# Didactics of communication codes in language education: dyslexia and AAC - alternative augmentative communication for a pedagogy of inclusion

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Currently teachers use various methodologies to promote inclusion in subjects with specific learning disorders.

Through inclusive teaching all students, not only certified ones, can make use of compensatory tools. It is a matter of promoting, on the part of the teacher, a continuous assessment, articulated daily, through the control of the notebooks and therefore of the assigned tasks and must aim at both oral and written tests: through the evaluation the teacher obtains a general performance of the class and assess the progress of all pupils. Therefore we speak of inclusive teaching also because all students have the right to take advantage of compensatory tools even if sometimes they can be used differently according to the needs of individual students. The aim of the teacher is therefore to allow the pupils to reach the maximum possible point so that they can acquire most of the skills and to make the pupil intellectually satisfied. Therefore, since teaching is a creative process, the teacher must help the student by always stimulating him to curiosity and creativity[1]. In fact, it is possible to consider "inclusion as a tool to prevent school discomfort and disaffection and create competent citizens, responsible and capable of contributing to the development of their country, fully exploiting their potential"[2].

The Document "Culture, School, Person is fundamental, affirming that the school must guarantee the academic success of all pupils by paying more attention to the disadvantage, diversity and disabilities[3].

It should be remembered that "(...) good teaching for students with DSA is good teaching for everyone: all classmates can benefit from a study method that privileges different channels of access to information and a strategic and active approach to texts and content. The idea of the pupil with dyslexia as a "biological indicator" of the quality of the school returns: in a class where the pupil in difficulty finds an effective and efficient method of study, all the other companions will also be able to experiment with their different skills"[4].

The teacher who aims at inclusive teaching does not aim to simplify the learning process of pupils with disabilities and special educational needs, but tries to understand which methodologies can positively influence the learning process of each pupil and who try to give importance to the personal and social autonomy of all.

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[1] Cfr. A. Pian, *Metodi e tecniche per ispirare creatività e successo degli studenti con DSA - BES e di tutta la classe*, Webinar AID, 09-12-2019.

[2] C. Cornoldi, C. Meneghetti, A. Moè, C. Zamperlin, *Processi cognitivi, motivazione e apprendimento*, Il Mulino, Bologna, 2018, p. 238.

[3]Cfr. Ministero dell' Istruzione, dell' Università e della Ricerca, *Indicazioni nazionali per il curricolo della scuola dell' infanzia e del primo ciclo di istruzione*, Roma 2012.

[4] G. Stella, L. Grandi (a cura di), *Come leggere la dislessia e i DSA. Conoscere per intervenire,*Giunti Edu, Firenze 2016, p. 137.

"Developmental disturbances can also be reduced thanks to the use of technology at school and in this way it is possible to avoid labeling and difficulties of insertion within society. They focus on the didactic - cognitive aspects provided by law 170/2010 and constitute a support not only for dyslexic pupils but also for teachers, educators and families. These tools do not determine an improvement in learning but the way in which they are used is important since they are able to facilitate and stimulate cognitive processes. The information and communication technologies must therefore be learned and used as technological information models and constitute a real choice on the part of the teacher relating to education and school education"[5].

Compensatory tools also favor autonomy, participation and sharing, thus promoting inclusive teaching. Sometimes students appear unmotivated to use these technological and non-technological tools, both during school activities and at home, since they are sometimes perceived as an extra cognitive work to perform a certain task. "Because of this problem, very often there is a lowering of self-esteem by the student who does not feel adequate to carry out that specific task. Therefore classmates consider these students sometimes privileged because, unlike them, they can use the calculator and the forms and because during the oral questions they have the possibility to explain the lesson with the help of the concept maps: all this entails stigma and negative psychological consequences"[6].

### Compensatory and dispensing tools for inclusion

The teachers guarantee individualized and personalized teaching taking into account the multiple characteristics of the subject and implementing strategies and methodologies related to his needs. The compensatory tools include alternative means of learning to common teaching aids and may also include information technology and dispensing measures, avoiding the student from carrying out some activities not considered essential among the contents to be learned. The teacher must avoid having a dyslexic pupil read a long passage because this activity does not improve his reading performance due to the disturbance the pupil presents[7].

Law 170/2010 shows how useful these tools are, but in the Guidelines it is clear that the use of these tools is not immediate and teachers must support the use of them by pupils with a specific learning disorder. which must always be adequately supported so that all objectives are achieved and that these tools are used efficiently[8].

In addition to compensatory tools, we also speak of "compensatory strategies" which include "the set of procedures, expedients, work or learning styles that can reduce (...) the limits of disability or disturbance"[9].

Some examples of such strategies consist of the following points:
- "to integrate or mediate written communication through other codes in particular of a graphic-visual type (diagrams, graphs, maps, diagrams, images, videos, etc.)
- tools, methods, gimmicks to facilitate the storage and organization of information (...)

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[5] L. Guerra (a cura di), *Tecnologie dell' educazione e innovazione didattica*, Educazione e tecnologie, Edizioni Junior, Azzano, S. Paolo 2010, p. 56.

[6] L. Ventriglia, F. Storace, A. Capuano, *DSA e strumenti compensativi. Una guida critica,* Carocci, Roma 2018, p. 82.

[7] Cfr. *www.lineeguidadsa.it*

[8] Cfr. *www.lineeguidadsa.it*

[9] F. Barbera (a cura di), *Con - pensare i DSA. Guida per insegnanti,* Cleup, Vicenza 2012, p. 37.

- enhance listening and concentration skills;
- strengthen social relationships (studying with a partner, knowing how to ask for help, etc.)[10].

The teacher also refers to compensatory technologies represented not only by the computer but also by voice recording programs. While compensatory strategies are often acquired independently by the pupil, as far as technologies are concerned, the intervention of the teacher is indispensable, at least in the first phase. In addition, they must be well administered to avoid that the student has a low motivation and that there is a tendency to labeling by classmates. In fact, they may also be indispensable for other pupils of the same class since in this way they are more positively accepted by pupils with a specific learning disorder. "As regards compensatory measures, the school tends to have a" dispensative "attitude (...) which limits itself to letting these tools be used without a real involvement in the educational and training aspects.

The dispensing measures, however, must not create facilitated paths and their adoption must be assessed on the basis of how much the disturbance affects the required performances, but the teacher must not differentiate the learning process of the dyslexic pupil compared to that of the other companions of class[11].

Their main goal is to encourage inclusion and to achieve educational goals. In this way, the teacher is inclined to allocate more time available during the tests, to assign fewer homework tasks, to avoid memorizing formulas or notions.

So compensatory and dispensing tools can be both simple and technological and allow you to replace and also facilitate the performance of pupils when one of the skills is lacking[12].

Compensatory instruments are divided into two categories: low technology and high technology. The former constitute "non-digital didactic materials so called because they compensate the difficulties of the pupils; [high technology ones are instead considered as resources for school learning and some examples are made up] of computers, vocal synthesis, digital documents, interactive multimedia blackboard, useful tools to compensate for dyslexia and dysgraphic disorders"[13].

Furthermore, it is useful to distinguish specific compensatory tools (...) and non-specific or functional compensatory tools (e.g. procedural memory or other skills such as the multiplication table, verb reminders, sequence of days, months, etc., notebooks special, more legible texts).

**High-tech compensatory instruments**

There are many technological tools used in the teaching field such as the computer with the vocal synthesis that allows the student to listen instead of reading a passage and textbooks in PDF format. Particularly important is above all the computer, considered a compensatory tool only when the student is able to use it correctly knowing how to adapt it according to his needs and allows the same to organize the space and ideas thus promoting reading and writing. There must therefore be a real competence during its use.

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[10] Ibidem, p. 37.
[11] Cfr. *Legge 170/2010*.
[12] Cfr. Ibidem.
[13] L. Ventriglia, F. Storace, A. Capuano, *DSA e strumenti compensativi. Una guida critica,* op.cit., p. 43.

Many students with Specific Learning Disorders also use the recorder which allows pupils not to take notes during a lesson. Recording a lesson can be an effective strategy for a dyslexic pupil: therefore it can be prepared by the teacher and listened to at home by all the pupils. Despite its importance, the recorder must never replace the book but must be placed next to it because it is necessary to give importance not only to the pupil's ear canal but also to the pupil's visual one to encourage learning. There are many teachers who allow you to use word processing programs with a spelling checker that are adequate and indispensable not to fatigue especially the dysorthographic child since the errors, with this strategy, are automatically corrected. These programs allow you to create texts quickly and can also include the automatic corrector thanks to which it is possible to detect any typing errors. Students with Specific Learning Disorders are also allowed to use the calculator which facilitates calculations and various tools such as concept maps, tables and forms[14].

Therefore, there are also programs that are used to build concept maps and which are indispensable support tools for pupils with specific learning disorders because thanks to them it is possible to simplify mental and conceptual maps. Speech synthesis is one of the compensatory tools that students can use to facilitate their learning process: it allows dyslexic pupils to read different documents without receiving the help of the other. In this way the written text is transformed into auditory text. There are some programs that also allow you to modulate the reading speed allowing the student to read phoneme by phoneme, word by word or phrase by phrase. Also you can edit the text when errors are encountered while reading; also the digital book allows the pupil to combine sound information with visual information.

It must not replace the paper one "which must be kept open on the table and consulted [or they can both be used by activating a double reading channel]"[15].

"[The digital book,] instead of being a tool for the DSA, must be perceived as an opportunity for positive didactic innovation, (...) (text for the class, text for the student with DSA, text for the student foreigner (...) adequate response to the inclusive education model"[16].

The interactive multimedia whiteboard (IWB) is also considered "a useful tool for inclusive teaching [therefore addressed to the whole class through multiple teaching practices because thanks to it information is shared and communication is favored]"[17].

Since inclusive teaching must consider the differences of each pupil, the interactive multimedia blackboard allows you to structure different materials that can be used during multiple educational courses. In fact, the IWB is not only an inclusion tool for pupils in difficulty but it guarantees inclusion among all. Thanks to this tool the pupil can make concrete the concepts that turn out to be abstract and stimulates attention from different perspectives such as listening and sight, thus stimulating participation in the educational dialogue. Furthermore, thanks to it, it is possible to create a sort of multimedia archive through which the pupil, especially the one with difficulties, can order and consult the notes more easily[18].

All these means stimulate active learning since they promote autonomy which can only be achieved in this way. All the software that is included in the differentiated teaching are considered enabling educational paths. The inclusive use of new technologies allows the teacher to provide multiple

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[14] Cfr. *Legge 170/2010.*

[15] F. Barbera (a cura di), *Con - pensare i DSA. Guida per insegnanti,* Cleup, Vicenza 2012, p. 43.

[16] L. Ventriglia, F. Storace, A. Capuano, *DSA e strumenti compensativi. Una guida critica*, op. cit., pp. 74- 75.

[17] Ibidem, p. 64.

[18] Cfr. *www.sostegnobes.com*

means of representation (...) of knowledge so as to provide different access options for students, but also makes it possible for students to express what they know and / or they are learning, in a way that is more congenial and motivating to them. [It is also important to train] a welcoming and supportive school environment in which the teacher's competence is based on promoting the active participation of all students in the learning process[19].

The use of technologies allows you to check your performance and to verify your progress, essential characteristics to increase the child's level of self-esteem and self-efficacy. Therefore the use of digital in the classroom has many positive effects such as the improvement of didactic communication, the support of students to learn their study skills independently, important strategies for all students, not only for those who have Specific Disorders of Learning or Special Educational Needs. In the didactic field, the use of technologies must always be supported by training in the use of these tools in which both the school and the family are involved.

**Specific Learning Disorders**

According to ICD-10 and DSM-V, Specific Learning Disorders indicate "an alteration of a particular function that affects one or more specific domains (...)"[20].

They are neurobiological disorders that refer to specific learning areas such as reading, writing and calculating. Sometimes these disorders may be present simultaneously in a child but do not affect his intellectual level. "A different development at the neurobiological level, which manifests itself during the first learning (...) determines delays, failures and consequently anxiety and discomfort"[21].

[In fact] "children in whom these difficulties are encountered are usually characterized by intelligence, creativity, ability to solve problems and imagine new solutions. (...), a different development at the neurobiological level, which manifests itself during the first learning of reading, writing and calculating (...)"[22].

"The acronym DSA concerns a broad terminology: the" D "usually refers to the" Specific Learning Disability "or" Learning Disability "but can also take on other meanings such as that of difficulty or disability. The term "Disorder" refers to that of discrepancy, a term introduced by Critchley, that is the difference between the intellectual quotient and school skills: it also indicates the methodology that the clinician uses to make a diagnosis of DSA. The pupil with a Specific Learning Disorder does not have the basic prerequisites and for this reason, the exposure to stimuli and the frequency of the exercise do not give the desired results neither for the teachers nor for the parents. According to Pollak it is necessary to recognize the rights of disabled people and the recognition of dyslexia as a disability is only a phase since it is necessary to promote an inclusive society where labeling must be eliminated"[23].

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[19] Cfr., L. Ventriglia, F. Storace, A. Capuano, *DSA e strumenti compensativi. Una guida critica,* op. cit..

[20] D. VIOLA, *Difficoltà e disturbi specifici dell' apprendimento. Domande e risposte per conoscere la dislessia, la disortografia, la disgrafia e la discalculia*, Libreriauniversitaria.it, Padova 2012, p. 5.

[21] R. Centra, *Come leggere DSA e scuola dell' infanzia. Cosa fare nella pratica didattica attraverso l' osservazione e i giochi di rafforzamento*, Giunti Scuola, Firenze 2015, p. 4.

[22] Ibid., p. 4.

[23]G. Stella, L. Grandi (a cura di), *Come leggere la dislessia e i DSA. Conoscere per intervenire,* op.cit.,  p. 11.

This disturbance also indicates a difficulty not only in the school environment but also in life which can often lead to "psychological critical situations, such as a negative school self that affects the attribution of successes to luck (...) and failures in one's inability or commitment; this results in a low level of self-efficacy and low motivation, low self-confidence and self-esteem"[24].

Therefore Specific Learning Disorders depend on some congenital deficiencies and prevent the pupil from achieving certain important skills for his / her cultural education. Furthermore, they should not be confused with Special Educational Needs (BES) as they have no connection with socio-cultural distress, with socio-economic difficulties or with the poor schooling that can sometimes characterize a pupil and do not depend on external factors or from sensory or psychic disabilities, but they are linked to dysfunctions of the central nervous system[25].

Usually "it is particularly difficult to find children with isolated disorders, while it is more common to find heterogeneous pictures"[26].
Specific Learning Disorders can be diagnosed when the results achieved by the person after carrying out specific tests, administered for each individual, on the reading, the calculation, the written expression, are below what was expected in based on the age, the level of education and the level of intelligence that a pupil can present. These learning difficulties significantly compromise school results and also multiple activities of daily life which require a rather large commitment in reading, writing and arithmetic. Specific learning disorders can be defined as disorders in which the normal ways of acquiring the skills in question are altered already in the early stages of development. They are not simply a consequence of a lack of learning opportunities and are not due to an acquired brain disease. The disorders are believed to result from anomalies in cognitive processing related to some type of biological dysfunction. As with most other developmental disorders, these conditions are markedly more frequent in males[27].
With regard to Specific Learning Disorders there is currently a large scientific production but despite this many experts in the field experience a feeling of bewilderment since there is a rather lack of clinical knowledge. In addition to the scarcity in this area, the teachers also showed particular unease in the face of the complex legislation currently in force. Particularly important are three documents such as "the 2006 AID Consensus Conference, the 2010 ISS - SNLG and the PARCC Memorandum of Understanding which present characteristics of strong complementarity mainly due to the substantially unitary and coordinated methodological path, following a working group (...)"[28].

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[24] Ibid., p. 11.
[25] F. Barbera (a cura di), *Con - pensare i DSA. Guida per insegnanti*, Cleup, Vicenza, 2012, p. 9.
[26] E. Benso, *La dislessia. Una guida per genitori e insegnanti: teoria, trattamenti e giochi*, Il Leone Verde, Torino 2011, p. 9.
[27] Cfr. D. Kemali, M. Maj, F. Catapano, G. Giordano, C. Saccà (a cura di), *ICD.10. Classificazione delle sindromi e dei disturbi psichici e comportamentali*, Masson, Milano 1996.
[28] G. Stella, C. Termine (a cura di), *La diagnosi della dislessia e degli altri disturbi specifici dell' apprendimento (DSA)*, Omega Edizioni, Torino 2013, p. 15.

"[Thanks to the Consensus Conference] some recommendations for clinical practice have been defined, followed by the answers to the questions on DSA drawn up by the PANEL for updating and review"[29].

**Didactic strategies for dyslexic pupils: the role of the teacher.**

The teachers, curricular and support, wonder what the methodologies and strategies they can use to be able to work together with the whole class by introducing multimedia programs and activities in order to create an inclusive environment. The first step is to create an inclusive environment by inserting furniture and mobile devices that move easily, promoting greater cooperation that also includes pupils with difficulties[30], so as to improve the quality of teaching, becoming "the creators of the change towards more inclusive "[31]. The Guidelines on Specific Learning Disorders emphasize how all the teachers of the educational institution must possess knowledge tools and certain skills related to Specific Learning Disorders. In the presence of a DSA diagnosis previously issued by the clinician, we remind you that within sixty days the Personalized Didactic Plan (PDP) must be drawn up, in which didactic strategies of enhancement, dispensing measures and compensatory tools appropriate to the pupil are underlined. Pupils with Specific Learning Disorders present major difficulties from the visual - verbal point of view affecting bed - writing. In addition, these pupils also have a predisposition to use the ear canal, the dsa subjects favor non-verbal, auditory and kinesthetic learning styles. Furthermore, (...) they usually use a global cognitive style (...) that manages to give a vision of the whole.

Strengthening activities are proposed, indispensable not only for the child with Specific Learning Disorder but for all pupils. In order to acquire reading skills, the teacher must first develop phonological competence through varied activities to encourage metacognitive skills, to understand the written text and organize the study, such as those related to ":

• "recognition of syllables, of sounds, in search of rhymes within nursery rhymes;

• reading rhymed stories;

• use of figurative and graphic material;

• adequate activities that the teacher can make pupils carry out to make them acquire phonological awareness: these are activities aimed at identifying and discriminating the initial and final part of the word both with and without the aid of iconic material;

• analysis of the sounds that make up the word;

• activities in which children can transform words;

• search for rhyming words;

• reading nursery rhymes to increase vocabulary.

Therefore even children of kindergarten who have not yet acquired full alphabetic awareness can be approached to sounds through multiple playful activities such as those aimed at reflection on the length of the word;

• association of images with the related words: game of dominoes or memory.

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[29] G. Stella, L. Grandi (a cura di), *Come leggere la dislessia e i DSA. Conoscere per intervenire*, op.cit., p. 7.

[30] Cfr. *www.aiditalia.org*

[31] L. Miato, S. A. Miato, *La didattica inclusiva. Organizzare l'apprendimento cooperativo metacognitivo,* Erickson, Roma 2003, p. 19.

• invention of stories and their completion and group communication to observe linguistic tasks.

All the activities and games mentioned above must be carried out daily, they can be carried out with the class, within a small group or individually using various materials, both paper and technological. "Organizing the materials to be used (...) will allow you to have faster access to what you need and the procedures necessary to carry out that specific task"[32].

As regards learning the reading process, there are different techniques based on the type of material available and the purpose for which it is read since for these pupils the written text is presented (...) as a mixture of letters to which try to make sense of your cognitive abilities.

[For example] the vocal synthesis allows to overcome the objective difficulty of the subjects with DSA. (...). Reading in presence has the advantage of an intonation and an expressiveness that can support understanding. (...). With the recorded reading, (...) we cannot know what exactly are the points that the child does not understand. On the other hand, the reader is not always available and limits the autonomy of the subject. (...). Speech synthesis therefore allows autonomous text management and is preferable for study, and in some cases also for reading (...). On the contrary, "face-to-face reading"" [33].

allows the child to better understand the text since the reader dwells on the most difficult points tending to explain them and intones the most important moments of the text better than a vocal synthesis."Activities aimed at enhancing phonological skills, intended as" prerequisites "for reading and writing, favor the correct evolution of the acquisition of these skills, respecting the times and peculiarities of each child"[34].

"Reading is a process that includes two moments""[35]:

  • decoding phase;

  • phase of understanding.

  "For dyslexic pupils, if the reading is done with the eyes, they are unlikely to understand the text because they waste too much energy during the reading which is slow and stunted and what is called cognitive overload occurs. Precisely for this reason it is important to use vocal synthesis thus exploiting the pupil's ear canal"[36].

  "Going specifically to the teaching method - learning the bed - writing, the Guidelines attached to the decree implementing Law 170/2010 reiterate that the global method should never be proposed to pupils, being shown that it delays the acquisition of fluency and fair reading"[37]. To facilitate understanding of the written text, it is possible to start, where possible, with the analysis of textual indices and advance organizers. The latter are patterns of knowledge which are intended to facilitate understanding and remembrance of what the

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[32] G. Stella, L. Grandi (a cura di), *Come leggere la dislessia e i DSA. Conoscere per intervenire*, op.cit.*,* p. 31.

[33] G. Stella, L. Grandi (a cura di), *Come leggere la dislessia e i DSA. Conoscere per intervenire,* op.cit., p. 87.

[34] Ibid., p. 82.

[35] S. Vicari, D. Menghini, *La dislessia. Come riconoscerla e trattarla*, Raffaello Cortina Editore, Milano 2018, p. 61.

[36] Cfr. Ibidem, p. 61.

[37] Ivi, p. 116.

pupil has read. Therefore they must "start from the knowledge and exploration of cognitive styles and ways of learning. [Therefore they must]"[38]:

- "be used in the classroom continuously;
- must explain the concepts clearly;
- must be used during lessons and during homework;
- they must also be accompanied by images
- Apri in Google Traduttore
- Feedback
- Risultati web"[39].

Another tool that teachers can use to encourage the learning of dyslexic pupils is the construction of concept maps. They must present hierarchical structures in which the topic being discussed must be clear and the various concepts must be organized from general to particular; visual references such as images, photos, colors have an important function since they are very simple for understanding pupils with reading difficulties. In this way "teachers help pupils not only to learn better but to be competent also in carrying out schemes"[40].

[A particular strategy used to capture the attention of students with Specific Learning Disorders is to work on the comic strip because] it produces considerable involvement and keeps motivation high, (...) for the characteristics of keeping motivation high, of stimulating research and production, comics appear to be suitable in facing learning difficulties. (...) allows you to exercise various cognitive skills, (...) and to develop the ability to plan and monitor your work[41].

In fact, children with Specific Learning Disorders are often unable to exercise control and lack cognitive sensitivity: it is precisely the comic strip that facilitates these processes and in this way the failure that can sometimes follow the reading task is also reduced. In this way, the reader becomes active during reading tasks and tends to "develop metacognitive sensitivity [because through the comic, while reading the different scenes, he is able to] vary the reading rhythm (...), [ad] directing attention according to the importance attributed to the different parts and to make inferences (...)"[42].

Teachers should also allow children to study using mainly images, graphs, drawings and concept maps. The latter must be very graphic, with few written and highlighted keywords. To favor a non - verbal approach to study, the teacher must allow the pupil to focus attention on the index present in a text. They allow the pupil to give information on the content before reading the text[43].

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[38] Ibid, p. 17.

[39] Cfr. Ibid., p. 17.

[40] G. Stella, L. Grandi (a cura di), *Come leggere la dislessia e i DSA. Conoscere per intervenire,* op. cit., p. 130.

[41] D. Ianes (a cura di), *Le migliori proposte operative su...Strategie di insegnamento/apprendimento*, Difficoltà di apprendimento, Erickson, Trento 2012, p. 56.

[42] Ivi, p. 57.

[43] Cfr. G. Stella, L. Grandi (a cura di), *Come leggere la dislessia e i DSA. Conoscere per intervenire,* op.cit..

**Strategies to facilitate communication: AAC**

Numerous children who cannot use verbal language; many come to speak, but retain limited production and serious problems in understanding and using the functions of communication; many show the characteristic of repeating entire sentences they hear, sometimes with some communicative purpose or relevance to specific situations; many, on the other hand, get to use verbal language well, to develop it adequately and to use it with communicative functions[44]. Communication is the act of sending a message to another person and, on the other side of the interaction, the act of interpreting messages sent by someone else. Such messages can have a variety of purposes: giving information, requesting information, expressing feelings, drawing attention. Usually these messages are transmitted through the use of a language, but communication is much more than the use of the word and may not require the use of this code at all. In fact, communication can come through the use of other non-verbal but rather bodily channels, such as facial expression, gesticulation and the paralinguistic system that includes the tone of the voice. The problem with autism is that the absence of the use of verbal language is not accompanied by an attempt to compensate through alternative communication methods such as gestures or mimicry[45].

Communication is fundamental in all and for all aspects of learning; children with autism spectrum syndrome risk being disadvantaged compared to their peers; in fact, even if some autistic children have verbal language, there are deficits in the sphere of pragmatics, that is, the use of language for communication purposes is problematic[46].

It must be remembered that there are some tools that can be used to overcome the difficulties that children present due to the disorder itself. An emblematic example is the AAC (Alternative Augmentative Communication). It is a fundamental tool in modifying the environment and adapting the language in order to allow the students who present communication difficulties to reach the highest possible level of quality of life. In detail, it is a type of assistive technology, consisting of any tool, device, image, word, symbol or gesture that tends to compensate for the difficulties of expressive and receptive communication, meaning by assistive technology every object, product or system, even modified and customized, which is used to increase, maintain or improve the functional skills of people in situations of disability. The AAC, therefore, includes the language of signs, images, words, letters or objects used alone or in combination with communication tables, devices with vocal emission (VOCA) or keyboards.

The communication tables should be studied considering the level of development of the person using the AAC. To give an example, a table can show four types of communication sequences for asking for a biscuit, from the simplest request "biscuits" to the request with four symbols "I still want chocolate / cereal biscuits". So to ask for a biscuit, a child with a still low development could indicate only one symbol, ie "biscuits"; while another child with more developed language skills may be able to indicate a series of symbols to express the request. There are both assisted and unassisted AAC systems. Unattended systems include manual signs, gestures and vocalizations. They only require the body and no other systems or devices external to it. Assisted systems involve the use of objects, three-dimensional concrete symbols, drawings, photographs, words or simple

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[44] Cfr., S. Blockberger, A. Sutton, *Toward linguistic competence: Language experiences and knowledge of children with extremely limited speech* in B. D. Light J.C., Communicative competence for individuals who use AAC: From research to effective practice 2003.

[45] Cfr., P. Venuti, *Intervento e riabilitazione nei disturbi dello spettro autistico*, Carocci, Roma 2012.

[46] U. Frith, *L'autismo. Spiegazione di un enigma*, Editori Laterza, Roma, 1996.

linear symbols. The tangible, visual symbols of the assisted AAC can be used alone or in combination with a device for communication with voice emission (VOCA) or with IT auxiliaries. Sometimes, however, changes in the environment represent great difficulties for autistic children. To deal with this problem, we make sure to group the visual symbols on a communication table or on a VOCA, which is static and predictable as are the vocabulary and the placement of each symbol on the table[47].

It is therefore defined as "Augmentative" as it does not just replace or propose new communication methods, but increases the same, "Alternative" because, through the use of advanced aids and technologies, it proposes new communication methods with the aim of creating new opportunities for communication and involvement of the person. In particular with children suffering from autism spectrum disorder, the tools used are characterized by the PECS (Picture Exchange Communication System) and sign language. For younger children, the AAC can facilitate access to all those experiences that stimulate neurological development; instead for older children it can stimulate the fundamental cognitive development to access the school program or social networks. You may get the impression that AAC is not a useful tool for a child who already has functional language; on the contrary, the AAC not only provides an alternative way of communicating, but also increases the existing functional language. Furthermore, many people with autism have difficulty in symbolic language, reading the subtle non-verbal cues that come from others, as well as direct verbal cues. For example, when a fire alarm sounds at school, a pupil with DSA is unable to read verbal and non-verbal cues and would not be able to understand the meaning of the alarm and the series of activities that push everyone to leave. the building. This can lead to inadequate communicative behavior, such as physical assault, screaming or destruction of objects. So effective communication and socialization allow everyone to access a higher level of learning.

AAC is an effective tool that can provide the means to start spontaneous functional communication, to express what they want and how they feel.

The AAC refers to the relationship and interaction between people: the verbal partner who can be mom, dad, brother, sister, teacher, companion and subject with language difficulties.

The intervention with CAA is never standard and predetermined, but adapts to the characteristics of each child[48].

Many studies have highlighted many advantages deriving from the use of AAC such as:
• stimulation of brain development;
• development of spontaneous functional communication;
• facilitating access to social information;
• improvement of integration at home, at school, in communities;
• greater access to reading experiences;
• prevention of the need to develop problematic behaviors;
• offering psychological benefits related to better understanding of others and being better understood;
• better sense of self, for greater autonomy[49].

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[47] Ivi, p. 22-43.

[48] J. M. Cafiero, *Comunucazione aumentativa e alternativa. Strumenti e strategie per l'autismo e deficit di comunicazione*, Erickson, Trento, 2009, p. 28-39.

[49] Ibidem

In teaching the use of systems to facilitate communication, some considerations should be kept in mind: the individual must be able to access the system as often as he wishes, so this must be permanent and must not be presented occasionally, because there will be fewer probability that the autistic person generalizes its use; the system of symbols used should always be accessible and suitable for the cognitive level and its learning style; symbols should represent ideas, desires that the individual often expresses; An involvement of the family and people important to the individual is necessary[50].

A proposal that takes its cue from the application of the principles of the AAC, very important for fueling a truly inclusive teaching is that concerning IN-books. These are illustrated books with text in symbols tailored to the individual child, starting from works of literature for children or their experiences. They consist of a series of graphic images, each associated with the alphabetical word written at the top and surrounded by a thin border that holds the two elements together (image and word). The student who uses the AAC recognizes the image, while the communicative partner reads the word, also taking care of the expressiveness of the narrative. The repeated reading of these books by the parent or teacher can feed understanding, arouse emotions, support the child's cognitive and social development in situations of disability. These books can also be used by classmates, "especially in kindergarten, both as a support for understanding and as a means of approaching the specific diversity of their friend"[51].

The CAA promotes a visual learning style, resulting consistent with the predisposition, present in most children, to learn using the visual channel, that is they are able to assimilate information when it is presented in a visual way, while they struggle if are presented through the ear canal[52].

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[50] Cfr., A. L. Schuler, *Come migliorare lo sviluppo del linguaggio e della comunicazione: approcci prelinguistici*, in D. J. Cohen, F. R.Volkmar, Autismo e disturbi generalizzati dello sviluppo: Vol. II-Strategie e tecniche di intervento, Vannini Editrice, Gussago.

[51] L. Cottini, *Didattica speciale e inclusione scolastica*, Carocci, Roma, 2017, p. 350.

[52] Cfr., S. Freeman, L. Dake, *Il linguaggio verbale nell'autismo*, Edizione italiana a cura di Enrico Micheli, Erickson, Trento 2007.

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