

# Pedagogy in Strengthening Visual Perception: A Review of the Literature

Claudio Percy Hurtado Baldeón<sup>1</sup>, Doris Fuster-Guillén<sup>2</sup>,  
Roger Pedro Norabuena Figueroa<sup>3</sup>, Rudecindo Albino Penadillo Lirio<sup>4</sup> and  
Ronald M. Hernández<sup>5</sup>

<sup>1</sup>Universidad César Vallejo, Lima, Perú

<sup>2</sup>Universidad Nacional Mayor de San Marcos, Lima, Perú

<sup>3</sup>Universidad Nacional Mayor de San Marcos, Lima, Perú

<sup>4</sup>Universidad Nacional Santiago Antúnez de Mayolo, Huaraz, Perú

<sup>5</sup>Universidad Continental, Lima, Perú

E-mail: <sup>1</sup>[churtadob@ucvvirtual.edu.pe](mailto:churtadob@ucvvirtual.edu.pe), <sup>2</sup>[dfusterg@unmsm.edu.pe](mailto:dfusterg@unmsm.edu.pe), <sup>3</sup>[rmorabuenaf@unmsm.edu.pe](mailto:rmorabuenaf@unmsm.edu.pe),  
<sup>4</sup>[rpenadillo@unasam.edu.pe](mailto:rpenadillo@unasam.edu.pe), <sup>5</sup>[Ronald.hernandez@outlook.com.pe](mailto:Ronald.hernandez@outlook.com.pe)

ORCID: <sup>1</sup><https://orcid.org/0000-0002-4529-2938>, <sup>2</sup><https://orcid.org/0000-0002-7889-2243>,

<sup>3</sup><https://orcid.org/0000-0003-3731-9843>, <sup>4</sup><https://orcid.org/0000-0003-2888-6280>,

<sup>5</sup><https://orcid.org/0000-0003-1263-2454>

(Received 09 April 2024; Revised 08 May 2024; Accepted 25 May 2024; Available online 18 June 2024)

**Abstract** - The objective of this study is to know the educational intervention practices that strengthen visual perception in elementary school students, for that reason we went to the review of various bibliographic sources managing to locate 44 original scientific articles plus a doctoral thesis in different languages between the years 2012 and 2022; belonging to countries such as: Ecuador, Colombia, Cuba, Spain, Peru, Argentina, Mexico, United States, El Salvador, Costa Rica and Saudi Arabia. Likewise, the bibliographic location was carried out in Scopus, Scielo, Redalyc, Dialnet, EDUSER, Researchgate and RCM journals; using different search strategies: keyword, topic and/or follow-up of the bibliography of a base document. After an analysis of the theories, it can be mentioned that pedagogical praxis are important to strengthen perception skills in school-age students, concluding that if they are accompanied by strategies and the use of digital resources, they overcome the deficiencies within a learning process in the classroom.

**Keywords:** Pedagogical Practices, Visual Perception, Perceptual Skills Intervention, Digital Strategies and Resources

## I. INTRODUCTION

Interventive pedagogical practices are located in the classroom and respond to a strategy and didactics, impacting the community and the emotional part of the people involved in the educational act, being the teacher the one who generates the conditions for the development of meaningful learning experiences (Cruz & López, 2014). On the other hand, it is a complex activity because it is determined by various factors such as the characteristics of the school, the previous experiences of students and teachers, as well as the constant preparation they have received in recent years, thus helping to solve the problem and achieving the proposed goals (Gómez, 2008). It also includes a continuous reflection of the different activities developed in the classroom and the interactions between teachers and students, which allows a permanent evaluation of the teaching work, strengthening the different problems encountered (Castelblanco et al., 2020).

In the educational field, difficulties related to visuoperceptual skills affect the relationship with the outside world, autonomy and performance in everyday life (Campos et al., 2012). On the other hand, they directly influence the school stage because students spend between thirty and sixty percent of their time in the classroom developing tasks related to academics such as reading and writing and others where visual perception plays a very important role (Fanlo, 2016). The problems that occur in visual skills affect learning and psychomotor development, which brings serious consequences, especially the abandonment of students to the classroom in elementary school (Yepes, 2012). Similarly, they limit the intellectual and social aspect causing a negative effect in adulthood (Powell et al., 2004). Visual perception is related to the process of learning to read, the ability to recognize writing and spelling, the solution of mathematical operations, spatial relationships among others that are relevant in school life, students who have difficulties in these abilities reach failure in school, lose attention in complex activities, have an inadequate understanding of exercises and very little retention of information when reading (Fanlo, 2016). Childhood is a stage characterized by rapid growth and diverse changes determined by the interaction with the context that not only influences physical and motor development, but also cognitive and affective (Romero et al., 2019). Likewise, problems related to visual skills are visualized, so it is necessary to identify them in time, in order to address them in a timely manner, these can be addressed in advance in order to overcome them to avoid future problems in learning (Campos et al., 2012; Baldeón et al., 2022). On the other hand, the null incorporation of perceptual skills in the curriculum and in the exercise in a direct way in students causes obstacles to achieve good attention and retention, so it is necessary to provide intervention experiences to overcome these drawbacks (Kandari, 2017). That is why teachers, parents and researchers who are immersed in the educational

field must incorporate strategies, methods and technology within an appropriate intervention to overcome or improve difficulties in perception (Escobar et al., 2018; Mohammed, 2013). The stimulation of this skill is important so that students can develop learning that can be useful to them in everyday life (Baldeón et al., 2022). However, currently the teaching strategies used in school are still traditional and without focusing on higher cognitive processes such as perception (Narváez and Luna, 2022).

For this reason, the present research is related to the intervening pedagogical practices that transcend the walls of the classroom and have an impact on the subjects within an educational process (Cruz & López, 2014). Pedagogical interventional practices can be conceptualized as a set of actions framed within a classroom that helps to solve problems, where the teacher becomes an agent that uses pedagogical knowledge, strategies and resources to achieve educational goals by making relevant decisions (Gómez, 2008). They are also considered as preventive proposals with the purpose of providing support to students to avoid various problems that may be aggravated in subsequent learning, being the game a means to acquire knowledge and the incorporation of ICT as technological resources that are considered in the teaching process to provide opportunities achieving progress in the various skills and awakening interest in students (Baldeón et al., 2022). These practices are experiences that arise from the classroom providing a more critical view of what is happening in the environment, in this way the teacher will be impacting the community because it will not only improve the educational process of students, but will be empowering a community about its transforming role in society (Stevovic et al., 2023).

This research was approached through the review of various investigations that provided important information on the topic addressed in this study, the literature review is considered a systematic methodology of choice and review of information from different scientific studies that have been written and published in recent years with the purpose of locating information that is necessary to use it properly to solve a problem situation regarding a common theme (Buinevich et al., 2021). Likewise, it is a complete, ordered and reproducible research of documents in relation to a topic that contributes to the accumulation of a set of scientific articles that are published in recent years from which we can obtain important information that contributes to the solution of a problema (Agina-Obu & Oyinkepreye Evelyn, 2023) For the production of this article, a bibliographic search was conducted during the first semester of the year 2023 in scientific research in different languages published between the years 2012 and 2022 through different reliable databases with the purpose of having studies related to pedagogical interventional practices that help to overcome difficulties in visual perception skills (Puys et al., 2022)

Hence, the objective of this research is to explain the intervened pedagogical practices for the strengthening of

visual perception in elementary school students based on a literature review of different original articles.

## II. METHODOLOGY

This article was based on the search for specific documents with the purpose of having information on contributions regarding various authors on pedagogical interventional practices. The methodology used was the literature review considered or called state of the art, it is a precise description of research topics that provides relevant data for consultations helping to understand its purpose and continue the work (Gómez et al., 2014). Likewise, it has a qualitative approach because it allows locating, reviewing and analyzing the scientific and academic knowledge of a field of study through the detection of coherently what has been published related to a topic (Llopiz-Guerra et al., 2024). This approach is a technique that helps to identify and explore various areas of knowledge and different fields of research because it allows the identification of currents and trends in an area, as well as the gaps and opportunities of a research (Castro, 2022). On the other hand, they are based on direct interactions with people in their daily environments as well as the data generated through observation, interviews and fieldwork records, which allow for discussion in order to move forward (Pérez, 2022). During the first six months of the year 2023 an exploration of bibliography was made in different data supports such as, Scopus, Scielo, Redalyc, Dialnet, EDUSER, Researchgate and RCM. In order to reach a greater amount of research on the topic, search terms such as strategies, visual perception, pedagogical intervention practices were used (Arora, 2024). After an initial research, 79 articles and 2 doctoral theses were obtained, which were subjected to a validity and reliability process for their use and their contribution to the topic to be part of this study, and 34 studies and 1 doctoral thesis were excluded because they did not meet the eligibility criteria. Finally, 44 articles and 1 doctoral thesis were accepted as part of this research because they meet the inclusion criteria such as: access to the full text, publications in different languages such as English and Spanish; they have results related to our article, they are publications from different countries and published in indexed databases between 2012 and 2022.

## III. DEVELOPMENT AND DISCUSSION

### *Interventive Pedagogical Practices for the Strengthening of Visual Perception in Students*

Many authors have addressed studies concerning visual perception, being a total of 11 original articles published between the years 2006 to 2019; these refer that perceptual skills are the abilities related to visual analysis that allows to capture, differentiate and remember everything that is perceived by the visual system (Aribau, 2018). On the other hand, it is a cognitive process that helps the understanding and interpretation of the outside world and allows a good development in the educational aspect of students (Orellana, et al., 2019), it has an active character linked to the motor

aspect that is why a good learning performance depends on a positive development of visuo-perceptive skills (Guillar, 2009). However, this process is not only the acquisition of knowledge through the information obtained from the environment (Groffman, 2006) but the reception of data through sensory impulses and their interpretation must be based on the experience previously acquired by the individual which allows him to analyze what we see, allowing to have a good interpretation of the facts perceived in the world and the different situations of daily life (Jaramillo, 2009; Camusso et al., 2012).

Currently, it is very common to identify difficulties in the ability of perception in the first grades of primary school because it is a stage where the graphic-motor process is developed, which allows various tasks, especially those that have to do with discriminating the figure within a background that allows achieving learning related to reading and writing (Orellana et al., 2019). We know that the progress of learning and cognitive-motor activities occurs at school age, however, the WHO mentions that there are approximately seven million children with some visual impairment and only twenty-five percent show symptoms; these problems are related to the processing of information visually, so it is necessary to incorporate the motor, auditory, language and attention component added to the aspects of visual perception and cognition as part of higher brain functions (Jadue & Figueroa, 2017). It is necessary to recognize that there is a relationship between visoperceptive weaknesses and the various motor tasks in the infant stage, one of them being to distinguish phonemes and words during the reading process (Aribau, 2018).

Throughout time there are many studies that mention the importance of the school stage as part of a future process for the progress of various skills, this phase is essential for schoolchildren to develop aspects related to the intellectual and moral aspect, taking into account the brain plasticity that allows children to integrate knowledge in a constant and solid way, consolidating processes such as memory, language, imagination and mathematical thinking through speech and sensory systems, especially vision (Romero, et al., 2019). On the other hand, it is necessary to consider that perceptual skills can be quantifiable but it is necessary to know that they depend on the maturation in which a child is, this will allow them to develop in a normal way especially when the subskills act and are integrated correctly (Rincón, 2018). Likewise, students go through a formal process and acquire learning at school through various cognitive functions that allow activities that are performed daily, these are part of a process of brain maturity, which allows the child to be ready to be able to learn effectively as well as to adapt to a context where they can execute various daily situations of their life that is increasingly challenging and helps their autonomy (Escobar et al., 2018). Similarly, these skills require maturity in various areas, through actions in which the brain is involved that are part of the cognitive processes that allow students to obtain essential learning to function in life (Arbones, 2011). Then, we can mention that perception is a

very important cognitive process in early childhood because it allows students to organize and make sense of the information that is sent by the eyes to the brain and to understand the world around them. Therefore, it is necessary to have a good development of perceptual skills in the early years in the school stage because they influence school performance and consequently in future life. Hence the need to detect possible problems in time to make timely decisions considering activities and strategies that develop perceptual processes appropriately during childhood.

#### *Stimulation of Perceptual Skills*

Currently ICTs are gaining relevance in the world becoming a necessary component for people to develop in daily activities as well as contribute to improve the quality of the educational process through a series of tasks related to teaching and learning, changing those that were done with paper and pencil, these technologies generate the development of many skills difficult to achieve with traditional methods that is why it is necessary to incorporate digital tools in the education of children can strengthen many skills due to the curiosity they arouse by being very striking (Roque et al., 2019) These technologies such as computers, laptop, smartphones, tablets among others have marked in children who are used from early ages and who have much ease of access and use these digital devices allowing them to acquire a lot of information and manage to develop in a digital culture. However, the use of these technologies can have positive and negative effects on some cognitive and affective processes that is why it is necessary to consider those that can be favorable for the progress of skills that help to improve some difficulties in these processes (Clavero et al., 2019). Therefore, it is necessary to stimulate processes such as perception through strategies and resources that make it possible to acquire abilities to perceive and interpret all stimuli, that is why it is important to implement these strategies to improve the problem becoming a challenge to plan in a pedagogical way considering that school age is fundamental to be able to develop these skills by incorporating digital environments as motivating and challenging media for students through the use of computers, software, online video games that allow the stimulation of visual skills (Soto, 2018). In summary, inattention is a constant problem nowadays so its treatment is not an easy task for teachers due to the lack of knowledge to be able to identify and treat it properly. These require complex processes oriented to memory and visual learning as well as the total perception of visual stimuli. Selective attention is important because it allows voluntary or involuntary processing of information during childhood.

#### *Multisensory Strategies*

The topic of multisensory strategies has been addressed by various authors, so there are 8 scientific studies disseminated between the years 2012 to 2022 that express that this strategy is based on a multisensory approach where teachers teach students synchronously through skills where vision, hearing and body movement is necessary to significantly help

memory, learning and consolidation of other skills (Boliek et al., 2010). Multisensory stimulation is given to students who have perceptual needs where intentional activities are developed to stimulate the senses, becoming the protagonists of their learning and where the teacher is an agent that helps to mediate this process (Hernández et al., 2020). On the other hand, the activities take place in a physical place called "Multisensory Classroom", which is adequately prepared to make it possible to personally experience sensory tasks through sounds, tactile experiences, smells or light perceptions (Narváez & Luna, 2022). Therefore, the strategies implemented in this space are intended to achieve a better quality of life to individuals through the activation of neural networks allowing to overcome difficulties early on (Treviño, 2017). Likewise, they are useful because they contribute to the progress of the senses through free play tasks or directed by a person adequately using various user-friendly materials that help improve their learning, it is important that the student learns through experimentation in order to enhance their skills more effectively achieving a cognitive, behavioral, emotional and physical level; which allows generating a greater brain connection enables an improvement in attention, memory, perception and concentration, as well as language, intelligence and thinking (Narváez and Luna, 2022). Similarly, they allow awakening the senses through interaction with pleasant stimuli in a calm and relaxed environment to improve the deficiencies found allowing teachers to approach students in a very personal way which favors the stimulation of the senses awakening perceptions through the experiences lived in an environment (Apan et al., 2020).

It is important to mention that the strategies used by teachers to stimulate the senses help to improve perceptual ability (Alinizi, 2019), and create a favorable environment in an inclusive way to be able to increase capabilities achieving autonomy and personal independence, the progress of communicative competences, the social and affective part; and mathematical thinking, through an active participation within an educational space (Treviño, 2017). In addition, its application brings benefits by improving stress, which allows improving communication, concentration and cognitive integration, an interaction in society and work with emotions; in this way, fatigue is reduced achieving better relaxation in

a dominated environment (Hernández et al., 2020). On the other hand, multisensory teaching strategies achieve improvements in academic results allowing to overcome a variety of problems in the development of students, so it is necessary that teachers must innovate so that they can achieve meaningful learning where cognitive and behavioral responses are adequate to progress in a sensory development (Narvaez & Luna, 2022).

The didactic proposals allowed children to actively participate in the execution of tasks that help to overcome perceptual difficulties by generating spaces for interaction with other classmates in class, for this purpose activities such as gluing, cutting and elaboration of materials are proposed (Treviño, 2017). A work experience with these multisensory strategies was a program that had to determine the needs and the real situation in the performance of each student, the number of classes, the duration, the objective and the use of various materials. This program includes three main parts: the first focused on paper, the second on everyday life items and the third on identification item., each part was distributed in 45-minute classes; in the first part of the program students are expected to be able to infer information about each of the facts of a text; the second part aims that students will identify some everyday life items using various senses in which they can infer the shape, size, color and materials of the images (Alinizi, 2019). Another experience was to randomly and simply select students in two groups which were called control and intervention, the first group participated in three sessions of fifteen minutes personally in which topics related to vision were taken into account using a striking flipchart, thus identifying the scope of sight, its deficiencies and care to have a visual health managing to reduce the problem found; the other group did not perform any session simply continued with their normal sessions (Campos et al., 2012). Finally, the use of sensoperceptual stimulation modules based on the neural networks approach where sessions were applied according to the pair to stimulate perceptions in which some aspects were worked such as: object discrimination, auditory perception, problem solving and stimulation for the development of motor skills; through drawings, sounds, games and tasks in a recreational way, applied independently in which devices such as software are used (Méndez et al., 2015) (See Table I).

TABLE I MULTISENSORY STIMULATION MODULES

<b>Interactive Image Viewer</b>	<b>The Train Of Knowledge</b>	<b>Interactive Canute</b>
It helps to stimulate the cognitive part through tasks that are performed in daily life. They are images to be able to discriminate, memorize and perceive.	These are actions that stimulate cooperative work habits, social skills and daily activities.	They stimulate areas related to sensory perception, daily actions and work habits.

We can consider that a problem in the school environment is related to perceptual alterations affecting academic development, the relationships that occur with the environment and the proper way to function in daily life. That is why teachers have the need to use various teaching strategies to stimulate the senses in different activities, considering the mental age of infants before implementing

any strategy, to this must be added the use of materials and the active participation of families for best results. Therefore, the multisensory strategy helps the positive increase of perception in primary level students who evidenced learning problems, this sensory stimulation allows the progress of the senses in a free or guided way, with materials enhancing learning through experimentation, improving their skills in an

effective way. Similarly, multisensory activities achieve the acquisition of knowledge at a cognitive, behavioral, emotional and physical level in children.

### *Playful Activity for the Development of Visual Perception*

We can mention that 8 articles clarify the topic of play activities to strengthen perceptual skills. These explain that play in the infant stage is an activity that occurs naturally and spontaneously among children, it is not only for fun but is closely related to the development of various social, motor and cognitive skills which enables the connection of the world through the experiences lived (Albornoz, 2019). Therefore, it is a cognitive activity that allows acquiring knowledge and assimilating it efficiently, when children play they develop their thinking and consolidate their individual skills, however, it is important to consider previous conditions to fulfill its developmental, formative and educational function (Romero et al., 2019). It is also appropriate to express that play has a great potential for the development of visual perception referring to the psychomotor aspect (Fanlo, 2016) that should be exploited in all educational spaces because it enhances the learning process (Rodríguez, 2022). Hence the importance of play as a means to increase the skills and physical abilities, the formation of feelings and values of students, but, for the fulfillment of the tasks it is necessary to rely on the sensory systems, especially in sight which allows the development of visuoperceptual skills in children and in turn facilitates an interaction and understanding of the outside world allowing a better realization of the movements (Romero et al., 2019). To achieve success in the psychomotor aspect using playfulness as an important strategy requires adequate visual functioning to achieve good cognitive and motor development (Fanlo, 2016). Therefore, it is essential that the use of this strategy for the increase of cognitive skills such as visual perception because it is a powerful tool to achieve achievement in the various areas of learning ((Acuña & Quiñones, 2021).

On the other hand, play has an educational value for being a natural activity of children is reflected in adults because a well-directed playful direction contributes to the formation of positive aspects of character and intellect (Romero et al., 2019). In the same way, play within the educational field favors children in active listening and observation, the activities they perform help them to process information in the brain and understand their thought process which are

increasingly complex when they interact with others which favors their growth and development, in this way cognitive and social skills contribute to relate to the environment when they receive stimuli and information provided by their context ((Acuña & Quiñones, 2021). The ludic activities developed at school allow the development in creative thinking because they originate a relationship between diverse situations and materials with which students interact managing to contribute to a good motor and cognitive progress; when performing these games it is necessary the sensory channels emphasizing to visual perception which contribute to the increase of logical skills that allow analyzing, deducing and drawing conclusions to participate in the games (Albornoz, 2019; Acuña & Quiñones, 2021). Similarly, students through the game begin to think and act in situations that are presented to them always with a pedagogical purpose in which it combines participation, collectivity, creativity and results in various real situations contributing to the improvement of the educational process, it should be noted that in our country these dynamic strategies are recent compared to other countries where playful spaces are considered as a recreational, social and educational phenomenon (Rodríguez, 2022).

One of the game proposals consisted in that each of the students had to play for a period of 15 minutes during the day for eight weeks, although the time is short to see positive results, it is the one commonly used in the various studies reviewed, where the monitoring and execution of the tasks were noted in a chart or table similar to a weekly calendar. To enhance each of the skills, geometric figures were designated: triangle (visual discrimination), square (visual-motor coordination), circle (visual retention), rhombus (spatial relations) and rectangle (visual closure and figure background); the children could choose one of the figures to perform the activity so that at the end of the week all the boxes would be filled. On the other hand, various resources and materials were used for the development of the program such as: the internet where pages were used where various activities of discrimination, memory, training and visual games were proposed; virtual books, free apps and that meet the requirements that were tested before their application, games with physical materials and workbooks aimed at enhancing each of these skills, these were developed during eight weeks (Fanlo, 2016). On the other hand, the following table shows some games that develop visual perception skills ((Acuña & Quiñones, 2021) (See Table II).

TABLE II GAMES TO STRENGTHEN VISUAL PERCEPTION

Activity	Strategy	Cognitive Ability: Perception
1. The plant in 3D. What does the plant need to live?	The drawing of the plant was presented in 3D, the children had to color it. In the APP they had to choose the elements needed to make the plant grow.	When the student has the opportunity to live a direct sensory experience comparing a real plant through their previous knowledge and the effect of transforming it into a virtual space through a digital resource.
2. Understanding the natural physical world	It consists of awakening children's curiosity to understand the world around them through the scientific method (observe, explore, compare, compare, confront and reflect). They mold various figures according to their imagination using a dough.	The perception of environmental stimuli occurs when different senses are involved, allowing the interpretation of these stimuli.
3. Creative stamps with recycled material	Students develop their creativity through the use of recycled materials, stamps, creating figure designs and the use of paint.	Artistic and creative expression help students to express themselves in a more spontaneous way to make known their perception of the world around them in this way we can learn about children's thinking.

In conclusion, we can affirm that play is something intrinsic to children that provides wellbeing and distraction; it is a stimulating activity that should be developed at school age because it lays the foundations for later child development.

#### *The Strategy of Selective Attention to Aid Perceptual Skills*

There have been several authors who have addressed studies on selective attention, so 4 articles and 1 doctoral thesis cover this topic. One of the fundamental processes in people is attention because it allows the construction of knowledge through the selection of diverse environmental stimuli allowing progress in the development of cognitive processes such as perceptual skills that are presented in the first years of life and increases as individuals reach more complex skills and abilities. There are several definitions on this topic, we will start by mentioning that selective attention is the ability to process in a limited way everything that observes around selecting the relevant parts and discriminating that which is not important to be able to give an adequate response (Romero and Callejas, 2016). On the other hand, attention is a process in which there is necessary and unnecessary information within a visual field, where the individual extracts that which serves him but cannot ignore that which will not help him in the execution of the task (Coz, 2018). Likewise, it is an ability possessed by the subject to focus and capture stimuli voluntarily and differentiating those that distract them, these occur in cases such as solving a problem, production and analysis of various texts, this is done individually before applying the strategies that will help them solve the problem (García et al., 2014). Others consider it as a cognitive function related to any teaching and learning process linked to visual sensations because it serves as a filter to environmental stimuli that allows which are necessary and which are not, this influences the acquisition of knowledge therefore if it is deficient the student will not be able to attend and will be negatively influenced in their learning (Introzzi et al., 2019; Castellanos, 2015).

In the school stage, attention deficiency can be normal to a certain extent, especially in the first years of early childhood education, but it can become a problem if it becomes frequent or if attentional strategies are not developed as the students grow up, many of them present attention problems because they are not detected in time, especially in the selection since it is difficult for them to discriminate important data from those that are not relevant to understand efficiently, teachers can achieve an improvement by working from the classroom since the consequences of not having attention can be reflected in academic performance because it is a predictor of school success (Castellanos, 2015). For this reason, the organization and planning of activities related to attention plays a very important role in the progress of complex cognitive aspects such as perception, which requires an adjustment of the teaching methodologies of teachers (García et al., 2014). This allows an improvement in selective attention because many activities depend to a large extent on attentional processes (Introzzi et al., 2019).

There are different programs to strengthen perception through selective attention. One of them is the program called "Atento Aprendo" on the development of selective attention is based on a series of didactic processes framed in a set of varied activities with a common purpose, the interaction between the people who participate in the intervention oriented to improve learning; this sequence is flexible which allows adapting to the context of the students based on a process of reflection for better learning; it considers four phases: the initial immersion-observation, the collection of information, elaboration of the didactic sequence and the design and implementation of the program. The different phases of the program were evaluated during its implementation, the first one called "Observation" was a first contact with the students involved, it allowed to plan the processes that will be organized during its development, the second phase refers to the "accumulation of data and finding the characteristics of the population" this allowed to execute the various instruments that help to have a knowledge of the evolution of attention in the classroom and within their family context, the Beery test referred to visual perception and the network test on concentration; This diagnosis helped to raise the difficulty after collecting information, and after an exhaustive analysis of the results of the participants, observation cards were developed that would allow to know family aspects, academic performance and cognitive level through a booklet. The third phase was oriented to the "elaboration of the didactic sequence" involving all the students considering a logical order that allowed making adjustments that will help its perfection. Finally, the last phase aimed at the "Planning, execution of the Atento Aprendo proposal" comprising a primer with three units that allowed improving cognitive processes especially attention where all activities were related to the interests, needs and characteristics of the students; these pedagogical tasks allow stimulating the process of selective attention (Romero and Callejas, 2016). On the other hand, the Attention Program to improve perceptual levels in students contributed to the development of cognitive skills especially perception achieving better results in school performance, it had 10 sessions with a duration of 90 minutes. In each of the sessions we worked on different attention dynamics through songs and games, also during the development of each session we developed activities such as: "The hands of warming up" which consisted of performing various activities on gridded sheets for a space of one to three minutes maximum; another activity called "Attentive with our ears" consisted of providing the student with 10 words which they had to write remembering, the third activity "Attentive with our minds" had two tasks, the first completing the names with an initial letter of the alphabet or activities they perform in daily life and the second using a material designed by the researcher about colors and shapes (Coz, 2018).

Likewise, the intervention program related to concentration and attention helps to select the stimuli to obtain better results in visual learning, as well as the perception of visual stimuli.

This program was made up of 12 sessions containing the following highly significant activities aimed at developing complex tasks: instructional steps to solve problems (session 1, 3, 8 and 12), model to produce texts (session 2, 9 and 11), control training for writing (session 4, 5 and 11) and free play (session 6 and 7). Each of these activities includes a series of tasks. The first, referred to sessions one, three, eight and twelve develop the instructional steps of problem solving in which students must have some phases such as problem delimitation (where the student wonders what to do or identifies the challenge), problem approach (analyzes the strategies to be used to solve the situation), focus of attention (they concentrate their attention to analyze the possibilities), selection of the answer and finally reinforcement and evaluation (checking the results). The second refers to sessions two, nine and ten are aimed at the production of texts in which questions are posed to be able to plan their writing For whom am I going to write, Who will read it (defining the problem), What would they like to read, What do they know about the topic (approaching the challenge and the strategy to be used), then thinking about what is going to be written (focusing attention), the production of the text (responding to the challenge) and the meaning of their production is considered (self-reinforcement and evaluation). If the order of the steps is followed, we can affirm that the text can be understood by the addressee. The third procedure is given by the elaboration of the control task that allows individual corrections of those errors in the text, for this to happen it must include: (selection of the control action (review of the written texts), the performance of the action (presenting help cards with a series of actions to correct the text), the following activity and the control action, the gradualness of the action and the gradual reduction of the action. Finally, the game activity was developed in a free way such as dominoes, chess, lady, ludo, cards among others (García et al., 2014). The Attentional Intervention Program is a proposal that is given in the classroom when problems are identified, especially the perceptual process, this is developed at different levels: preventive when it is about inappropriate

behaviors that should not be reproduced among students, support where the teacher intervenes individually to the student using verbal language as a clue to know how to direct their performance in the classroom and corrective which consists of trying to correct inappropriate behaviors. Three stages are considered in the intervention practice in the classroom. In the first level is the "preventive" the teacher seeks that undesired behaviors are manifested through actions so that this is maintained or incorporated, before students who lose attention it is necessary to have a control or eliminate to be able to incorporate others that can be maintained to succeed in a task entrusted. Another level was "supportive" where the teacher looks for appropriate behavior based on body language, visual interaction, proximity, movement in the classroom and facial expression (moving the head in approval) as a positive reinforcement when the student does something that is required or expected. It should be noted that the teacher's support helps self-control to perform a job through attention and concentration, students feel stimulated, respected and therefore have a better result in their performance; it is not about incorporating various materials in the classroom but rather consider that educational contexts should generate various stimuli (visual, auditory and tactile) that allow providing a good multisensory development. When these two levels do not work, we can move to the third level called "corrective" whose purpose is to banish inappropriate behaviors, the teacher is an agent that can identify attention problems and reorient by informing families to carry out a coordinated work; that is why it is necessary that parents and teachers should use various strategies to modify the behaviors of students. We know that attention is linked to perception and it is almost impossible to separate them because we first perceive what is around us, the proposal contains some activities related to attention closely linked to perception and vice versa, however some activities are complemented with other functions such as memory. Some of these activities that help to improve attention can be seen in the following table (Castellanos, 2015) (See Table III)

TABLE III ACTIVITIES TO IMPROVE ATTENTION-PERCEPTION

Manipulation of objects	Psychomotor character	Visual stimuli	Auditory stimuli	Graphic space
<ul style="list-style-type: none"> <li>• Grouping of objects.</li> <li>• Crossing the accounts</li> <li>• Making figures on a board with nails.</li> <li>• Construction of different shapes with cubes or wooden blocks.</li> <li>• Assembling a puzzle according to the attentional level.</li> <li>• Reproduction of manipulative series.</li> <li>• Building jigsaw puzzles by reproducing a given model</li> </ul>	<ul style="list-style-type: none"> <li>• Throwing and picking up various objects.</li> <li>• Reproduction of movements.</li> <li>• Observation and mentioning the sequence of actions performed by the teacher.</li> <li>• Coordination tasks.</li> </ul>	<ul style="list-style-type: none"> <li>• Location and recognition of a series.</li> <li>• Location of figures of the same shape.</li> <li>• Complete the series of shapes, figures and colors.</li> <li>• Location of different figures within a sheet.</li> <li>• Location of an object according to its characteristics.</li> </ul>	<ul style="list-style-type: none"> <li>• Recognize sounds.</li> <li>• Identify the source of the sound or noise indicating where it comes from.</li> <li>• Sequence of orders, mentions a series with different orders.</li> <li>• Listening to noises or sounds or voices with eyes closed.</li> <li>• Imitate rhythmic sequences.</li> </ul>	<ul style="list-style-type: none"> <li>• Scraping and gluing of figures and shapes.</li> <li>• Color dyeing of shapes and figures.</li> <li>• Displacements in labyrinths and paths.</li> <li>• To reproduce shapes and figures.</li> <li>• Complete the missing part of a figure.</li> </ul>



In summary, inattention is a constant problem nowadays, so its treatment is not an easy task for teachers due to the lack of knowledge to identify and treat it properly. These require complex processes oriented to memory and visual development. Selective attention is important because it allows voluntary or involuntary processing of information during childhood.

*Use of Software for the Strengthening of Visuo-perceptive Skills*

Different authors have addressed issues on the use of software to strengthen perception, identifying a total of 8 articles published between 2016 and 2020, explaining this topic in detail. Cognitive activity is related to the processes of attention, perception and memory that are supported by the brain, attention allows abstracting information from the outside allowing activating and selecting cognitive resources focused on stimuli helping to discriminate to obtain an adequate response, memory allows managing the sequence of responses helping perception therefore both are important to acquire learning and perform activities of daily life (Chacón et al., 2018). In that sense, perception and other cognitive processes are not developed in the same way and are related to the individual characteristics of each student therefore it is necessary to enhance it since childhood because they intervene in school tasks allowing students to develop skills related to the reading process, writing, mathematical

operations and other skills that contribute to a good academic performance, likewise to perform activities motor movements with greater precision such as those executed with the hands to write, cut out, draw or color; if there is not a good development of visuomotor skills can cause deficiencies in school tasks bringing the delay in learning due to misinterpretation of visual stimuli as well as emotional problems such as anguish and restlessness because they are frustrated in some school duties (Roque et al., 2019). It is important to mention that perception is related to learning therefore exercising perceptual abilities and incorporating technology is a way to improve visoperceptual learning (Contreras, 2016). However, in the classrooms we observe that various actions that help children to strengthen them are not carried out, although some strategies aimed at this are used most of them are not effective or innovative, leaving aside the benefits that ICT offer us and the powerful motivation they generate in students even some teachers incorporate technologies in the classroom to train these skills consider that most of the available resources are not clear for some pedagogical content (Roque et al., 2019). In the school stage children should have the greatest amount of visual experiences which results in adequate visual stimulation that allows motivation to perform tasks that help the development of cognitive abilities achieving a development independently (Alcívar et al., 2016; Chacón et al., 2018). Below are some intervention proposals with the use of software to improve perception and attention (See Table IV).

TABLE IV SOFTWARE TO STRENGTHEN VISUOPERCEPTIVE SKILLS

PROGRAMS	WHAT IS IT?	WHAT IS IT FOR?	HOW IS IT USED?
PERCEPFIGURES	Program using the computer to stimulate the visual aspect.	Measuring the behavioral aspect of multistable perception	By means of a computerized visual stimulation program using software.
NEUROCOGNITIVE TRAINING	Program based on visual attention tasks.	Helps to strengthen attentional capacities.	Through the application of a software with visual tasks.
SCRATCHJR	Program to develop skills such as problem solving, reading and writing.	Develops linguistic, logical-mathematical, identity and autonomy skills.	By means of software with various activities
GRAPHOMAGIC	Visuo-perceptual and motor skills training program.	Helps the progress of perception skills.	Through the application of software and phonology.
SENSOPERCEPTION SIMULATOR	Program to use visual simulators.	Develops sensory perception skills.	By using "spiral" software with different visual tasks.
TECHNOLOGICAL TOOL	Instructional program for visual stimulation.	Develops visual-perceptual skills.	Using a digital resource through computers or Tablet with visual perception tasks.
VISUAL STIMULATION SOFTWARE	Program suitable for interacting with an ICT tool.	Helps to increase strengthening of the individual's visual skills.	Through the use of software applied individually to each student.
TRAINING WITH THE PERCEPTUAL SOFTWARE	Program for the evaluation of shape and size constancy skills.	For the advancement of perceptual skills: shape and size.	This intervention was given through an interactive visoperceptual CD based on a set of games that were distributed in three different stages with various levels of complexity.

In order to better understand the proposals where the use of software allows the strengthening of visual-perceptual skills, we will explain each of them in more detail. The first proposal called "PercepFiguras", considers multi-stable perception as the capture and visual interpretation of stimuli that have ambiguous characteristics despite the fact that this

is physical remains the same, an example is when an individual perceives in different ways a stimulus that does not vary over time producing a perceptual change spontaneously. The computerized program PercepFiguras is based on a state-of-the-art computer language of visual stimulation that allows coordination between the stimuli and responses of the



participants with the registers available for this purpose, whose objective is to explain the cognitive processes of the perceptual changes that occur between the interactions and the processes to control attention and memory. It has been elaborated so that people can execute repetitive activities of visual stimuli being able to incorporate figures and receive different responses allowing to manipulate the presentations storing in a file and sent by the pulse at the time of performing the task storing the responses and the time in which it is performed (Ortiz et al., 2018). The second proposal is called "Neurocognitive training", which is a cognitive stimulation software that allows performing attention tasks from a design that does not have much complexity for its use because it has easy access through a web platform that can be accessed from any device whose only condition is to have internet to be able to enter the page where the stimulation software is located, the intervention proposal had the support of a person in each of the sessions that facilitates students to adapt to the program likewise visualize the progress directly throughout the intervention process. This software was designed to create a user profile that allows the user to be monitored and observe their progress. To enter, an identification and password are required, which is then automatically exported to a registration table. When entering the program, children must read the instructions and enter the first level, where a video is presented with some indications of the activity; in each level the user must find "Key" figures, although at the end of the time and the activity has not been completed, the system has an instruction to complete the search. Also, if the student forgets the instruction, the screen has a "Help" button that allows the student to remember the instruction through a video that was presented before starting the corresponding level and has five levels with a gradual increase of difficulty in each level. It is necessary to express that the use of the software allowed the strengthening of processes such as attention and perception (Chacón et al., 2018). The third proposal called "ScratchJr" which is a software in a language and created for infants aged five and seven years focused to progress in problem solving, literacy and mathematics at school age, además develops other skills through a software with twenty-eight blocks where they must be connected in the form of puzzle creating sequences of movements, additionally, In addition, they have different characters that can incorporate movements, modify their appearance and even record sounds, as well as create backgrounds created by themselves, which helps them to develop a programming language at an early age allowing progress in skills, for this reason the purpose of this tool is to allow the development of skills in the classroom improving notions of space, time, sequencing and quantity. To carry out the proposal began with the programming of activities, one of them being the permission for teachers and parents indicating the objective of the intervention, then it was requested so that parents could enroll in the "Scrath Kids" course, registering 56 students (Narváez and Luna, 2022). The implementation phase lasted eight weeks with three activities each, making a total of twenty-four sessions, the phases were: application of the test through a virtual game, activities related to spatial positions and a new test application. After the intervention, this

program allowed to reinforce the abilities in the mathematical logical aspect referred to the spatial notions through the game that caused the motivation of the students, becoming an aid as an innovative strategy, likewise an improvement in laterality and directionality was observed in spite of being complex, ScratchJr has this characteristic and it is important to incorporate the methodology of the game to stimulate the curiosity and interests of the individuals, ScratchJr complies with striking planned activities that promote participation (Narváez and Luna (2022)). The fourth proposal is the use of a "Technological tool" that consists of determining the changes in visual perception and visual-motor coordination after its application to two groups of students. Thirty-eight children aged five and six years from elementary schools participated, divided into two groups: twenty students formed the control group and eighteen students formed the experimental group, the perceptual skills test was applied to both groups and the intervention process lasted eight sessions with ten tasks with a determined time of twenty to thirty minutes for a period of 45 days. Likewise, for the first group, a training called "Figures and shapes" was used to strengthen visual abilities and graphic training through exercises with tasks of hand-eye coordination, figure within a background, perceptual discrimination, location in space and relationships in space. For the experimental group the intervention was carried out with a technological tool "Graphomagic" that contains tasks of visuomotor coordination in four aspects integrated by sixteen levels that go from less to more complexity such as tracing routes from a character to an end point through trajectories that contain straight and curved strokes, in figure discrimination the task consists of differentiating and painting the figures of a background; in shape constancy the identification of elements of figures in sizes, shape and color; and in spatial position the task is to recognize the positions according to a given model; after the training of visuoperceptual skills, positive effects were obtained, achieving pedagogical changes with respect to didactics, increasing motivation and showing better results in the identification and delineation of two-dimensional figures, classifying images and execution of linear, curved, diagonal and dotted strokes, diagonals and dotted lines through activities of hand-eye coordination and directionality with the application of technological resources allowing children to become familiar with these technological tools because they have animations and a methodological approach that supports educational tasks that help motivate and develop visual perception skills through the experiences to which they are exposed in the use of this resource (López et al, 2020). The fifth proposal is referred to "sensoperception simulators" which is a pedagogical tool that allows experimenting and contextualizing the acquired knowledge with the purpose of contributing to the acquisition of content despite having a diversity of opportunities in educational activities it is not common to have these resources within the classroom but it is necessary because it is a support to enhance perception through a "spiral" software with a set of activities where each one has tasks that develop perceptual processes supporting the learning process and reducing the time to perform the exercises referred to visual skills. This tool places the student

in a context or reality and establishes situations similar to those he must face in his daily life, these help to offer a different way of learning in a didactic way and involves the student in his learning. To implement the simulator, the inductive method was used where the student experiences sensory activities through the Flex tool and later the designed tool was validated with thirty students with demonstration and experimentation activities. The sensoperception software helps to integrate content by performing exercises, demonstrations and experiments achieving training in terms of user-friendly visual skills considered as an important tool to perform academic activities (Cardona & Cardona, 2019). The sixth proposal is a "Computer program" that uses technologies as a tool to increase and improve the visual abilities of individuals using a tool to present, manipulate, produce, exchange information by electronic means.

#### IV. CONCLUSIONS

As part of the conclusions reached in the literature review, it is concluded that perceptual activity is an eminently cognitive process because it enables individuals to gather information from their environment and interpret it in order to give it a meaning, thus acquiring new knowledge. For this reason, perceptual skills should be developed during childhood due to their close relationship with school performance, so it is necessary to diagnose the problems that may occur at this stage early in order to reflect and make timely decisions to stimulate them through actions, activities and strategies to help overcome perceptual difficulties.

With the development of the present review, pedagogical practices that help to strengthen visuoperceptive skills are made visible and are considered as actions that take place within the classroom where the teacher generates conditions to execute learning experiences and adequate didactics in order to provide help to students to overcome certain difficulties that may worsen in the near future. Likewise, these practices should trigger a constant reflection on the activities and interactions between teacher and student, which allows them to achieve improvements.

One of the pedagogical practices are the multisensory strategies that stimulate the sensory part in a free or deliberate way through experimentation and the use of diverse visual materials, which allows progress in perception for the acquisition of diverse knowledge and improvements in learning.

Similarly, play strategies contribute positive aspects to overcome difficulties in perceptual skills at school age because it helps the exploration and participation of the surrounding world in a free way and achieves more effectively the development of sensory systems which helps to achieve educational purposes.

Regarding selective attention strategies, we can affirm that they allow them to process information from the environment by selecting that which is necessary to perform a task and to

be able to build knowledge, allowing the progress of visual skills.

The programming of graphoplastic activities improves visual and motor difficulties in a welcoming and participatory environment because it develops the senses and causes students to communicate and express their ideas, feelings and attitudes; these are very important because they reinforce hand and finger movements to pick up various objects they use in their daily lives, favoring the learning process referred to the strokes to have a legible writing.

Likewise, graphomotor strategies allow visual and motor coordination to improve the direction when producing texts by reproducing calligraphic movements made with the hands, being necessary that these activities can be planned in programs or workshops considering the participation of teachers, students and the family with the sole purpose of strengthening visual-perceptual skills.

On the other hand, perception is related to the learning of perceptual skills and the inclusion of technologies in the educational environment has allowed benefits and motivation in students generating visual experiences, the use of software is a didactic material that occurs in virtual environments and allows training visual skills necessary during childhood as it provides opportunities for children to perform various tasks related to skills necessary for writing, reading and performing mathematical operations, improving the academic aspect. Also, the use of video games as a way of exercising through games that enhance the visual system becomes an important resource to achieve progress in the skills of perception and attention, so it is necessary to reflect on its application and educational potential.

The present work has allowed a collection and review of various sources such as systematic articles and doctoral theses on pedagogical intervention practices where an explanation of programs or proposals to strengthen visual perception is made. The purpose is to provide the opportunity for people to give a reflective look on how pedagogical practices can contribute in a positive way to improve visual-perceptual skills. Likewise, this bibliographic review is an invitation for other researchers to expand and improve this article by researching other sources, since it is important to have works related to this topic in order to achieve a solid deepening and knowledge for future readers.

#### REFERENCES

- [1] Acuña, M. & Quiñones, Y. (2021). Playful environmental education to strengthen cognitive skills in school children. *Educación y Educadores*, 23(3), 444-468. <https://doi.org/10.5294/edu.2020.23.3.5>
- [2] Alcívar, G., Bravo, S. & Villafuerte, J. (2016). Stimulation of the visual remnant of low vision children, with a computer program and its effect on academic performance Pixel-Bit. *Journal of Media and Education*, 48, 115-134.
- [3] Alenizi, M. (2019). Effectiveness of a Program Based on A Multi-Sensory Strategy in Developing Visual Perception of Primary School Learners with Learning Disabilities: A Contextual Study of

- Arabic Learners. *International Journal of Educational Psychology*, 8(1),72-104.
- [4] Alborno, E. (2019). Play and the development of creativity in children of the initial level of the Benjamín Carrión school. *Conrado*, 15(66), 209-213.
- [5] Apan, K., Soriano, D., Martínez, R. & Romero G. (2020). Psychomotor skills as a therapeutic play tool implemented in a multisensory stimulation center. *Journal of Basic Education*, 4-16.
- [6] Agina-Obu, R., & Oyinkepreye Evelyn, S.G. (2023). Evaluation of Users' Satisfaction of Information Resources in University Libraries in Nigeria: A Case Study. *Indian Journal of Information Sources and Services*, 13(1), 1-5.
- [7] Arbones, B. (2011). *Detection, prevention and treatment of learning difficulties*. Bogotá.
- [8] Aribau, E. (2018). What visual skills are necessary for successful learning?
- [9] Baldeón, C., Fuster, D. & Geronimo, R. (2022). Perspective of visual perception in learning to read and write in children from 6 to 8 years old. *International Journal of Health Sciences*, 6(S7), 568-592. <https://doi.org/10.53730/ijhs>
- [10] Boliak, C., Keintz, C., Norrix, L., & Obrzut, J. (2010). Auditory-visual perception of speech in children with learning disabilities: The McGurk effect. *Canadian Journal of Speech Pathology and Audiology*, 34 (2), 124-131.
- [11] Buinevich, M. V., Izrailov, K. E., Kotenko, I. V., & Kurta, P. A. (2021). Method and algorithms of visual audit of program interaction. *Journal of Internet Services and Information Security*, 11(1), 16-43.
- [12] Campos de Aldana, M. S., Cañón Montañez, W., Moya Plata, D., Durán Parra, M., Amin Madera, A. L., Chinchilla Meza, J. C., & Noriega Pacheco, M. E. (2012). Efficacy of Nursing Intervention: Improving Communication-Visual Deficit, in School Students from a Primary Education Institute of Public Sector in Bucaramanga. *Revista Cuidarte*, 3(1), 320-325.
- [13] Camusso, M., Gaslaldo, S., Marchetti, V., Menendez, C., & Provencal, A. (2012). Visual Perception. *Graphic Visual Communication*.
- [14] Cardona, M. & Cardona, D. (2019). Visual Sensoperception Simulator As A Tool To Support The Learning Process In Distance Education. *figshare*. *Journal Contribution*. <https://doi.org/10.6084/m9.figshare.7774730.v2>
- [15] Castellanos, J. (2015). Classroom intervention for the improvement of attention and performance in students of second level of primary education: Effectiveness of self-instructions and self-observation (Doctoral thesis, University of Valencia).
- [16] Puys, M., Thevenon, P.H., Mocanu, S., Gallissot, M., & Sivelle, C. (2022). SCADA cybersecurity awareness and teaching with Hardware-In-The-Loop platforms. *Journal of Wireless Mobile Networks, Ubiquitous Computing, and Dependable Applications*, 13(1), 4-32.
- [17] Castelblanco, A., Cifuentes, J., Pinilla, D. & Pulido, S (2020). Pedagogical practices for the approach to knowledge as social and natural scientist in high school students. *Praxis & Saber*, 11(27), e202. <https://doi.org/10.19053/22160159.v11.n27.2020.10474>
- [18] Castro, Y. (2022). Systematic review on university research seedbeds as a formative intervention. *Propósitos y Representaciones*, 10(2), e873. Epub 2022. <https://dx.doi.org/10.20511/pyr2022.v10n2.873>.
- [19] Chacón, O., Riaño, M., Bermúdez, V., Chaparro, Y., & Hernández, J. (2018). Effects of software-assisted cognitive stimulation on visual attention ability in school children.
- [20] Clavero, C., Gordillo, F. Pérez, M. (2019). Relationship between frequency and perception of technological use, personality, affect and neuropsychological variables in young adult population. *Psychology Writings (Internet)*, 12(2), 69-80. <https://dx.doi.org/10.24310/espiesepsi.v12i2.9985>.
- [21] Stevovic, I., Hadrović, S., & Jovanović, J. (2023). Environmental, social and other non-profit impacts of mountain streams usage as Renewable energy resources. *Archives for Technical Sciences*, 2(29), 57-64.
- [22] Arora, G. (2024). Desing of VLSI Architecture for a flexible testbed of Artificial Neural Network for training and testing on FPGA. *Journal of VLSI Circuits and Systems*, 6(1), 30-35.
- [23] Contreras, A. (2016). Evaluation of shape and size constancy skill in emmetropic children after training with perceptual software.
- [24] Coz, R. (2018). Attention program in perceptual difficulties in primary level students, Huancayo. *Apuntes de Ciencias Sociales*, 8(01). <http://dx.doi.org/10.18259/acs.2018009>
- [25] Cruz, G. & López, K. (2014). The powerful educational practices. *Aletheia Magazine*, 6(2), 136-163.
- [26] Llopiz-Guerra, K., Daline, U.R., Ronald, M.H., Valia, L.V.M., Jadira, D.R.J.N., Karla, R.S. (2024). Importance of Environmental Education in the Context of Natural Sustainability. *Natural and Engineering Sciences*, 9(1), 57-71.
- [27] Escobar, M., Carvajal, V. & Obando, E. (2018). Maturational development in children 5 to 6 years of age from a social perspective, 39(53).
- [28] Fanlo, A. (2016). Stimulation of visual cognitive skills through play. *Optics and Optometry Journal*, University of Zaragoza.
- [29] Garcia, G., Hernandez, S. and Cruz, O. (2014). Cognitive intervention program in adolescents with attentional deficit in an indigenous community of Chiapas. *Apuntes de Psicología Colegio Oficial de Psicología de Andalucía Occidental*, 32(1), 33-40.
- [30] Gómez, E., Fernando, D., Aponte, G., Betancourt, L. (2014). Methodology for literature review and information management of scientific topics, through its structuring and systematization Dyna, 81(184), 158-163.
- [31] Gómez, L. (2008). Los determinantes de la práctica educativa, 38(2), 29-39
- [32] Groffman, S. (2006). The relationship between visual perceptual problems and learning. *Optometric management of learning-related vision problems*, 241-280.
- [33] Guilar, M. (2009). Bruner's ideas: from the cognitive revolution to the cultural revolution. *Educere*, 13(44), 235-241.
- [34] García-Pérez, M. M., Morales-Hernández, D., Ramírez-Becerra, B. A., de Lourdes Ugalde-Chávez, M., Vargas-Ortuno, S. A., & Hernández-Valle, V. Implementación de un programa de estimulación multisensorial en personas mayores con trastorno neurocognitivo. *Lux Médica*, 16(48).
- [35] Introzzi, I., Aymune, Y., Zamora, E.V., Vernucci, S., & Ledesma, R. (2019). Developmental mechanisms of selective attention in infant population. *Rev. CES Psico*, 12(3), 105-118.
- [36] Jadue, T., & Figueroa, L. (2017). Visuoperceptual skills in school children aged 7 to 12 years with refractive amblyopia. *Ciencia Tecnología Salud Visual*; 15(2), 31-38. <http://dx.doi.org/10.19052/sv.4145>
- [37] Jaramillo, C. (2009) Perception, cognition and psychomotor skills: games and psychomotor tests. *Bogotá: Universidad Nacional de Colombia*.
- [38] Kandari, M. (2017). The effect of using structural assessment methods on achievement and self-esteem of students with learning difficulties in elementary school in Kuwait. *Journal of reading and knowledge*.
- [39] López, A., Pérez, L., Gaviria, P., Montilla, D., Navarro, K., Díaz, J., Meneses, A., Manzano, A., Hoyos, A. and Castrillón, Y. (2020). Visuomotor coordination skills and visual perception in children: results of training with a technological tool. EDUTEC. *Electronic Journal of Educational Technology*. <https://doi.org/10.21556/edutec.2020.74.1795>
- [40] Méndez, T., Quintuña, F., Robles, V. and Ingavélez, P. (2015). Stimulation of sensoperceptions: An educational approach based on artificial intelligence. *Revista Tecnológica ESPOL - RTE*, 28(4), 28-39.
- [41] Mohammed, A. (2013). Multisensory attention to the efficacy development program for elementary students with learning difficulties in reading. *Journal of Special Education*, 4(84), 53-85.
- [42] Narvač & Luna (2022). Analysis and importance of the use of multisensory teaching strategies in preschool teaching performance. *Cognosis Journal*, 7(3).

- [43] Orellana L., Vega C., Condorchúa G. & Carpio J. (2019). Visual perception in early childhood education, *Journal of Global Education Sciences*, 1(1), 86-95.  
<https://doi.org/10.32829/ges.v1i1.8286>
- [44] Ortiz-Cruz, E. E., Rodríguez-Camacho, H., Rodríguez-Camacho, M. A., & Bernal-Hernández, J. (2018). Percep Figuras: a computerized visual stimulation program to assess, behaviorally and electrophysiologically, the multistable perception. *Revista mexicana de ingeniería biomédica*, 39(2), 190-204.
- [45] Pérez, J. (2022). What to do in qualitative research in the face of Open Data. *Recerca. Revista de Pensament Anàlisi*, 27(2), 1-16.  
<http://dx.doi.org/10.6035/recerca.6103>
- [46] Powell, A., Piccoli, G. & Ives, B. (2004). The Cochrane Library Plus Update Software: Screening for correctable visual acuity deficits in school-aged children and adolescents [Monograph on the Internet]: London: School of Hygiene & Tropical Medicine.
- [47] Rincón, J. (2018). Visual-perceptual skills in visually healthy schoolchildren aged 7 to 12 years.
- [48] Rodríguez, M. (2022). Visual perception in the development of creativity in second grade students of the educational institution "Simon Bolívar"- Mache. *Ciencia Latina Revista Científica Multidisciplinar*, 6(5), 3413-3450.  
[https://doi.org/10.37811/cl\\_rem.v6i5.3327](https://doi.org/10.37811/cl_rem.v6i5.3327)
- [49] Romero, M., Mariño, A. & Moreno, E. (2019). Playful direction for the development of visual perception in preschool children, 19(35).
- [50] Romero and Callejas (2016). Atento Aprendo program as a strategy to improve selective attention. *Iberoamerican Journal. Faculty of Education, Human and Social Sciences Bachelor's Degree Program in Special Education Neiva -Huila*.
- [51] Aguilar, D. R., Guerra, M. J., & González, L. G. M. (2019). Software educativo para estimular procesos cognitivos en escolares con funcionamiento intelectual límite. *Delectus*, 2(2), 32-45.
- [52] Soto, A. (2018) Skills and didactic strategies needed for visual literacy in preschool education. *Educare Electronic Journal*, 22(3), 26-42. <https://doi.org/10.15359/ree.223.2>
- [53] Trevino, V. (2017). Multisensory stimulation and learning. *National and International Journal of Inclusive Education*, 9(2), 276-299,
- [54] Yepes A. (2012). Visual health in population under 15 years of age. *Primary Health Care Program, Antioquia, Colombia*, 2(3), 201-206.