatives:

Josep Solves Almela

Mónica Puerto Muñoz

Purificación Párraga Pérez

Collaborators:

Danish association for people with albinism DFFA

Representatives: Claus Hansen and Emily Kristensen

Italian association for people with albinism ALBINIT

Representatives: Emanuele Regalini and Marianna Pezzella

Norwegian association for people with albinism NFFA

Representatives: Silje Solvang and Eva Elida Skråmestø

Oogvereniging Nederland- Netherlands

Representatives: Lotte Van Kerkhoven and Susan Van Grinsven

Layout and design:

Gisela Ramírez de Arellano Fambuena and the Association for Helping People with Albinism (ALBA)

Translated by Javier Jose Silvestre Puerto and the Association for Helping People with Albinism (ALBA)

ÍNDEX

CONTENT GUIDE

01 INTRODUCTIÓN

1.1.- Justification of guide

1.2. - Erasmus+ programme

1.3. - SELFIE tool

02 BRIEF NOTES ON ALBINISM

2.1.- Albinism

2.2. - Basic concepts of anatomy and functioning of the visual system

2.2.1. - Physiology of the visual system

2.2.1.1. - Eyeball

2.2.1.2. - Optic nerve

2.2.1.3. - Oculomotor system

2.2.2. - Operation of the visual system

2.3. - Visual impairment in albinism: from blindness to low vision

2.4. - Visual functionality in pupils with albinism and/or visual impairment

2.5. - Risks and benefits of digitisation in the classroom

TECHNOLOGY AND EDUCATION

03

3.1.- European legal framework

3.1.1. - Inclusive education as a universal right

3.1.2. - Inclusive education in European education systems

3.1.2.1. - In Denmark

3.1.2.2. - In the Netherlands

3.1.2.3. - In Italy

3.1.2.4. - In Norway

3.1.2.5. - In Spain

3.2. - Education and technologies: partners in inclusive education

3.2.1. - First experiences of the use of technology in education

3.2.2. - Current situation

3.2.3. - Technological resources

TECHNOLOGICAL RESOURCES

04

GUÍA PEGAGÓGICA

METHODOLOGY FOR INCLUSION THROUGH TECHNOLOGY: BARRIER-FREE CLASSROOM OF THE FUTURE

05

5.1.- General guidelines for the use of new technologies in the classroom

5.2. - Pedagogical bases for the use of technology in the classroom

5.3. - Guidelines for teachers for the development of key competences through technology

5.4. - Resources needed to implement inclusive education methodologies through technology

5.5. - Proposals for technological resources for the ideal classroom

5.5.1. - Technological and general resources for education

5.5.2. - Specific technological resources for education by area

5.5.2.1. - Mathematics

5.5.2.2. - History and geography

5.5.2.3. - Foreign languages and languages

5.5.2.4. - Physical education

5.5.2.5. - Technology

5.5.2.6. - Artistic education

5.5.2.7. - Music education

5.6.- Methods for incorporating devices directly into skills development: connect with inclusion

5.7. - Recommendations for creating a barrier-free classroom of the future

Proposals from Alba for the diitalization of the classroom

6.1.- Current situation

6.2. - Proposals

CONCLUSIONS
07

LINKS OF INTEREST AND RESOURCES
08

BIBLIOGRAPHY
09

THANKS
10

AUTHORS
11

CONTENT GUIDE

The aim of this part of the guide is to broaden teachers' knowledge of albinism, the consequences of this rare disease and the benefits and risks of digitization for them. It also includes the regulatory study at European and national level, as well as an analysis of the current situation. Finally, it collects content and theoretical resources for the inclusion of young students with albinism and/or visual disability through ICTs, and the digitization of the center.

01 INTRODUCTION



JUSTIFICACIÓN DE LA GUÍA

The technological resources have been gaining presence gradually in the secondary education classrooms till the point of becoming an indispensable tool for the teaching.

A lot of this technological resources have supposed a decrease of the barriers to accessibility to the scholar curriculum with witch the students with visual disability have face historically.

The progressive implementation of this types of mediums in the classrooms joined with the efficient and quick answer that made easier the closing of the educational centers in almost all Europe as a consequence of the sanitary crisis produced by COVID-19, has made it an essential tool due to its immediacy, accessibility and inclusiveness

ABOUT.

The general objective of this guide is to show interested teachers/teachers the methodology of work supported by technology and used in educational classrooms in Europe where students with visual disabilities derived from the genetic condition of albinism attend secondary education. An innovative strategy for the inclusion of students with albinism or visual impairment through this new and committed digitization process that achieves participation in equity of students with SEN through the widespread use of technological and digital. This is the ultimate guide to demonstrating how to create the BARRIER FREE CLASSROOM OF THE FUTURE in your school.

This guide is one of the two main results of the project CREATING THE CLASSROOM WITHOUT BARRIERS OF THE FUTURE: FOR THE INCLUSION OF STUDENTS WITH ALBINISM, funded by the E+ Program in 2019 and carried out following the collaboration of Asociación Alba (Spain), Norsk forening for Albinisme (Norway), Danish Association of Albinism (Denmark), ALBINIT (Italy) and Oogvereniging Nederland (Netherlands).





OBJETIVOS DEL PROGRAMA:

- Achieving the objectives of the Europe 2020 strategy, including the main objective on education.

- Achievement of the objectives of the Strategic Framework for European Cooperation in Education and Training (ET2020) with benchmarks.

- Sustainable development of partner countries in the field of higher education.

- Achievement of overall objectives of the Framework.

- Promotion of European values, in accordance with Article 2 of the Treaty on European Union, and relating to respect for human dignity, freedom, democracy, equality, the rule of law and respect for human rights, including the rights of persons belonging to minorities.

ERASMUS+ PROGRAM

Erasmus+ is a program of the European Union that has as a general objective the education, training, the youth and the sports in Europe.

Within a period of six years (2021-2027) we try to boost the social inclusion, technological and digital transition and the promotion of the participation of young people in a democratic life.

In this way Erasmus+ promotes «educational mobility of people and colectives, both students and staff, as well as cooperation, quality, inclusion and equity, excellence, creativity and innovation at the level of organizations and policies through the permanent learning, the educational, professional and personal development of people in the fields of education and training, youth and sport, within Europe and beyond its territory, thus contributing to sustainable growth, quality employment and social cohesion, in addition to promoting innovation and strengthening European identity, active citizenship and participation in democratic life»

The program supports the priority and activities of the European space of education, the plan of action of digital education and the schedule of European capacities.

Also:

- Support the European social rights pillar.

- Apply the European union strategy for the youth (2019 – 2027).

- Develop a European dimension for sports



The objectives of Erasmus+ are education, training, youth and sport in Europe.

Erasmus+ defends of the work in the education, training, youth and sports fields can be a great help for addressing the socioeconomic changes and the main challenges which Europe faces till the end of the decade, as well as to support the implementation of the European political agenda aimed at growth employment, equity and inclusion .

The efficiency of the educations and training systems and the policies directed to the youth provide people with the skills that are required in the job market and economy. At the same time, Allows them to play an active role in society and archive peak personal development.

The Reforms in the education, training and youth environments can reinforce the process to those objectives, but always on the basis of a shared between the policy makers and the interested parties, solid proof and the cooperation between the different levels and scopes.

The Erasmus+ is designed for supporting all the efforts of the participant countries for using efficiently the potential of the human talent and social at European level.

The form to do it is attending at the permanent learning principle and linking the support to a formal, non formal or informal learning in the education, training and youth scopes.



CHARACTERISTICS OF THE ERASMUS+ PROGRAM:

01 Recognition and validation of skills and qualifications:

One of the common objectives of all this tools is to ensure an easier recognition and a better comprehension of the capabilities and qualifications inside national borders and through them in all educational subsystems and the job market, regardless of whether they have been acquired though academic education and training or in other learning experiences (such as: job experience, volunteering or online learning)

Equally the tools must also be orientated to guarantee that the education, training and youth policies continue to contribute to achieve the objectives of smart, sustainable, and integrating growth of 2020 Europe, as well as achieving their main goals of education and labor through more successful integration into the job market and increased mobility.

02 Diffusion and use of the project results:

The diffusion and use of the project results constitute one of the fundamental areas of the life cycle of the Erasmus+ project. Give the opportunity to the participant organizations to communicate and share the obtained results and materials. Which it will expand the impact of their projects, enhance their sustainability and will manifest the added European value of Erasmus+

03 Erasmus+ open access requirement for teaching materials:

The program promotes the open access to the results of the project to support the learning, teaching, training and working in the field of youth. Specially the beneficiaries of Erasmus+ compromise to put in public display the tools and educational resources produced in the context of the projects financed by the program, such as documents, supports, software or other materials with open source and free of charge.

Thus, this materials must be of easy access and free of charge without any restriction, likewise will have an open license that must allow the public to: use, re-use, adapt and share this resources. All of this materials are known as «OPEN EDUCATIVE RESOURCES» (OER)

04 International Scope:

Erasmus+ incorporates a strong international scope, that means a big collaboration between all associated countries in special on the high education and youth area.

05 Multilingualism:

The multilingualism is one of the the angular stones of the European project and a obvious symbol of the aspirations of the European union to the unity and diversity. Foreign languages play a key role among the skills that will help to better equip people for the job market and make the most of the available opportunities. The European entity has set the objective of all the citizens have the chance to learn at least 2 foreign languages at an early age .

06 Equity and inclusion:

The Erasmus+ program has as objective to promote the equity and the inclusions easing the access to the participants that come from hard environments and with less opportunities than their peers, either when the unfavorable situation limits them or when it prevents them from participating in transnational activities for reasons such as disability or barriers for health reasons.

07 Protection and security of the participants:

The protection and security of the participants in Erasmus+ projects are important principles of the program. All the people that participate in the program has to have the chance to take advantage of the possibilities that the materials of learning and professional development from the program brings. This should guarantee a safe environment where the rights of all people are respected and protected



In this framework, the Erasmus+ program allows the possibility to share and exchange between European countries experiences related to the educational attention on the secondary educational level of the students with the genetic condition of albinism and or with visual disabilities from the accessibility, equality and rights framework

The program is a useful tool at a European Scale for helping to fight the inequities generated due to the obstacles and barriers that secondary education students with educational support need (NEE) face in their educational centers

This project had as a main objective the development of innovation though the elaboration of high quality intellectual products for students with a disability linked to visual deficiency or albinism at the secondary education age (between 12 and 16 years old), in line with the priorities of the Erasmus+ program and the Declaration on the promotion of citizenship and the common values of freedom, tolerance and non-discrimination through education, frim 17th of march of 2015 (« Paris Declaration»).

The result is made visible though this methodological guide for the creation of a classroom of the future, without barriers, being the result of the project«Methodological guide to transform your classroom into the classroom without barriers of the future», made by the ALBA asociation from spain, Danish Association of albinism (DFFA) from Denmark, Norwegian Association of albinism (NFFA) from Norway, ALBINIT from Italy and OOGVERENIGING NEDERLAND from the Netherlands.



The protect is co-financed with the Erasmus+ program and the European union [agreement number 219-1ESO1-KA201-065782].



SELFIE is the acronym of (Self-reflection on Effective Learning by Fostering the use of Innovative Educational technologies) and describe one of the tools degined to help educational centers to integrate digital technologies, the learning and evaluation

Thus, it collects opinions from different components and ranks of the educational community such as teachers, school management staff and students in relation to the way they use technology in the educational institution. The process is carried out through a brief questionnaire made up of short questions, brief statements and a simple rating scale. This information is collected anonymously.

Then based on the information collected, the SELFIE generates a report on the strengths and weaknesses of the use of technology by the educational center.

This tool is viable for every teaching center both inside Europe and outside it, with its different levels and in more than 30 languages.Regarding its use, SELFIE does not need or require an advanced level of infrastructure, equipment and technology management, thus being accessible to any educational center that wishes it

SELFIE TOOL

Designed by and for educational centers, it has been developed by a team of experts from educational institutions, Ministries of Education and research institutes from all over Europe. The tool, supported by a solid research, has been developed on the framework of the European Commission regarding the promotion of learning in educational institutions in the digital age.

Numerous and highly relevant institutions are associated with SELFIE, including the European Training Foundation, the European Center for the Development of Vocational Training (DEDEFOP) and the UNESCO Institute for the Use of Information Technology. Information in education



02 BREIF NOTES ON ALBINISM



ALBINISM

Albinism is a hereditary, recessive condition caused by a genetic mutation that is transmitted from parents to children. The effect it generates is an affectation in the production and distribution of melanin.

When determining this hereditary character, it is required that both parents carry the albinism gene so that one or more of their descendants show this genetic condition.

Due its a recessive gene, which means that it has to receive a copy from both parents to have the condition; if he did it only from a single parent, he would not present symptoms.

he mutations that people with albinism suffer are determinate by characteristic genes of the human begin that alternate the production of melanin, a pigment that protects the skin from ultraviolet (UV) rays and which is equally important for the proper development of the eye. Without melanin, the retina and optic nerve cannot develop properly.

Therefore, melanin is a pigment that is found in most of our body and due to its chemical properties, it's constituted as a very efficient photo-protector so much as it allows to dissipate more than 99.9% of the radiation absorbed in the heat.In people, melanin is found in the skin, hair, the pigmented epithelium that surrounds the retina, the spinal cord, the reticular zone of the adrenal gland, and some areas of the inner ear and other parts of the brain.In the case of people with the genetic condition of albinism, their concentration of melanin is much lower.

That is why people with albinism are generally recognized by their little or no pigmentation in the skin and hair.

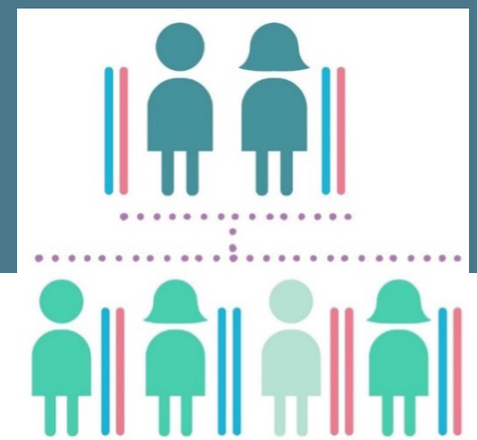


Figure 1: Hereditary pattern

«The most identifying trait is a severe lack of sight, with a very limited visual acuity».

«Albinism is not a disease: a person does not suffer or suffers from albinism, but “is” a person with albinism»

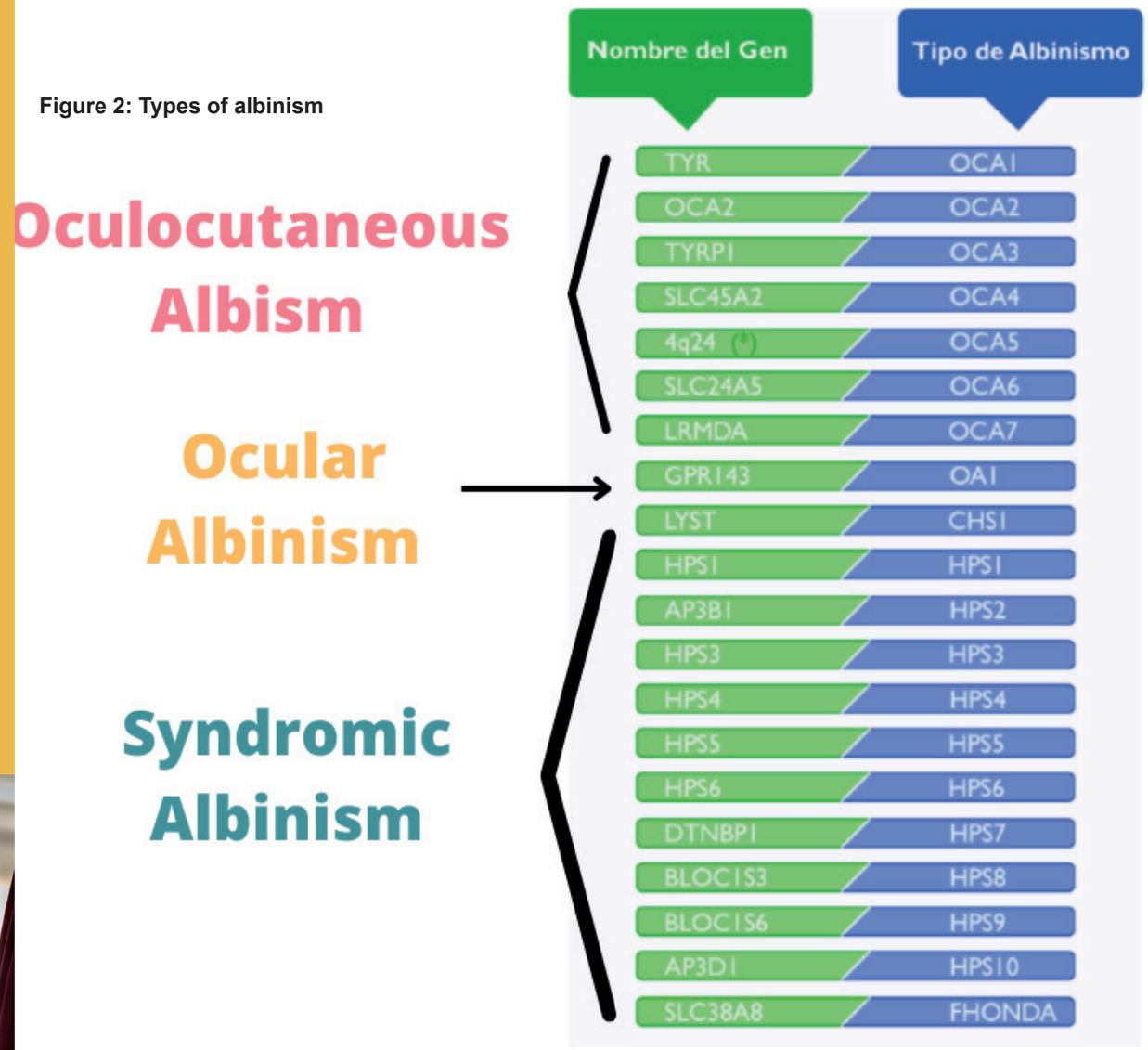
Depending on the area that is affected, there are two basic types of albinism: oculocutaneous (OCA) and ocular (AO).

People with oculocutaneous albinism (OCA) show the effects on the skin, hair, and eyes, while people with ocular albinism (OA) only show the effects on the eyes.

Of the OCA type there are seven subtypes depending on the gene that is altered, as well as a subgroup: syndromic albinism. The latter is made up of oculocutaneous albinisms that manifest in combination with other symptoms within more complex syndromes. with the Hermansky-Pudkak (HPS) type, the Chediak-Higashi (CHS) type, and the Fhonda type.



Figure 2: Types of albinism



Also, all the people with the genetic condition of albinism show to a greater or lesser extent a visual deficiency related to :

- Nistagmus
- Estrabism
- Photophobia
- Limited or reduced stereoscopic vision.
- Foveal hypoplasia.
- Alterations in the optic nerve..



BASIC CONCEPTS OF ANATOMY AND FUNCTIONING OF THE VISUAL SYSTEM

PHYSIOLOGY OF THE VISUAL SYSTEM

In order to understand the complexity of visual perception it is necessary to know, albeit in a basic way, all the organs and structures involved in this process. Doing so will help us understand the functional consequences that the genetic condition of albinism presents.

This organs and structures are:

- Eyeball.
- Optic Nerve.
- Attached structures: oculomotor system.



OPTIC NERVE

The cornea and lens of the eye project an image of the environment onto the photo-receptors of the retina in such a way that, each one responding to the intensity they receive, the connections of the photo-receptors with the ganglion cells are made. The latter are axons that transmit visual information through the optic nerve.

Axons from retinal ganglion cells ascend to the brain via the optic nerve, reaching the dorsal lateral geniculate nucleus of the thalamus. During this synopsis, they also send axons via the optic radiations to the primary visual cortex in the occipital lobe.

Alterations of the visual system, from the retina to the striate cortex, produce total or partial blindness of the visual field. However, lesions in the striate cortex or optic radiation produce the “blind-sight” syndrome.

«A null development or incomplete development of the fovea (foveal hypoplasia) is associated with the great deficiency in visual acuity, characteristic in people with albinism»

EYEBALL

The eyeballs are two “gelatinous” masses located in the cavities of the front part of the skull. They are maintained, oriented and directed by six muscles that allow us to move them in order to optimally collect light stimuli and transfer them later to our brain, where they are interpreted once they have been transformed into nervous stimuli..

Structurally, each of the eyeballs are formed, on their walls, by three layers: the external is made up of the sclera and the cornea; the intermediate, by the choroid; and the last, the inner layer, is called the retina.

In the outer layer is the sclera, the most opaque part of the eyeball. that does not let light through except in a certain area: the cornea. This is located in the most frontal part of the mass, regulating the passage of light by changing the size of the pupil through an opening called the iris.

Immediately behind the iris is the lens, whose main function is to focus the image of objects on the retina. To do this, it can alter its shape through the intervention of some muscles in order to seek the best vision. This process of modifying the shape of the lens is called accommodation and must be carried out in an integrated manner in both eyeballs. That means that there must be some convergence between both eyes.

In the central part of the retina is the macula, an area in which there is a point of greater visual acuity due to the large number of cones it has. That particular point is called the fovea.

Opposite the fovea, and close to it, is the eye papilla or disc. This is an area where the visual axons meet and leave the eyeball towards the optic nerve. Since this area has no photo-receptors, it results in a blind spot.

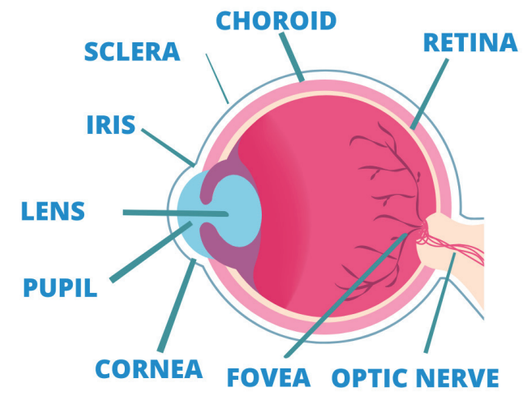


Figure 3: Structure of the eyeball



OCULOMOTOR SYSTEM:

Those responsible for this happening are the extraocular muscles, which are responsible for moving the eyes so that the images of the environment are projected in equal parts on each of the two retinas.

To do this, the six muscles work as a group moving in different directions (up, down, centrally or nasally, and laterally, temporally or rotationally) to focus on up to 100,000 different points in the field of vision.

VISUAL SYSTEM FUNCTIONING

Most of the sensory information that reaches our brain is collected and processed by our visual system. Thus, all impressions of our external world and of our memory are based on sight. This circumstance means that any alteration in any of the mechanisms involved has a great impact on the perception and interpretation of reality, hindering both the form and pace of learning at an early age and, consequently, the maturational development children in this age situation.

Our eyes pick up light stimuli from our environment. When we look at an object, the signal is collected and impressed on the retina, which translates it into stimuli that it sends to our cerebral cortex to interpret and store them.

The perception of the shape, movement, color and definition of objects are the result of millions of data that reach the retina and that it contributes to the brain; as well as the previously stored information of those objects.

Therefore, the alteration in any of the parts of our visual system will result in the distortion of the interpretation of reality.

The complex process of vision begins with visual perception. This is the phase of information collection: light enters the eye through the cornea, the aqueous humor, the lens and the vitreous humor, trying to search, follow and focus the images to project them on the retina.

Once this light information is projected on the retina, the phase of transformation of the light stimulus into a nervous one begins. This phase occurs in the retina or macula, where once this light information has been transformed into a nervous stimulus, the process of transmission to the cerebral cortex begins.

For the whole process to work well, numerous visual functions must also be carried out correctly.

Among other:

- **The accommodation of the eye.**
- **Color vision.**
- **The adaptation of the eye to darkness.**
- **Binocular vision.**
- **Peripheral vision.**

Functions that must include environmental cues related to the lighting and contrast in which the object is presented, in addition to psychosocial factors such as the person's cognitive competence, the familiarity of the objects to be observed, the emotional state and their fatigue.All these mechanisms involved and named above in a very summarized way make the "fact of seeing" a very complex process.

Although it is often said that the human eye is the organ of vision, it is actually more correct to say that it is the organ in which vision begins, since it is the first stage of what is often called "the human visual system".

Figure 4: Process of vision



The human eye is the organ in which vision begins, since it is the first stage of what is usually called «the human visual system»



Thus, human vision is a complex process about which, at present, we still do not know much more than we do. There are many scientific disciplines that investigate the different aspects involved in the human visual system. Among others, there are medicine (from its specialties in ophthalmology and neurology), optics, psychology, pedagogy, etc. All these disciplines try to explain the different stages of the complicated process though which, from light emitted by sources or reflected by objects and through its absorption in retinal photo-pigments and transmission of a series of electrical impulses through our nervous system, a certain image of the outside world is finally formed in our brain that we can interpret.

In order to value visual functionality, it is necessary to define two concepts: visual acuity and visual field or peripheral vision.

«Students with albinism always show a significant lack of visual acuity, since their fraction ranges between 0.3 and 0.05 in most cases»

1.- Visual acuity: it is the ability of the eye, in combination with the brain, to perceive the shape of objects at a certain distance. It is measured by the smallest image that the eye is capable of distinguishing.

To determine this visual acuity in a standard way the professionals use optotypes some instruments in the form of plates that contain printed letters or drawings whose size progressively decreases. In this way, the smallest dimension or size that the individual can see clearly will give us the measure of their visual acuity. The test is performed with each eye, both near and far.

The numerical expression of visual acuity is calculated by means of a fraction. The numerator corresponds to the distance at which the Optotype is seen and the denominator reflects the distance at which an eye with normal sight would perceive it. The corresponding fraction with that normal vision is 6/6.

In this sense, a visual acuity of 1/60, 2/60 or 3/60 means that a subject sees a total distance of one, two or three meters (respectively) of the sixty meters that a person with normal sight can perceive

Thus, a visual acuity of 0.8 is considered normal, while a vision of 0.3 would be below normal.

Consequently, sight of 0.1 corresponds to legal blindness and vision 0 is amaurosis or total blindness.

For there to be good visual acuity, ocular refraction must be correct. The transparent structures of the eye must be in good condition and the fovea, optic pathway and cerebral cortex must have adequate anatomy and physiology. A circumstance that does not occur in people with the genetic condition of albinism.

When there are severe difficulties in visual acuity, there will also be difficulties in the acquisition and development of reading and writing, contrast perception, blackboard vision and color vision.

2.- Visual field or peripheral vision: it is the space that the eye is capable of perceiving, the area that can be seen without the need to move the eyes. A person with a normal visual field, looking straight ahead, is able to perceive objects in an amplitude of 1800 in the horizontal plane and 1400 in the vertical plane. The measurement is made with the campimeter.

Students with albinism generally have a visual field of 20 degrees or less.

The assessment of visual acuity and field is useful to establish the classification we use to define visual functionality in students with the genetic condition of albinism, as well as other people. In this way, you will place them in a range that ranges from optimal visual efficiency to blindness.

«When a pathology affects peripheral vision there will be difficulties to interpret and follow moving scenes, locate elements or perform globalized reading»



Figure 5: Snellen chart for the evaluation of visual acuity

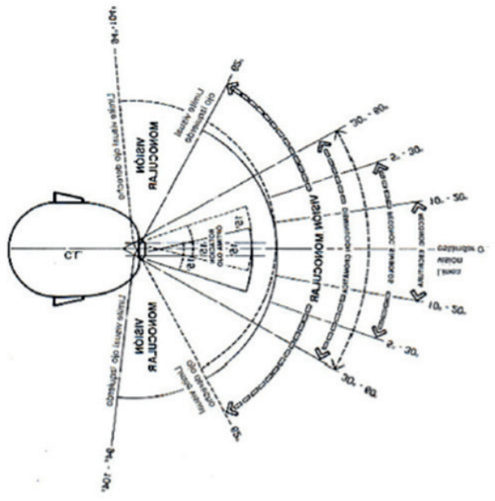


Figure 6: Human visual field. Recovered from Mereu-2012 (Scientific Diagram)

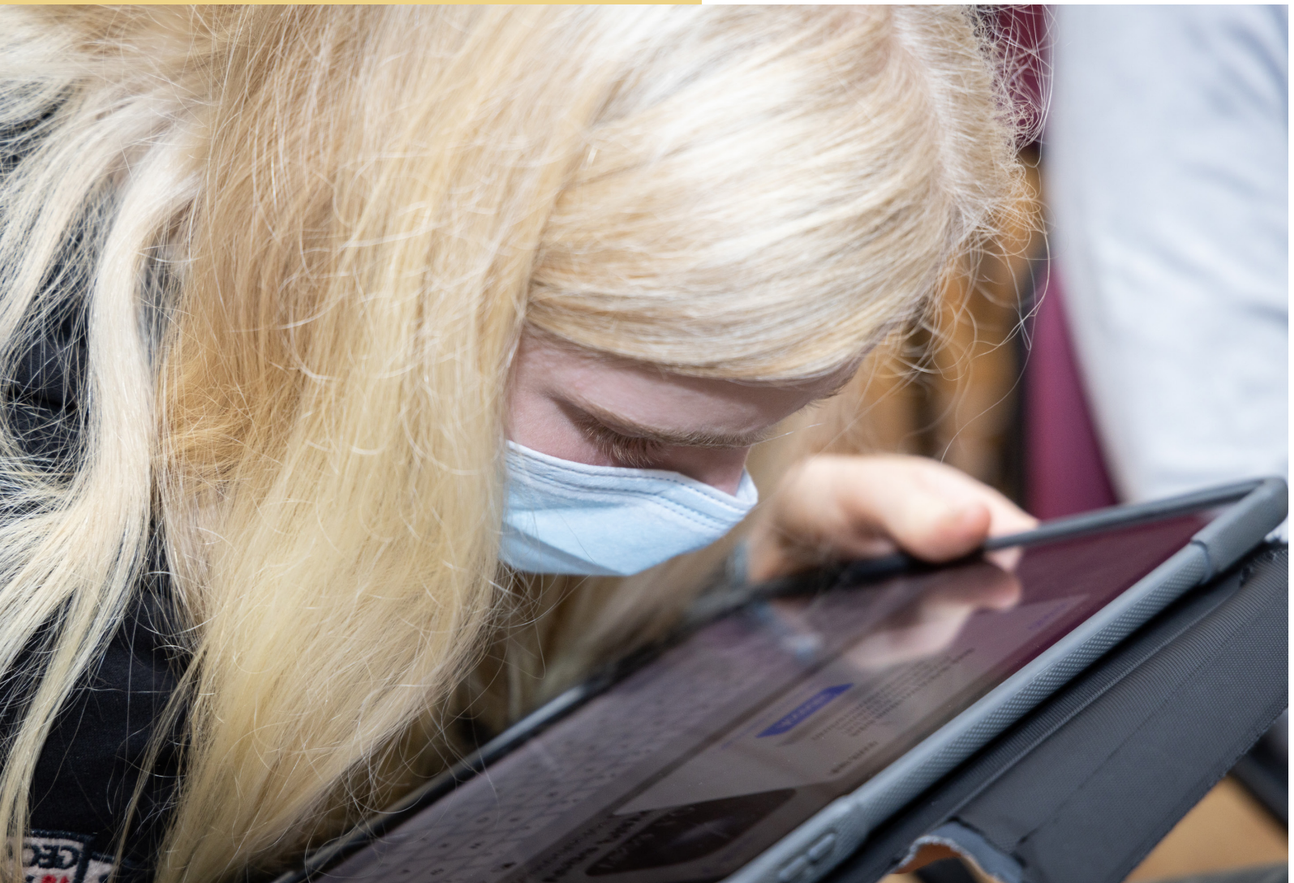
VISUAL IMPAIRMENT IN ALBINISM: FROM BLINDNESS TO LOW VISION

Most visual abnormalities in the general population and resulting in decreased sharpness are easily repairable through optical compensation. That is, the use of glasses or contact lenses that get a vision close to normal.

In other cases, including people with albinism, the anomaly is associated with something other than a defect in refraction that can alter the difficulty to distinguish different degrees of luminosity, the ability to adapt to light or darkness, the perception of colors, the amplitude of field and visual acuity. Several can also happen at once.

In this circumstance, the visual result causes a limitation in the performance of certain visual activities such as reading, writing, orientation and mobility, which can significantly deteriorate their social and job relationships.

The World Health Organization, in 2012, in its «Definitions of blindness and visual impairment» collects the update and revision of the ICD-10, classifying visual impairment (from now on: «visual impairment») in three levels: moderate visual impairment, severe visual impairment and blindness. The parameters to define them are:



MODERATE VISUAL IMPAIRMENT:

hen the person has a visual acuity ranging from 6/18 to 6/60 (i.e., between 0.3 and 0.1).

SEVERE VISUAL IMPAIRMENT:

when the person has a visual acuity that varies between 6/60 and equal to or greater than 3/60 (i.e., between 0.1 and 0.05).

BLINDNESS:

visual acuity less than 3/60 or visual field loss less than 10º.

These three levels, for the purposes of teaching and learning processes, can be grouped into two other groups according to the ability of a person to read printed letters with technical and optical aids. These groups are:



People with albinism are between legal blindness and visual impairmentmoderada».

LOW VISION:

Existing in students with visual ability, but unable to do so at a normal distance, even with optical aids.

BLINDNESS:

existing in students without measurable visual ability and therefore need the Braille code or the use of hearing aids to read.

According to this classification, which has legal repercussions, people with albinism are between legal blindness (with a visual acuity equal to or less than 0.05) and moderate visual impairment (with a visual acuity between 0.3 and 0.1). According to this classification, which has legal repercussions, people with albinism are between legal blindness (with a visual acuity equal to or less than 0.05) and moderate visual impairment (with a visual acuity between 0.3 and 0.1).

VISUAL FUNCTIONALITY IN STUDENTS WITH ALBINISM OR VISUAL DEFICENCY

When we talk about visual functionality we are not only talking about visual acuity or affect in the visual field, but we are referring to both the ability to perceive and the effectiveness with which a student «sees with his visual ability».

Many factors influence visual functionality. Therefore, a much broader exploration is required than the simple subjective assessment of the specialist in ophthalmology and the intervention of other specialties needs to be included.

First, it is necessary to identify how much the student sees with albinism; second, how it does; and, third, under what circumstances.

This requires an interdisciplinary intervention involving the affected students, the family, the ophthalmology specialist, the optician, the teacher classroom and professionals specialized in low vision. The objective to be sought is to determine, in the most complete way possible, how the student uses his or her residual vision from suitable optical and non-optical aids in the set of visual tasks. In addition, emotional, social and cognitive aspects and their possible implications in the family, social and academic environment (learning style, appropriate teaching method, specific material, curricular adaptation, etc.) should be assessed.

Once information on the physiological and perceptive-visual aspects related to vision has been collected in the student with albinism (such as eye accommodation, eye adaptation to darkness, chromatic vision, peripheral vision and binocular vision)



WHAT SHOULD WE OBSERVE TO EVALUATE THE FUNCTIONALITY OF VISION?:

- **Behaviors it shows.**
- **Environmental conditions.**
- **Your preferences.**
- **The skills he shows in different tasks and contexts.**
- **His attitude to vision.**

«Technology is always a means to improve learning, but it can never become an end».

When we talk about technology we mean the conjunction between technique, tools and science to produce «technological» products that serve to improve our lives. We refer to those electronic instruments, automatic systems, devices and technological resources that generate, process or store information.

Digital technology has been present in classrooms for two decades. In recent years, and on the basis of the measures adopted to respond to the pandemic situation by COVID-19, technology has shown its strengths in the education system, becoming an effective instrument, It was a fast and accessible way to take classrooms home at a time when physical contact between people needed to be restricted.

The pandemic in Europe, and especially in Spain, has led to a technological explosion and an acceleration of digitization in the education sector. The closure of the schools was a blow to the schools themselves and also to many families who did not have the resources to continue online classes. However, although the health crisis exposed the weaknesses of technology, there are those who discovered a great opportunity: to initiate a digital transformation in education.



The arrival of the coronavirus forced society to reinvent itself and adapt to a new scenario for which only a few were prepared. In education, teachers, students and families had to make a great effort to adapt and transfer educational activity to digital platforms and videoconferencing services. Although this was a great challenge for all, the result was positive and both students and teachers were equal to the circumstances.

Thanks to technology, not only did education not stop during the first months of confinement, but it also raised a debate:

IS THIS THE NEW EDUCATIONAL MODEL FOR THE FUTURE?

RISKS AND BENEFITS OF THE CLASSROOM DIGITIZATION

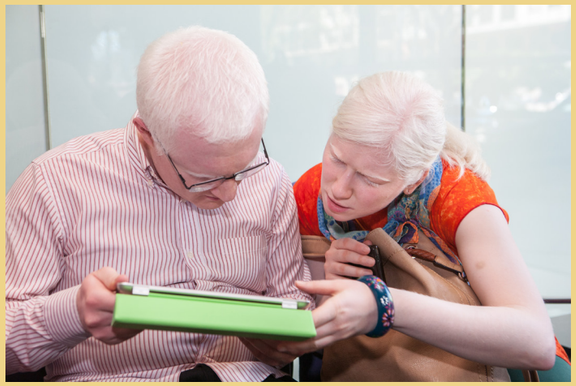
RISKS AND BENEFITS OF THE CLASSROOM DIGITIZATION

Digital technology has come to stay in the classroom and the challenge of increasing digital skills in both students and teachers is evident. Although it is true that technology is increasingly integrated into educational processes, we must continuously train ourselves in digital skills. As a teacher trained and prepared will be able to address any type of educational project with their students inside and outside the classroom.

However, while it is true that technology is a key factor in driving change in classrooms, it is essential to focus on the innovation of educational techniques as a whole and not just on devices.

«Technology without associated pedagogy is not education»

Similarly, this methodological change must be complemented by continuous digital skills training for teachers to enable further innovation in educational techniques. Because digital transformation in the classroom is not just about handing out technological instruments such as laptops, tablets, etc., but to «accompany students» in these changes, taking into account their specific learning needs. This accompaniment is something that is being carried out in some schools independently and with the help of the most innovative teachers, but it should occur universally.



For accessibility to be complete, digitization in the classroom has to face the challenge of «the socioeconomic gap». There are many families who do not have the financial resources or knowledge to help their children connect to the network and cannot be left behind. Traditional education has become obsolete and does not meet all students' needs. The teacher is no longer that figure of authority that possesses all knowledge, teaching it categorically and unilateral. In their new role, teachers must contribute to the growing development of personal and adapted education. To do this, respecting the learning pace of each student and their individual needs to access information is fundamental.

Technology plays a central role in educational digitization and in making better use of education in general. However, poor monitoring and education on how to use or use technology responsibly is a problem.

One issue that needs to be worked on correctly is that of the risks associated with the technology itself. Educating students on how to make responsible use of it will allow students to take advantage of all the opportunities that it can offer them.

«Educational digitalization must necessarily be inclusive»

Some studies conducted on the impact of the use of electronic tablets in classrooms say that they «improve learning». This is because the devices facilitate access to different sources of information, provide different resources for learning activities and invite the application of methodologies focused on the student and his autonomy.

However, despite these advantages, it was noted that a large majority of teachers acknowledged that they did not have the necessary technological knowledge or adequate resources to work in the classroom. Similarly, it was noted that providing students with universal access to technology is not the solution to improving the level of education. If the technology is not used correctly can be includedso contraproducente.

According to a study conducted by Professor D. Nicholas of the CiberResearch Institute Ltd., children and adolescents are shown, with regard to new technologies, «somewhat lazy, dependent on search engines and not knowing how to value information once selected»

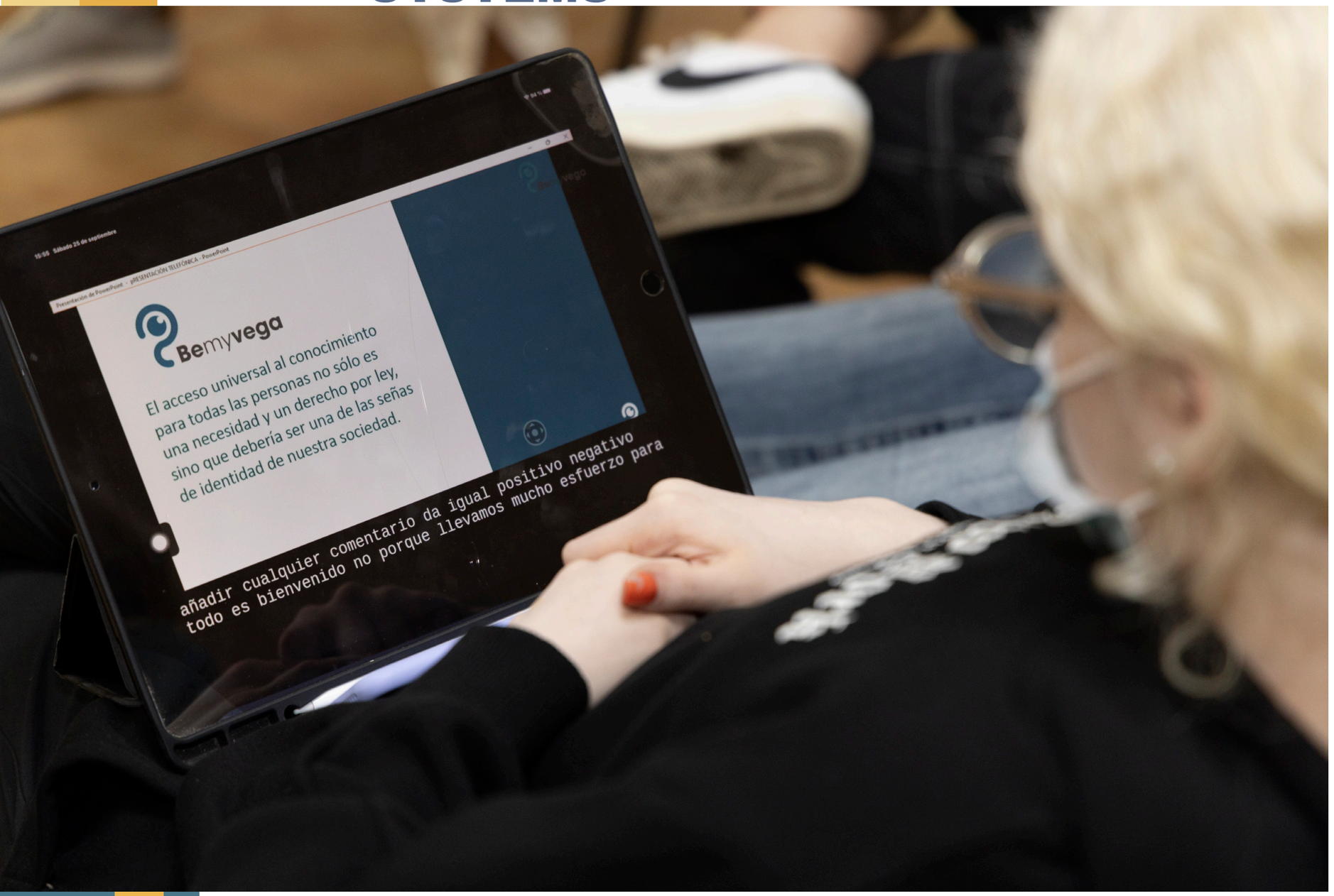
THE GENERAL ADVANTAGES IN THE USE OF THE DIGITAL TECHNOLOGY IN THE CLASSROOM:

- **Students are more motivated to investigate**
- **Students can interact and exchange experiences with other peers.**
- **Students lose their fear of subjects they don't like.**
- **The tasks involved in the use of the computer make it possible to obtain a high degree of interdisciplinarity since they make it possible to carry out various types of information processing.**

THE GENERAL DISADVANTAGES IN THE USE OF THE DIGITAL TECHNOLOGY IN THE CLASSROOM:

- **The constant use of digital tools helps students to isolate themselves and not foster their communication and relational skills.**
- **Interest in studying may be diminished by curiosity when exploring other websites that have nothing to do with academic activities. It happens especially with students who are more dispersed when it comes to concentrating.**
- **Young people may feel overwhelmed by the immediacy with which they find a great deal of information. In many cases, they solve by «cutting and pasting» the information found without processing it.**
- **Not knowing how to search for information and retain as valid knowledge that is not reliable.**

03 INTRODUCTION OF THE TECHNOLOGY IN EUROPEAN EDUCATIONAL SYSTEMS



EUROPEAN JURIDICAL STATE

In Europe, each country has its own educational system, but with many shared guidelines reflecting the commitment made in education.

The response of the different European education systems to pupils with any type of disability is also based on the ratification of international commitments relating to the right to education. These include the following:

- **The UN Convention on the Rights of Persons with Disabilities (2006)** which advocates inclusive and equal opportunities schooling for persons with disabilities.

- **The European Agency for Special Needs and Inclusive Education (2011) and the World Education Forum (2015)** which makes explicit the objective of ensuring inclusive education, Quality and equity are key to addressing all forms of exclusion, marginalization and inequalities in access, participation and learning outcomes.

Education in Europe is a fundamental right reflecting, inter alia, the principles of equity, quality, inclusion, equal access, permanence, promotion, selection and social participation, Adopted after ratifying the commitment in the different forums and conventions on education: UNESCO Conventions and Forums held in Jomtien (Thailancia-1990), Salamanca (Spain - 1994), Dakar (Senegal - 2000); Incheon Declaration (Korea - 2015), etc.

MARCO JURÍDICO EUROPEO

However, the European recognition of education as a fundamental right requires that the different states design their own laws and regulations that determine in detail the competence and organisational structure, as well as the content of their education systems. These laws, which take into account the recommendations provided by the international systems of protection to education, define their own.

Thus, we found it interesting to make a brief presentation of the legislative frameworks related to the articulation of the right to education of persons with visual disabilities derived from the genetic condition of albinism in the countries that have collaborated in the preparation of this guide and its development. We have structured the exhibition in three different points specific to each of the educational systems:

- **A** Competence structure
- Organizational structure.
- How they respond to students with visual disabilities derived from the genetic condition of albinism in secondary education by guaranteeing the right to an inclusive education on the basis of equality.

- **Denmark**
- **Holland**
- **Italy**
- **Norway**
- **Spain**





«The design of a State legislative framework that takes into account international considerations relating to inclusive education ensures immediate compliance with the right.»

We have had no difficulty in finding the rules governing the various education systems as they are easily accessible thanks to the Eurodyce European education information network; In this Network we have found the normative development corresponding to each one of the participating countries besides comparative reports of its structuring.

Although our objective is not to make a comparative analysis, in relation to the structuring of secondary education we have observed that there is no coincidence in its beginning: in Denmark it is included in the Folkeskole, in Italy at 11, in Holland and in Spain at 12 and Norway at 13, although the completion is always coincident: At 16 years old, the direct impact in this guide is that the proposed technological tools are made concrete for students between 11 and 16 years of age and not so much for students at a certain educational stage. What the authors call secondary education roughly coincides with what the other participating countries call secondary education stage, VWO, HAVO and/or VMBO, first-grade secondary school and part of the Folkeskole.



As regards the response to the educational needs arising from the visual impairment of students with the genetic condition of albinism in the participating countries, stresses that all of them include a commitment to ensure their inclusion in the ordinary education system in a manner adapted to their characteristics and skills and on an equal footing with other students. In all cases, adaptation measures are the result of the assessment and assessment of competences, skills and deficits of students, which are sometimes initiated by the national health system and others by educational and psychological counselling services. These measures are being continuously monitored.

Our aim has never been to make a comparative analysis of the ways in which the different European educational systems respond to the specific needs of students with visual disabilities derived from the genetic condition of albinism in education secondary. However, we believe that this exhibition can be useful as it is a guide for implementation throughout Europe. Therefore, if the reader is interested in the comparative study, we refer it to the latest Eurydice report entitled Equity in Europe's education systems and published by the European Commission's EACEA. It provides a more in-depth analysis of the range of key education policies and structures across Europe, assessing how they affect equity levels in education systems.

INCLUSIVE EDUCATION AS AN UNIVERSAL RIGHT

Everyone has the right to education, as stated in the different European regulatory regulations, especially those that ratify the Convention on the Rights of Persons with Disabilities, of 13 December 2006. In accordance with article 24 of the Convention, States parties recognize the right of persons with disabilities to education. With a view to realizing this right without discrimination and on the basis of equal opportunities, States Parties shall ensure an inclusive education system at all levels, as well as lifelong learning, with a view to:

1.- Fully develop human potential and a sense of dignity and self-esteem and strengthen respect for human rights, fundamental freedoms and human diversity.

2.- Develop to the maximum the personality, talents and creativity of persons with disabilities, as well as their mental and physical aptitudes.

3.- Make it possible for persons with disabilities to participate effectively in a free society».

«Inclusive Education is a fundamental right and, as such, its recognition must be full and effective, without being subject to analysis in each case of the reasons or motives contained in the resolutions of the Educational Administrations.».

A number of principles linked this right and providing the basis for policy action are firmly anchored in the UNESCO Constitution. These are:

- **Non discrimination principle.**
- **Principle of equal opportunities and treatment.**
- **Universal educational access principle.**
- **Principle of solidarity.**

INCLUSIVE EDUCATION AS AN UNIVERSAL RIGHT

01 Non discrimination principle

Non-discrimination means that all people must have access to education, both in the form of a right and in fact. The Universal Declaration of Human Rights and the UNESCO Constitution embody this «principle of non-discrimination». Specifically, the latter organization adopted the Convention on Combating Discrimination in Education in 1960, «as part of its mission to understand the ideal of equal educational opportunities regardless of race, sex or any kind of economic or social distinction».

This UNESCO Convention marks a milestone, as we are talking about the first international treaty that comprehensively covers the right to education and provides the legal basis for it by outlawing any form of discrimination. Thus, in education, discrimination based on race, color, sex, language, religion, political or other opinions, national or social origin, economic position or birth of the person is prohibited.

In 2009, the United Nations (UN) Committee on Economic, Social and Cultural Rights (CESCR) issued guidance on how this principle should be understood in the context of economic, social and cultural rights. All these guidelines are reflected in General Comment 20 of the Committee on Economic, Social and Cultural Rights.

02 Principle of equal opportunities and treatment:

The principle of equal opportunities and treatment is reflected in the mission of UNESCO, which aims to promote collaboration among nations in order to improve equal educational opportunities. The Convention to fight against Discrimination in Education therefore sought to eliminate discrimination in education and to promote equal opportunities and treatment.

In the face of growing disparities, action at the national level to create equal opportunities for education for all is crucial. Measures taken by Member States with a view to implementing the Convention contribute to this process and reinforce the right to education as a fundamental human rights. In addition, the 2030 Education Agenda and Sustainable Development Goal 4 call for greater efforts to ensure equity and inclusion as part of their goals to «ensure inclusive quality education and promote lifelong learning opportunities for all by 2030».

Addressing exclusion and overcoming persistent barriers in education requires that learning environments be accessible to all learners, respecting their diverse needs, capacities and characteristics and eliminating all forms of discrimination. Inclusive education should guide policies and practices in an attempt to achieve full equality of educational opportunities.

03 Universal educational access principle:

Universal access to education, free from discrimination and exclusion, is the cornerstone of the right to education. This principle is found in most of the instruments that UNESCO has developed in the field of education, translated into normative content.

The 2030 Education Agenda reiterates the importance of ensuring both access to and completion of the quality education cycle for all children and young people, and promoting permanent learning opportunities for all. Therefore, in order to fulfil the right to education, countries should ensure inclusive and equitable access to free, quality and compulsory educational and learning practices. Education should aim at the integral development of the human personality and promote understanding, tolerance, friendship and peace.

04 Principle of solidarity.

In 2000, the World Community affirmed that «no country that commits seriously to education for all will be frustrated by a lack of resources in its efforts to achieve this goal».

The shortage of funds must not jeopardize the educational opportunities of billions of students who are entitled to receive a quality education. This commitment was reinforced following the adoption of the 2030 Agenda for Sustainable Development in 2015. The Incheon Declaration reaffirmed that the primary responsibility for implementing this Agenda rests with Governments and requires collaboration, cooperation, coordination and follow-up at the regional level.



INCLUSIVE EDUCATION IN EUROPEAN EDUCATION SYSTEMS



DENMARK

The education system in Denmark guarantees that all its citizens have the right to access quality free education. Mandatory education ranges from 6 to 16 years.

B DANISH ORGANIZATIONAL STRUCTURE

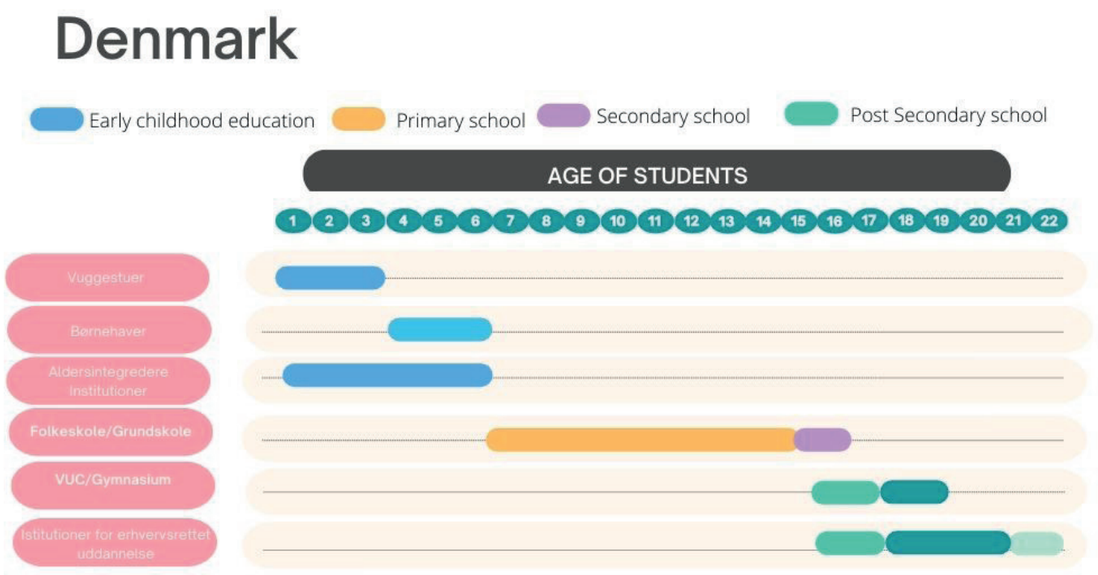


Figure 7: Organisation of the education system in Denmark

A DANISH STRUCTURE OF COMPETENCE

Its comprehensive system is called Folkeskole and covers the entire period of compulsory education, including primary and lower secondary education. Its guiding principles are:

Education for all: the State guarantees the acquisition of knowledge and skills that enable students to participate actively in society and contribute to its further development

Compulsory education from the age of six to 16, with the possibility of extending it for a further year (that is, until the age of 17).

Lifelong learning is essential because work by highly qualified people plays a decisive role in the global economy and in the development of the country as a society.

Self-government of educational institutions.



In addition, the Danish education system is centrally organised and managed by the following ministries:

Ministry of Education: responsible for early childhood and care, as well as primary and lower secondary education.

The Ministry of Higher Education and Science: responsible for higher education and formal adult education.

The Ministry of Culture: responsible for non-formal adult education.

Ministry of Defense: responsible for specialized education programs within the Danish defense.

Corresponding to the level of education in which we focus, it is the Ministry of Education which has the full competence; it is responsible for setting general objectives, curricula, funding, examinations and staffing.

The contents of each level are defined by the teachers themselves, together with the students, and supervised by the Ministry of Education in collaboration with the municipal councils. At the same time, an autonomous body under the Ministry of Education, the National Evaluation Institute, monitors and evaluates all areas of education.

With regard to financing, he stressed that the municipalities themselves were responsible for securing and inspecting economic funds.

Some of the fundamental principles of public school education are:
Educational differentiation, which involves taking the skills of each student as a starting point for the teaching approach.

Continuous internal evaluation.Student participation through student councils which, in schools with grades above the fourth level, are compulsory.

Organizational structure of the Danish education system.



Education in Denmark is seen as a training tool that promotes democracy and equality. Thus, the public school is a unitary school in which pupils are not separated according to their aptitudes or social background. The classes not only focus on academic knowledge but also ensure that students develop a capacity for dialogue and collaboration.

The principle of inclusion is also present in the Danish Folkeskole and implies that children with special educational needs are enrolled with other pupils of the same school age in regular classes and have the professional and material support need. The main regulations governing this area are:

· **Bekendtgørelse om folkeskolens specialundervisning og anden specialpædagogisk bistand** [Ministerial Order on Special Educational Education of the Folkeskole and Other Specialized Pedagogical Assistance], BEK nr 693 af 20/06/2014.

· **Bekendtgørelse af lov om folkeskolen** • [Folkeskole Consolidation Act], LBK nr 1510 af 14/12/2017.

The definition of pupils with special educational needs is laid down in the Folkeskole Act. According to this, these are «children whose development requires special consideration or support». We are talking, therefore, about students who show inability to develop satisfactorily within the framework of education.



As regulated by the Ministerial Order on Special Education Education of Folkeskole and other types of specialized pedagogical assistance, the procedure for deciding when special education is needed is as follows:

1. Teachers detect the special needs of a student.

2. The pedagogical-psychological counselling service examines the nature of the need and form.

3. The person in charge of the school decides whether the student should receive special educational support. If it is determined that it should be received, the management in collaboration with the pedagogical-psychological advisory service and parents monitor the progress of the student in order to make the necessary adjustments.

4. At least once a year, it is decided whether to continue, adjust or suspend the special educational support measure. This decision is made on the basis of a pedagogical-educational evaluation, with the consent of the student (taking into account their age and maturity) and their parents.

This support may be provided:

- Inside the classroom.
- In special classes.
- In special schools.

According to the Folkeskole Act, it is the municipal board which is responsible for ensuring that all pupils whose development requires special support for educational education and other forms of special pedagogical assistance receive it..

Special educational support, according to the Ministerial Order on Special Educational Education of the Folkeskole and other specialized pedagogical assistance, includes:

- **Special pedagogical advice to parents, teachers and others with significant impact on the student's development.**
- **Special teaching material and necessary technical material in relation to student education.**
- **Teaching in the subject area of the Folkeskole, organized according to the prerequisites of the student.**
- **Teaching and training in methods of function and work that can help students cope with their functional difficulties.**
- **Personal assistance to overcome practical difficulties related to school.**
- **Special activities organized**

The decision of one support or another will always be determined by the needs required by the student based on the pedagogical-psychological evaluation previously carried out.



NETHERLANDS

Freedom of education is the guiding principle of the Dutch education system. This principle is enshrined in its 1848 Constitution, guaranteeing it.

A COMPETENCE STRUCTURE DUTCH

After a legal battle between public and private schools, to achieve complete equality before the law in relation to their financing, they achieved in 1917 the principle of financial equality. According to this constitutional principle, the financial treatment of private education and public education is identical.

The overall responsibility for the education system rests with the State, namely the Minister of Education, Culture and Science and the State Secretary for Education, Culture and Science.

One of the distinctive features of the Dutch education system is that it combines centralised education policy with the decentralised administration and management of schools, always ensuring compliance with the provisions of its Constitution.

> The government, through this Ministry, establishes the framework of the educational system: legal requirements at each of its levels, with the provincial authorities responsible for supervision and legality, Local authorities administer and manage primary, secondary and secondary vocational schools.

Freedom of education is another key feature of the Dutch education system, guaranteeing the freedom to found schools (freedom of establishment), to organise education in schools (freedom of teaching organisation) and determine the principles on which they are based (freedom of conviction). As a result, schools can be: public, special (religious) and general, although there are also some private schools.

All these types of schools are under the jurisdiction of a governing body called the Inspectorate of Education (ONDERWIJSINSPECTIE); a body through which they can demand a change in their educational policy and quality, although at the risk of being closed.

ORGANISATIONAL STRUCTURE DUTCH

01

Compulsory education in the Netherlands (LEERPLICHT) begins at the age of five, although in practice many parents enrol their children from the age of four.

02

From four to twelve years, students attend elementary school (BASISSCHOOL). This school has eight grades or groups (group 1 to group 8). As I have anticipated, compulsory education begins at the age of five so group 1 is not obligatory. Hasta el año 1985, los dos primeros grupos de la BASISSCHOOL eran instituciones separadas de las escuelas elementales, más semejantes a las guarderías (KLEUTERSCHOOL).

03

Until 1985, groups 1 and 2 of BASISSCHOOL were separate institutions from elementary schools; they were institutions similar to nurseries (KLEUTERSCHOOL). From group 3 (6 years) onwards, students learn how to read, write and do arithmetic, and often English.

LThe evaluation of students to promote to the next grade or repeat it is done by a team of teachers at the school. It is a decision well thought out by the team since its consequences can have a great impact on the life of the affected students, in the event that the decision is not to promote as a group. To avoid repetition, the Dutch education system has resources such as therapeutic teaching and other forms of mentoring. The result of this procedure is that repeating a group is rare and, when it happens, it happens in elementary schools.

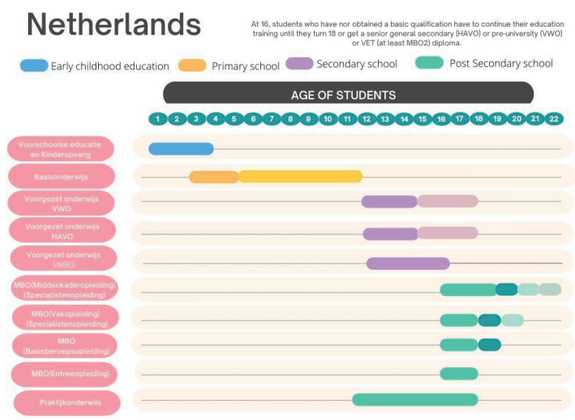


Gráfico 8: Organización sistema de educación en Holanda

When students pass group 8 (12 years) they take an aptitude test called the final examination of primary education (CITO EINDTOETS BASISONDERWIJS -CITOTOETS). The test is developed by the Central Institute for exam development, from which the type of secondary education most suitable for the student will be recommended. Although the result obtained in the CITOTOETS is important, the recommendation of the group 8 teacher together with the opinion of the student and that of their parents are preponderant factors when choosing one type or another of secondary school.

This examination is not compulsory and, in some elementary schools, either a School Final Examination (SCHOOLEINDONDERZOEK) or the Dutch Educational Intelligence Examination (NIOTOETS) is held.

When students pass group 8 (12 years) they take an aptitude test called the final examination of primary education (CITO EINDTOETS BASISONDERWIJS -CITOTOETS).

The test is developed by the Central Institute for exam development, from which the type of secondary education most suitable for the student will be recommended. Although the result obtained in the CITOTOETS is important, the recommendation of the group 8 teacher together with the opinion of the student and that of their parents are preponderant factors when choosing one type or another of secondary school.

This examination is not compulsory and, in some elementary schools, either a School Final Examination (SCHOOLEINDONDERZOEK) or the Dutch Educational Intelligence Examination (NIO-TOETS) is held.

From the age of 16 and after passing the levels VMBO (at 16) or HAVO (at 17) and VWO (at 18) can access the labour market and, in the specific case of VWO can also access WO training (Research Universities).

Also, from the age of 16, there is a partial compulsory education according to which a student has to participate in some form of education at least two days a week. Compulsory education ends at the age of 18 or when a grade is attained.

VMBO is a four-year education level (twelve to sixteen years) that combines vocational training, language, mathematics, history, arts and sciences. There are four different levels of **VMBO**:

1· **VMBO-TL**, iIdentified as a "theoretical learning route" includes in most of its theoretical education curriculum. It allows:

Preparación para futuros manos medios Preparing for future middle hands..

Preparation for the MBO level of higher education.

Resume vocational training at the HAVO level.

2· **VMBO-GL** or "combined learning route. It is a level between the VMBO-TL and the VMBO-KL.

3· **VMBO-KL** is the "middle management-oriented learning route" and its curriculum includes an equal amount of theoretical education and vocational training. Prepares future middle management and MBO level of higher education.

4· **VMBO-BB** or "basic management oriented learning path" emphasizes vocational training and prepares for the MBO level.

5· **PRAKTIJKONDERWIJS** or practical education. It consists of vocational training and is adapted to students who would otherwise not be able to obtain a VMBO diploma. It allows direct access to the job market.

6· **LEERWEGONDERSTEUNEND ONDERWIJS** or "educational support learning route" is a level adapted to students with educational or behavioural difficulties.

Attention to the special educational needs of the Dutch education system.



In the Netherlands, the integration of students with special needs into ordinary schools began in 1991 with the WSNS. Some objectives of this policy are:

Allow students with special needs to attend regular primary schools.

Expand and strengthen special needs facilities in primary schools so that more students with special needs can stay in general education and receive the support they need.

There are several types of support measures for students with disabilities guaranteed by the Dutch education system:

Educational Adaptations /Accommodations

Guidance, advice and support,

Adapted accommodation and equipment

Special provisions for review and evaluation

This commitment to integration is maintained for secondary and higher education, articulated through the Law on Equal Treatment for Persons with Disabilities and Chronic Diseases, the Law on Research and Higher Education, etc. According to these regulations, Students with a disability can access facilities and curricula in a sufficiently accessible manner and be examined.

Some of the support measures that facilitate accessibility to students with visual disabilities, derived from the genetic condition of albinism, are:

01 Educational Adaptations

- Personalized study plans and exams.
- Availability of adapted materials.
- Adapted locations
- Alternative curriculum content (digital).

02 Guidance, advice and support

- Attendance at the classes.
- Assistance in teaching tasks.
- Contact group of disabled students.
- Readers, annotators or editorial assistants.
- Personal assistants.
- Manual or literature on disabilities.

03 Accommodation and adapted equipment

- Technology and adaptive equipment.
- Modification of the building to improve access.
- Lifts adapted
- Textbooks in audio format.

04 Special arrangements for review and appraisal

- Tiempo extra.
- Alternative test formats.
- Big print
- Adapted subjects

According to the dispositions of the Equal Treatment (Disabled and Chronically Ill Persons) Act, educational institutions must adapt their facilities effectively to accommodate students with disabilities, unless it places an unacceptable burden on the institution. On the basis of the same Act, an educational establishment may not refuse a student with a disability unless it is a disproportionate burden on the school, in which case another solution will be sought.



ITALY

Italy's education system is governed by a series of rules that help students feel comfortable and develop their skills in a more useful way. By law, it is guaranteed that the entire population has the right to access quality free education, being compulsory between the ages of six to 16.

A COMPETENCE STRUCTURE ITALIAN





The Italian State has exclusive legislative powers over the general organization of the education system. The Ministry of Education and the Ministry of University and Research are responsible for the general administration of education at the national level. In addition, it is structured in the regions through the Regional Education Offices (Uffici Scolastici Regionali or USR) for the monitoring, school organization and inspection of the training offer and its development.

«Italian education is free and open to all citizens at all educational levels. Includes Italian citizens and foreign minors from EU and non-EU countries»

ORGANIZATIONAL STRUCTURE ITALIAN

Education is divided into three levels, starting with primary education or primary istruzione, which includes pre-school and primary education. The next level corresponds to secondary education or Scuola media, which is divided into two educational stages: the secondary school of first grade or Medie Inferior, which has three phases. Finally, there is higher university education and technical.

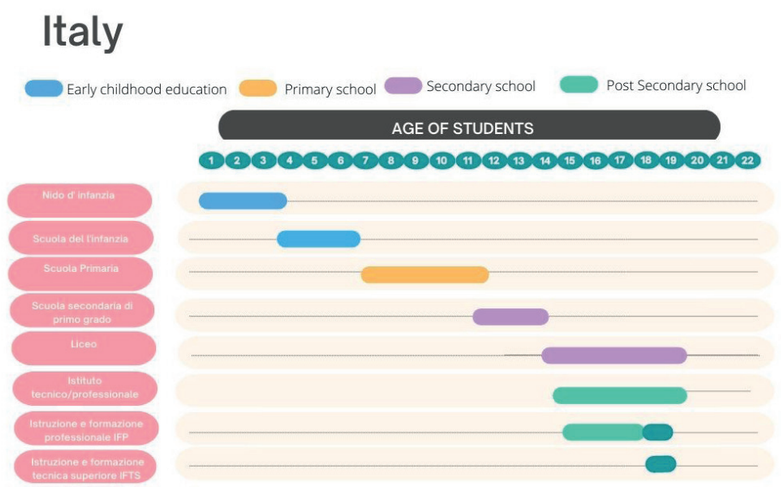


Figure 9: Organization of the education system in Italy

- **Primary school** is obligatory for children from the age of six. Over the next five years, they acquire knowledge in mathematics, history, geography, science and languages.

- **The three-year intermediate school** aims to prepare students for secondary school, with emphasis on subjects such as Italian literature, history, mathematics and English.

- **Secondary school** lasts five years and covers the age range from 14 to 19 years. The institutes where these courses are taught are divided into three types: classical, scientific and linguistic. This division arises with the aim of allowing the student to better prepare for a future university career or access directly to the labour market, according to their choice.

To climb within all levels of the Italian education system, students take final tests. According to their resolution, the grade they get is added to the rest that they have accumulated during the school year.

The qualification system used in the first two levels of education (Instruzione primaria and Scuola media) is based on alphabetical notes. Thus, the letter «**A**» corresponds to the maximum note that can be obtained and the rest of the grades are followed by the following letters until reaching «**E**», which represents the lowest score.

Attention to the special educational needs of the Italian education system.





As we pointed out earlier, Italian education is free and open to all citizens at all educational levels. It includes Italian citizens and foreign minors from both EU and non-EU countries.

The inclusion principle advocated by this system is also applicable to students with disabilities, and consideration is given to the establishment of legislative measures and norms that guarantee their access to the school curriculum in a manner adapted to their needs. Those responsible for ensuring the provision of these standards are the Italian State, local authorities and the National Health System. School inclusion in Italy is now a fact thanks to the collaboration and coordination between these bodies, which act within the competences of each.

Specifically, the integration and support measures to be implemented for students with special educational needs are defined in Framework Law 104/1992 on care, social inclusion and the rights of persons with disabilities.

At present, the type of pupils considered to have special educational needs has been expanded. Initially, and defined in Law 104/1992, it included those students with physical, psychic or sensory disabilities, stable or progressive, causing learning difficulties and that can produce detriment and social exclusion.

The subsequent law 170/2010 added a new pedagogical-didactic category of students with special educational needs that also includes language, non-verbal skills, movement coordination, attention deficit and hyperactivity disorder. Limiting intellectual functioning, on the other hand, can be considered as a borderline case between disabilities and specific developmental disorders.

Summary table of categories of special educational needs:

1. Disability.

1.1. Sensory.

1.2. psyche.

1.3. physical.

2. Specific disorders of development.

2.1. language

2.2. Specific disorders of learning

2.2.1. Dyslexia.

2.2.2. dysgraphia.

2.2.3. Dysorthography.

2.2.4. Dyscalculia.

2.3. Movement coordination.

2.4. Non verbal skills

2.5. Attention deficit

2.6. hyperactivity disorder

3. Socio-economic, linguistic and cultural disadvantage.

Although there are still some special institutes for students with some type of disability (visual or/and hearing), students with special educational needs attend the ordinary school at all levels, from pre-school education (primary Istruzione) up to upper secondary education (Scuola media).

Its educational inclusion begins when a medical committee of the National Public Health System certifies the disability of a student (Legislative Decree 66/2017). After certification, an operating profile is developed following the International Performance Classification (CIF). With this information, a multidisciplinary evaluation unit, in collaboration with a representative of the school and the parents of the student, develop the operational profile. This operating profile replaces the functional diagnosis.

The operating profile includes:

1. Support measures.

2. Structural resources.

3. Professional resources:

- Professional specialist.

- support teachers

- Assistants for autonomy and communication, etc.

Following the development of the functioning profile of the student with educational needs arising from a disability, teachers, support teachers, class council and specific professionals involved, in collaboration with parents, define the Individualized Education Plan (PEI) for a given period.

The Individualized Education Plan (PEI) includes:

1. Tools and strategies to create a learning environment based on:

- Relations

- Socialization

- The communication

- The orientation

-The autonomy

2. Teacher methods

3. Evaluation according to individual planning.

The number of students in any high school classroom ranges from a maximum of 27-28 students to a minimum of 18. The total number of students with disabilities is reduced to 20.

The procedures for evaluating students with special educational needs arising from a disability, as well as those for completing and accessing the next stage, are the same as those applied to other students. The only indication that changes is that progress is taken into account rather than results.

Although obligatory education in Italy ranges from six to 16 years, enrolment for students with disabilities in upper secondary education may be extended to 18 years (provided they have passed the end-of-cycle examination and obtained the final qualification).



NORWAY

The first schools in Norway appear in the Middle Ages and it was not until the eighteenth century when, with an emerging central government, education and upbringing was placed at the axis of political priorities, support that remains today.

They understand that promoting a large educational system allows children, adolescents and young people to be given opportunities for personal development, knowledge and skills. Ensuring equal access and equal opportunities for all citizens to complete education are important in Norway.

A universal education system, open to all its population, accessible and inclusive generates improved human capital. On the one hand, this human capital has direct effects on the national economy by increasing the quality of its workers and, therefore, their productivity. On the other hand, this universal educational system allows its citizens to acquire skills that help them

- function well in their daily life
- to face the increasingly complicated challenges of society,
- evolve as human begin
- be personally realized
- and to ensure their participation in the job market.

The strategic objectives they advocate are:

- **All students participate in a good and inclusive learning environment.**
- **Children and young people who need it will have special assistance from the outset in order to develop their potential.**
- **Children and young people who need it will have special assistance from the outset in order to develop their potential.**
- **All are successful in education and training.**

A COMPETENCE STRUCTURE NORWEGIAN

The education system in Norway is free, with public and private institutions financed by the central government.

The Norwegian National Assembly has adopted an administrative structure through which it delegates much authority and freedom of financial action at the county level. State grants are awarded "In block" with municipal and county authorities determining what activities to implement and how to do so, in accordance with state legislation and existing regulations.

The Royal Norwegian Ministry of Education and Research (Kunnskapsdepartmente) is responsible for ensuring education, research, integration and kindergartens in the country. Originally called the Ministry of Church Affairs and Education, after the dissolution of Denmark-Norway in 1814, it was the first of six government ministries to be established at the time.

From this Royal Ministry, responsibility is delegated to the localities/municipality/county, to perform the didactic interpretation and adaptation that the school owner must comply with, in accordance with the Education Act and the national regulations.



The administration and management of schools and institutions vary according to their level in the education system:

1- **The Ministry of Education** and Research administers all higher education institutions. It also supervises private higher education.

2- **The Council for Primary and Secondary** Education is directly responsible for:

2.1.- Produce nationals curriculum

2.2.- monitor and control its implementation

2.3.- make the necessary assessments

2.4.- make the necessary assessments

2.5.- develop national examinations

2.6.-ensuring and assessing the competence of school administrators and teachers

2.7.- ensure that each education department carries out its activities

3.- **The municipal/county administrations:**

3.1.- influence the degree of self-government in the schools/institutions of the municipality/county.

3.2.- Build and run secondary schools



The Norwegian government has focused on creating an inclusive, knowledge-based, diverse and cohesive society. They understand that knowledge is a source of self-sufficiency, social mobility, democratic understanding and participation, and to achieve success in working life.

They argue that a competence policy contributes to increasing the knowledge of each person, creating a future-oriented society with safe workplaces and good welfare systems. They propose to build in the long term a knowledge-based nation in which all people should be able to participate and benefit.

Today, Norway's education system is ranked as one of the best in the world.

B COMPETENCE STRUCTURE NORWEGIAN

Education in Norway is obligatory and begins at the age of seven in obligatory primary education until the age of sixteen after the end of three years of obligatory secondary education. Its structure comprises ten years, divided into seven years of primary education and three years of lower secondary education

Although obligatory at the age of seven, the Norwegian Government guarantees the right of all girls in the country to access a kindergarten from the age of one, facilitating a coordinated process of admission to public and private kindergartens.

Has four stages:



1º.- Elemental school or BARNESKOLE.

2º.- Lower level of Secondary education or UNGDOMSSKOLE

3º.- Higher level of Secondary education or VIDEREGAENDESKOLE

4º.- higher education.

The **BARNESKOLE** stage (elementary school) starts at age 6 until age 13. Organized into grades, corresponding to years, ranging from 1 to 7. During grade 1 students learn much more about social structures without taking away contents related to simple mathematical operations, alphabet and basic English skills.

Between grades 2 and 7, students advance a lot in English, science, mathematics and religion, and something less in: arts, music, geography, history and social studies. During this stage the students do not receive any kind of official note, although it is frequent to do some unofficial test that allows to analyze their progress.

The **UNGDOMSSKOLE** stage or lower level of secondary education ranges from approximately grades 8 to 10, covering ages 13 to 16. At this stage they begin to have qualifications according to the efforts and work done by the students in their daily activities. When they reach grade 8, students have options to choose an optional subject: German, French or Spanish. In grade 10, students are informed about what their studies will be at the higher levels of secondary education; they can also start taking

Superada the **UNGDOMSSKOLE**, the student or student can access the higher level of secondary education or **VIDEREGAENDESKOLE.** Although this new level is not mandatory, the fact that few jobs are available for these ages confer great importance and make it inevitable.

Therefore, in general, all students have to go through this school level. This stage includes the age from 16 to 19, which means that there are only three years of schooling: from grade 11 to 13.

Having passed the upper level of secondary education, and having obtained a general certificate of admission to university, the student may access the stage of higher education. In Norway, higher education is defined as education and training:

University.

Specialized university guidelines .

College.

Art college.

Other public colleges not under the auspices of the Ministry of Education and Research.

Private higher education institutions.



Following the 2002 quality reform, higher education institutions offer three-year, two-year and three-year master's degrees, although there is also a six-year professional programme and a master's degree of less than two years.



ATTENTION TO THE SPECIAL EDUCATIONAL NEEDS OF THE NORWEGIAN EDUCATION SYSTEM.

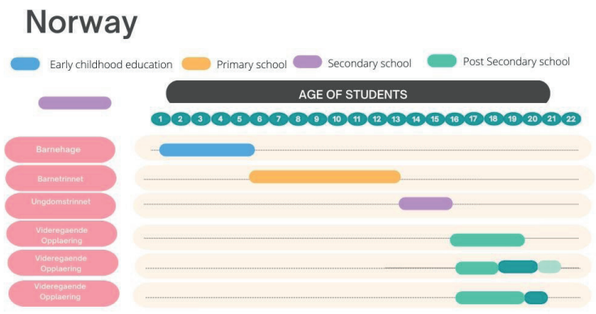
In Norway, inclusion is the basic principle and objective in its education policy for both compulsory and pre- and post-compulsory education. This means that boys and girls with different needs and skills share the same spaces in an adapted manner.

Its Education Act guarantees the right of pupils to receive support adapted to their special needs in the ordinary classroom, unless they cannot benefit from ordinary education, which would be provided in special classrooms, integrated into general education. Admission to the education system is a priority.

In the first year of life, the Kindergarten (Kindergarten) Act guarantees the right to receive support for special needs below the compulsory school age. It states that children with disabilities, as well as children under the care of child welfare services, are entitled to receive educational support tailored to their circumstances and abilities. There are therefore two key aspects:

1º.- Identify children with special educational needs as soon as possible and implement appropriate measures.

2º.- Identify the extent to which the child needs special educational support.



In either aspect, it is the municipality that has the competence, on the one hand, to ensure early detection, intervention and early adaptation, appropriate to the circumstances and abilities of each student with disabilities and, on the other hand, coordinating educational and psychological counseling services which, in addition to advising students in these areas, Parents, teachers and educational institutions also help diagnose learning difficulties and participate in the process of planning individual education plans.



SPAIN

In Spain, persons with disabilities were not included in the public education system until the late nineteenth century. Until then, education had been aimed only at people whose personal abilities or social circumstances allowed them to «take advantage of teaching», thus discarding the rest.

From that moment on, and taking into account the European current prevailing at the time, Spain considered that persons with disabilities could benefit from regulated education in parallel to that provided in the ordinary system. It was a fundamentally medical model, focused on the difficulty of the students and that promoted the segregation of this in specialized centers. The educational response that occurred during this period gave rise to numerous recommendations that left their imprint in the Spanish Constitution of 1978.

According to the Spanish Constitution, education becomes a right of all children, without differences on the basis of gender, sex, race, disability, etc., and the public authorities acquire the power to ensure compliance so that, in a compulsory and free manner, has access to this right

The consolidation of the right to education begins with the educational integration of all students in the same schools, with exceptions. This means moving from the previous medical model to one focused on the learning possibilities of students without emphasizing both their personal and social characteristics.

The principles guiding this new model are those defined in 2015 by the European Agency for Inclusive Education and Special Needs. They are equity, effectiveness, efficiency and increasing success for all stakeholders (students, family, education professionals, community representatives and decision makers) through accessible high quality educational opportunities.





The current education law (LOMLOE: Organic Law amending the LOE - 2021) has been defined according to a motor principle: «The adoption of the child rights approach in the guiding principles of the education system [...] The adoption of this approach, among others, aims to strengthen the equity and inclusive capacity of the system, whose main backbone is comprehensive education. This gives effect to the right to inclusive education as a human right for all persons, recognized in the Convention on the Rights of Persons with Disabilities, ratified by Spain in 2008, For this right to reach those people in situations of greater vulnerability» (LOMLO, BOE 340, of 30/12/2020).

It aims to create a common educational context for all children in which to learn to live together and without restrictions of any kind. In the case of Spain, priority has been given to modernising and making the education system more flexible.

Important challenges of the Spanish educative system:

• Improve the level of competence of all students, compensating for initial disadvantages.

• Recover the equality lost during the years of crisis.

• Modernize vocational training and improve their enrollment and qualification rates.

• Reduce early school dropout and facilitate reintegration into the education system.

• Update the teaching profession to lead curricular and didactic innovation.

• Improve the scope and quality of 0-3 education and its curriculum framework.

• Make secondary education more flexible with greater individual attention to educational achievement.

• Increase STEM vocations, especially among female students.

• Ensure education in civic values to enable the exercise of a critical and participatory citizenship.

• Ensure a space for investment in education and scholarships regardless of political and economic circumstances.

A Spanish competence structure



The Spanish Constitution of 1978, as well as subsequent educational laws, guarantees, encourages and arbitrates the participation of all sectors of the educational community in the organization, governance, functioning and evaluation of educational institutions and in the overall programming of education. It establishes a decentralized and symmetrical model of the State and distributes many of its competences among all administrative levels. It is therefore a symmetrical model in which each of the autonomous communities that make up Spain exercise the same competences.

Las competencias en materia de educación quedan distribuidas de la siguiente manera:

- Estado Español: **Gobierno de España**.
- **Comunidades Autónomas**: todas excepto Ceuta y Melilla.
- **Entidades locales**.
- **Centros educativos**.

01 Government of Spain,

Through the Ministry of Education and Vocational Training (MEFP), is responsible for:

• The general organization of the Spanish education system.

• The general planning of education.

• Establishing the core aspects of the curriculum.

• The regulation of the conditions for the acquisition, issuance and recognition of academic and professional qualifications, as well as the basic standards for the development of the right to education.

• The evaluation and innovation of the integrative studies of the Spanish education system.

• The Higher Education Inspectorate.

• The regulation, at a minimum, of the modalities and amounts of the general system of scholarships and study grants and the economic and academic conditions to be met by the beneficiaries, as well as the cases of incompatibility, withdrawal, reimbursement and any other requirements necessary to ensure equal access to the scholarships and grants.

• Promotion of policies of equality, non-discrimination and universal accessibility within the scope of their competences.

• The creation or withdrawal of teaching specializations, their basic regulation and the preparation of the bases of the legal system of the teaching public service.

• The basic aspects to which educational agreements with private institutions must be subject.·

01 Government of Spain

In relation to curriculum design:

• Establish the basic aspects of the curriculum in relation to objectives, competences, contents and evaluation criteria.

• Establish 50% of school hours for those autonomous communities that have a co-official language and 60% for those that do not.

• Validate the certificates for the regulated service types.

• Establish mixed curricula for the different types of provision in the Spanish education system and other areas.

02 Spanish Autonomous Communities. → With competence in education

Each one is responsible for:

• The legislative elaboration of State standards and the regulation of non-core elements or aspects of the education system.

• Executive and administrative powers for the management of the education system in its own territory.

• Executive and administrative powers for the management of the education system in its own territory.

• Regulation of the structure and functioning of the bodies they establish for the performance of educational inspection in their respective territorial areas.

• Regulations necessary for the development of the system of educational agreements with private institutions..

In relation to curriculum design:

• Establish the curriculum of the different non-university education programs, which must include the basic aspects of the curriculum established by the MEFP.

• To determine the percentage of school hours in schools within its management area in order to ensure the integrated development of all competences at the educational stage and the incorporation of transversal content in all areas, subjects and fields.

• Periodically review the curricula to adapt them to the advances of knowledge, as well as to the changes and new demands of their local, Spanish society and the European and international context.

• To issue the diplomas of regulated studies.



03 Local entities

Each locality is responsible for:

• Maintenance, maintenance and monitoring of educational facilities.

• Collaboration with the relevant educational administrations in obtaining the necessary place for the construction of the new public educational institutions.

• The management of certain educational services in order to promote greater efficiency, coordination and social control in the use of resources by delegation of the education departments of those autonomous communities that so agree..

04 Educational centers.

They are responsible for:

• Develop, approve and implement:

- Educational project

- Managing plan.

- Organizational and operational rules.

In relation to curriculum design, schools have the responsibility to develop and complete, where appropriate, the curriculum of the different stages and cycles in the use of their autonomy. It is a set of specifications established and approved by teachers.

B Organizational structure Spanish

LThe current Organic Law for the Improvement of Educational Quality (LOMCE) has introduced important changes in the organization of the Spanish education system with the objective of modernizing it, restoring equity and inclusion of the system, improve results and increase school success. It also seeks to consolidate the education system as a basic pillar of knowledge policies. Therefore, it offers:

- Kindergarten
- Primary education
- Obligatory secondary education
- High school.
- Vocational training.
- Language learning.
- Art training.
- Sports education.
- Adult education.
- University.

In relation to the subjects offered, the following blocks are established:

- **Trunk.** They occupy 50% of the school hours. Their contents are regulated by the Spanish State and are common throughout its territory.

- **Specific.** Its contents and timetables are defined by the autonomous communities and educational centers.

- **Of Free autonomic configuration.** Includes those of higher level of autonomy in its definition. Among others: co-official language and literature, subjects of own design, etc.

Basic education comprises the stages of primary and secondary education. This basic education is compulsory and free of charge and ranges from six to 16 years of age, with the right to remain in the ordinary system until 18 years of age.

Post-compulsory secondary education includes the Baccalaureate, Secondary Vocational Training, Secondary Vocational Education in Visual Arts and Design and Secondary Sports Education.

Higher education includes university education, higher art education, higher vocational training, professional education in visual arts and design, and sports education at higher education.

The special education system includes artistic education, language and sports education.

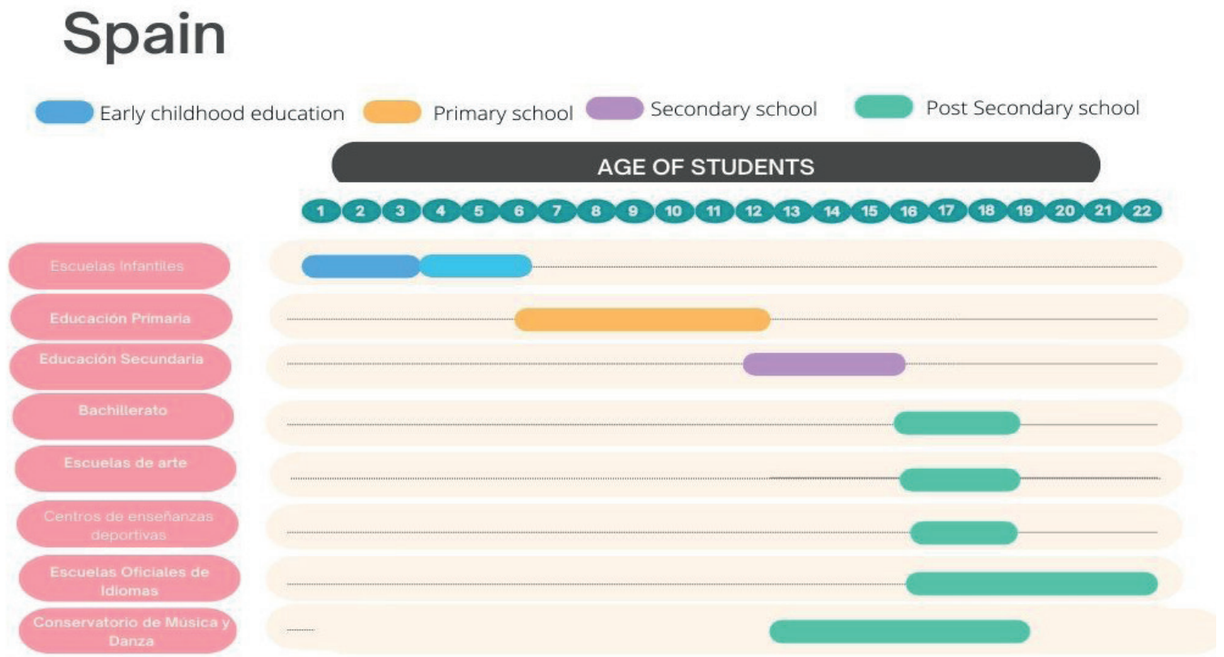


Figure 10: Organization of the education system in Spain

Among the most important changes that the LOMCE has brought about, which affect the organizational structure, the following stand out:

- Provide for an increase in the number of public places in the first cycle of pre-school education to meet all requests for schooling and the regulation of the curriculum and minimum requirements for the entire stage.

- Elimination of the routes and hierarchy between subjects of Compulsory Secondary Education (ESO).

- Curricular diversification programs and basic training cycles from 3rd ESO leading to the graduation of ESO.

- Modification of promotion criteria.

- Annual diagnostic assessments based on censuses in 4th Primary Education and 2nd ESO and general evaluations, by sampling and multi-year, of the education system in 6th Primary Education and 4th ESO. These assessments will have no academic effect.

- Changes in the administration and management of the education system: curriculum and distribution of competences, participation in the functioning and governance of schools, school autonomy, collegiate governing bodies and coordination, Management of public schools and evaluation of the education system.

- Promotion of dual vocational training at all levels of vocational training.

Attention to the special educational needs and educational support of the Spanish education system.

According to Article 73 of Organic Law 3/2020, students with special educational needs are understood «those who face barriers that limit their access, presence, participation or learning, arising from disability or serious behavioral, communication and language disorders, for a period of or throughout their schooling, and that it requires specific educational support and attention for the achievement of learning objectives appropriate to its development».

The schooling of these students is governed by the principles of normalization and inclusion and ensures non-discrimination and effective equality in access to and retention in the education system.

Article 71 of Organic Law 2/2006 on Education, as amended by Organic Law 3/2020, stipulates that educational administrations must provide the necessary means for all students to achieve maximum personal, intellectual, social and emotional development. In addition, they must ensure the necessary resources so





that students requiring educational care other than the ordinary one can achieve the maximum possible development of their personal abilities and, in any case, of the general objectives set for all students.

Students with special educational needs, arising from severe or severe disabilities, must attend regular educational establishments and, exceptionally, special educational establishments when, according to the required reports, It is justified that it requires support and measures of high intensity and individualization that cannot be provided with the measures of attention to diversity available in ordinary schools. In any case, decisions on schooling are subject to continuous monitoring by educational establishments and the competent services in order to ensure their up to review and reversible nature.



Article 72 of the same Act, as amended by LOMLOE, defines the resources that educational administrations must have available in educational establishments to cater for students with educational support needs:

• Teaching staff of the corresponding specialties and qualified professionals, as well as the means and materials necessary for the adequate attention of these students.

• The provision of the necessary resources so that the institutions can adequately assist this student body.

• The provision of the necessary resources so that the institutions can adequately assist this student body.

• The promotion of the training of teachers and other professionals related to the care of students with specific needs of educational support.

• Collaboration with other public or private administrations or entities, institutions or associations to facilitate schooling and better integration of these students into the educational institution, as well as promoting educational success and preventing early school leaving.

Article 71 of the LOE, modified by the LOMLOE, also establishes groups of students who require different educational care than the ordinary one. It's the one with**:**

• Special educational needs: students with disabilities or severe disorders of behavior, communication and language.

• Developmental delay

• Language and communication development disorders.

• Attention or learning disorders.

• A serious lack of knowledge of the working language.

• In a situation of socio-educational vulnerability.

• High intellectual capabilities

• Late enrollment in the education system.

• Problems of personal or academic formation.• Problemas de formación personal o académica.



Attention to the special educational needs and educational support of the Spanish education system.



The identification and evaluation of the educational needs of these students will be carried out as soon as possible by specialized professionals and in the terms determined by the educational administrations. In this process the parents or legal guardians of the students will be heard and informed. For their part, the educational authorities shall regulate the procedures for resolving any discrepancies that may arise, always taking into account the best interests of the child and the will of the families that show their preference for the most inclusive regime.

In 2019, the organization of the educational response for the inclusion of students with special educational needs is regulated in the following modalities:

a) In ordinary schools and in ordinary full-time classrooms.

b) In specific units located in regular, part-time institutions.

c) Centros específicos.



The proposal for schooling in specific centers or units in an ordinary center, given its exceptional nature, must be adequately justified by a socio-psycho-pedagogical report. In it, the reasons why these specific contexts (rather than the more inclusive context of the ordinary classroom) are considered more appropriate to respond to the needs of students should be argued.

Pupils with specific educational support needs are identified prior to school attendance. It is generally carried out by health services, early-care centers, social initiative bodies involved in the socio-educational response, schools and early childhood education centers and other educational services.

«Technology enables accessible educational environments»

pecialized guidance units are responsible for collecting all this information from students and, together with the corresponding municipal psychopedagogical cabinet:



1. Analyze the information.

2. Determine whether there are indicators that suggest the need for individualized measures or specialized support at the beginning of schooling.

3. Determine whether there is no need for individualized measures or specialized support, but advice to families.

4. To propose to educational guidance teams and municipal psycho-pedagogical offices the preparation of a socio-psycho-pedagogical assessment in cases where the need for individualized measures of specialized support or individualized measures is foreseen.

Once the evaluation has been carried out, a report will be issued proposing both technical and material and procedural measures that will allow students to be accessible in accordance with their educational needs. The monitoring and evaluation of these measures will be carried out by listening to the students and counting on the collaboration of the families and the other external agents involved. In addition, the following shall be updated in a mandatory manner:

- When measures are modified and new measures have to be incorporated.
- When determining or reviewing the mode of schooling.
- When you change educational stage.



EDUCATION AND TECHNOLOGIES: PARTNERS IN INCLUSIVE EDUCATION

In most European countries we have witnessed a process of educational change, evolving from a segregated system to an inclusive one as a fundamental right of the individual, through integration. This Inclusive Education shows the reflection of the search for equity and equality of rights among all people.

According to this new conceptual framework, educational inclusion aims at the transformation of culture, educational organization and school practice. In this sense, technology can be an educational resource that helps to implement actions that facilitate the processes of access to information and school content, and communication. It can also be a resource that breaks the unity of time, space and action of traditional formative action.

What relationship do we see with inclusive education? Technology allows access to the educational world, helping to eliminate barriers and "disabling" environments faced by students with severe visual impairment derived from their genetic condition of Albinism.

It seems evident that educational projects based on technology and aimed at groups that present functional difficulties in their access (as is the case of students with the genetic condition of albinism, due to their visual deficiency)They represent an excellent alternative for their inclusion in the knowledge society. Let us remember that, as the Norwegian education system insists: "A universal education system, open to all its population, accessible and inclusive generates improved human capital, with direct effects on the quality of life of the population and its productivity".

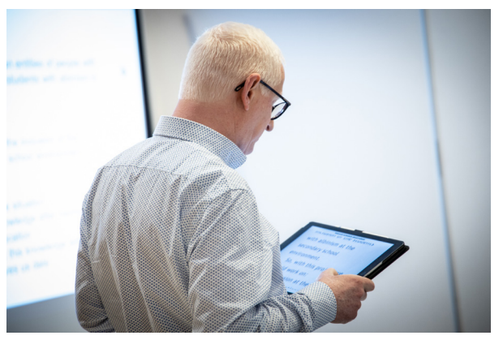
But what do we mean by technology? We must remember that the general perception we have about the use of technology in educational processes has been varying over time. There are three categories of perceived use, which we have found:

1. Information and communication technologies (ICT).

2. Technologies for learning and knowledge.

3. Technologies for empowerment and perception.





Technologies for learning and knowledge involve, as the name suggests, their use as a tool to facilitate learning and the dissemination of knowledge. They would therefore be used as tools for the realization of study activities and the analysis of the surrounding reality by the/the student.

Although accessibility has not been a fundamental objective, awareness-raising actions carried out by affected groups and their families, such as, among others, the case of students with severe visual impairment with or without the genetic condition of albinism- have borne fruit that is increasingly taken into account in its design.

Finally, from the position of technologies for empowerment and perception, these would be perceived not only as mere educational resources, but also como instrumentos for the participation and collaboration of teachers and students who not necessarily have to be situated in the same space and time.



The theoretical and practical framework for teaching practice of Universal Learning Design (DUA) is the model present in most European education systems, being present in many of its educational policies. The DUA is emerging as a model of educational transformation aimed at, among others, ensuring inclusive and quality education, and promoting learning opportunity for all people without discrimination on the basis of impairment: functional, cognitive and sensory, gender, sex, race, social group, etc

In relation to the presence of technology as educational resources, and in an attempt to steer us towards that DUA, We must be careful not to outline these technologies in such a way as to prevent certain pupils from accessing them and benefiting from the possibilities they offer. It is from this perspective that we must look for design principles in both hardware and software.

Many studies have shown that different ways of designing ICTs can prevent access to them for people with certain physical, cognitive or cultural disabilities.

According to Cabero, Córdoba and Fernández (2007), there are studies that defend that ICTs in the classroom help to overcome the limitations that derive from a large group of deficiencies, stimulating, in addition:

• The autonomy of the students, being able to adapt to the needs and demands of each student in a personalized way.

• The synchronous and asynchronous communication of these students with the rest of the students and teachers.

• Save time for students to acquire skills and abilities.

• Support a multi-sensory communication and training model.

• To encourage individualized training.

• Provide moments of leisure

• Save time for skills and abilities.

• Promote the approach of these people to the scientific and cultural world, as well as being up to date in the knowledge that is constantly being produced.

• Encourage the reduction of the sense of personal and academic failure.

The Universal Learning Design (DUA), to which we are referring, is based on the following principles:

• **Equal use.** The design should be easy to use and suitable for all people regardless of their abilities and abilities.

• **Flexibility.** Design must be able to fit a wide range of individual preferences and skills.

• **Simple and intuitive**. The design should be easy to understand regardless of the user's experience, knowledge, skills or level of concentration.

• **Information easy to perceive.** The design must be able to exchange information with the user, regardless of the environmental conditions or sensory capabilities of the user.

• **Error-tolerant**. Design should minimize accidental or accidental actions that can have fatal or unintended consequences.

• **Low physical effort.** The design must be able to be used effectively and with the minimum possible effort.

• **Appropriate dimensions.** Sizes and spaces should be appropriate for user reach, handling and use, regardless of size, position or mobility..

Adapting the principles of the DUA to students with severe visual impairment, its design would include:

• Using low contrasts in the combination of colors or the use of images and graphics without any description hinder the approach to information to people with visual problems.

• Poorly organized pages or screens overflowing with information slow and hinder the interaction of these students with ICTs.

• The use of buttons small and close to each other, or not being able to control the time of entry and exit to certain pages, also makes access to information impossible.

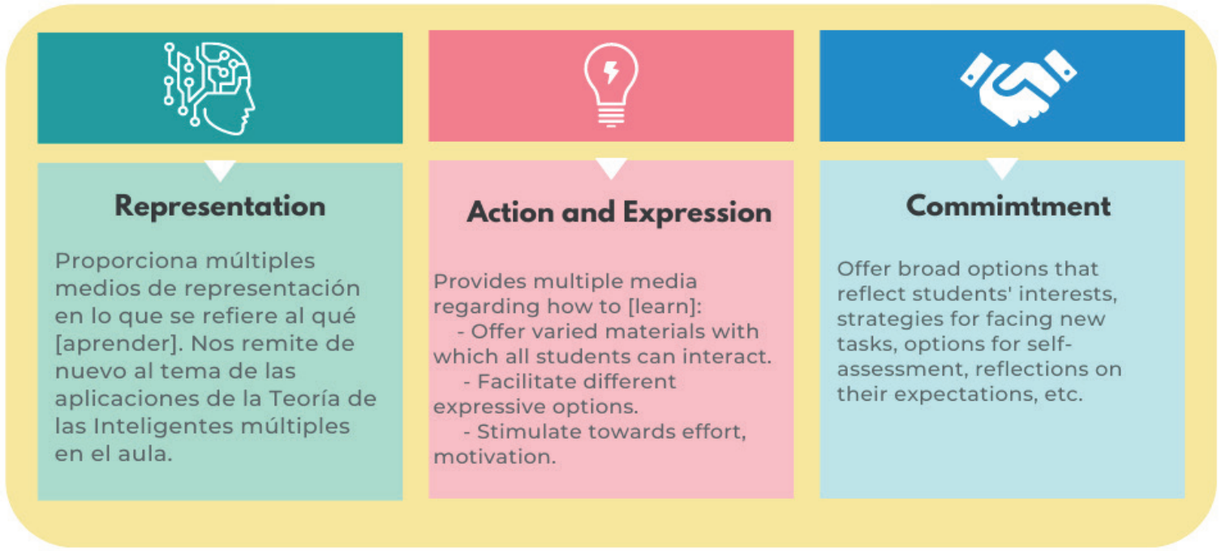
For all this, although the adoption of the DUA framework as an engine of educational transformation aimed at ensuring inclusive education, and that the introduction of technology into the educational system is a reality, we must reflect on its use especially in students with some sensory deficiency, function and/or severe cognitive. The existence of policies to incorporate Information and Communication Technologies in schools favors the development of Inclusive Education. However, we must point out again that this model not only needs the presence of ICT in the classroom, but also requires reflection on its design and that teachers have the necessary skills for its correct use.



Diseño Universal de Aprendizaje (DUA)

· Sistema de apoyo que favorece la eliminación de barreras físicas, sensoriales, afectivas y cognitivas para el acceso, aprendizaje y participación de los alumnos/as. Considera que hay «entornos discapacitantes» y no «personas discapacitadas».

Principios en los que se fundamenta



«Failure to reflect on the design we use for ICT production can lead us to create «disabling» rather than inclusive environments.»



«The educational methodology cannot be defined and controlled through contents and methods prepared outside the pedagogical space and without taking into account the human relations between teachers and students»

Some of the factors that can promote the incorporation of technology in education so that it is inclusive.

Some of the factors that can promote the incorporation of technology in education so that it is inclusive. They are the following:

• Some of the factors that can promote the incorporation of technology in education so that it is inclusive. They are the following:

• Clear and evident support from the management teams of educational institutions for their incorporation.

• Presence of technology in the classrooms with equipment that favors its adaptation to the special needs of the students.

• Clear policies for teacher training and support for the incorporation of technology in the inclusive classroom.

• Generate licensing and open access policies that facilitate the use, reuse, reorientation and adaptation at no cost.

• Prioritize open educational resources so that education does not depend on digital platforms provided by private companies.

• Organize policies for transfers of good practices and collaborative work among teachers.

• Incorporate subjects in initial teacher training plans that favour the incorporation of ICT for Inclusive Education.

• Enhance research for the search for new proposals for media design and teaching strategies and methodologies for subjects with certain characteristics.



Increasingly, the use of technologies for teaching and learning has attracted much interest. In fact, lightweight, portable digital devices have stopped restricting learning to fixed, predetermined places, completely altering the circulation of knowledge within societies.

In the context of the COVID-19 health crisis, this interest in educational and learning technologies grew exponentially. This historical-social context facilitated, in an agile but thoughtless way, the generation of methodologies that guaranteed the follow-up of the sessions from home in a supposedly inclusive way. In another sense, it revealed some weaknesses related to personal, social and economic factors of both students and their families and teachers.

The intense struggle for materials and platforms that we have seen during the pandemic poses a great risk to the teaching profession and its autonomy, and could have serious consequences for the future of a truly inclusive education. We must ensure that any technological and digital transition is not just an effort driven by technology companies, but that teachers, students, governments, Civil society representatives and privacy advocates are also represented and guiding these transformations.



FIRST EXPERIENCES OF USING TECHNOLOGY IN EDUCATION

Taking as reference the case of Spain, by the proximity to the association author of this guide, we can say the first institutional initiatives of incorporation of technologies in education that appear in the educational system in the decade of the 80's. An era whose evolution was marked by changes in the field of technology, legislation and organization.



Initially, under the auspices of the Ministry of Education and Science (an agency with national competence in education), two projects were launched to introduce computer and audiovisual technologies in educational establishments. These projects are called «Athena» and «Mercury» and their main objectives were:



• Respond to the needs of progressive introduction of new technologies.

• Act as a permanent support body for the creation, development and evaluation of applications of information and communication technologies.

• Provide advice and support to Ministry of Education and Science agencies on these issues.

• To define the technical characteristics of the computer programs and equipment provided to educational centers in accordance with technological evolution.

• Propose lines of collaboration with public and private organizations and institutions, and with industrial and service sectors for the proposal of new learning environments, the development of educational programs and the design of peripherals and other devices.

At that time, technologically speaking, the greatest future projection was linked to the IBM compatible computer and the MSDOS operating system. The qualitative leap came later with the appearance of the initial versions of Microsoft Windows and its graphical environment manageable with mouse.



An important effort was also made for the emerging software industry to develop educational application programs.

Ten years later, the emergence of the Internet represented an exponential evolution not only because it favored the introduction of technological equipment in schools, but also for its influence on the great methodological change in teaching that has developed in the future.

From now on, the use of computer hardware and software resources in schools is a widespread reality.

The first attempt at technology specifically designed for the accessibility of students with special educational needs arose from the Atenea Project and included, among others:

• Concept boards

• keyboard substitutes

• Voice synthesizer cards.

• Voice synthesizer cards. Peripheral data collection for laboratories.

• General software adapted to educational tasks.



CURRENT SITUATION

With the emergence of educational policies favoring the implementation of technology in the classrooms, in a short space of time, students with visual impairment have found that the tools that until now was using as auxiliary support to their studies, have become tools of daily work in the classroom.

However, the methodology used so far by teachers is currently not valid. Computers, digital whiteboards, the Internet, networking and other tools that have been used cannot be used with the digital tools that have been provided in the classrooms.

There has been a total change in the teaching-learning paradigm to be assumed by the entire educational community. This implies the transformation of the traditional paradigm, based on the knowledge of the teaching professional, into a new one focused on learning and based on competences and collaborative work.







For visually impaired students, the use of technologies in the classroom can lead to access to many curriculum activities that were previously impossible or difficult for them. Among others: access the information in real time, select the one they need or take it to your computer and print it if they deem it necessary, as well as follow the explanations of the teaching professional. Tasks that previously posed a serious problem for students with low vision and were considered practically impossible for students with total blindness.



«Should general technological resources be used in the classroom or should they develop their own resources for visually impaired pupils?»

Currently, thanks to technologies, students with any type of visual impairment can follow the explanations of the teacher on the blackboard from their study post as well as prepare their own exhibitions on the blackboard from their workspace. However, there are still some difficulties with access to technological educational resources. The main one is that they cannot be guaranteed to reach all students in need.

For families, the introduction of computers in classrooms and their use at home, especially at compulsory stages, poses a serious problem when helping their children in their studies. They do not know how to use this technology and how to adapt it to the characteristics of their children.

For the teaching professional, working in a technological classroom with students with visual impairment is a double challenge: adapt the working methodology to the new tools and that this methodology is flexible enough to be followed by all students in the classroom. In this respect, there is a dilemma regarding accessibility and full inclusion, as should general technological resources be used or should their own resources be developed? So far, resources offered on educational platforms have a low level of accessibility. However, in order for the second situation to occur, basic knowledge of accessibility must be available both for searching for Internet resources and for adapting or developing one's own.

04 Technological resources



Regarding who provides technological resources to students with visual impairment, are the Autonomous Communities in Spain, together with the National Organization of the Blind of Spain (ONCE)These students are provided with technological tools that can help them solve their accessibility difficulties. This organization has a group of professionals who work to ensure that all students with visual impairment receive an inclusive and quality education.

Linked to the National Organization of the Blind of Spain (ONCE), there is the working group on accessibility to digital educational content of the ONCE (ACCEDO) which, on an inter-disciplinary basis, is a group of highly specialized professionals who work in the research of the exploitation of tools of general use that, generally or in combination, can provide a special support when working with digital educational resources.

Technology as an educational resource for accessibility in students with visual impairment, is currently a reality that evolves towards a future clearly supported in it.

There are two groups that, depending on the characteristics of their vision, will condition the proposal of one type of technology or another to use as an educational resource: students with zero vision level and, on the other hand, those who have a low vision or limit vision. The case of children with the genetic condition of albinism, the low vision or vision limit that usually present -except for exceptions- allows them access to specific configurations in computers, software adaptations, etc.



Some of the functions of the ACCEDO group are:

• The study and evaluation of accessibility in digital educational resources.

• Advice on accessibility to public entities and private companies responsible for developing such resources, as well as to professionals, teachers and families.

• Training teachers in accessibility and the use of support tools.

• Student evaluation and diagnosis of which support tools best suit their needs and the tasks they will perform, both at school and at home.

Returning to the type of technological resource that can respond to the visual needs of students with visual impairment derived from albinism, as long as its visual rest allows possibilities of work in computer or similar, can be:

- pen tablets
- touch screens
- interactive tablets
- digotal blackboards

These types of resources require a certain level of keyboard skill and certain application knowledge. Therefore, they can be easily used by students with visual impairment derived from the genetic condition of albinism in the secondary or upper secondary education.



«The use of technology in the educational system favours the active participation of students as long as the technological resource is adapted to the specific needs of this»

PEDAGOGICAL GUIDE

PEDAGOGICAL GUIDE This part offers guidelines and provides guidance to the teacher in the recommended working methods for the development of the key competences of students with albinism through the digitization of the classroom.

It contains different proposals or ways to digitize the classroom (from traditional digital materials such as tablets to highly innovative equipment), and generates methods to incorporate these devices directly into the development of skills.

05 METHODOLOGY FOR INCLUSION THROUGH TECHNOLOGY: BARRIER-FREE CLASSROOM OF THE FUTURE



GENERAL GUIDELINES FOR THE USE OF NEW TECHNOLOGIES IN THE CLASSROOM

As we have pointed out in this guide, the European education system has focused on the incorporation of technologies in classrooms as an indication of pedagogical renewal. This trend is reflected in an increase in the provision of technological infrastructures in schools and access to digital teaching materials of increasing quality. All this along with the proliferation of research aimed at its assessment by teachers in order to know those digital materials most in demand in the classroom and the uses that are made of them. Many of these studies defend in their conclusions, as recommended, the participation of teachers in the definition of pedagogical and technological models in the classroom adapted to the levels of digital teaching competence established by UNESCO.

Taking into account what was proposed by the United Nations Educational, Scientific and Cultural Organization in 2013, the effective integration of ICT in education requires «redefining the role of teachers in the planning of these technologies in order to change and improve learning». European education systems should encourage the preparation and further training of teachers so that they can optimize technology for educational purposes.

The United Nations General Assembly, which adopted the 2030 Agenda for Sustainable Development, highlights global change aimed at building sustainable knowledge-based societies supported by the access pillars, equity and inclusion. Urges the international community to «ensure inclusive, equitable and quality education and promote lifelong learning opportunities for all».

GUIDELINES FOR SUCCESSFUL INTEGRATION

At the 2015 World Education Forum in Incheon, the importance of technology in teacher education and training was affirmed and stated to be «technologies need to be harnessed to strengthen education systems, knowledge dissemination, access to information, effective and quality learning and more effective service delivery». Subsequently, the Qingdao Declaration reaffirmed the importance of professional development of teachers with the aim of successfully integrating technologies into their professional role. Successful integration requires:





1 Promote a culture of quality in all its forms.

2 Support educational staff and students.

3 Develop study plans, courses, etc.

4 Strategic planning and development.

5 Ensure that teacher training centers are equipped and prepared to use technology in an appropriate manner, in order to ensure that all teachers benefit from training and further training programs, and to be at the forefront of technology-based pedagogical innovations.

6 Ensure that teacher training centers are equipped and prepared to use technology in an appropriate manner, in order to ensure that all teachers benefit from training and further training programs, and to be at the forefront of technology-based pedagogical innovations.

PEDAGOGICAL BASES FOR THE USE OF TECHNOLOGY IN THE CLASSROOM

The continuous technological development, the democratization of education through this technology and the speed and abundance of information require students to develop cognitive skills supported by interactive and collaborative processes. In this context, the dilemma in educational innovation is not to use technology in the classroom but to achieve its proper integration into educational processes.

The incorporation of technology has allowed to improve the transmission and collaborative construction of knowledge both virtual and face-to-face. In addition, it contributes to the pedagogical processes developed in the classroom, whether deductive or inductive.

Each **learning objective** is defined as the teacher's purpose in relation to the students' mastery of certain aspects of education. In some cases, the purpose is for students to strengthen the assimilation of contents, while in others it is intended the construction of arguments and schemes or negotiation and consensus in responses.

When we talk about **methodological strategy** we mean the organization of teacher and student activities during the class, which can acquire different levels of interactivity depending on the pedagogical guidelines that support it.

The classes can be:

a) **Pre-structured:** if the form and order of participation are defined a priori.

b) **Regulated:** if emergent student participation is allowed.



Considering the criteria and objectives of learning and methodological strategy, two configurations of the pedagogical processes that take place in the classroom are defined: the deductive process and the inductive process.

DEDUCTIVE PEDAGOGICAL PROCESSES

We talk about deductive pedagogical processes when teaching activities aim at the students assimilate and apply the contents to a learning situation. The methodological strategy focuses on structuring the student's action and, at the end of the session, the teaching professional verifies the process and completes the information through feedback.



INDUCTIVE PEDAGOGICAL PROCESSE

When we talk about inductive pedagogical processes we refer to those teaching activities that have the purpose of the student to design, build, apply and argue their response to a learning situation. The methodological strategy begins with the presentation of a problem situation and ends with the comprehensive formalization of expected learning.

Below, we will present different tables compiled by Marco Antonio Villalta et al. Pedagogical processes and use of technology in the classroom Revista Complutense de Educación 409 Vol. 26 No. 2 (2015) 405-424.

PHASES IN THE SESSION	PEDAGOGICAL CATEGORIES	
	DEDUCTIVE PROCESS	INDUCTIVE PROCESS
START	**STRUCTURAL INFORMATION** Teacher activities in which he communicates to students the objectives of the class and the actions to be developed.	**PROBLEM SITUATION** Teacher activities that present students with a specific disciplinary situation to solve
DEVELOPMENT	**PROCEDURE APPLICATION** Activities of students whose purpose is to exercise and apply the information previously provided, in structured learning situations.	**ANSWER CONSTRUCTION** Activities of students whose purpose is to elaborate, explore and evaluate strategies of response, to the disciplinary situation presented at the beginning of the class.
CLOSING	**VERIFICATION OF INFORMATION** Teacher activities aimed at providing feedback and completing the information	**DISCIPLINARY FORMALIZATION** Teacher and student activities aimed at transferring the built strategy to the formal concepts of the subject.

The following table details the most representative activities that are used with the deductive pedagogical process when technology is present in the classroom

PHASES IN THE SESSION	PEDAGOGICAL CATEGORIES	INDUCTIVE PROCESS	INDUCTIVE PROCESS
START	Structural information		Instructional information
DEVELOP	procedure application	Assimilation of information	Exercise with different levels of complexity. Group development
		Execution	Multiple choice questions. Strategy development Concept Arrengement
		FeedBack	Check the domain Correct the answer
CLOSING	Verification of the information		Adjustment and transfer of learning activities

Synthesis of the deductive pedagogical process using technology.

PHASES OF THE SESSION	PEDAGOGICAL CATEGORIES	INDUCTIVE PROCESS	INDUCTIVE PROCESS
START	Problem situation		Immersion in a task or mission.
DEVELOP	Answer construction	Strategy negotiation	Response negotiation. Argued dialogue. Deepening knowledge.
		Construction and implementation of strategy	Games for developing abilities. Schematic representation. Participation projects
		Reflection	Autonomous processes. Middle processes
CLOSING	Formalization		Dialogue around learning. Presentation of the work done.

Synthesis of the inductive pedagogical process using technology.

The review of the research carried out on the relationship between the use of technology in the classroom and the pedagogical processes employed show that technology can participate in these, whether deductive or inductive pedagogical processes. Reveal that the use of technology «favors the active participation of students as long as the technological resource is adapted to the specific needs of this» or when it manages to structure a pattern of actions for collaborative work. Also, technology favors immediate feedback to student participation and, on the other hand, the scaffolding that facilitates and allows collaborative work.

When the pedagogical process used is deductive, the frontal relation of presentation of contents is considered important, but it is not enough to complete the assimilation of a content by the/the student. Achieving fluency in this cognitive ability is best achieved by integrating process visualization and exercise activities along with response feedback activities. This is achieved with a type of interactivity generated by the appropriate technology, understood as one that enhances the role of the teacher by providing tools that favor the logical organization of information. In other words: the right technology is one that allows working with pre-structured action scripts that facilitate the presentation and transmission of the content of the discipline.

When the pedagogical process is inductive, requiring learning environments that facilitate the teacher and his students design and apply knowledge to the didactic situations raised in the class, technology enhances it.



The use of technology adds elements such as:

- Greater interactivity in the communicative relationship of the classroom by expanding the channels of visual and verbal communication.
- Enrichment of learning environments.
- Immediate feedback, both to the teaching action and to the action of learning by the students.
- Structuring and interactive graduation of the transmission of curriculum content, adjusted to the student learning process.
- Structuring the collaborative process of students in the classroom through, for example, communication systems that organize shifts of participation and decision-making.
- Stimulation of skills development for teamwork, along with content learning.



In short, technological mediation in the classroom strengthens the interactive activities that occur in it, ensuring operability by allowing to incorporate previously established processes that favor student participation. It also introduces new resources for teaching by diversifying the activities of students and teachers, Encourage the direct participation of students, structure the processes of collaboration and have mechanisms for monitoring and feedback on previously established learning objectives. Technology also enables students to learn collaboratively, optimizing the structuring of classroom pedagogical processes and promoting the development of competencies for teamwork.

«The use of technology in the educational system favors the active participation of students as long as the technological resource is adapted to their specific needs.».

GUIDELINES FOR TEACHERS TO DEVELOP KEY COMPETENCES THROUGH TECHNOLOGY



According to Abdul Waheed Khan, Assistant Director General for Communication and Information UNESCO, «students and teachers must use technology effectively if they want to live, learn and work successfully in an increasingly complex society».

«Es necesario la redefinición de la función de los docentes en la planificación de esas tecnologías a fin de cambiar y mejorar el aprendizaje».

The teacher in each class is the person who plays the most important role in helping students acquire these abilities. It is therefore the teacher's responsibility to create learning opportunities and an enabling environment in the classroom that facilitates the use of technology by students to learn, communicate and create knowledge products. It is essential that all teachers are prepared to provide such opportunities for students in their respective classes.

In a strong educational context, technology can empower students to:

- **Use of information technologies.**
- **Search, analyze and evaluate information.**
- **Solve problems and make decisions.**
- **Use production tools with creativity and efficiency.**
- **Communicate, collaborate, publish and produce.**
- **To be informed, responsible and able to contribute to society.**

Vocational training programs should be developed for practicing teachers and initial training programs for future teachers to understand the offer of current and innovative technological experiences.

Today, classroom teachers need to be prepared to offer their students learning opportunities with the support of new technologies. Being prepared to use technology and knowing how it can contribute to students' learning are two skills that have now become part of the professional competence catalog of each teacher. These professionals must be prepared to ensure that students acquire the skills and autonomy provided by technology in a fully accessible and inclusive manner.

Schools and classrooms, whether real or virtual, must have teachers who possess the skills and resources necessary for technology. They must be able to effectively teach the required disciplines.

How should the teacher use these technological resources? How can we incorporate them into teaching and classroom programming? We return to the idea that technological resources applied to teaching can help improve the educational system, allowing the accessibility of students with visual impairment; accessibility that will lead us to real inclusion. But it will not be a reality if the introduction is not accompanied by the good choice and management of these by teachers.

RECOMMENDATIONS TO FOLLOW

1º.- Identify the needs of students to decide which technology best suits them. For this, in most of the countries that have collaborated in this guide, it is regulated which health and/or educational resources are responsible for making the proposal.

2º.- Decide, among the proposed technologies, which will help to meet educational objectives and facilitate the implementation of activities to students with visual impairment -in our case- while allowing contact between all students. It is important that the final choice is based on experience and demonstrable effectiveness, whenever possible, in addition to promoting the autonomy of students and respecting the slightly slower pace of those who present visual impairment.

3º.- Incorporate technological resources into teaching and learning processes by exploring different methodologies that can enrich the educational content while meeting the needs of all students, without discrimination.

4º.- Encourage group work within the classroom. One of the great advantages of technologies in the classroom is that they can allow all students, without any discrimination, to move within it, placing themselves in its different spaces (development, creation, presentation, research, etc.) generating opportunities for collaboration, reflection and learning in a fully inclusive manner.

As stated in the article on Inclusive learning methodologies through the use of ICT by C. Avalos, V. Redondo et all (in Revista Posgrado y Sociedad, vol. 16, num. 2018, 53-69)a change of mentality is needed among teachers so that the use of technology is incorporated into teaching and learning processes, generating an experiential ecosystem in which participation is incorporated, accountability is enhanced, Socialization and autonomy of students, whatever their needs.

Some of the inclusive learning methodologies, through the use of technological resources and applicable to secondary and/or second grade levels are (Guerrero, 2013):

Cooperative learning methodologies and techniques:

1. peer mentoring
2. collaborative strategies
3. Support groups between teachers
4. Interactive problem solving strategies

Technologies of evaluation:

1. Oral test
2. Observations
3. Dialog
4. Team evaluation
5. Self-evaluation from using templates for self-evaluation students
6. Evidence assessment

Collaborative learning methodologies and techniques:

1. mutual support comision between partners
2. Learning techniques such as:
   a) Case studies
   b) Interviews
   c) Dialogues
   d) Gathering
   e) Discusion groups
   f) Group research
   g) Círculos de acción-reflexión.



RESOURCES NEEDED TO IMPLEMENT INCLUSIVE EDUCATION METHODOLOGIES THROUGH TECHNOLOGY

Technology inclusion in the classroom means that a resource can be used by any student, regardless of their personal needs. The choice of these is an important decision since, in the case of students with visual impairment could be the origin of the possibility of access or not to school contents, in conditions comparable to those of the rest of their peers.

The technological resources required for secondary and/or second-grade students with visual impairment are:

1. Computers, PC tablets, touch screens and interactive displays with operating systems and general applications, including:

- **Screen amplifier/magnifier,** allowing you to enlarge the full screen or part of it, modifying the attributes of color, contrast, size and shape. It would not simply be a question of enlarging the image of the screen, but once enlarged it can be understandable. MAGic and Zoomtex Xtra are an example.

- **Internet access.** For their accessibility to be real, teachers must check it through accessibility reviewers if it meets the level of accessibility that students with visual impairment need (A. AA or AAA of the WAI). HERA13 and TAW14 are examples of reviewers in Spanish, and BOBB15 and CYNTHIA16 in English.

Educational materials in digital format, recommended in PDF format. This format allows to enlarge the image without subtracting hardly resolution, consult and even write on many of the devices that are currently on the market. Adobe Acrobat and PDF Annotato, both developed by Adobe Systems, are examples..

Support products that facilitate class monitoring. They make it easier for students to follow the class through their own device (PC, tablet and/or telephone) when receiving the audio and video signal in real time. Bemyvega is an example.

«Technology in the education system must go hand in hand with pedagogy».

PROPOSAL OF TECHNOLOGICAL RESOURCES FOR AN IDEAL CLASSROOM



Assistive technology in the classroom can be generic or specific.

GENERIC TECHNOLOGY:

- • Laptops 15 inches or larger.
- • Desktop computer
- • Tablet PC.
- • Touch and interactive screens.
- • Plataformas virtuales.
- • Scanning and reading pen.
- • Digital books
- • Phone devices
- • Digital voice recorders.
- • Digital whiteboards: interactive or not.
- • Support products that facilitate class monitoring.

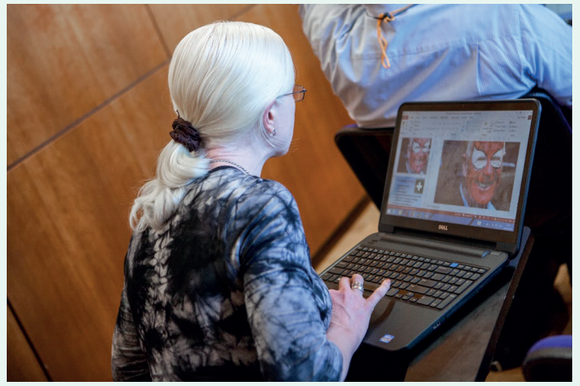
SPECIFIC TECHNOLOGY FOR STUDENTS WITH VISUAL IMPAIRMENT (TYPLOTECHNICAL TOOLS):

- • Braille line.
- • Braille note holder.
- • Braille printer.
- • Digital tablets
- • Screen reviews
- • Informatics services
- • Screen reader.
- • speech synthesizers.



1 LAPTOPS 15 INCHES OR LARGER AND DESKTOP:

Mini-computers with nine or 10-inch screens are, in most cases, an accessibility problem. In spite of being able to use adaptations, such as the screen magnifiers, the size of this screen does not allow the input of sufficient information to be able to work at the time that an enlargement greater than 2x is used.

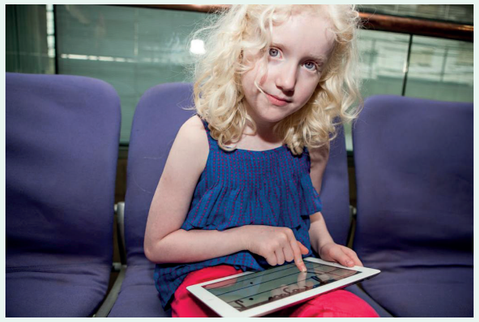


As a result of our experience, we have found that the most functional screen size for visually impaired students corresponds to sizes between 17 and 21 inches. As support software for these larger screens are using accessibility functions developed in the operating systems installed on computers, or the screen magnifiers. Some of the accessibility functions developed in the operating systems themselves are the modification of parameters in terms of:

- Icon size.
- Menu
- Cursor bars
- Chromatic contrast
- Etc.

2 TABLET PC:

In relation to tablet PCs, we know that their use has been beneficial because, due to their size, weight and possibilities of location and positioning, allows students with visual impairment a great flexibility when working. Students can choose the inclination of the screen, the proximity to it, control the brightness, etc. They also offer the possibility of working directly on the screen using a pencil that acts as a mouse, which promotes hand-eye coordination and increases the simplicity of handling and motivation.



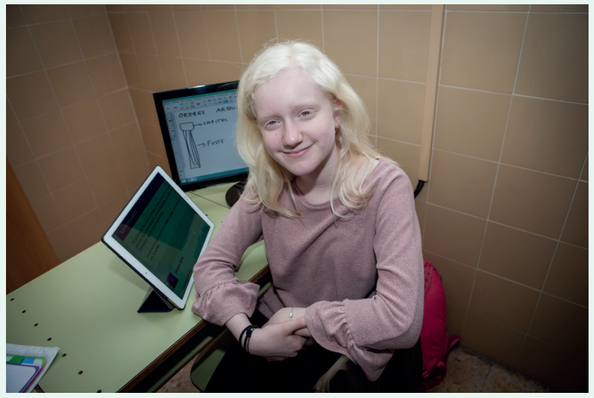
3 Touch screens and interactive screens:

On the other hand, thanks to the touch screens and interactive screens the students can act directly on them with the finger or with a pencil that fulfills the function of the mouse. Among others, it offers the advantage of its use by students with visual impairment from their own workplace, allowing them to continue the explanations that are being made on digital boards.

The touch screen is a monitor connected to the computer that has the particularity of being able to work directly by pressing your fingers on the screen itself. Thus, you can perform the functions of click, right click, drag, link activation, etc., and run the same functions as a mouse but simply with a finger on the screen.



Interactive digital screens are another type of screen on which you can work with your finger or with a magnetic pen (which acts, as we have already pointed out, as a mouse). They are in different sizes, with 15, 17 or 19 inches being the most common.



The screen is glass, flat and with possibilities of greater or lesser inclination, allowing students with visual impairment to adapt it to their lighting needs.

When acting as a computer screen, it can be configured according to the needs of the students, although it always has to be connected to an image source, either a computer or a projector gun. It also has two connections:one as display output of the computer itself and another for data transmission to the USB port. Likewise, interactive digital screens include a specific software that allows to take more advantage of the functions of these, among which is the possibility of recording both audio and video of everything executed on them. This type of screen allows students not only to follow the class from their studio, but also to work from their screen and that their work is reflected in the classroom screen.

4 Virtual platforms:

A qualitative leap in the development of technology in schools has been the introduction of virtual platforms. With them the printed books disappear, as these are introduced in these platforms for the consultation, study and work of the students. Thus, they host teaching materials and learning activities in a virtual environment in a logical way and organized according to the structure of an academic program. Its purpose is to place them within reach and establish educational relationships.

Although this has been a great economic advantage, ergonomic, time and higher educational quality, it has also led to a slight decline in the accessibility of people with visual impairment in their early experiences. The reason is that its accessibility only allows magnifications of 3x, an extension completely insufficient to be functionally accessible for students with severe and severe visual impairment, as is the case with people with

The execution procedure depends on the connection made by the student's screen, that is, whether that screen is connected to their own computer or to the teacher's computer:

The screen is connected to your own computer. In this case, this computer must be connected, either directly or via a network, to the teacher's computer because it would be from his computer that the teaching professional would manage the blackboard. When both computers are connected, everything projected on the blackboard from the teacher's device will also pass through the student's screen and the student, in turn, can act on its screen and reflect its actions on the digital whiteboard.



the genetic condition of albinism. Therefore, virtual platforms do not seem to be the most appropriate resource until they solve this obstacle. And more considering that there are other file formats with proven accessibility that, to date, have been a breakthrough without incurring any extra cost for the publisher, school or family. We refer to the PDF file format.

The screen is connected to the teacher's computer. In this situation, the student's screen is connected to the projector or the teacher's screen and receives the image projected by them. This allows you to receive the image in the foreground and, as it is an interactive device, be able to interact with it allowing the whole class to see what it does from its studio. Because interactive screens are usually accompanied by software that allows the recording of screenshots or everything done on the board by video. In this way, the student can repeat all or part of the session without having to take notes, favoring their understanding of what is taught.

5 CANNING AND READING PEN:



Scanning and reading pen are manual and wireless devices that scan multilingual OCR texts, editing it directly to any computer application. It is a portable, comfortable and lightweight device that connects easily to all technological devices via Bluetooth. Among other functions, the pen edits, reads aloud in real time, translates into computers, smartphones and tablets and is compatible with MacOS, Microsoft Windows and mobile devices IOS and Android.

6 PHONE DEVICES



Some smartphones offer default accessibility options with magnification, color reversal, audio output, etc. Regarding audio output, Apple devices are equipped with an integrated screen reader called«Voice Over»,while Android OS devices have a similar app called «Talk Back». These applications are often already installed on devices, but can also be installed manually.

7 DIGITAL BOOKS

On the other hand, there are digital books, better known as eBooks. It is another technology that can respond to the specific needs of students with visual impairment because it allows the change of size, contrast, font, background and colors of the plane. The two most common eBook formats are «Mobi», for Amazon Kindle, and «EPUB», for most technological devices: iPad, iPhone, B&N Nook, Kobo, Google Play and OverDrive.

7

As we have previously pointed out, both PCs, laptops and tablets are usually accompanied, as a rule, by a software that allows the recording of screen or everything done on the board using the video format. Thus, they can repeat all or part of the teacher's work session without having to be aware of taking notes, thus favoring the understanding of the explanation

Also useful are the accessibility functions developed in the operating systems installed on the computers, which allow to modify the parameters in terms of size of icons, menus and course bars, as well as the chromatic contrast of them. But for students with severe and severe visual impairment is not enough, because the virtual platforms introduced in schools as substitutes for books (as well as other printed materials and with a marked purpose of accessibility and inclusion) They have not been able to overcome this obstacle. To date, the PDF file format is giving the best response.

The different publishers, although not always with the desired speed, provide in this format [PDF] materials for students with visual impairment, which has allowed access to the same materials and at the same time as their classmates. They can be used to consult and even write on any technological device (tablet, PC and laptop computer, digitizing tablet, etc.) provided that you have the right software. Some examples are: Adobe Acrobat, Adobe Reader and PDF Annotator, developed by Adobe Systems.

The PDF format (Portable Document Format) shows the text with a very neat visual design, allowing a large enlargement without significant loss of visibility of the document. Its use is very popular and has versions for the most used operating systems, such as Microsoft Windows, MacOs, iOS, Android and Windows Phone. Through the PDF Annotator



application, students would have all the above-mentioned benefits as well as the possibility to write with a magnetic pen and finger on a digitizing screen. In any case, the final document could be saved and printed with the annotations added. It is the format that is giving the best response to date.

Directive 2014/26/EU of the European Parliament and of the Council of 26 February 2014, together with Directive (EU) 2017/1564 of the European Parliament and of the Council of 13 September 2017, in its Article 31b. Accessibility for people with disabilities», argues that it has been a breakthrough in the accessibility of students with visual disabilities «in special cases which do not conflict with the normal operation of the work and which do not unduly prejudice the legitimate interests of the right holder, authorised entities established in Spain which produce copies in accessible format of works for the exclusive use of blind persons, visually impaired persons or persons with other difficulties in accessing printed texts may carry out the acts referred to in the preceding paragraph, in the manner referred to therein, for the exclusive use of such beneficiaries or an authorised entity established in any Member State of the European Union» (Law 2/2019, of 1 March, amending the consolidated text of the Law on Intellectual Property. Article 31b. Second paragraph).

8 Digital voice recorders



A digital voice recorder is a device that records sounds and voice, so it is suitable for recording parts of a class or capturing ideas from it. But what added value do digital recorders have in front of the phone? The answer is simple: mobile devices do not offer the quality and engraving options that recorders have.

9 Digital whiteboards, interactive or not:



The digital whiteboard is a technological system usually composed of a computer and a video projector that allows to project digital contents in a format ideal for group viewing. In it you can interact on projected images using computer peripherals such as mouse or keyboard. In addition, the surface can be both a projection screen and a white wall, although the most advisable option is the use of a whiteboard.

Like the digital whiteboard, the interactive digital whiteboard allows digital content to be projected on an interactive surface in a format suitable for group viewing, as well as interacting directly on the projection surface. However, compared to the conventional digital whiteboard, the interactive one provides a differential value in that it allows to interact directly on the projection surface by means of a pen pointer or directly using the fingers if it is tactile. The projection surface is usually a whiteboard, which includes inside the pointer control device, although there are also other versions: one in which the transportable external box can be attached to any whiteboard (portable interactive digital whiteboard) and another that allows moving from one place to another when placing it on a pedestal stand.

10 Support products that facilitate class monitoring:

Among the support products that facilitate the monitoring of classes stands out, for example, the «Vega Compact». Much more elaborate than interactive digital whiteboards, this support product facilitates the monitoring of classes in local mode and streaming, in addition to allowing simultaneous local-streaming teaching.

The system consists of a system that allows to send both the image of the exhibition area of interest and the image of the speaker with automatic tracking and the image of the screen of the speaker along with the corresponding sound of his speech. The sending of these images takes place in real time. In addition, it has a software package composed of the application «Master for PC», which manages and controls the issue and the application Player for customers who receive the issue.

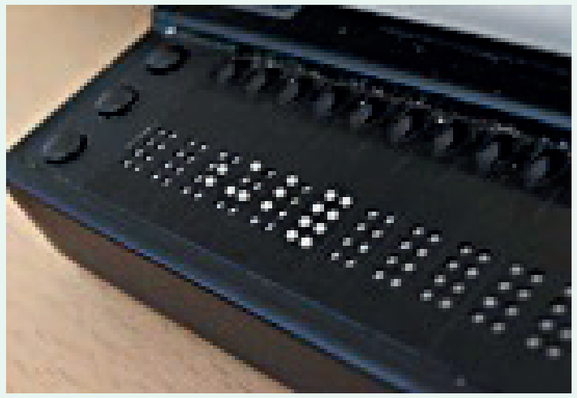
Thus, the student with low vision receives on his computer these three signals that can go alternating on his screen. Likewise, the software allows you to zoom any of them, enlarging the area that needs to be seen in larger size as much as necessary, and also change the contrast that exists, being able to pass the image to binary. This allows, for example, to put what is in the presentation or on the blackboard on a black background on white letter or vice versa (white background with black letter).

The system is fully portable and does not require installation, as it is only necessary to plug it into a socket.

Another support product variant that facilitates class monitoring is the «AbleCenter®». It is a system that allows you to increase any content in the classroom using a camera and a computer. The camera is installed on the ceiling and transmits the images wirelessly to the devices of the student in a way that facilitates reading any text or viewing any content.



11 Braille line:



In cases where the rest of the student's visual is not functional or lacks it, the braille line is the appropriate technology. We are talking about an electronic instrument that connects to another device and allows the output of content in Braille code. In this way, students with blindness can access the information.

Explained in greater detail, the braille line consists of a desktop computer in which a line of integrated cells is shown, each one, by eight mobile stems that simulate braille points. The number of cells can vary according to the different models, but the most used are those that collect a total of 40 or 80 characters. Thanks to a communication software, which makes it possible to coordinate the line with the application in use, you can make different configurations and select between character charts or screen sweeping forms, among other possibilities. The only limitation it presents is that it can only offer one display line at most.

13 Braille Printer:



Braille printers are machines that print information from the computer on paper and in relief. Thus, these instruments print, by paper size, a maximum of 42 characters per line and, as in the case of writing printers «in ink», there are personal printers and others of high production.

12 Note holders in Braille:

As a complement to the braille line are the Braille note takers. They are the current takers of the technological evolution of the pattern and the subsequent mechanical machine «Perkins», designed by David Abraham. These instruments were slow and did not allow corrections, so other more versatile instruments have been used thanks to the advent of computing.

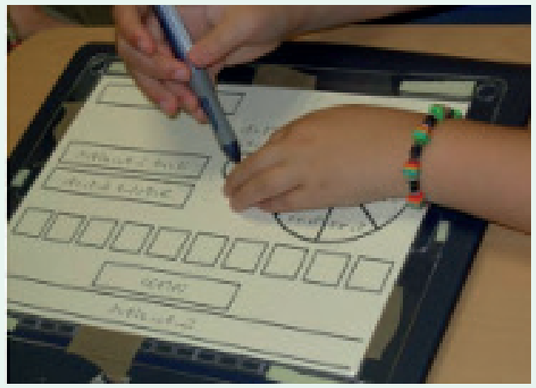
The current note takers are much easier to use, have a much more ergonomic design and have many more features. Most are equipped with the features of a modern braille annotator with braille keyboard and synthesized voice output. And they also offer built-in note-taking and productivity apps, including a book reader, file editor, calculator, clock, freedom of address, etc. Some can be connected to smartphones and computers and have wifi access, allowing instant access to a wide range of online services and information available on the Internet.



With built-in Braille translator, note takers allow students with blindness to do school work and easily share it with their teachers. For this, there are a variety of models that allow you to connect to computers and smartphones through Bluetooth or USB, providing an instant and perfect connection to multiple devices simultaneously. In addition, the fact that they are fully compatible with a large group of screen readers and operating systems facilitates their use.

14 Digitizing tablets:

Another example of technology is digitizing tablets. The invention relates to magnetic plates made of plastic material on which, by means of a magnetic pen which performs the function of the mouse, it is possible to draw, write or navigate. This tablet connects to the computer via USB connection or via Bluetooth and, once calibrated the magnetic plate, acts as a faithful reflection of all areas of the touch screen (without the graphic image of the computer screen). Also, if we carry out a relief adaptation of the computer screen and place it on the tablet, we can act on it and activate with the magnetic pen those sensitive areas, links or command buttons as we would if we were using the mouse on the screen.



This digitizing tablet is very useful for students with total blindness because it allows working with computer applications through the necessary relief adaptations, a reality that would otherwise not be possible since they require the student to use touch.

15 Screen reviwers

Screen reviewers are a type of software that allows students with severe visual impairment or total blindness to access the different functions of the computer, thus facilitating its operation. This involves two fundamental functions:

The user can detect the items displayed on the screen at all times.

The user interacts with applications by filling in edit boxes, selecting list items, reading text boxes through a speech synthesis or via a braille line, or any other actions that need to be performed to manage an application.

15

Obviously, this interaction must be done by using the keyboard as a blind person cannot use the mouse. Therefore, we can activate elements or move from one to another using, for example, course keys. Generally, these screen reviewers provide a set of shortcut keys to perform the most common actions, which results in greater efficiency when handling the computer by a blind user

All this taking into account that both voice and braille output is configurable in terms of voice type, speed, volume, amount of information, etc. Currently, There are different screen reviewers among which are some freely available and others paid.



16 Computer services

The computer service converts written documents into audio and/or braille formats and facilitates access to written information for persons with severe and severe visual impairment. An example is the so-called«RoboBraille©».

It is a free computer service through its http://www.robobraille.org website that can convert both educational and other text materials into a variety of accessible formats. These include: mp3 files, e-books, digital audio-books and Daisy. It is also useful for converting scanned images and pdf files into more accessible formats.

RoboBraille offers students with visual impairment the possibility of converting word, math thype documents into Daisy (Audio), eBook, EPUB, EPUB3, Mobi Pocket, eBook and those other documents that would otherwise be inaccessible as image files in gif, tiff, jpg, bmp, pcx, dcx, j2k, jp2, jpx, djv and pdf only with images.

It also converts all kinds of pdf files to more accessible formats, including structured documents pdf, doc, docx, word xml, xls, xlsx, csv, text, rtf and html. Word and rtf files are converted into PDF or pdf files according to the format specified by the user in the «subject» field, for example, txt or pdf.

The knowledge of this service comes from Italy, where it seems that its use is more frequent, although it can be useful in other European countries since in its conversion service includes high quality voices in other languages such as English, Italian, Danish and Spanish/Spanish. Today, neither Norwegian nor Dutch is included.

17 Screen readers:

Another technological tool is screen readers. They consist of software that reads both the text and the individual elements that make up the computer screen. It does so aloud so that it can be heard through computer speakers and/or through headphones, if connected. Among other possibilities, they can describe icons and graphics.

Initially, these screen readers are intended for students with total blindness, but they are also useful for students with albinism and/or visual impairment as they help reduce visual fatigue.

18 Voice synthesizers:

Finally, as a specific technological resource for students with visual impairment, voice synthesizers are found. It is a software that converts the text of an electronic document into an audio file using a synthesized voice very similar to the human voice.

The voice synthesis software is available in several languages and can coexist on the same device, which facilitates the conversion of long blocks of text in audio format to students studying a foreign language. In addition, some text readers combine the magnifying glass with vocal synthesis, thus allowing students to hear and visualize the text at the same time, for which activates both visual and auditory perceptions.



SPECIFIC TECHNOLOGICAL RESOURCES FOR EDUCATION, BY AREA

Technological and digital advances, and their ability to magnify and visually approach information without losing resolution, have been a great advance in the access, inclusion and normalization of students with visual disabilities in the classroom. Some of them, classified by teaching areas, are:

Mathematics

- Calculators with very large keys, digital or speakers.
- Books in digital format, preferably PDF.
- Large PC or tablet computer.
- Support device that facilitates class monitoring.
- App ACCESSIBLE MEMORY PRO
- App CALCULADORA MYSCRIPT

Hystory and geography

- Books in digital format, preferably PDF
- Large PC or tablet computer.
- Support device that facilitates class monitoring.
- Multimedia resources.
- Websites that meet accessibility standards.
- App DO YOU KNOW MORE THAN A SECOND-GRADER?
- REDOX ADJUSTMENT app
- App ANATOMY VERSION
- LEARN GEOGRAPHY app
- APP CHEMICAL FORMULATION I

Spanish and foreign language

- Books in digital format, preferably PDF
- Large PC or tablet computer.
- Support device that facilitates class monitoring.
- Multimedia resources.
- Websites that meet accessibility standards.
- Screen readers
- Audio books
- App DICTIONARY «WORD REFERENCE».
- App DUOLINGO

Physical education

- Calculators with very large keys, digital or . Video recorders (phone, tablet, etc.).

Technology

- LPantallas digitalizadoras y Tablet (Pc o IPAD) que permita realizar dibujo técnico.
- Ordenadores con pantallas de gran formato y que dispongan de sistemas operativos y aplicaciones que incluyan amplificadores/magnificadores de pantallas y acceso a internet.

Arts educations

- Digitalize them and Tablet (PC or iPad) to make technical drawing.
- Computers with large-format screens and with operating systems and applications that include amplifiers/magnifiers of screens and internet access.

Music education

- Large PC or tablet computer with accessibility software.
- SOUND APP PERFECT PRO.
- Books in digital format, preferably PDF.

METHODS FOR INCORPORATING DEVICES DIRECTLY INTO SKILLS DEVELOPMENT: CONNECTING WITH INCLUSION

Schools should make every effort to enable students to use, autonomously and appropriately in the classroom, technological resources that allow them to access ordinary curricular content such as developing complementary digital skills and abilities.

The introduction of these technological resources should be done after reasoned technical assessment with the aim of creating an environment where students can develop educational activities in a safe, accessible and inclusive manner.

The technical opinion justifying the incorporation of technological resources in the classroom should be made after the collection of medical, psychological, social, educational and family information. This information should be shared, assessed collectively and informed by decision-making, which should be argued. The proposed decision must guarantee equal opportunities for the full development of the personality through education, educational inclusion, equal rights and opportunities, non-discrimination and universal accessibility.







Once the reasoned proposal for the use of technological resources that allow accessibility to students with special needs has been made, schools can access European, state or local subsidies aimed at this purpose. In the case of funding through European entities, such as the UN European Commission, this can be carried out through centralised and decentralised actions.



Centralised actions are those carried out by the European Commission itself.

Decentralised actions are those managed at national level and are the responsibility of the national agencies established in the Member States.

Educational authorities may have the necessary technological resources to enable students with special educational needs arising from disability to achieve the maximum possible development of their abilities and, in any case, the objectives established generally for all students. Access to these technological resources may be the result of the financing referred to above, although there is also the possibility that this may be the result of collaboration with private non-profit entities, These will not only provide the resource to the educational institution, but also develop actions aimed at encouraging students to use technology.

RECOMMENDATIONS FOR CREATING A BARRIER-FREE CLASSROOM OF THE FUTURE

When we talk about the «classroom of the future» we mean the educational space (physical, structural and procedural) adapted to the teaching-learning activity of any student without discrimination on the grounds of disability, gender, sex or social group, among other factors.

This classroom also includes technological tools active methodologies that allow students to develop skills. Therefore, the classroom that proposes this model should not be understood as a standard classroom, but can adapt to students and respond to the needs of students who will use it. Always according to our object with regard to the visual deficiency and adapting to the work to be developed.

The classroom of the future without barriers is not, fundamentally, a physical space, furniture or technological, but it is a space of experimentation to improve, in this case, the learning processes of students with visual impairment related to the genetic condition of albinism.

The classroom of the future without barriers must therefore be part of a network of classrooms of the future that serve for the exchange of experiences, laboratory of good practices and development, promotion and dissemination of curricular materials and other documents to support teachers. It must also include the promotion, development and dissemination of digital and audiovisual materials of all areas of knowledge in order for information and communication technologies (ICT) They are an ordinary instrument of classroom work at all stages of education.

The first classrooms of the future have their origin in 2012 and are the fruit of the project «Future Classroom Lab» (FCL) developed by the consortium of European Education Ministries (European Schoolnet - EUN) following the results of the iTEC research and development project. Since then, the Future Classroom has been actively involved in developing actions such as:

- • Network coordination
- • Creation of a resource bank, support and dissemination of proposals developed by schools.
- • Creation of training courses for teachers.



Gráfico 11: ¿Qué es?



In short, the classrooms of the future without barriers have become a meeting place to promote methodological change in the classrooms. To this end, they must be based on the promotion of school collaboration, the improvement of learning spaces and the development of educational skills and digital competence.

«The classrooms of the future without barriers have become a meeting place to promote methodological change in the classrooms»

06 Proposals from Alba for the digitization of the classroom







CURRENT SITUATION

At this point, we wanted to know what is the current experience of young people with albinism in terms of the inclusion of technology in their classrooms in order to know if such inclusion is as effective as intended, and to value where we should direct our efforts.

There are two ways of collecting information. The first was through focus groups formed by young students with the genetic condition of albinism between 12 and 18 years, In each of the countries participating in this guide and the second was through a SWOT analysis by the representatives of the associations involved in this project.

1. All of them use technology and digital technology tools in the classroom that allow them to access the curricular contents of the course in a way adapted to their needs derived from their visual deficiency.

2. The technology used by all is general: laptops, tablets, touch screens, interactive digital whiteboards, virtual platforms, digital books and, in some cases, temporary experiences with support products for class monitoring. Regarding the use of specific technology for people with visual impairment, which is rarely used, the tools are of the optical type: magnifiers, television magnifiers and, in no case, screen readers or voice synthesizers.

3. Most of this technology is usually proposed by external resources and specialists in visual impairment (such as the National Organization of the Blind of Spain -ONCE) or by the families themselves, Good acceptance by the management of the educational institutions in which secondary education takes place.

4. The implementation of accessibility measures for students with the genetic condition of albinism in a new schooling does not always have the desired speed. But tardiness cannot be associated with the type of centre or the context in which it is located (urban or rural), but individual differences of the centres or other related bodies are argued.

5. Acceptance of the introduction of technology in the classroom to facilitate accessibility to students with visual impairment is good by teachers, generally.

6. Most of this technology is provided for the use of the student by agencies with competence in education: Municipal Boards, regional councils, ministries, etc.

7. In most cases they use technological tools for reading and writing, although in advanced secondary education they decrease their use for writing and introduce paper writing. The reason they argue is the difficulty of coordinating writing and moving on the touch screen when there are a lot of annotations.

8. For the most part, the use of virtual platforms for reading is not accessible to them and they prefer books in PDF format. The difficulties they observe in virtual platforms are related to how to enlarge the text, the poor enlargement and the way to move on.

9. In secondary education, the vast majority of students with albinism take their exams in digital format: the teacher sends the document virtually by e-mail.

10. All students report having difficulty reading the document sent to them by the teacher for introducing photographs of texts rather than editing them. This makes it difficult to read and causes them to lose much definition and therefore readability in the necessary enlargement.

11. All students with visual impairment derived from their genetic condition of albinism said that, despite the willingness of teachers to use the proposed technology, there are still many who show certain resistance to using them always. The reason they find this behavior is that, despite their good intention, they still lack good training on this type of resources and cause them some inability to see all the possibilities that technology would allow them. Another reason they provide with regard to the disablement of technology are the resistances for changing educational methodology; resistances that are greater the greater the ignorance of technology by teachers.

GENERAL CONCLUSION

12. All students surveyed reported having had many experiences in which teachers have not adopted accessibility measures in daily sessions or in assessment tests. Faced with this situation, strategies have been developed to solve problems: in ordinary sessions, reporting directly to/to the teacher or asking for help from classmates; and, in evaluation sessions, reminding the teacher of his/her need beforehand and bringing optical aids.

13. All persons verbalize feeling satisfied and taken into account by their teachers, except in certain specific situations, Although they also feel a slight discomfort at having to remember continuously and throughout their educational stage their accessibility needs. Express their incomprehension at the fact that, although their needs and methodology for their accessibility are duly argued in their academic records, They have to justify it and remember it daily before their teachers.

14. All students with albinism said they felt accepted by their peer groups in their respective schools. In most cases they take their entire school stage with the same classmates and believe that they have greatly standardized the introduction of technology in the classroom.

15. On no occasion do they refer to having felt that their companions made them feel «strange» or rejected. On the contrary, they have felt that they aroused curiosity during their first days in the school, but that this disappeared after answering with sincerity and naturalness the questions of their classmates.

16. Classmates standardize technological instruments much more than optical aids, such as magnifiers or tele-magnifiers.

17. They recognize that the rest of their colleagues value positively the introduction in their classrooms of digital technology that allows them adapted access to information, because they have even discovered advantages for them in certain subjects.

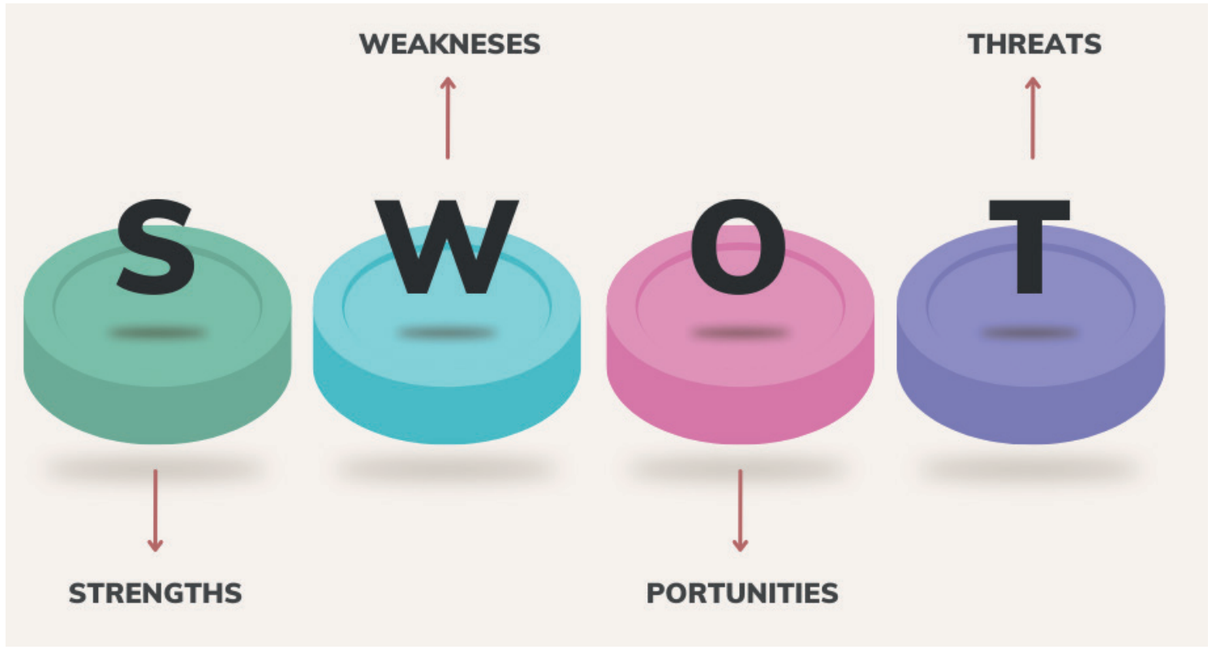
18.All students with albinism who have participated in the study, aged between 12 and 18 years, highly appreciate the progress that has been for them the introduction of technology, This is particularly true of digital content, which gives them much more standardised access to curricular content.

19. Despite the positive progress that the introduction of technology in the classrooms has brought, the young people surveyed think that there is still much to be done:

- Regarding teachers: encouraging them to receive continuous training in relation to the technological products that help them and allowing them to recognize new educational methodologies that include technology.

- In relation to the education system: creating the appropriate institutional procedures that exempt them from assuming responsibility for the implementation and use of technology, and that this does not generate resistance by the teaching team.

- In relation to technology companies: taking them into account in material and application reviews. Your opinion is very important if the technology is to be truly accessible and effective.



THREATS

Stereotyped and general image of the characteristics by which students with the genetic condition of albinism require attention for their educational accessibility.

Little scientific research on the impact of technological assistance and educational methodology on students with the genetic condition of albinism.

Equivalence between assistive technology systems as sophisticated systems for the expansion of information and which may result in poorly planned incorporation without educational guidelines in schools.

Individual overexertion on the part of families and educational professionals with whom the student relates for the self-training and implementation of educational methodologies, often generalist.

Economic and social barriers to educational accessibility through the adoption of technological assistance measures: not all schools have sufficient professional and material resources and the procedures for their inclusion are often very slow, especially when these measures are innovative.

Disconnection between the academic and practical fields in professions present in the educational field: we hardly know research with innovative proposals of technological assistance or that value the effectiveness of existing ones. What exists are descriptive studies.

Resistance of educational professionals to the inclusion of technological assistance methodologies in their programming either due to overwork, ignorance, personal insecurity or all these reasons at the same time.

Resistance of students and/or their families to use technological assistance methodologies for not recognizing the need, not considering it as a measure that favors inclusion given their difficulty to use them at home or all at the same time.

Emotional exhaustion of professionals and relatives by the continuous self-training. They do not always have institutional support and bureaucratic procedures are changing for the introduction and use of methodologies based on technological assistance.

WEAKNESSES

Difficulties in identifying a person with the genetic condition of albinism. Diagnoses are not always immediate, especially in the OA subtype or in places where karyotype is common to the general population. This difficulty can lead to late detection and, consequently, individualized and accessible care in the school.

Lack of homogeneity in the characteristics of persons with albinism and those requiring educational care. The slight functional diversity in the characteristics of people with albinism may cause care not to be as individualized as expected when using general methodologies.

Appearance of functional normality, which can sometimes lead to questioning its functionality and, therefore, the need to use educational methodologies of technological assistance for educational accessibility.

Low prevalence of the genetic condition of albinism in the general population, resulting in a low presence in the classrooms of students with this condition.

Need for a complete functional evaluation that includes physiological, functional, perceptive-visual and emotional aspects. This assessment must precede decisions on the technological assistance measures to be implemented so that they are adapted to the educational needs of students.

Little or no specific training of educational professionals, or future professionals, on functional characteristics of students with albinism and their needs for educational inclusion.

There is no technology that is useful for all educational subjects: in some, one type of technology is more useful than in others.

For its use, it requires a good, quality and safe Internet installation that reaches all classrooms.

The possibility that the Internet signal may not work properly, at a certain time. If this happens, students with visual impairment need other substitute technologies to be used.

It is the educational agencies and institutions that must be responsible for the financing, installation, maintenance and day-to-day management of the appropriate technology for students with albinism.

Generally, each secondary school student uses several classrooms during the school year, which generates the choice between:

- That the student receives all the subjects in the classroom in which the technological resources are installed.

- The student moves from the classroom with his or her classmates even though they are not adapted technologically.

- That all classrooms have the technological resources.

To function properly, all teachers must be trained to use technological resources. Responding to this need can be quite challenging for small and medium-sized schools.

OPPORTUNITIES

•lobal commitment to education for all and educational inclusion, declaring among other objectives that of «guaranteeing an inclusive, equitable and quality Education».

Sensitivity of the United Nations on the human rights problems suffered by people with the genetic condition of albinism.

Establishment by the UN Human Rights Council of a mandate for the defence of the human rights of persons with albinism. Recently, a second independent expert has assumed this mandate.

European Union commitment, through the Erasmus+ Programmes, to support Inclusive Education with emphasis on the digital transition.

European countries are concerned to ensure inclusive and accessible education by providing regulatory mechanisms for its implementation.

Greater knowledge of the genetic condition of albinism and more adjusted to reality as a result of awareness-raising work carried out through all committed associations: UN, Global Albinism Europe, Global Albinism Alliance and national associations.

Consolidation in time of some of the associations, currently possessing a very stable organizational structure.

Greater presence and acceptance of the use of educational methodology based on technological assistance, not only as a strategy of accessibility to education.

Research boom for the design of technological devices for educational purposes.

It helps the accessibility of students with any educational need, favoring total inclusion.

The commitment of international, national and local organizations -with competence in education- to design budgets for the technological endowment of classrooms. The aim is to achieve a fully accessible and inclusive education system that closes possible gaps arising from the social, cultural and personal contexts of students.

STRENGTHS

•There are 83 associations in the world that aim to defend the rights of people with the genetic condition of albinism and that their needs are met. They are present in many countries and are represented on five continents.

Creation of the Global Albinism Europe and the Global Albinism Alliance, to which many of the aforementioned associations have joined. Its objective, among others, is related to the promotion and defense of the rights of people with albinism. Among them is the right to accessible and inclusive education.

Many of these partnerships are collecting technical knowledge and good practice experiences in educational care through technology assistance so that it can serve as a shared practice.

Increasingly close relationship between associations of persons with albinism and the medical and scientific community.

The technology is fully inclusive, allowing access to school learning and daily sessions in a way adapted to the visual needs of students with albinism. It also enables an attractive, motivating and current education for all students and not only for people with visual impairment.

It is user-friendly for students and probably quite affordable for school.

The great boom of the technological sector and its strong irruption in the educational sphere has resulted in many technological instruments that have allowed to increase accessibility in the classroom, in a comfortable and standardized way, for students with albinism. In this way, it allows them to read the blackboard, see the teachers in the classroom while teaching the session, make video recordings, etc. This boom is favoring the evaluation of the effectiveness of existing technology and its revision to adapt it to most of the needs of students.

PROPOSALS

SAccording to the theoretical and practical information collected in the focus groups, it is confirmed that the use of technology as a tool for accessing the ordinary curriculum, for students with visual impairment derived from albinism, is a reality. Its introduction is widespread and there are many students who, with its use, have benefited by facilitating access to information with full autonomy and equality with the rest of their peers. But there are still things to do.

"To examine" the current situation of the educational inclusion of students with the genetic condition of albinism, in a sincere way, allows us to look to the future knowing the benefits and defects of our objectives, and to propose better objectives for the future.

Some of the resulting strategies may be:

• Participate, from the associations of albinism, in legislative regulations aimed at guaranteeing the right to a truly inclusive education for students with visual impairment derived from their genetic condition of albinism, where the use of technology is present as an educational tool and not only accessibility.

• Strengthen the numerous associations that exist on albinism, in collaboration with international organizations committed to inclusive education, research on the impact of technology on the learning processes of this student body.



• Promote, in collaboration with international organizations, the collection and publication of experiences of good practices in inclusive education through the use of technological resources.

• Implementation of actions aimed at the knowledge and dissemination of grants and/or subsidies of general technological material for educational institutions; this material must respond to the specific needs of students and not be a source of discrimination.

07 CONCLUSIONS



We have witnessed a process of change in the educational system, in which, starting from an exclusive model of disabilities -in our case the one related to visual impairment- we have transitioned from a segregationist model to an integrator - accessible, Towards an inclusive education system.

Inclusive education is a reflection of the fulfillment of the right to equity and equality of all people. And, it aims to pursue the transformation of culture, educational organization and school practice.

The implementation of an inclusive education system, in which it is a reality for students with visual impairment derived from albinism, implies a deep reflection in which educational leaders must participate: legislators, education system and teachers, students and family.

From our association Alba: We have always advocated the adoption of measures to support students with visual impairment due to their genetic condition in order to achieve the educational objectives at each of the educational levels, The European Commission's White Paper on the European Union's role in the field of education and training.

The commitment to the educational inclusion of pupils with special needs arising from visual impairment is now a reality; accessible and quality education for all are accepted and present principles in most European education systems and In particular, in all the European countries involved in the preparation of this guide..



The irruption of technology in educational classrooms across Europe is a fact, being currently present in most educational centers. Its introduction has been linked, in many cases, to give accessible response to students with disabilities, as is the case with students of this genetic condition. An example of this technology in secondary and/or second grade education are PCs and digital whiteboards.

There are many benefits to secondary school students from the use of technology as an educational methodology and regardless of the specific needs of each or one of the students; among other benefits increases motivation towards the subject, encourages interaction, expression and debate in the classroom and increases creativity in students.

The use of these technologies has allowed students with visual impairment derived from their genetic condition of albinism to have greater access to academic information, greater autonomy in communication and greater independence in the handling of materials and study proposals, providing a better quality of life. But it also raised the need to define new didactic and pedagogical strategies.

They are now the most important resource for visually impaired people to access information and perform reading and writing tasks. All secondary school students with visual impairment derived from their genetic condition of albinism and interviewed for this guide, use them continuously.

The closure of educational centers, due to the health control by the pandemic of COVID-19, was a great showcase for educational technology's ability to respond quickly, Fast and accessible to the entire educational system regardless of the students' functional, sensory and/or cognitive needs. But this showcase has also highlighted some weaknesses that need to be rethought. On the one hand, it is necessary to avoid a social gap in access to educational technology and, on the other, create new didactic-pedagogical models adapted to technology and combine them with more traditional models.

In order to overcome these weaknesses, there must be a political commitment to create legislation to guarantee access to educational technology for all students, especially if they are disabled, In addition to creating policies for teaching professionals to improve their skills with the aim of successfully integrating technologies.

It is essential that teachers have an entrepreneurial, positive and flexible attitude to achieve the development of inclusive methodologies through the use of technology. Seeing support opportunities in the classroom, in technological innovations, can lead to significant learning.



The research review on the relationship between the use of technology in the classroom and the pedagogical processes used show that technology can participate in them, whether deductive or inductive as long as it is adapted to the specific needs of students, in our case with visual deficiency derived from the genetic condition of albinism.

Technology is a key driver of full accessibility in the education system, but the focus must be on innovation and research in educational techniques rather than the introduction of technological tools. It is not just about using instruments but accompanying students in general in their use and taking into account the specific needs of each of them. It is also essential that, in its design, the different professional and knowledge disciplines involved in the educational and technological field collaborate, especially with specialization in special needs derived from sensory, functional and cognitive impairment.

Accessibility measures aimed at students with special needs arising from their genetic condition and/or visual impairment, in secondary classrooms, should lead to the full inclusion of these in equity with the rest of their peers, through curricular adaptations and/or pedagogical methodologies that affect the entire class as a whole and not only students with, in this case, severe visual impairment; being promoted and shared by the entire educational community. This would only be achieved based on the fact of offering an education for all and adapting mediation processes to the different learning styles in secondary school students. **Only then will accessibility be real.**

08 LINKS OF INTEREST AND RESOURCES

LEGISLATION:



DENNMARK:

The Constitution (Grundloven), nr. 169 of 05/06/1953.

Act on Follow-up on Evaluation performed by the Danish Evaluation Institute etc. (Bekendtgørelse om opfølgning på evaluering ved Danmarks Evalueringsinstitut m.v.), BEK nr 1117 of 28/12/2001.

Circular on Agreement on Salary and Employment Conditions for School Heads in Upper Secondary Education (Cirkulære om aftale om løn- og ansættelsesforhold for rektorer ved almene og private gymnasier), 11/06/2008.

Bekendtgørelse om folkeskolens specialundervisning og anden specialpædagogisk bistand [Ministerial Order on Special Education in Folkeskole and Other Specialized Pedagogical Assistance], BEK nr 693 af 20/06/2014

Act on the Bachelor of Education for Primary and Lower Secondary School Teachers (Bekendtgørelse om uddannelsen til professionsbachelor som lærer i folkeskolen), BEK nr. 1068 of 08/09/2015.

Act on the use of tests in the Folkeskole (Bekendtgørelse om anvendelse af test i folkeskolen mv.), BEK nr. 742 of 14/06/2017.

Bekendtgørelse af lov om folkeskolen [The Folkeskole Consolidation Act], LBK nr 1510 af 14/12/2017.

Consolidation Act on pedagogical objects and content of the pedagogical curriculum (Bekendtgørelse om pædagogiske mål og indhold i seks læreplanstemaer), BEK nr. 968 of 28/06/2018.

Act on Study and Career Guidance Denmark (Lov om Studievalg Danmark), LOV nr. 311 of 25/04/2018.

Act on Final Examinations in the Folkeskole (Bekendtgørelse om folkeskolens prøver), BEK nr. 1090 of 29/08/2018

Act on The Danish Evaluation Institute (Bekendtgørelse af lov om Danmarks Evalueringsinstitut), LBK nr. 600 of 21/05/2019.

Act on Education for Young People with Special Needs (Bekendtgørelse af lov om ungdomsuddannelse for unge med særlige behov), LBK nr. 610 of 28/05/2019.

Act on obligation to education, employment etc. (Pligtbekendtgørelsen), BEK nr 1014 of 04/10/2019.

Act on Quality Reports in the Folkeskole (Bekendtgørelse kvalitetsrapporter i folkeskolen), BEK nr 204 of 13/03/2020.

Act on the Folkeskole (Folkeskoleloven), LBK nr 1396 of 28/09/2020.

The Finance Act for 2021 (Finansloven for 2021).

Additional information | Ministry of Children and Education (uvm.dk) (sobre atención a necesidades educativas especiales)



ITALY:

-Constitución de la República Italiana. Gazzetta Ufficiale, n° 298, 27/12/1947

Act No 104 of February from 1992 Gazzetta Ufficiale, Rome, No. 39, 17/02/1992, Ordinary Supplement

D.Lgs. 16 of april from 1994, N° 297. Gazzetta Ufficiale, Roma, n. 115, 19/05/1994,

DPR 24 of june from 1998, N° 249 Gazzetta ufficiale, Roma, n.175 del 29/07/1998 (Statuto delle studentesse e degli studenti).

DPR 8 of march from 1999, no. 275. SO 152/L della GU 10 august 1999, n. 186.

Law 10 of march from 2000, no. 62. Gazzetta Ufficiale, Roma, n. 67, 31/03/2000

Law 28 of march from 2003, no. 53. Gazzetta Ufficiale n. 77 del 2 de abril de 2003

D.Lgs. 15 of april from 2005, N° 76. Gazzetta Ufficiale, Roma, n. 103, 05/05/2005.

Law N° 1 of january from 2007, N° 1. Gazzetta Ufficiale n. 10 del 13 gennaio 2007.

D.M. 22 of august from 2007, N° 139. Gazzetta Ufficiale n.202, 31/08/2007

D.M.l de 29 of November from 2007

Law N° 133 of august from 2008. Gazzetta Ufficiale n. 195 of 21 august 2008 - Suppl. Ordinario n. 196

law 30 of October from 2008, N° 169. Gazzetta Ufficiale n. 256 of 31 October 2008

DPR 20 of march from 2009, no. 81 Gazzetta Ufficiale 2 luglio 2009, n. 151

DPR 20 of march from 2009, no. 89 Gazzetta Ufficiale 15 luglio 2009, n. 162

DPR 22 of june from 2009, N° 122. Gazzetta Ufficiale 19 agosto 2009, n. 191

Law 8 of October from 2010, N° 170. Gazzetta ufficiale, n.244 18/10/2010

Law N° 26 of february from 2011 Gazzetta Ufficiale, n.47, 26/02/2011, SO n. 53

Law 17 of december from 2012, N° 221. Gazzetta Ufficiale, Roma, n. 294, 18/12/2012

Ministerial Directive 16 of January from 2012, n° 4. Gazzetta Ufficiale n.76, 30-3-2012 - SO n. 60

DPR 28 of march from 2013, no. 80. Gazzetta Ufficiale, n. 155, 04/07/2013

Ley 13 of july from 2015, n° 107 Gazzetta Ufficiale, n. 162, 15/07/2015

D.L. 13 of april from 2017, n° 66. Gazzetta Ufficiale, Roma, n. 66, 16/05/2017

D.M 3 of october from2017, n.° 742 Gazzetta Ufficiale, Roma, n. 742, 03/10/2017,

Ley 3 of march from 2020, no. 12 Gazzetta Ufficiale n° 61, 9/03/2020



NETHERLANDS:

Centraal Bureau voor de Statistiek (Statistics of Netherlands), 2012. Jaarboek onderwijs in cijfers 2012 (Yearbook of education in fi'gures 2012).

Centraal Bureau voor de Statistiek (Statistics of Netherlands), 2013. Nederland en 2012 (Países Bajos en 2012

Comisión Macro Eficiencia Amarantis, 2013. They're smarter together.

Parlamento Europeo, 2012. Status of implementation of the European Qualifications Framework.

Ministry of Education, Culture and Science,2011. Actieplan Laaggeletterdheid 2012-2015 'Geletterdheid in Nederland'

Ministry of Education, Culture and Science, 2011. Actieplan Leraar 2020 (Plan de Acción Maestro 2020).

Ministry of Education, Culture and Science 2011. Actieplan mbo: Focus op Vakmanschap 2011-2015 (Plan de acción de formación profesional: Enfoque en la artesanía 2011-2015

Ministry of Education, Culture and Science 2013. Basisonderwijs 2013-2014 (Educación Primaria 2013-2014

Ministry of Education, Culture and Science 2013. Lerarenagenda 2013-2020: de leraar maakt het verschil (Agenda de los docentes 2013-2020: los docentes marcan la diferencia

Ministry of Education, Culture and Science 2013. Nederlands Nationaal Hervormingsprogramma 2013 (National Reform Programme of the Netherlands 2013).

Ministry of Education, Culture and Science 2013. Voortgezet Onderwijs 2013-2014 - Gids voor ouders, verzorgers en leerlingen (Secondary education 2013-2014 - Guide for parents, caregivers and students)

Ministry of Education, Culture and Science, september of 2015. Onderwijsgids vo 2016- 2017.

Ministry of Education, Culture and Science, Onderzoekskader 2017 voor het toezicht op het voortgezet onderwijs,Inspectie van het Onderwijs, (10 of october from 2016).

Ministry of Education, Culture and Science, Een eigentijds curriculum advies, (may from 2014).

Eurydice Netherlands Unit, 2010. The education system in the Netherlands 2009. The Hague: Ministry of Education, Culture and Science.

SLO,Instituto Nacional para el Desarrollo Curricular, 2007. Handreiking Studieloopbaanbegeleiding: De rol van de studiecoach (Career guidance: The role of the studio coach)

The Dutch Association of Psychologists (NIP), 2008. From studentenpsycholoog: Deskundige begeleiding van persoonlijke en studieproblemen (The psychologist for students: Guidance on personal problems and study

La Inspección holandesa de Educación, 2013. De staat van het onderwijs. 'Onderwijsverslag 2011/2012 (El estado de la educación. Informe sobre educación 2011/2012- L a Inspección holandesa de Educación, 2013. De staat van het onderwijs. 'Onderwijsverslag 2011/2012 (El estado de la educación. Informe sobre educación 2011/2012.



NORWAY:

(barnehageloven)

Lov om grunnskolen og den vidaregåande opplæringa (opplæringlova), The Education

Lov om folkehøyskoler (folkehøyskoleloven)

Lov om frittståande skolar (friskolelova), The Independent Schools

Lov om høyere yrkesfaglig utdanning (fagskoleloven), The Vocational Education

Lov om voksenopplæring (voksenopplæringsloven), The Adult Education Act is not available in English in October 2019.

Lov om universiteter og høyskoler (universitets- og høyskoleloven)

Lov om utdanningsstøtte (utdanningsstøtteloven)

Lov om studentsamskipnader Lov om barnehager(Studentsamskipnadslove

Lov om introduksjonsordning og norskopplæring for nyankomne innvandrere (introduksjonsloven),

Lov om kommuner og fylkeskommuner (kommuneloven).

Lov om barn og foreldre (barnelova)

Lov om rett til innsyn i dokument i offentleg verksemd (offentlighetslova),

Lov om arbeidsmiljø, arbeidstid og stillingsvern mv. (arbeidsmiljøloven)

Lov om høyere yrkesfaglig utdanning (fagskoleloven)



SPAIN:

Organic Law 8/1985, of 3 July, regulating the Right to Education. (boe.es)

Organic Law 2/2006, of 3 May, of Education. (boe.es)

Royal Legislative Decree 1/2013 of 29 November approving the Consolidated Text of the General Law on the Rights of Persons with Disabilities and their Social Inclusion. (boe.es)

Organic Law 8/2013 of 9 December on Improving the Quality of Education

Royal Decree 310/2016 of 29 July regulating the final evaluations of compulsory secondary education and baccalaureate

Organic Law 3/2020 of 29 December amending Law 2/2006 of 3 May on Education

WEBGRAPHY:

Aula Mentor(Mentor classroom)

Buenas Prácticas de INQAAHE(Good Practices of INQAAHE)

Catálogo Nacional de Cualificaciones Profesionales(National catalogue of professional qualifications)

Espacio Europeo de Educación Superior(European higher education area)

Estadística del gasto público en educación(Statistics on public expenditure on education)

Evaluación General de Diagnóstico 2010. Educación Secundaria Obligatoria.(General Diagnostic Assessment 2010. Compulsory Se-

INTEREST LINKS:

https://eurydice.eacea.ec.europa.eu/national-education.

https://eldiariodelaeducacion.com/porotrapoliticaeducativa/2021/02/08/la-lomloe-y-el-derecho-a-la-educacion-inclusiva-por-otra-politica-educativa-foro-de-sevilla/

https://www.once.es/servicios-sociales/tecnologiayrecursosadaptados

http://www.ite.educacion.es/formacion/materiales/129/cd/indi ce.htm

https://www.academia.edu/es/30024587/La_respuesta_educativa_a_los_estudiantes_con_discapacidad_visual

https://albinismo.es/- https://www.academia.edu/es/30024587/La_respuesta_educativa_a_los_estudiantes_con_discapacidad_visual

https://albinismo.es/



09 BIBLIOGRAPHY

AVALOS DAVIDA, C, REDONDO QUESADA, V., ROJAS CAMACHO, D. Y SALAZAR MARIN, J. (2018). "Metodologías inclusivas de aprendizaje mediante el uso de TIC: opiniones de estudiantes y docente costarricenses". Revista SEP-PyS@uned.ac.cr. Volumen 16 numero 1 pág. Núm. 53-69.

AVILA CAÑADAS, M. (2017) "Calidad y equidad educativa: La educación inclusiva como un derecho". Aportación en Mesa redonda "La educación inclusiva como derecho" Organizado por la Sección de Derecho de la Discapacidad del ICAV (Ilustrísimo colegio de abogados de Valencia).

BUENO, M., ESPEJO DE LA FUENTE B., RODRIGUEZ DIAZ F., TORO BUENO S. (1999) "Niños y niñas con baja visión: recomendaciones para la familia y la escuela". Ediciones Aljibe.

CALDERON ALMENDROS, I. (2021) "la LOMLOE y el derecho a la educación inclusiva" Blog de El diario de la educación. Buscar en https://eldiariodelaeducacion.com/porotrapoliticaeducativa/2021/02/08/la-lomloe-y-el-derecho-a-la-educacion-inclusiva-por-otra-politica-educativa-foro-de-sevilla/ (búsqueda 24 de octubre de 2022)

CREAMERS, B.P.M. "El sistema educativo holandés". En Los sistemas educativos europeos: ¿crisis o transformación? Directores J. Prats y Raventós F. Capítulo IV. Pág. 88 – 118. Obra Social Fundació La Caixa. Colección Estudios Sociales.

DEL CURA GONZALEZ, M. "Un patronato para los "anormales": primeros pasos en la protección pública a los niños con discapacidad intelectual en España (1910-1936)" en Asclepio. Revista de Historia de la Medicina y de la Ciencia, 2012, vol. LXIV, nº 2, julio-diciembre, págs. 541-564.

FANDOS GARRIDO, M. (2003) Tesis doctoral "Formación basada en las tecnologías de la información y comunicación. Análisis didáctico del proceso de enseñanza-aprendizaje". Director. Ángel-Pio González Soto. Universitat Rovira i Virgili – Departament de Pedagogia. Tarragona.

GARCIA RUBIO, J. "Evolución legislativa de la educación inclusiva en España". Revista Nacional e Internacional de Educación Inclusiva 10(2). 2017. pp. 251-264.

GAVARI STARKIE, E. (2003) "Los principios rectores de la política educativa italiana contemporánea". En Educación XXI: Revista de la Facultad de Educación nº 6, pág. 247-272.

GRANHEIM, M.K. y LUNDGREEN, U.P. (1992) "Monográfico: La dirección por objetivos y la evaluación en la educación noruega". En Revista de Educación. Núm. 299. Pág. 7-42.

GRUPO ACCEDO. "Utilización de las TIC por parte de los alumnos con discapacidad visual como eemento de apoyo al aprendizaje de la lectoescritura". En Integración: Revista digital sobre discapacidad visual. Nº 62, marzo 2013.

GRUPO ACCEDO. "Catálogo de APPs accesibles para discapacitados visuales en la escuela inclusiva" (dispositivos Android). Septiembre de 2015.

ILLA VILAGUT, N. (2015) Trabajo fin de master "Los alumnos con discapacidad visual en la escuela ordinaria: el uso de Tiflotecnología y Tecnologías de la información y la comunicación en el área de Lengua castellana y Literatura en Educación Secundaria". Directora. Mª Angel Somalo Fernández. Universidad Internación de la Rioja – Facultad de Educación. Barcelona.

INTEF- INSTITUTO NACIONAL DE TECNOLOGIAS EDUCATIVAS Y DE FORMACION DEL PROFESORADO (2017). Una breve historia de las TIC educativas en España.

JUNTA DE ANDALUCIA (2021) "Guía para la orientación académica y profesional del alumnado". Elaborado por las coordinadoras y coordinador del área de Orientación vocacional y profesional de los Equipos Técnicos Provinciales de Orientación Educativa y Profesional de Andalucía. Consejería de Educación y Deporte.

JUNTA DE ANDALUCIA (2008) "Manual de servicios, prestaciones y recursos educativos para el alumnado con necesidades específicas de apoyo educativo". Elaborado por la Dirección General de Participación e Innovación Educativa. Consejería de Educación.

LUCERGA R., SANZ-ANDRES M.J. (2003). Puentes invisibles: El desarrollo emocional de los niños con discapacidad visual. Madrid: ONCE.

MARTINEZ RON, A. (2016) "El ojo desnudo". Editorial Planeta

MONTOLIU, LLUIS (2018) "¿Qué es el Albinismo? Editado y publicado por ALBA ©

MONTOLIU L., GRØNSKOV k., WEI AH., MARTINEZ GARCIA M., FERNANDEZ A., ARVEILER B., MORICEPICARD F., RIAZUDDIN S., SUZUKI T., AHMED ZM., ROSENBERG T., LI W. "Increasing the complexity: new genes and new types of albinism".

PEDRÓ, F. (2017) "Tecnologías para la transformación de la educación". Edit. Fundación Santillana.

PEREZ RUIZ, C.I. ((2017) "La respuesta educative a los estudiantes con discapacidad visual". Edita Fundación Mapfre y Organización de Estados Iberoamericanos para la educación, la ciencia y la cultura.

RODRIGUEZ CORREA, M, y ARROYO GONZALEZ, M.J. "las TIC al servicio de la inclusion educative". Digital Education Review- Number 25. June 2014.

RODRIGUEZ FUENTES A. (2005) "¿Cómo leen los niños con ceguera y baja visión?" Ediciones Aljibe

SERRANO MARUGÁN, I., PALOMARES RUIZ, A. y GARROTE ROJAS, D.: "Propuestas innovadoras para favorecer el uso de las TIC y propiciar la inclusión educativa del alumnado con discapacidad visual", en ENSAYOS, Revista de la Facultad de Educación de Albacete, Nº 28, 2013.

UNESCO (2007) “Normas UNESCO sobre competencias en TIC para Docentes” Publicado en 2008 por la Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura.

UNIVERSIDAD AUTONOMA DE BARCELONA (2016) “Tecnología y pedagogía en las aulas”. Dirección y coordinación de J.M. Pérez Tornero y M. Pi.

VILLALTA PAUCAR, M.A., GUZMAN, A. y NUSSBAUM, M. (2013) “Procesos pedagógicos y uso de tecnología en el aula”. En Revista Complutense de Educación. Vol. 26 num. 26, pág. 405-424.

WAKEFIELD, MA (2013) “Universal Design for Learning Guidelines 2.0. Traducción al español versión 2.0

ZAPPALÁ, A., SUCHODOLSKI (2011). “Inclusión de TIC en escuelas para alumnos con discapacidad visual” Buenos Aires - Ministerio de Educación de la Nación.

PROYECTOS FINANCIADOS POR EL PROGRAMA ERASMUS + DE LA UNION EUROPEA (ordenados por año de publicación)

BONET, PATTY (2015) ALBINISMO: UN RETO EDUCATIVO. Buscar en http://albinismo.es/wp-content/uploads/Albinismo.Un-reto-educativo..pdf (búsqueda 04 de octubre de 2022).

PARRAGA PEREZ, P. y PUERTO MUÑOZ, M. (2018) ADAPTACION CURRICULAR INDIVIDUALIZADA PARA PERSONAS CON ALBINISMO. Buscar en http://albinismo.es/wp-content/uploads/Guia-Adaptacion.pdf (búsqueda 04 de octubre de 2022)

PARRAGA PEREZ, P. y PUERTO MUÑOZ, M. (2018) ENTORNO EDUCATIVO PARA PERSONAS CON ALBINISMO. Buscar en http://albinismo.es/wp-content/uploads/Guia-Entorno.pdf (búsqueda 04 de octubre de 2022).

HERNANDEZ, A., PICAZO, R. y SANTODOMINGO, J. (2021). LA INCLUSION DE JÓVENES CON ALBINISMO A TRAVÉS DEL DEPORTE. Buscar en https://albinismo.es/wp-content/uploads/GuiaAlbinismoyDeporteImprimir.pdf (búsqueda 04 de octubre de 2022).

10 THANKS

This guide would not have been possible thanks to the European Union and its co-financing through the Erasmus+ programm.

Thanks to ALBA, the Association for Helping People with Albinism, for participating in awareness-raising, collaboration and research initiatives in different areas where the person with the genetic condition of albinism has to face barriers; and that has as one of its reflections this methodological guide for the creation in the future of classrooms without barriers through the use of technology.

Our thanks to the associations for helping people with albinism from Denmark (DFFA), Italy (ALBINIT), Norway (NFFA) and the Netherlands (ON-N) for their effort and collaboration in the elaboration and enrichment of the contents of this guide despite the difficulties we had to face during the socio-sanitary crisis caused by the pandemic by COVID19. Our special mention to ALBINIT for his greater commitment.

Our gratitude to Eurydice, for having been an agile and reliable tool for the identification of the legislative framework of the educational system of the participating countries in the elaboration of this guide.

Many thanks to all those professionals from different fields related to education and technology, specialized in attention to the special needs of students with visual impairment in secondary and/or second grade education. Thanks to his research, reflection and publication we have been nourished for the elaboration of this guide.

And finally, we would like to thank all young people with visual impairment derived from their genetic condition of albinism and that during the elaboration of this guide they were studying secondary education, for having shared with us their experiences with the use of educational technology and their assessment of its accessibility and inclusion. The information gathered in their selfless participation, and their serve as motivators to continue fighting for an inclusive society in which the visual impairment present in people with the genetic condition of albinism is not a reason for inequality: educational, social and economic.

11 AUTHORS

MÓNICA PUERTO MUÑOZ

Graduate in Teaching Ed. Primary and Infant by the University of Valencia. Professor in the school Valencia since 1993. Master in direction and management of educational centers. Member of the communication team of the Escolapias Foundation. Founder and president of the Association for Assistance to People with Albinism, Alba since 2006 Eleven Accessibility Award 2010 which explained the pilot experience of technological accessibility in the classroom. Co-author of this guide in addition to "Curricular adaptation for people with albinism" (2018) and "Educational environment for people with albinism" (2018).

PURIFICACIÓN PARRAGA PEREZ

Graduated in Psychology from the University of Valencia is accredited by the C.G.C.O.P. as a psychologist expert in Psychology of social intervention with certification

Specific in the field of Family, Childhood and Adolescence. Master in Intervention in learning difficulties. Master's degree in family mediation, E.P.U. Diploma in adoption counseling. She has more than 5000 hours of training in evaluation, diagnosis, therapy and family intervention, trauma and attachment in childhood and adolescence and in contexts of risk. Adviser to the Governing Board of the Col·legi Oficial de Psicolegs de la Comunitat Valenciana on the protection of children and adolescents. Since 2005 she develops her professional activity as a psychologist in the E.E.I.I.A. of the Commonwealth I. Barrio del Cristo Aldaia-Quart of Poblet (Valencia), activity that combines with teaching work, Guidance and advice to organizations linked to vulnerable groups of high social risk, always from psychology.

On a personal level, the birth of her child in 2003 with severe visual impairment allowed her to contact other parents who, Like her, they wanted to defend a much more accessible and inclusive future for their sons and daughters Together with actions of social awareness of the visual disability and defense of their rights, with the association

ALBA: Association for helping people with albinism and within the framework of the erasmus+ projects, is co-author of this guide in addition to those of "Curricular adaptation for people with albinism" (2018) and "Educational environment for people with albinism" (2018).

GISELA RAMÍREZ DE ARELLANO FAMBUENA

Degree in Journalism and Advertising and Public Relations from the CEU Cardenal-Herrera University (Valencia). She is passionate about reading and communication and in her professional career highlights her time writing the regional newspaper Las Provincias. Committed to social journalism, she has recently embarked on a personal project of interviews with people with disabilities (physical, visual and intellectual) in an attempt to eliminate prejudices and social stigmas that concern the collective. For Gisela, what is important are people, regardless of their status, sex or ideology and their main objective is to fight for social inclusion (in this case, people with albinism and visual disabilities).


BY
NC