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LOOKING OUT FOR A SCHOOL FOR ALL

METHODOLOGICAL GUIDE

TOWARDS AN INCLUSIVE PRE-PRIMARY EDUCATION CLASSROOM

redREE making projects

ALBA Asociación de ayuda a personas con albinismo

Aniridia Europe

Aniridi Norge

Aniridia Italiana

smallcodes technology

This guide is a result of the project:

LOOKING OUT FOR A SCHOOL FOR ALL: Early Educational Inclusion for Students With Low Vision

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INDEX

INTRODUCTION

This Methodological Guide is a tangible result of the Erasmus Plus project "LOOKING OUT FOR A SCHOOL FOR ALL: EARLY EDUCATIONAL INCLUSION FOR STUDENTS WITH LOW VISION", which seeks to serve as a resource for the adaptation of pre-primary education centers in inclusive schools for children visually impaired.

In order to understand the reality of students with visual impairment in education, the general educational lines that characterize the psychopedagogical intervention in them, and the actions that we -as teachers and centers- can carry out to answer to them, is addressed in this methodological guide from a theoretical-practical orientation with advice, ideas, and recommendations thanks to the advice and support of the project's partner entities, to turn schools into inclusive spaces.

With this, we intend in the first place to facilitate an approach to teachers and pre-primary schools on the educational needs presented by children with visual impairment (low vision), to know the necessary intervention of the different agents in the educational process that a student with visual impairment requires (general and specialized education professionals, support teams, family members, beneficiary entities, etc.) and meet their educational needs to offer them responses tailored to them.

We propose a harmonic approach encompassing the different elements or doctrines of the new pedagogical model of Special Educational Needs (SEN), integrating other concepts like cognition and behavior in the development of types of intervention for the different areas and strategies, among others. Lastly, the guide also intends to be of interest for those who, having previous experience of integration of this population, seek to deepen their performance.

WHAT IS LOW VISION?

Low vision is the condition suffered by any person with a significant reduction in sight that does not improve with an adequate correction with glasses, contact lenses, or even successful pharmacological treatments or surgery, and who therefore has difficulty or inability to perform some daily life tasks.

For the World Health Organization (WHO), people considered with low vision are between the maximum limits of 0,3 (30%) and minimum of 0,1 (10%) visual acuity and/or have a visual field between 30 and 10 degrees. The situation in which visual acuity is equal to or less than 0,1 (10%) and the visual field is equal to or less than 10 degrees is called legal blindness in Spain. Despite everything, low vision in the educational context is associated with the terms: partially sighted and legally blind to describe the severity of a visual impairment.

Sometimes detecting or understanding that a student has low vision is very difficult. It is much easier to put yourself in the place of a blind person than a person with low vision, because: How much do they actually see? Imagining this situation is very complicated, since there is no established standard on how much people with low vision actually see, since each one sees in a different way depending on the degree of visual impairment they have. Not all children with low vision have the same visual acuity, and not all show the same symptoms, nor do it with the same intensity. Thus, constant medical surveillance to evaluate their visual functioning is necessary.

According to studies by Foundation Retina Plus and the Spanish Low Vision Society, it is estimated that the population with low vision in Spain exceeds one million affected persons. These analyzes also state that people with severe visual limitations are around two million and that, due to the

increase in life expectancy of the Spanish population, the prognosis is that there will be more and more people at these levels of visual dysfunction, limiting their daily activity.

However, in our society, there is the general idea that a person either does or does not see. Medium-term situations are not well understood, meaning situations in which the visual function is not possible or is not good: there is no awareness of the existence of Low Vision. And not only does this idea exist in people, but in many aspects of the regulations these situations are forgotten, leaving them in a limbo that makes equitable attention to Low Vision very complicated, especially in public services.

There are many causes that cause low vision, mostly eye diseases (Macular Degeneration, Glaucoma, Diabetic Retinopathy, Pigment Retinitis, Magna Myopia…), but also accidents, neurological injuries, genetic disorders, congenital malformations, infectious diseases, etc. Therefore, there is no single way of seeing with low vision, but many symptoms that produce it in a unitary or mixed way (blurred vision, patchy vision, glare, night blindness, tunnel vision, loss of contrast, disorder in the vision of colors, etc.).

TWO GENETIC DISORDERS LINKED TO LOW VISION

ALBINISM

The term **Albinism** comes From the Latin word Albus, meaning white, and it refers to the condition resulting from the genetic condition that results in a deficiency in the production and distribution of melanin in our body. Melanin is a pigment found in most of our body, which is a very efficient photoprotector due to its chemical properties, since it allows to dissipate into heat more than 99.9% of the sun radiation absorbed. In humans, melanin is found in the skin, the hair, the

pigmented epithelium that surrounds the retina, the spinal cord, the reticular area of the adrenal gland, some areas of the inner ear, and some others of the brain. The concentration of this pigment in persons with Albinism is significantly lower.

From the words of Dr. Lluís Montoliu[1] in his book "What is Albinism?" we can state that "there is not one type of Albinism but many, which do not share the same symptoms, nor do they show them with the same intensity or relevance". The only shared characteristic is specifically visual impairment to some degree, while the lack of pigment in different parts of the body may or may not appear depending on the person's genetics and their type of Albinism.

There are two main types of Albinism depending on the affected areas, these being:

- Oculocutaneous Albinism (OCA), affecting the pigments of the skin, hair, and eyes.

- Ocular Albinism (OA), in which the eyes are affected by the decrease or absence of melanin.

It is necessary to note, if we want to know the origin of Albinism, that persons with this condition are born with it: they do not "become" or "get" Albinism, so it is important to refer to it as a genetic condition and not as "a disease that can be cured". Albinism is the result of a genetic mutation, the genes responsible being recessive, so an abnormal copy of the responsible gene must be inherited from both parents for it to manifest; two defective copies of the gene are necessary.

[1] Lluís Montoliu has a PhD in Biology and is a researcher in CSIC, in the department of Molecular and Cellular Biology of *Centro Nacional de Biotecnología* (CNB-CSIC) in Madrid, and an expert in Albinism and rare diseases.

Thus, in terms of prevalence, Albinism is a recessive genetic condition, and since only one of the two copies of each gene is inherited from each parent, the probability that they appear in the same person is small: specifically a 25% (1/4 children) if both parents carry the gene.

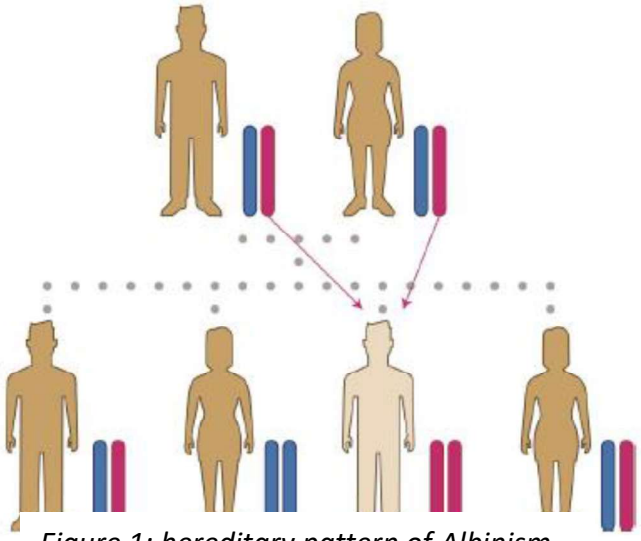

Figure 1: hereditary pattern of Albinism.

Therefore, even if the two parents are carriers of the gene, it is much more likely (75%, ¾ children) that the child will be born without Albinism than with it; but and even if the child does not develop Albinism, he/she will be twice as likely to have inherited one copy of the gene from one of the parents than to have inherited both "healthy" copies of it.

This makes it a rare genetic condition: approximately only 1 in 17000 persons have some type of Albinism (recent studies estimates this at around 1 in 10000 people). From these numbers, we can deduct that in Spain, with approximately 46 million persons, there are approximately 3000 people with some type of Albinism; in Italy, with approximately 60 million, there are around 6000 persons; and in Norway, with 5 million, around 500 persons.

To better understand Albinism, you can consult the Virtual Course for teachers and pre-primary schools created in this project (http://www.schoolforall.eu/virtual-training-course/) and visit the website of Asociación de Ayuda a Personas con Albinism, ALBA: http://www.Albinismo.es/.

ANIRIDIA

Aniridia is a genetic, congenital disorder. While the word "Aniridia" literally means "lack of iris", it is actually a disorder involving various eye structures, and is generally bilateral and incomplete, since in most cases there is an incipient -underdeveloped- iris. This is caused by a lack of development of the eyeball during pregnancy, due to a genetic mutation on pair 13 of chromosome 11, which affects the PAX6 gene responsible for the formation of the eye and other structures, being also sometimes linked to malformations in other organs in the body.

The first detectable symptom is photophobia, but also the lack of development of the retina and the optic nerve, which causes low visual acuity, usually 20% or less. Persons with Aniridia may also have other eye disorders:

- Nystagmus: constant and involuntary movements of the eye.
- Glaucoma: high intraocular pressure that can permanently damage the optic nerve.
- Cataracts: opacity of the lens.
- Keratopathy: disorders of the cornea, due to a lack of limbal stem cells.

Like Albinism, Aniridia is a genetic disorder that is already present at birth. It is diagnosed by clinical examination and confirmed with genetic tests. Aniridia is not always detected in routine pediatric examinations at birth, but in the first or second week of life.

Aniridia can be found alone or as part of a syndrome, the most common being WAGR syndrome (Wilms tumor, Aniridia, Genitourinary disorders, and Mental retardation). There is no curative treatment for Aniridia, although some linked disorders and complications can be treated, so patients require frequent ophthalmological and general check-ups and controls.

To better understand Albinism, you can consult the Virtual Course for teachers and pre-primary schools created in this project (http://www.schoolforall.eu/virtual-training-course/), and visit the website: https://www.Aniridia.eu/.

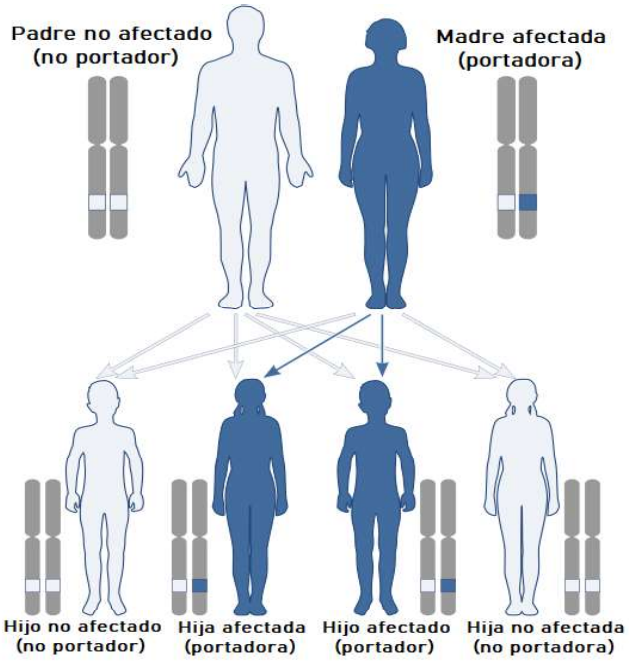

Figure 2: Hereditary pattern in Aniridia.

HOW DO I ACT BEFORE LOW VISION?

As we described previously, low vision is the condition suffered by any person with a significant reduction in sight that does not improve with an adequate correction with glasses, contact lenses, or even successful pharmacological treatments or surgery, and who therefore has difficulty or inability to perform some daily life tasks. The multiple studies carried out with children who suffer

from mild to severe visual impairment have proven that generating care mechanisms as early as possible is essential for them to reach adequate maturity and achieve full inclusion in their family, school, and social environment, without their visual handicap impeding their development.

This early care to children with visual impairment must begin before the age of 4 and must aim its efforts towards providing stimuli, according to the corresponding level of development, but starting from each case in particular. It must be an enriching and compensating mechanism that facilitates varied, non-improvised situations with specific stimuli that enable the development in various areas: motor, cognitive, social, language, and personal autonomy.

Historically, it had mostly been chosen for this specific training for children with severe visual impairment to be carried out in family or controlled environments for specific training, isolated from standard pre-primary schools. Nowadays, however, the social inclusion of children with visual impairment in ordinary schools is a priority. To guarantee compliance with this, it is necessary to provide the schools with visually impaired students with the specific resources and tools necessary for adaptation to the study place and access to the curriculum.

In general, the school becomes one of the places where children will spend most of their time, so its design and adaptation must consider full accessibility criteria. For the education of visually impaired children to be truly inclusive, it requires an interdisciplinary and coordinated work, of which the entire educational community must be part: the team of education professionals, the family, and all the competent public administrations. Team of education professionals consists of:

- The Faculty, who is in charge of marking the criteria and procedures to carry out any adaptations and curricular diversifications considered appropriate for the best attention to the students.

- The Pedagogical Coordination Commission, who must structure the educational project of the school with its Curricular Projects to be coherent between them and the educational practice.
- The Teachers, whose commitment is to guarantee the best possible the principles of normalization and integration in a school.
- The Classroom Teacher (or Tutor), whose function is to put into practice the general approaches within their possibilities and detect difficulties so they can be helped in their task by the rest of the team and by other teachers from the school.
- The Support Teacher, whose main mission is to support the Tutor in their care of students with Special Educational Needs (SEN) and the coordinating bodies of the school. Its main functions in pre-primary education are:
    1. Systematic observation in the natural environment of the behavior of visually impaired children.
    2. Joint elaboration of individualized curricular adaptations.
    3. Guidance regarding the methodological and organizational adaptations of the classroom, as well as to the appropriate teaching materials and personal resources.
    4. Development of specific materials for the teaching and learning process.
    5. Relationship with the pedagogical services of the school.
    6. Evaluation of the students, including the decision to withdraw or modify specific services.

We will not go into detail to explain the functions corresponding to each of those who make up what we call “team of education professionals” (technical team for pedagogical coordination, the school’s guidance team), although it is included in the course we have created in the project. However, we will focus throughout this guide on describing the role the school should play and how it can carry it out.

EARLY CARE

All work that could be carried out in early care would not be complete if we did not facilitate the incorporation of these children into a wider social life than what the family nucleus and their therapist offer: they must know society , with its rules and demands. This function of insertion in society is done through the school, which in turn has the mission of preparing them for their future commitment to it.

For any student, the home-school relationship is very important, but in these cases it is essential, since parents are an impressive source of information, being the ones who live with their sons and daughters every day and know first-hand their difficulties and what they can do to help them overcome the challenges we face. It is our job to transform all this information into tools and guidelines for our workplace: the educational environment.

As teachers and school, we sometimes think we know everything about education, but the day to day with our students teaches us that this is not the case, that children always teach something new, and that being able to count on people who know what is happening to a specific student, what can be done pedagogically, and what has already been tried without success encourages our educational work and helps us in the task with these students.

Therefore, the process of intervention must be carried out jointly with the parents; it is necessary to carry out work sessions with them to help them think about questions such as: what does this first separation mean for the family? what fantasies does the school create in your mind? what expectations, fears, and degree of trust in other people do you have? what type of school do they think of, and is it suitable for their sons or daughters and their current possibilities? do they establish an adequate mental separation from the moment the school is considered? etc.

In practically all cases, the family makes a first contact with the chosen school well in advance, to consider the advantages and disadvantages it poses for the visually impaired child and if it is willing to take on the challenge, beyond the regulations. This nuance is very important, because compliance with regulations does not guarantee the educational inclusion of a student with SEN per se: there must be a will by the school and the entire educational community, because if there isn't, the injured party will always be the student.

If the school is considered appropriate, a meeting will be convened with all interested professionals to offer information about the visual deficit and its repercussions on development, and they will talk about the specific child to be being integrated: how he/she is like, their abilities, difficulties, anxieties and fears, conditions to consider, and in general, all those aspects that can help teachers and educators to understand him/her better and in their task. The whole school has to share the inclusive educational project, and that the child, as a consequence, hast to participate in the school dynamics.

Incorporation into the school should be progressive, starting this difficult stage for the child -whenever possible and advised- in the company of the mother/father or with a family member. This auxiliary person will gradually disappear, and their role should be filled by the direct educator of the nursery or pre-primary school. It is advisable not to overload the school hours so the child can adapt in a rational and understandable way.

Also, appropriate conditions should be created for parents to feel supported and included, and to offer them the opportunity to express and share their feelings and doubts with the early care specialist. At the first stages of schooling, all parents experience feelings of anxiety and doubts: if their son/daughter has a disability, these are multiplied and the separation is much more painful,

also with permanent elements of comparison and the verification of the limitations and difficulties of their child.

On the other hand, the integration process must be welcomed with enthusiasm by the school, accepting and understanding the characteristics of the child with low vision, respecting their right to be different, and favoring the structural and organizational changes that are considered appropriate.

There are many questions that also produce insecurity or anxiety in teachers. Given the new feelings and expectations generated by the incorporation of the child with visual impairment to a classroom, the specialist should hold interviews with the teacher and the rest of the agents of the educational community as soon as possible, to exchange points of view and talk about the aspects that concern them. It is also convenient to hold regular meetings with teachers from pre-primary schools or nurseries who participate in integration, to offer a common space for contrasting opinions and experiences made by other professionals. Not only are the needs of the child important, but also the experiences of the family and the needs raised by educators in these early stages of adaptation.

INCLUSIVE EDUCATIONAL ENVIRONMENTS

The inclusive classroom and school are a response that does not just acknowledge, but also values the heterogeneity of students by focusing on the development of each of their potentials and not on their difficulties, to build a new culture for people with Specific Educational Support Needs (SESN).

This process of integration of people with difficulties entails the need to rethink and restructure the duty and attitude of the teacher, the family, and the community towards the child with SESN, they must be allowed not only to develop their abilities and potential so they can build knowledge, respecting their individual learning pace, but also to become an active subject of a non-exclusive education that provides equal conditions and opportunities. In this way, a quality education will be provided for all those who are in a situation of disadvantage or vulnerability, which in most cases are many more than the students with SEN.

Educational inclusion implies building or rebuilding the culture and educational identity of schools, their vision, and their mission. It also involves redefining educational and social policies, action strategies, and a change in the existing educational practices.

Not wanting to repeat what we described in DU 4 when talking about inclusive education, we will just add that referring to it entails a different way of approaching attention to diversity and involves designing and implementing procedures for the identification, location, and demolition of the obstacles present in schools. It goes beyond a reform that allows materializing resources that students with SESN can access, but this is a necessary condition.

In the words of Koichirô Matsuura, Director General of UNESCO, “Inclusive education can involve a great variety of policies and approaches in different regions, although in most contexts the term is commonly used to refer to the strategies that seek to integrate students with special needs into standard education schools. This vision of the problem is, however, too narrow” (2008).

When we speak of inclusive classrooms, we refer to the whole set of an educational system that guarantees basic education to the entire population in their environment, regardless of whether they show SEN or are in a situation of risk of social exclusion. Inclusive schools develop in their management of the teaching-learning processes the universal design for curricular learning (UDL).

UNIVERSAL DESIGN FOR CURRICULAR LEARNING (UDL)

- A support system that promotes the elimination of physical, sensory, affective, and cognitive barriers for the access, learning, and participation of students.
- It considers that there are “disabling environments” not “disabled persons”.

Principles on which the UDL is based:

1. Representation: providing multiple means of representation regarding what to learn; it refers to the applications of the Theory of Multiple Intelligences in the classroom.

2. Action and Expression: providing multiple means in relation to how to learn, offering various materials with which all students can interact, and facilitating different expressive options. “Stimulating towards effort, motivating towards a goal”.

3. Commitment: offering broad options that reflect the interests of the students, strategies to face new tasks, self-evaluation options, reflections on their expectations, etc.

These educational centers include a flexible curriculum, where all students learn together, allowing everyone to learn and participate, structured as a learning community, and as a school organization immersed in the process of continuous improvement, because it regards evaluation as a key part of the educational process, and consequently acting as a “learning” organization.

Giné[2] and Font[3] (2007) propose this design, since it favors the removal of physical, sensory, cognitive, and affective barriers for the access, learning, and participation of all students regardless of their specific needs. It generates a paradigm shift in education by moving away from

[2] Climent, Giné Giné. PhD in Psychology, Associate Professor, Dean of the Faculty of Psychology, Education and Sport Sciences; Blanquerna of the Ramon Llull University. Main researcher of the Disability and Quality of Life Research Group, Educational Aspects, Spain.
[3] Giné, C. and Font, J. (2007). Students with intellectual and developmental disabilities. In Joan Bonals and Manuel Sánchez-Cano (coord.) Pedagogical advice manual. Barcelona. Editorial Grao.

the model that focuses on the difficulties of students and looks towards what it regards as "disabling environments".

This model assumes that the problems generated by the lack of accessibility are problems directly related to the exercise of rights and the fulfillment of duties, and therefore cannot be tackled just with the removal of physical barriers. It deems necessary to identify why these barriers arise, what can be done to avoid their re-origination, and how to develop measures, programs, and policies necessary to advance towards equal opportunities and the fulfillment of duties.

We refer to barriers as the set of elements of diverse nature (formal, material, organizational, functional, attitudinal, etc.) that hinder the development of educational inclusion. They can be as varied as the specific ways of teaching of a teacher, to the rules that govern the academic organization, how the support to the school center is organized, or even excluding attitudes.

Education is a fundamental right, being a responsibility of the public powers (the competent educational administration: central, regional, or local), of the educational centers as an organization (teaching and non-teaching professionals), and of families (individually and through associations) ensure compliance in an inclusive manner.

Therefore, all this socio-educational discourse recognized by law, must be coupled in the educational practice by a change in methods, organization, and educational response that leads to a change in the attitudes and beliefs towards disability, and more specifically in our case to the visual disability linked to Albinism and Aniridia.

EDUCATIONAL NEEDS DERIVED FROM LOW VISION

The current trend in the European Union is to develop a policy aimed at the integration of students with SEN within ordinary schools by providing teachers with various types of support like complementary staff, materials, training courses, and equipment. As we know from Eurydice reports, the definitions and categories of SEN vary from country to country, but in the 3 partner countries of this project, there are shared characteristics when identifying and defining them. This is why we believe it necessary to unify a definition of what we mean by SEN (Special Educational Needs), to better understand the concept and know who we refer to when talking about SEN students.

In order to do this, we will refer to two definitions that can help us clarify this concept: first, the one used in the current Spanish Education Law, which is similar in the other project member countries (Italy and Norway), so it is the definition that all educational centers they must abide to. This law states that students with SEN are "those who require, for a period of their schooling or throughout all of it, certain specific educational supports and care due to disabilities or serious conduct disorders".

On the other hand, the second definition is given by Jiménez, and in our opinion is broader and more complete since it does not just include children with disabilities, but also those who need special attention by their environment or show imbalances in their learning. It also highlights curricular adaptations, such as how students with SEN can access the curriculum just like others. Jiménez (2001), states: "[Children with] difficulties greater than the rest of the students to access the learning determined in the curriculum matching their age (either due to internal causes, difficulties, deficiencies in the social-family environment, or due to a poor learning history) and

need access adaptations and/or significant curricular adaptations in diverse areas of said curriculum to compensate for said difficulties".

We believe that the second definition better fits the approach we define to inclusive classrooms and educational centers throughout the guide, since it assumes that the students' difficulties are not only within them, they also depend on external variables. It is important not to focus on the degree of disability of the student, but on the degree of training that he/she will achieve if we cover their SEN.

As we have already pointed out in previous sections, people with visual impairment are among the students with SEN included in this guide, specifically children with low vision caused by the congenital conditions of Albinism and Aniridia. However, although the field of research has been delimited, the characteristics of visual impairment for this population are heterogeneous, and so will be their educational needs.

Variables like the severity of the visual impairment, the degree of functionality of the remaining sight, the presence of other conditions concurrent with the visual impairment, the etiology of the visual disorder and its prognosis, etc. will determine the educational intervention too. Thus, the educational support to a child with Albinism or Aniridia must start from the knowledge of the characteristics determined by their condition, so their environment can be adapted to their functioning sight, and to put into practice a series of strategies appropriate to the intervention. For this, we need a prior assessment allowing to better know the child's starting situation, consulting their ophthalmological report, medical history, educational history, and psychopedagogical evaluation.

The type of visual impairment of the child is what will mark the specific educational needs that he/she requires. SEN always refer to the personal, pedagogical, curricular or material aids that

students with severe vision problems need to access the purposes of education. Given the interactive nature of educational processes and the different characteristics of each school context and each student, educational needs have a high degree of relativity and therefore the measures adopted need constant reviews.

Below, we highlight some needs of students with severe visual problems that allow us to approach the type of support they require; but we must not forget that these needs are always unique and inherent to the situation of each individual student and their context, and that they must be determined after a process of psychopedagogical evaluation. Thus, some SEN consequence of low vision are:

- Need to integrate information from different sensory access routes.
- Need for an education and stimulation of the remaining sight to maximize its functionality.
- Need to internalize strategies and actions that ensure personal autonomy.
- Need to use technical support to access printed materials.
- Need to use materials and support that facilitate the participation and benefit of the activities in the classroom.
- Need for acceptance, identity, and positive self-esteem.
- Need to develop social skills and promote their social integration.
- Need for integration and active participation in the classroom and the school.

GUIDELINES FOR TEACHERS AND SCHOOLS RECEIVING FOR THE FIRST TIME STUDENTS WITH VISUAL IMPAIRMENT

Tutors play an important role regarding the work to be done with students with SEN incorporated into ordinary schools. They are responsible for all students, but they also have a special need before the singular situation derived from the attention to a student with visual impairment in the classroom. This is why the teacher has the main support, as we mentioned, mainly via a specialist teacher.

Tutors hope to receive advice that can be turned into being able to better care for students with SEN (in this case visual disabilities) within the group-class dynamic. They demand teachings from the support teacher to respond to these demands, favor autonomous decision-making and initiatives, and ultimately fully exercise their role as tutors also for students with visual disabilities.

We speak in better detail about the role and functions of these complementary agents to the action of the teacher-tutor in the virtual course for teachers and pre-primary schools created within the project. For now, our concern is to state the general tasks the pre-primary education professionals we are dealing with in this section have to carry out in the classroom and in the school:

- Encourage the incorporation of students with visual impairment to the school in a way as normalized as possible. The individual intervention plan (which we will discuss later in detail) includes a reception plan that begins before the incorporation of the student to the school -so they get to know its general structure and the main pathways beforehand- and culminates during the first days of school, when the child meets the rest of his/her peers.

Including some activities aimed at understanding the similarities and differences between people with and without visual disabilities in the reception plan can be a great tool for social integration in the classroom and to enrich coexistence.

- Facilitate the access to the curriculum for students with visual disabilities; guaranteeing at all times that the information worked with in the classroom is at all times accessible to all students.

- Organizing the space in the classroom, the location of the students with visual disabilities, the use of optical, non-optical, and technological aids, etc. are all aspects that must always be considered in the classroom.

- The support books, which include the curricular objectives of the course, must be available to these students at the beginning of the course and in a format fully accessible to them. The best current accessibility -as we stated in DU4- lies in PDFs (Portable Document Format), so we recommend for the chosen books to have this option.

- Enrich the curriculum with objectives and contents related to visual impairment, meaning objectives related to the development of orientation and mobility (much necessary skills when the visual impairment is severe) and the development of social competences in all cases.

- Another objective to include is related to the introduction of new technologies in the classroom, generating learning contents, for example, on typing and computer science.

The introduction of these specific supports is justified by drafting a specific intervention plan (which may have different names depending on the country) for the student. This is responsibility of the school, who should draft it with the advice of resources and professionals specialized in each need. The plan will collect all the interventions that affect various organizational, functional,

material, personal, and curricular aspects, based on the psychopedagogical evaluation, so they respond to the detected needs (access or curricular adaptations).

The support may consist of materials -provided to the school for their use by the students- and/or the total or partial presence in the classroom of a specialist teacher, who will work in a coordinated way with all the professionals included in the intervention plan.

Lastly, we also want to point out some of the guidelines that should be considered regarding the attitude when acting in the classroom, pointed out by the Hercules academic group of University of A Coruña:

- Overcome the fear adults have due to ignorance of the world of visual impairment.
- Discuss with the support teacher any and all doubts that you have on the subject.
- Use all words that refer to visual impairment normally and without fear (eye, see, look, etc.).
- Identify yourself to the visually impaired child, since they may not recognize you, and give them the option of asking you.
- When addressing the visually impaired child, say their name so he/she is sure that we are speaking to him/her and not to another child.
- Make them notice the end of a conversation so they don't continue after it ends.
- Use any gestures or expressions you normally use, but try to couple them verbally so the child with low vision is not excluded.
- Don't get carried away by the dynamics of the child; the adult is who has to set the guidelines.
- Make clear spatial references; avoid saying things like "there" and pointing to a location.
- Provide them fixed reference points so they can locate their place.
- Keep a set location of materials or objects in the classroom, and notify the child of any changes.

- Provide ample spaces for them to explore.
- Encourage and bring them closer to objects to explore them.
- Keep their hands busy to avoid possible peculiar habits of self-stimulation (blindism) or isolation.
- Assess their work properly, not abusing the "very good" if it is not deserved.
- Prioritize collective games if you see withdrawal in the child due to fear, relationship problems, or any other cause.
- Promote the stimulation of more senses than sight both in games and in the classroom (with dances, songs…).

PLAN OF ATTENTION TO DIVERSITY (PAD)

On December 13th 2006, the resolution of the UN Convention on the Rights of Persons with Disabilities was approved. In its article 24, the participating States recognize the right of persons with disabilities to education, and to make this right effective without discrimination and on the basis of equal opportunities, the party States shall ensure an inclusive, high-quality, and free education system at all levels, on equal terms with the rest of the students in any community they live.

To do this, and as we have already said, reasonable adjustments must be made within the framework of the general education system, depending on individual needs, to provide the necessary support to students with visual impairment, in this case linked to their genetic condition of Albinism or Aniridia, facilitating personalized and effective support measures in educational settings that promote academic and social development to the fullest, in accordance with the objective of full inclusion.

Since, in general terms, the educational center is where children will spend most time, its design and adaptation must take into account full accessibility criteria to create an inclusive environment. The context around which the guidelines, strategies, and actions that make these criteria possible are structured and allow to intervene on the reality we are dealing with, must be the Plan of Attention to Diversity (PAD). As an integral part of the educational project of the school, the main objective of the PAD is to achieve an individualized and high quality education for all its students, and especially for those with specific needs for educational support.

The PAD is therefore the document that collects the set of actions (adaptations of the curriculum, organizational measures, and support and reinforcement) that a school designs, selects, and implements to provide the most appropriate response to the general and individual educational needs of all students. It must specify the analysis and current reality of the school, determine the objectives to be achieved, the measures to be carried out, the human, material, and didactic resources that will be used temporarily or permanently, and the procedures of monitoring, evaluation, and review.

It must match the identity of the center itself, so that if the values promoted by it are inclusive, the PAD must also be so, advocating at all times for general measures that should form part of its day-to-day running: general measures that must be ordinary and habitual, basically matching organizational and methodological strategies and curricular and social measures that respect the different learning rhythms of students, favor the ability to learn by themselves and promote teamwork.

The PAD is part of the Annual General Programming, which responds to the principles of equality, equity, and educational inclusion as key values. Consequently, it is a coordinated, planned, and agreed document with annual concretions of said programming, that is also open and flexible that

can be adapted to the context, resulting in a concrete and useful document aims at giving an inclusive response to all students and which, from an inclusive perspective, considers the school as a guarantor of said inclusive measures for all students.

Lastly, the process of developing this plan will be promoted by the management team of each center through the joint deliberation of the whole teaching staff, and it will be reviewed at the beginning of each school year according to the analysis of the starting situation and assessment of the foreseeable needs in relation to the type of students, its educational offer, and regarding the existing resources to provide care measures to the diversity of the students.

TYPES OF INTERVENTION

The concept of curricular adaptation is broad, we understand it as adjustment or modification that is made to the common educational offer in response to the SEN of students, in response to diversity, and/or inclusion. Based on it we can speak of different levels of accommodation or adjustments -different levels of curricular adaptation-. These different types of curricular adaptations will be included in the individual intervention plan of each of the students with Albinism, Aniridia, and/or visual impairment and that can be applied. In order to achieve correct learning, it is very important to know them and know how to choose the one that better suits the needs of the student.

These interventions impact various organizational, functional, material, personal, and curricular aspects depending on the psychopedagogical evaluation, in such a way that they answer to the detected needs. Their starting point is the level of curricular competence of the students, unlike the old ways of attention to students with SEN, which were based on the student's impairment or

disability. Thus, curricular adaptations are conceived as a continuum, and they may have different taxonomies and nomenclatures due to the groups of adaptations made around different criteria.

Even though they are not incompatible, we are going to take as a reference the classification that distinguishes adaptations by their elements: **adaptations of elements of access** to the curriculum and **adaptations of basic elements** of the curriculum (both significant and non-significant).

ADAPTATIONS OF ELEMENTS OF ACCESS TO THE CURRICULUM

Authors Ochaíta and Espinosa (experts in developmental and educational psychology) state that the cognitive development of children with visual impairment at school does not show serious problems (1995). Thus, experts and beneficiary organizations agree that students with severe visual problems mainly require adaptations of access, meaning technical, material, and personal support that allow them to benefit from a common curriculum. The difficulties of these students are not so much related to the contents to be learned, but to the means that the educational system has to teach them.

As we have already shown above, the collaboration between the competent educational administration (usually the Ministry) and specialist entities (ONCE and its counterparts in the partner countries) enables schools to be provided with the appropriate resources.

- TECHNICAL AND MATERIAL RESOURCES

They consist of an adaptation of access to information, meaning what type of tools or activities we must incorporate so the student can access the information provided to their classmates at the

same time and level as they do. In order to provide the necessary support, we need to know all the optical and non-optical aids, ICTs, and apps necessary to facilitate said access.

Non-optical aids

They refer to "primary and natural" strategies and techniques that would not involve the use of other materials:

- **Lighting**: good lighting always improves visibility and consequently visual performance, but increasing lighting does not always increase visibility; in the specific case of Albinism there is great photophobia, so a lot of light would result in visual malfunction. The best light is the natural one, but without it directly hitting the work table: the best location would be light from the side and sometimes from behind, never from the front. If there is not enough natural light, artificial light can also be used via diffuse lighting throughout the room, so it does not produce glare, and indirect lighting that generates the least number of shadows that can cause distortions and confusion with the work material.

  The work table can also affect the greater or lesser illumination, thus matte finishes are better for illumination than glossy finishes, since the former do not produce glare. These considerations have to be taken into account both in the classroom and at home.

- **Contrast**: contrast is understood as the difference in lighting of two close objects, with one of them being highlighted (more illuminated).

  At the same lighting, contrast is provided by color, since they too reflect luminosity. The best contrast is given by the white-black or yellow-black color pairs. The use of yellow filters on top of a black text and typescopes also favor it. Pens with black ink instead of blue, pencils with a soft lead (0 and 1), and notebooks with a contrasting pattern can also be helpful.

- **Font**: the written texts used by students with visual disabilities must meet a series of requirements that guarantee the best readability conditions, so we must consider some criteria when choosing a written or handwritten text: clarity (few capital letters), not being wider than taller, with spaces, without too long lines (to be read at a glance), and if it is read on paper it should not to be very thin (paper transparency makes letters from the previous page readable, obstructing clarity) and should be matte (to avoid glare).

  Nowadays, technological and digital devices like touch screens and tablets facilitate the enlargement of the text at will by the students with low vision, so the original letter size is less important.

Optical aids

- **Magnifiers**: convex lenses mounted on devices that students can place according to their needs; they can be manually moved or with a mount. Manual magnifiers are placed in a certain position on the object and are moved by hand; mounted magnifiers are on a stand and do not need to be moved by hand, and can be of fixed focus or focusable. The difference between fixed-focus and focusable magnifiers is that the former are placed at a comfortable distance for the student and with focusable magnifiers the eye is placed on the lens.

- **Telescopes and telemicroscopes**: they are tools that consist of several lenses that allow to observe objects in a larger scale; they depend on the distance of the watcher and are generally very useful for extracurricular trips, school functions…

- **Absorption lenses or filters**: they are lenses that reduce part of the light spectrum, absorbing ultraviolet light. With great photophobia, as in students with Albinism, neutral density filters, yellow/orange, and/or red color filters are recommended, since they increase the contrast. In

general, they are an optical aid that favors visual efficiency by reducing glare and improving adaptation to changes in light and increasing contrast.

- **High contrast magnetic board**: these are illuminated blackboards on which fluorescent markers are used. When these receive light, they generate a high contrast with the dark background, producing a neon effect.

  The blackboard is composed of a glass that receives LED or black light from its sides; behind it there is a dark surface, so the light is reflected illuminating the lines of the fluorescent markers, causing a high contrast between the dark background and the illuminated fluorescent colors.

  This is a very interesting resource due to the high contrast it offers, but they are actually not commonly used in schools.

Technological and digital aids

Although optical and non-optical aids are still useful resources and should be known and rightfully considered, we would like to emphasize that it is the technology currently being implemented in digital classrooms what is truly making great advances in the accessibility, inclusion, and standardization for students with low vision produced by the conditions of Aniridia and Albinism, due to their ability to visually magnify and zoom into information without losing resolution.

The most common support technologies currently being implemented in pre-primary education classrooms with students with low vision are the following:

- **Digital whiteboard** (0-6 years old).

- **Interactive digital whiteboard** (0-6 years old); like the digital whiteboard, this is a technological system that allows digital contents to be projected on an interactive surface in an ideal format for groups of students, and that allows direct interaction with the projection surface.

- **Individual screen of the digital whiteboard** (0-6 years old); digital whiteboards have revolutionized teaching, but for people with Albinism they are still a blackboard at an inaccessible distance for them. Therefore, the use of an individual screen connected to the digital whiteboard may be the solution: it prevents the student from having to move from their place to access the information reflected on it, and is an integrating element in the classroom.

- **Laptop** (from 3 years old); for visually impaired students, 21-inch or larger monitors are recommended, both for desktop PCs and tablet devices.

- **Tablet devices** (0-6 years old); their use is beneficial for many students with severe vision problems since, due to their size, weight, location, and positioning possibilities, it provides great flexibility for students when it comes to work (one can change the screen tilt, proximity, brightness, etc.).

- **Screen reviewers** (from 3 years old); this is a type of software that allows students with severe visual impairment to access the different functions of the computer, facilitating their handling. This implies two main functions: the user can know what is displayed on the screen at all times, and he/she can interact with applications by filling in edit boxes, selecting elements from lists, reading text boxes –both by means of speech synthesis or in braille through a braille

line–, or any other action needed when using an app. This interaction must obviously be via the keyboard, since a blind person cannot use the mouse.

- **Virtual platforms** (from 3 years old): the maximum introduction of digital technology in schools has yielded in the implementation of virtual platforms as the basic context of curricular materials. They serve to host teaching materials and learning activities in a virtual environment, in a logical and organized manner according to the structure of an academic program, to make them available to students and teachers and to establish educational relationships. Although this has been a great economic, ergonomic, time, and quality advantage, it has also meant a setback in accessibility for people with visual impairment: beyond the accessibility that allows the basic applications of the technological device in the that is supported (in most cases iPad) only allows magnifications of x3, totally insufficient to be functionally accessible for students with severe visual impairment, as is the case of people with Albinism or Aniridia. Until the virtual platforms do not solve these obstacles, we defend the alternative use of another file format with proven accessibility and which to date has meant a great advance without any extra cost neither for the publisher, for the school, nor for the family: the PDF (Portable Document Format).

- **PC software** (from 3 years old); as we have anticipated, as a general rule, PCs, laptops, and tablet devices are coupled with software that allows to capture screenshots or video of what is being done on the whiteboard, so the student can repeat all or part of the lesson without needing to take notes, favoring their understanding of the explanation. The accessibility functions in the operating systems of PCs are also useful –allowing to modify parameters like icon size, menus, cursor bars, and color contrast–, but for students with severe visual impairment this is not enough, even the virtual platforms introduced in schools replacing

books and other printed materials, with the marked purpose of accessibility and inclusion have not yet been able to solve this obstacle. To date, PDFs (Portable Document Format) have given the best response.

The many book publishers -not always with the desired speed- provide materials for students with visual impairment as PDFs, which enables their access to the same materials and at the same time as their classmates. These can be used to consult and even write on any technological device (digitizing tablet, traditional tablets, and PC) as long as you have the appropriate software (*Adobe Acrobat*, *Adobe Reader*, and *PDF Annotator*, all of them developed by *Adobe Systems*). *PDF Annotator*, for example, allows students to have all the aforementioned features plus the possibility of writing with a magnetic pen and with their finger on a digitizing screen. In all cases, the final document can be saved and printed, even with the annotations added.

PDFs display text with an orderly visual design, allowing a large magnification without significantly sacrificing visibility. They are very popular and have versions for the most used operating systems: *Microsoft Windows*, *MacOS*, *iOS*, *Android*, and *Windows Phone*.

- **Screen readers** (0-6 years old); these are software that reads aloud both the text and the individual elements included in the screen. The user listens to it through the speakers and/or headphones, if they are connected. Among other possibilities, they can describe icons and graphics. They were initially intended for totally blind students, but are also useful for visual impairment, as they help reduce visual fatigue.

- **Digital books** (0-6 years old); also known as eBooks, these reformatting devices (reformatting documents being those that automatically rearrange their layout to fit any output device) provide answers to the specific needs of visually impaired students for being able to change

their size, contrast, font, background, and colors of the plane. The two most common reformatting eBook formats are *.mobi* for *Kindle* and *.epub* for all other major devices, including Apple's *iPad* and *iPhone*, *B&N's Nook*, *Kobo*, *Google Play*, and *OverDrive*. eBooks can be read with audio assistance, both with smartphones and a tablet devices.

You can find more information about these resources and ICTs as inclusive resources in pre-primary education in the virtual course for teachers and pre-primary schools created in this project (http://www.schoolforall.eu/virtual-training-course/).

- HUMAN RESOURCES

As we have mentioned previously, all the professionals necessary for students with visual impairment to successfully carry out the specific adaptive measures for their access to the curriculum must be involved and work closely with the tutor in their teaching/learning process. We must consider the human resources we have, to be able to carry out all the programmed measures and assign them so that their schedules and timing are established.

This assignment of the appropriate professionals (psychologists, pedagogues, support teachers, etc.) is be defined in the adaptation of access (or intervention plan) guaranteeing their participation in a coordinated manner. These services and agents external to the school institution are the specific support teams.

Coordination, in the case of pre-primary education, is in charge of the tutor who transfers the pertinent information to the rest of the staff that works with these students. In this team, the role of the specialist teacher of the specific team of educational care for people with low vision is essential, and they must actively participate in decisions regarding adaptation. In Spain, the most

characteristic and significant basic element of the current model for the educational inclusion of blind and visually impaired students is undoubtedly the Specific Support Team of ONCE (Spain's national organization of blind persons), complementing the work carried out by the Educational Guidance Psychopedagogical Teams.

The intervention in the school environment consists of providing advice to the school, the classroom teacher, and the rest of the educational community, providing enough information to facilitate the adequate evolution of the students, responding to the needs and type of intervention to be carried out, and providing advice on methodological and didactic resources, areas of intervention, adaptation of didactic resources, etc.

On the other hand, we cannot forget that the family is an essential human resource when carrying out the adaptation: they are those who better know the specific needs of their children and can help the team in making correct decisions. In this sense, it is also important to promote a trusting climate and maintain a fluid relationship with them, to have the collaboration and support of the association of Albinism or Aniridia to which the student probably belongs.

Lastly, the school must also consider the presence of these students when designing its plan of attention to diversity: when making groupings, flexible groups, reinforcements, etc., they must consider both "the best group" as much as "the most suitable teaching staff" for them.

ADAPTATIONS OF BASIC ELEMENTS OF THE CURRICULUM (SIGNIFICANT AND NON-SIGNIFICANT)

There are two types of individualized curricular adaptations that affect the basic elements of the curriculum: non-significant and significant adaptations.

- **NON-SIGNIFICANT ADAPTATIONS**

These are learning support strategies that impact the objectives, contents, methodology, and evaluation criteria of non-prescriptive elements of the curriculum to adjust their degree of difficulty to the level of competence of the student and their learning style, and therefore have a preventive nature and tend to compensate for these differences. They are an ordinary measure and are can be taken on by the classroom teacher, but cannot represent a curricular gap of more than two academic years. They affect the methodology (didactic procedures, activities, and materials), evaluation tools, the type of scheduled activities, timing, and organization. Some examples are:

1. **Changes in the schedule**; for example granting more time for the acquisition and/or practice of certain knowledge that could be more difficult for students due to their visual impairment; also giving more time when carrying out exams.

2. **Transversally including certain learning** necessary for visually impaired students in the curricular contents. For example, spatial concepts (left, right, above, below, etc.) are of vital importance for their movement.

3. **Introducing specific objectives not part of the ordinary curriculum**, like visual stimulation, the use of technical tools, learning to use tiflotechnical materials, and activities to develop autonomy in daily life.

4. **Prioritizing some contents over others** or modifying their learning order or sequence. Sometimes it is convenient to eliminate or minimize certain contents that have little accessibility margin for students with visual disabilities.

5. **Adapting the methodology** regarding organization, didactic procedures, activities, or materials. For example: it will always be necessary to adequately verbalize and describe what is written on the board or shown in transparencies, children must always be able to manipulate 3-dimensional objects or models, use of rich language, etc.

6. **Adapting the evaluation**: it will be necessary to modify, adapt, or introduce evaluation techniques or tools other than the usual ones, like evaluating the student with a spoken exam instead of the usual written test. It will sometimes also be necessary to adapt the type of exam itself, if it has excessive images or text (Spain's law, as an example, allows increasing the time for exams and general activities to students with SEN).

- **SIGNIFICANT ADAPTATIONS**

These are modifications made from the programming, and which impact the prescriptive elements of the official curriculum by modifying general stage objectives, basic contents of the different curricular areas, and evaluation criteria. This type of adaptation should not be assigned to students with visual impairment without a prior evaluation, since they just have a need derived from their difficulty in accessing the curriculum, and for which their corresponding access curricular adaptation is designed.

This type of adaptation is appropriate in cases where, in addition to sensory impairment, the student has other difficulties. They are extraordinary measures for the most part, and therefore should not be generally necessary for students with visual impairment.

On the other hand, regarding the classifications of the adaptations made to physical places and facilities, there is also a division between adaptations to the classroom and to the school:

ADAPTATIONS TO THE SCHOOL

These types of adaptations are those that, from the school, provide answers to the specific needs of students with visual impairment regarding organizational resources and provision of spatial resources to facilitate learning. But the school's adaptation measures are not just intended to respond to the educational needs of students with vision problems, they are intended to be beneficial at the same time for the rest of the students. It is about creating an infrastructure that ensures an internal and external coordination of the center, an effective management of resources, and that guarantees the real integration of students by eliminating and adjusting possible spatial and material barriers.

It would be desirable for the design of all schools to meet accessibility and inclusion criteria for all disabilities, making small accessibility adjustments when required, although we know the great difficulty that this entails, since it is a responsibility of the public administrations in most of Europe and not of the educational communities, who can only transmit the need.

We will now expose some of the minimum accessibility conditions that would respond to the needs of students with severe visual impairment based on the recommendations made by the beneficiary entities participating in the project, to illustrate the adaptation process. The most significant adaptations for the school are:

- **Eliminating architectural barriers** as much as possible to avoid accidents; if this is difficult to accomplish, they must be signaled adequately and sufficiently in advance by means of clear indications in their message and with maximum visibility criteria (size, location, contrast, etc.). This is something especially important in fixed elements like columns, stairs, windows, doors, radiators, built-in cabinets, doorbells, etc.

It is convenient to review the routes that visually impaired students usually take to eliminate or save, if any, obstacles that may hinder mobility and cause physical danger (low flowerpots, fire extinguishers, benches…). Special attention must be paid to stairs, as they are a point of conflict for the visually impaired student; it is convenient to put a sign like adhesive tape or tactile strips on the floor in front of the stairs, railings that start and end at the beginning and end of the staircase, etc. The school teachers, students, and staff should create the habit of verbalizing any situation (at the corridors, classroom, playground…) so that students with low vision can better integrate.

Avoid placing furniture or objects in the lines of movement. If they have to be placed in passage areas, do so in the gaps that remain at walls between the beams or columns, and if this is not possible, avoid placing them in main passage areas. Items should be placed in such a way that they are easily recognizable by students with low vision.

- Adapting lighting: the amount of light needed to properly function visually is also highly variable depending on the ocular pathology. In general, increasing illumination improves visual resolution, color perception, discrimination and depth perception, and consequently visual performance, but an increase in illumination does not necessarily lead to better visibility. For children with Albinism or Aniridia, increased lighting can result in greater glare and less visibility and visual functioning.

  The physical conditions of spaces must be considered, avoiding light that produces glare and favoring increasing the contrast of those spaces that need to be highlighted. The presence of mirrors and shiny floors can also impact visibility negatively due to the reflections they produce. Some recommendations in this regard that can help in a general way that visual functioning is optimal, are:

- Look for as much contrast as possible.
- Choose lights that emit uniform light and use matte surfaces to avoid glare.
- Use directional lighting to highlight an obstacle or point out things of interest to draw the attention of the students with low vision.
- Avoid light that produces strong shadows.
- Pay attention to lighting in places like stairs, elevators, emergency exits, corridors…

- **Design and signal "accessible itineraries"**: plan routes with the necessary access and orientation measures to reach all services of the school, not just the classroom. In many occasions, the accessibility conditions of the gym, conference hall, cafeteria, library, infirmary, classrooms of specialist teachers, and administration -among others- are not taken into account.

  It is convenient to use indicators with textures or objects in the different facilities of the school to give greater autonomy of orientation. Indicators in Braille can also be placed for the different facilities, along with notes in Braille on the notice board.

  Likewise, it is also important to enlarge any signs for students with low vision, and facilitate their physical approach to it, not putting obstacles under it.

- **Design of recreational areas by differentiated spaces**.

ADAPTATIONS TO THE CLASSROOM

As with adaptations to the school, the measures proposed for the classroom are intended to respond to students with visual impairment while being beneficial for the rest. The classroom is the natural space for learning and socialization, so it is the place in the school where students with

visual impairment spend more time by far, so it must meet the same accessibility criteria in its adaptation, design, and inclusion; the spatial distribution, lighting, design, and arrangement of furniture must be thought to favor communication and work, both individually and as teams, allowing comfortable mobility.

The objective with these adaptations is to ensure that all students participate in the same teaching experiences, and that those with visual or other problems need to leave the classroom space as little as possible. We point out here some actions that facilitate the participation and integration of blind or low vision students in the classroom:

- **Removal of architectural barriers** in the classroom: doors and windows should be fully open or closed, since partially open doors and windows pose a physical danger to visually impaired students. Cabinets and shelves should be attached to the wall and reach the floor, avoiding projections that may be dangerous as much as possible. They should also be not very high, since the materials they keep must be easily accessible.

  The distribution of furniture should be as permanent as possible, with minimal changes, not to disorient the student with visual impairment and facilitate their autonomy within the classroom. When necessary, students will be warned in advance of the changes, and they will check them by themselves on the spot.

- **Posters or plaques**, both informative and illustrative, must be placed in such a way that they can be physically approached up to 5cm and at a height that allows them to be read by children (eyesight level approximately); and the everything written in the blackboard should use a font size that allows students with low vision to read it.

- **Noise level**: students with severe low vision use hearing as an essential complement to the other ways of access to reality, and it plays an even predominant role in their educational process, so they generally need a relatively quiet, non-disruptive environment. It is advisable to control the noise level in the classroom at times that require more attention: explanations, reading, presentations, etc., avoiding outside noises.

- **The ideal location** of the student with visual impairment in the classroom must be based on their needs: near the teacher, near the blackboard, near the window if they need more lighting… wherever they better benefit from their visual remains.

  Access to their seat must be comfortable. It should be located next to the teacher and in a well-lit point of the classroom (with the light source from behind and to the side to avoid glare), so they have the maximum visibility of the blackboard, computer, and other optical materials with which they work. Being close to the teacher responds to the need of being able to appreciate the hearing keys that provide information about their environment, essential for their orientation.

  Another characteristic is that the study place must be spacious, meaning that the table of students with Albinism or Aniridia -in addition to being located in the first row, in front of the blackboard, and next to the teacher- must be big enough to allow them to access the computer, tablet device, and other work materials (any optical or technological aids they need) quickly and in a safe way. Since the use of technology implies connection to the electrical grid, it would be convenient for cables and such to be placed in such a way that they are not obstacles for the student. Since the permanent need to use technological materials prevents them from changing places, special interest must be put into this not becoming a reason for isolation from the rest of the classmates.

- **The students' work table** should be distributed in the classroom in a way that favors both individual and team work, allowing a high degree of personal concentration plus a good communication between classmates. In this sense, it is necessary to consider grouping criteria in the classroom so the student with low vision is not isolated and becomes integrated.

- Teachers should **never stand with their back to the light**, especially if they are reading or explaining, since visually impaired students would be dazzled. When explaining while writing on the board, be especially careful to position yourself so that you don't cover what you write, making the student lose information.

- **General ergonomics**: students with low vision usually need to get very close to the text they are reading or the notebook in which they write. So, in order to avoid back pains, ergonomic elements for the study place should be used, like the lectern, a school desk with degrees of inclination, a cold light, etc.

- **The support learning materials** of the classroom (mainly those that involve reading) must be fully accessible (see annex 2, topic 6 for more info), meaning that they have to be big enough for the student with severe visual impairment to access it.

  In instances where this cannot be the case, it is useful to have magnifying software to digitize non-accessible texts, allowing them to be read on the PC screen and even listened to with a voice synthesizer.

We do not differentiate and delve into other specific facilities like the gym, computer room, etc., since they essentially must meet the same criteria as any ordinary classroom. We are not focusing on them not because we think that they are less important, on the contrary: many times, due to

the little time students spend in these, the school does not pay near enough attention, focusing access measures to main facilities.

GENERAL GUIDELINES FOR OTHER ADAPTATIONS

- **The DINING ROOM**, in addition to being a space where a basic need is satisfied, is an educational and relationship space in which we acquire eating and posture habits, develop fine motor skills, interact with equals, etc., so the same accessibility criteria must be taken into account in its design and planning: the size and shape of tables and chairs, their spatial location, and the correct marking of each activity areas (cutlery, plates, napkins, trays, garbage can, etc.) help promote the personal autonomy of the visually impaired student, their acquisition of habits, behavioral self-control, and indirectly develop a perception of self-efficacy that will lead them to positive self-esteem.

  An aspect that is not usually considered is the contrast between plates and cutlery, especially in the storage area, in addition to not marking some condiments, so we recommend seeking the maximum contrast by using tablecloths both at the storage area and at the table. The maximum contrast is not achieved by cutlery of diverse colors, since this could cause the opposite effect; we mean using tablecloths of one color (smooth, if possible) that contrast with the kitchenware.

  The beneficiary entities participating in the project propose and recommend having auxiliary dining room staff to act as support to any student that needs it, in our case those with visual impairment, to carry out guided modeling and supervision. In pre-primary students (from 0 to 6 years old), their guided modeling function is more present, progressively advancing to supervision.

- **The CONFERENCE HALL** of the school must meet the same accessibility and design measures than the rest of the center. As an accessibility adjustment for students with visual disabilities, the school will have audiovisual materials to allow them to see what happens on stage (shows, films, exhibitions, etc.) through a screen.

  Whenever possible, technical resources will be placed in the front row in an accessible and inclusive manner; the student with visual impairment will seat behind the screen, always with their classmates too (sometimes, when trying to favor the accessibility of students with disabilities, no attention was paid to their social inclusion, taking measures that -although allowed better access to information- led to separation from their classmates).

- **At the PLAYGROUND**; bear in mind the need for more time to adapt to changes in light, especially when the student enters the classroom from the playground. There is also the need to emphasize the use of sunglasses to reduce the entry of light in outdoor spaces, also making the child responsible for looking for them in his/her backpack and changing glasses independently, keeping those that are not used in their case, always in the same place. Also using a cap with a visor as a protection measure and sunscreen on days of intense sun (for Albinism).

ON THE OTHER SIDE OF CURRICULAR ADAPTATIONS

Below, as a summary and to finalize this methodological guide for the adaptation of pre-primary schools in inclusive schools for children with visual impairment, we offer some useful guidelines or recommendations in various aspects of the development, evolution, and inclusion of visually

impaired students in the classroom and outside of it aimed at professionals, parents, and students themselves, with or without visual impairment.

RECOMMENDATIONS FOR THE WORK IN THE CLASSROOM

- Teach the student with visual impairment based on their possibilities and abilities, respecting their specificity, learning pace, and their evolution, not focusing on their disability and what they cannot do.

- Children with visual impairment are just like the others, with an intellectual and social potential to be developed; they only need you to adapt the information to their way of perceiving the world and respond to their SEN.

- "The visually impaired child is not a seer who lacks vision" (Leonhardt, 1992); they perceive the world by organizing it without the information and integration that the full sense of sight would provide. Their information is intermittent, sequential, and fragmented, so they need extraordinary stimulation: a greater number of sensory, cognitive, and affective elements that, on the other hand, will be beneficial for their classmates too.

- Inform the classmates from the first day, along the student with visual impairment, of what low vision means and how they can play, work, and interact together.

- In order for the visually impaired child to know and identify their classmates, introduce each one of them, where they sit, and what their voice is like.

- Show them the school environment (classrooms, toilets, playground), emphasizing landmarks.

- Talk to the student before touching them or picking them up, to not scare them.

- When addressing the student, identify yourself with your name. Don't play "who am I?" riddles. Let them know when you leave or change places.

- Teach them to move around the environment safely, autonomously, and efficiently.

- Teach them proper personal habits: sitting properly, how to call a peer, how to get in line, wait for their turn to speak…

- Create a climate of respect and appreciation of the work and the special work techniques used.

- Offer objective information about the world and teach them to demand this information, to avoid accumulating concepts they actually don't know the meaning of (verbalism).

- Teach them common use gestures: nodding, shrugging, turning their face towards the speaker, raising their hand to ask for their turn to speak… all of this contributes to improving social skills.

- Make them aware of tics or blindisms (rubbing their eyes, shaking their arms, moving their head…); they often repeat them when they are nervous or bored and do not always know that they are moving. Offer alternatives to prevent it from becoming a habit.

- Involve the child in all collective activities organized in the classroom. Don't marginalize them, find a way to include them in the group.

- Alternate near and far tasks to avoid fatigue and eyestrain.

- It is important that the student, depending on their level of understanding and age, knows their visual impairment, the name of their disease, their visual acuity, their visual field, their limitations, and the optical and non-optical aids that exist and can serve to improve their vision

and better meet their needs. In this way, they will be able to improve their ability to use their visual remains at all times and circumstances and will be able to improve their performance.

- Help them clarify and interpret what they see, to be aware of the difference between what they perceive and reality. Teach them to ask for help and to use their optical aids without fear of comments.

- Make them aware of their abilities and limitations. Teach them to ask for help without exploiting their deficiency, and also to offer help.

- Understand that they can get more tired than the rest and that there will be days when they get more satisfactory results than others, simply because they see better.

- Bring things close to their eyes to motivate them to look. The more they use sight, the more they will learn to see and develop the cognitive-perceptual process. They must fill their brain with memory and visual images.

- Encourage their visual exploration in open spaces and to use the prescribed optical aids.

- Treat them as any other child, praising or reprimanding them like others. But keep in mind that certain approving glances, smiles, or gestures are not perceived by visually impaired children if they are not coupled with language. It is only through physical or verbal contact that they realize that the teacher is looking at them or has them in mind.

- Tell them what is written on the board out loud as you write it. Avoid using meaningless words for them like “here, there, this, or that”. Substitute them for things like “to the right of such number”, “the door next to the one you just knocked”, “the sheet is to the right of the table”,

"stand in front of the chair". This is not only convenient for visually impaired students, but also for the rest of the group, it improves clarity of presentation and breadth of vocabulary.

- Avoid explaining things taking only their visual aspect into account; build on the other sensory qualities of objects and events.

- Evaluate the student with the same guidelines as the rest, but bear in mind that they may need a little extra time to finish the exercises (or demand less of them).

- Provide adequate lighting, avoiding reflections in the work area or on the floor. Sit them near the blackboard, and allow them to approach it to check what is written. A correct quantity and quality lighting, depending on the student's pathology, their sensitivity to contrast and adaptation to the amount of light, guarantees a reduction in fatigue and a better use of their visual remains.

- Reduce the noise level of in the classroom so the oral message is not distorted.

- Favor learning through manipulating real objects, three-dimensional models, maps in relief…

- Make sure that they use the optical and non-optical aids they have been prescribed. Sometimes students don't use them out of embarrassment, or to not stand out. Work on these aspects with the student themselves and with their classmates.

- Work with the student on the acceptance of visual impairment.

RECOMMENDATIONS FOR ACTIVITIES OUTSIDE THE CLASSROOM

- Explain them the noises and sounds around him, both at home and outside (ambulance sirens, plate breaking…).
- Teach them to turn their gaze towards the speaker; keeping eye contact with people they speak to is important to improve their social relationships.
- When you make gestures or facial expressions, draw the child's attention to them.
- Give them freedom to move, explore, and touch.
- Name and explain everything you come across on the street: trees, cars, streetlights, animals, sidewalks, traffic lights, phone booths, mailboxes…
- Provide them with pictures and drawings of familiar things, even if they get very close to see them.
- Teach them to look at the items they handle and discover their visual characteristics too: color, shape, texture, size, uses…
- Provide enough contrast between objects and surfaces; for example: use dark colored toys on a white table (and vice versa), light paper with dark pencils, dark plates for light colored food, etc.
- Show them the tools and objects of common use at home, where they are kept, and their uses.
- Name the clothes they use, where they are worn, how they are arranged, how they are folded, and how they are worn on the right side.

- Let them learn to do things by themselves: wash their hands, take off their slippers, pick up their toys… everything they can do by themselves, even if they have to invest a lot of time, they must do it without help. This is important for self-esteem and to develop autonomy and independence.

- Do not overprotect them; children with visual impairment are capable of doing things just like others, they just have to be taught how. Overprotection creates dependency, limits motor and exploratory activities, and delays the development of many skills.

- It is important for them to interact with other children and share their things.

- Encourage them to tell you about things they have experienced to avoid verbalisms, what they have done at school, what they have played, etc.

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