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**Dyslexia and
Foreign Language Teaching**
A survey on the implementation
of accommodations
towards dyslexic learners

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*To my brother Luca and his Elisa,
for their new life together*

*To my sister Selene,
for her priceless advice*

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Introduction

*"Ci sono tonnellate di documenti prodotti dalla ricerca
che dicono che la dislessia non è una malattia,
ma l'espressione di una piccola differenza di alcune aree del cervello
che non impedisce di imparare,
ma lo rende molto più faticoso.
E in questa società che vuole tutto e subito
questa fatica e lentezza non viene tollerata.
Ma forse questo è un concetto troppo elaborato
per chi è abituato a distinguere i malati dai sani,
i neri dai bianchi, gli intelligenti dagli stupidi".¹*
Giacomo Stella

A huge amount of anecdotes that portray the stories and experiences of dyslexic individuals tell events in which features such as injustice, ignorance of the problem, lack of interventions (or application of wrong treatments), failure, underestimation of the difficulties, lack of recognition of dyslexics' weaknesses and strengths, frustration, loneliness, anger, sadness and anxiety are predominant (e.g. Stella, 2004; Stella, 2007; Wolf, 2007). In addition, ignorance and platitudes aggravate the picture of dyslexia condition, making individuals who suffer from reading disorders feel uneasy.

It often seems that there is a gulf between scientific research progresses and everyday lives of some individuals with dyslexia. And this gap also characterizes the foreign language classroom, in which inadequate teaching can have dramatic effects towards pupils with dyslexia.

However, as well highlighted by scholars (e.g. Ganschow, *et al.*, 1998; Sparks & Ganschow, 1991), affective variables such as frustration, low motivation and anxiety are effects rather than causes of dyslexia, that are brought about by underachievement and failure (see also 3.1).

As dyslexic learners are not impossible to teach and have to have the chance of mastering a foreign language, it is important that the L2 instructor is well aware of the hurdles and difficulties that this type of pupils is very likely to face in a foreign language classroom. It follows that educators ought to:

¹ Research has produced tons of evidence which highlight that dyslexia is not a disease, but the expression of little differences in some brain areas which do not hamper learning, but they make it even more difficult. In today's society, in which "now" and "all" are the imperatives, struggle and slowness are not tolerated. But maybe this concept is too complex for whom is used to telling sick apart from healthy one, blacks apart from whites, smart people apart from stupid.

- i. set attainable goals based on dyslexic pupil's characteristics;
- ii. make curricular changes that ease the foreign language acquisition;
- iii. put in practice teaching accommodations that cover all aspect of L2 learning (e.g. environment, learning materials, instruction, testing and assessment).

These three points constitute the cornerstone of possible success for foreign language learners who suffer from reading disorders, whose features hamper the acquisition of an additional language. Despite the difficulties, dyslexic learners may succeed in mastering it (e.g. Crombie, 2005; Daloiso, 2012; Kormos & Smith, 2012; Nijakowska, 2010; Schneider & Crombie, 2003).

This paper is aimed to give a brief but exhaustive understanding of causes, characteristics and problems of dyslexia. Indeed, chapter 1 provides an overview of the picture of the disorder; it presents findings from massive research in order to touch upon definition, incidence and types of dyslexia. Light is put on hypotheses that try to explain the origins of the reading impairments, as these hypotheses highlight the different and multiple facets of dyslexia and its manifestations. Finally, background theories on literacy skill development give an idea of how we become proficient in reading tasks.

Specifically, this work focuses on the relation between dyslexia and foreign languages and on the role that a given type of language has in dyslexia framework. These issues are addressed in chapter 2, which discusses dyslexia according to a cross-language point of view.

Chapter 3 is the heart of the question, as not only does it offer a clear view of the problems that dyslexic learners face in foreign language acquisition, but it also suggests effective educational accommodations and good teaching practices to foreign language instructors. These strategies cover many aspects of L2 learning and stress the importance of (early) treatment in the foreign classroom, as the intervention towards at-risk pupils is fundamental to guarantee them more possibilities of success.

Furthermore, this thesis includes a survey that addresses foreign language teachers' habits: chapter 4 is devoted to research methodology and aims, whereas a wide discussion on findings is given in chapters 5 and 6.

Finally, implications and recommendations are given in chapter 7.

1 Dyslexia

«The verb to read can't stand the imperative form, a dislike it shares with other verbs: the verb to love and the verb to dream. Love me! Dream! No good. Read! Read! I order you to go and read, sod! Go up to your room and read! Results? None.»

Daniel Pennac, *Like a Romance*.

Dyslexia has a Greek etymology which means faulty or impaired (*dys-*) speech (*lexis*, from *legein*). The word was first used by ophthalmologist Berlin in 1872 (Guardiola, 2001; Wagner, 1973), who used this term referring to reading disorders that are brought about by cerebral dysfunctions, which is known as acquired dyslexia (c.f 1.1).

Important findings in this field were made by neurologist Dejerine (1849-1917), although his outcomes did not receive much attention. Nevertheless, in some of his patients reading disorders stemmed from injuries in parietal lobe and in occipital lobe of the left hemisphere (Guardiola, 2001). This damage hampered connections between visual and linguistic areas of the cerebral hemisphere (see Figure 1.5.1, p. 26).

Another leading figure in the issue of dyslexia is the optic surgeon Hinshelwood, who published several papers on clinical cases. He pinpointed that the cause that underlies "word blindness" is the lack of storage of visual information for letters (Hinshelwood, 1917).

Significant contributions to the clinical picture of dyslexia came from Orton's studies (1879-1948), a neuropsychiatrist and pathologist who pioneered the study of learning disabilities and firstly hypothesized that causes of dyslexia could be determined by a lack of left hemisphere specialization or a mixed hemispheric dominance (cf. 1.5). He called the deficit "*strephosymbolia*", that is twisted symbols, as he spotted that several individuals affected by reading disorders made numerous mistakes in writing and reading tasks. These errors were caused by letter inversions. Additionally, he put stress on the fact that mental retardation was not correlated to reading deficits (e.g. Orton, 1925; Orton, 1939).

1.1 Definitions of dyslexia

Dyslexia is a word that we often hear, although sometimes we do not know exactly what its actual meaning is.

Before trying to define and describe what dyslexia is, a brief discussion of some platitudes about this topic is reported:

- i. Firstly, dyslexia is not a disease; it is a lifetime and chronic condition. It is a **developmental specific disorder**, with a biological, constitutional basis. Thus it has not to be confused with other reading difficulties that can be brought about by other causes.
- ii. Secondly, as it is not a disease, it cannot be cured and children with dyslexia do not outgrow the disorder; however, symptoms can alter with time, age, education and certain deficits get compensated. In fact, the impairment can be reduced or sometimes eliminated thanks to regular and adequate training designed to overcome dyslexic difficulties. However, as said by Nijakowska, "the underlying cognitive cause, most probably in the form of the phonological deficit, may remain impaired" (Nijakowska, 2010:8).
- iii. Thirdly, it is not hereditary, although it is claimed that there exists a familiar incidence (Nijakowska, 2010; Wolf, 2007)², already spotted by Hinshelwood and Orton (Guardiola, 2001).
- iv. Moreover, individuals with dyslexia have average or above average IQ level (the average IQ for the population is 100, with a standard deviation of 15 points), thus dyslexia does not depend on mental retardation³ (Nijakowska, 2010; Wolf, 2007).

Dyslexia is one of the specific learning disabilities, which involve the acquisition of reading, spelling, writing and calculation skills, whereas the ability of understanding concepts is undamaged. Dyslexia prevents the reading system from becoming efficient and automatized.

² There are no specific genes associated with dyslexia (Vellutino, *et al.*, 2004).

³ From the International Dyslexia Association website: "Dyslexia is a specific reading disorder and does not reflect low intelligence. There are many bright and creative individuals with dyslexia who never learn to read, write, and/or spell at a level consistent with their intellectual ability".

The term 'specific' used above refers to the distinction between general and specific disorders. The former stands for deficits in most cognitive functions, while the latter deals with an impairment that concerns one or a small number of skills.

Zappaterra (2010) clarifies that 'specific' indicates that this type of disorders is not caused by external factors such as educational negligence or socio-cultural disadvantage (nevertheless, environment can play a role in dyslexia) nor by sensory deprivation⁴ or mental retardation. They are brought about by intrinsic factors.

Although dyslexia is a well studied issue, there is a lamentable lack of a commonly accepted definition of the disorder and there are many hypotheses and theories on its nature, origins and causes.

Getting to the heart of the matter, there follows some definitions. The first two are reported by Nijakowska (2010).

The first is recommended by the World Federation of Neurology in 1968:

"Specific developmental dyslexia is a disorder manifested by difficulty in learning to read and write despite conventional instruction, adequate intelligence⁵, and socio-cultural opportunity. It depends on fundamental cognitive disabilities that are frequently constitutional in origin". (Nijakowska, 2010:6)

The Orton Dyslexia Society Research Committee in conjunction with the National Centre for Learning Disabilities and the National Institute of Child Health and Human Development provided this definition in 1994:

"Dyslexia is one of several distinct learning disabilities. It is a specific language-based disorder of constitutional origin characterized by difficulties in single word decoding, usually reflecting insufficient phonological processing. These difficulties in single word decoding are often unexpected in relation to age and other cognitive and academic abilities; they are not the result of generalized developmental disability or sensory impairment. Dyslexia is manifested by variable difficulty with different forms of language, often including, in addition to problems with

⁴ Initially, some scholars have hypothesized that hearing impairment or sight deficit may cause the dyslexic disorder. Vellutino (1979) has demonstrated that visual reversals (*p/q; d/b*), which are common in dyslexics, are not originated by perceptive impairments, but by difficulties in recalling linguistic labels of these sounds. In an illuminating experiment, he has shown letters that are typically inverted by children with reading disorders. Although they drew these letters correctly (non-verbal task), they were not able to give them their appropriate names (verbal task). This demonstrates that dyslexia has a linguistic origin.

⁵ The use of IQ in dyslexia assessment have come under several criticisms (e.g. Nijakowska, 2010).

reading, a conspicuous problem with acquiring proficiency in writing and spelling". (Nijakowska, 2010:7)

A scholarly definition by Dr. Astrid Kopp-Duller is available at American Dyslexia Association's website⁶:

"A dyslexic person of good or average intelligence perceives his environment in a different way, and his attention diminishes when confronted by letters or numbers. Due to a deficiency in his partial performances, his perception of these symbols differs from that by non-dyslexic people. This results in difficulties when learning to read, write and do arithmetic".

Italian Dyslexia Association's definition runs as follows:

La Dislessia è un Disturbo Specifico dell'Apprendimento (DSA). [...] Il disturbo interessa uno specifico dominio di abilità (lettura, scrittura, calcolo) lasciando intatto il funzionamento intellettivo generale. Tale disturbo è determinato da un'alterazione neurobiologica che caratterizza i DSA (disfunzione nel funzionamento di alcuni gruppi di cellule deputate al riconoscimento delle lettere-parole e il loro significato). La dislessia è una difficoltà che riguarda la capacità di leggere e scrivere in modo corretto e fluente. Leggere e scrivere sono considerati atti così semplici e automatici che risulta difficile comprendere la fatica di un bambino dislessico. [...] La dislessia non è causata da un deficit di intelligenza né da problemi ambientali o psicologici o da deficit sensoriali o neurologici. Il bambino dislessico può leggere e scrivere, ma riesce a farlo solo impegnando al massimo le sue capacità e le sue energie, poiché non può farlo in maniera automatica e perciò si stanca rapidamente, commette errori, rimane indietro, non impara. La dislessia si presenta in quasi costante associazione ad altri disturbi [...]; questo fatto determina la marcata eterogeneità dei profili e l'espressività con cui i DSA si manifestano [...].⁷

⁶ www.american-dyslexia-association.com

⁷ This definition is available at www.aiditalia.org. It follows a translation: Dyslexia is a specific learning disorder. [...] The disorder concerns one of specific ability fields (reading, writing, calculation), not affecting the general intellectual functioning. [...] This disorder is caused by a neurobiological alteration which characterizes specific learning disabilities (the dysfunction involves some cellular groups whose job is letter-word and meaning recognition). Dyslexia is a difficulty in fluent and correct reading and writing. As reading and writing are activities considered simple and automatic, it is hard to understand the difficulties encountered by children with dyslexia.

International Dyslexia Association defines the disorder in the following way⁸:

“Dyslexia is a language-based learning disability. Dyslexia refers to a cluster of symptoms, which result in people having difficulties with specific language skills, particularly reading. Students with dyslexia usually experience difficulties with other language skills such as spelling, writing, and pronouncing words. Dyslexia affects individuals throughout their lives; however, its impact can change at different stages in a person’s life. It is referred to as a learning disability because dyslexia can make it very difficult for a student to succeed academically in the typical instructional environment, and in its more severe forms, will qualify a student for special education, special accommodations, or extra support services”.

And then:

“It is characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. These difficulties typically result from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction. Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge.

Studies show that individuals with dyslexia process information in a different area of the brain than do non-dyslexics.

Many people who are dyslexic are of average to above average intelligence”.

The abovementioned definitions highlight different facets of the reading disorder, however they give an ample explanation of the impairment.

[...] Dyslexia is not determined by an intelligence deficit, nor by environmental or psychological factors nor by sensory or neurological impairments.

The child who suffers from dyslexia can read and write, but he or she can master these tasks by using skills and energies to their full potential, as he or she cannot do them automatically. Hence, the child gets tired quickly, makes mistakes, lags behind his or her peers, does not learn. Dyslexia is almost constantly associated with other disorders; that determines the heterogeneity of profiles and the expressiveness of the specific learning disabilities.

⁸ The website of the Association (www.interdys.org) is rich in information about the deficit, its incidence, its consequences, its ‘discovery’ in children, teens and adults; it also deals with educational programs, information and suggestions for both parents and teachers.

When talking about dyslexia it is right to stress this distinction: disorders can be acquired or developmental. **Acquired disorders** stem from brain injury or disease and refer to a total or partial loss of reading and spelling abilities that a given person already possessed. (Nijakowska, 2010; Zappaterra, 2010).

On the contrary, **developmental disorders** are diagnosed in individuals who have not yet learnt to read: indeed, they entail difficulties in written language acquisition process. These disorders are not caused by brain injury.

Among developmental disorders, dyslexia is one of the most studied issues; however, unfortunately, there is no unanimous agreement as to the understanding of the phenomenon and its symptoms, as well as a widely accepted definition. The terms dyslexia, dysgraphia or dysorthography can vary their meanings due to criteria, scholars and states.

Nevertheless, as stressed by Nijakowska (2010), some assumptions are commonly accepted: first of all, dyslexia has a biological and constitutional basis; secondly, its distinctive characteristic is decoding and encoding difficulty: namely, inaccurate and/or slow decoding and incorrect word encoding (spelling).

1.1.1 Diagnosis criteria

One of the most debated issues in dyslexia is the diagnosis. Indeed, experts complain about the lack of common, scientifically established and accepted criteria for dyslexia identification.

One of the main criteria for the diagnosis is the **discrepancy** between the low performance of the individual and that expected according to age, education and intelligence; this discrepancy is reported by the majority of scholars. The fact that a severe disorder can affect individuals with average or even above-average intelligence is a demonstration that decoding mechanisms are independent of general cognitive level. In order to be diagnosed as dyslexic, you have to be intelligent.

According to Stella (Simoneschi, 2010), two parameters of reading performance are very significant in dyslexia identification: speed and accuracy (although their importance are subject to change with regard to language orthography). In neuropsychology, time values are relevant as it is assumed that they demonstrate the efficiency or inefficiency of elaboration processes. When a person, notwithstanding his or her intelligence and after years of training, finds it

hard and requires more time to accomplish reading, writing or calculating tasks, it can be said that there is an anomaly of the functional system that has to do that specific tasks.

On the other hand, accuracy refers to the acquisition of grapheme-phoneme conversions. In Italian these correspondences are twenty-seven⁹, in English forty-four.

For the diagnosis, DSM-IV¹⁰ and ICD-10¹¹ consider these parameters: reading speed, decoding accuracy, text comprehension. However, scholars lack agreement on the last parameter: in fact, some authors¹² support the idea that there exists a specific comprehension disorder which can affect individuals with or without text decoding deficit and, moreover, without general linguistic disadvantage. On the contrary, American Dyslexia Association considers dyslexia characterized by fluency and accuracy difficulties in reading and writing; these difficulties are independent of text comprehension skills. Finally, some authors claim that individuals with dyslexia do not encounter comprehension problems in spoken texts, although they often may experience trouble in understanding written texts¹³. Cornoldi (1999) claims that dyslexia is related to comprehension deficit as understanding a text can facilitate the decoding process, and, vice versa, decoding may make comprehension easier.

The WHO, World Health Organization, has identified five conditions for dyslexia diagnosis (Stella, 2004):

- i. I.Q. level must be average (≥ 85);
- ii. Reading level has to be much lower than that demonstrated by peers or children who are the same age;
- iii. Individuals have not to be affected by neurologic deficits or sensory impairments which might originate reading difficulties;
- iv. The disorder must be persistent, notwithstanding education and specific training;
- v. The reading disorder has to have effects on education or on social activities in which reading and writing tasks are involved.

⁹ In Italian there are 21 consonant phonemes and 24 consonant graphemes (among which 19 are constituted by only one letter).

¹⁰ DSM-IV is the fourth revision of the Diagnostic and Statistical Manual of Mental Disorders published by the American Psychiatric Association in 1994 and provides a common language and standard criteria for the classification of mental disorders.

¹¹ ICD-10 stands for the International Statistical Classification of Diseases and Related Health Problems, 10th Revision, 1992. It is a medical classification listed by the World Health Organization (WHO).

¹² E.g. Carretti, *et al.* (2007); Cornoldi & Oakhill (1996).

¹³ See: Barbieri in Stella (2003).

Dyslexia has a complex nature, as it is caused by biological, cognitive and behavioural factors which are inborn. Dyslexia manifestations have various degrees, from mild to severe, and they are disposed on a continuum.

Associations and scholars (e.g. Biancardi & Milano, 1999; Nijakowska, 2010; Italian Dyslexia Association; American Dyslexia Association; British Dyslexia Association) have listed several secondary common signs of dyslexia which can accompany reading impairments:

Most common difficulties	Examples
<ul style="list-style-type: none"> • Low level of orientation in body schemata, space and time 	<p>Difficulties in ordering months correctly, saying the time, remembering dates and events in chronological order; difficulties in time management; difficulties in distinguishing left from right.</p> <p>Skipping or repeating lines/words and losing a place in the text; confusion of letters of similar shape but with diverse position in space (<i>p-b; p-q; g-q</i>); confusion of letters similar in shape (<i>c-e</i>); confusion of symbols that are similar in sound (<i>f-v; t-d</i>);</p>
<ul style="list-style-type: none"> • Low-grade orthographic spelling 	<p>Omission or addition of graphemes or syllables ('partly' for 'particularly'; 'intensity' for 'intensity'); word or syllable reversals (was for saw); bizarre and inconsistent spelling (skchool)</p>
<ul style="list-style-type: none"> • Language impairments 	<p>Late development of speech; poor use of syntax; difficulties in processing language at speed; less communicative competence; jumbling words</p>
<ul style="list-style-type: none"> • Memory difficulties 	<p>Difficulties in remembering the alphabet, the days of the week and in counting backward</p>
<ul style="list-style-type: none"> • Difficulties in coordination tasks • Poor automatization or late development of fine and gross motor skills 	<p>Difficulties in tying shoe laces and in doing sports which require a high degree of coordination;</p> <p>Poor manual precision: unintelligible handwriting and odd pen grip</p>
<ul style="list-style-type: none"> • Visual stress 	<p>Jumping letters; blurred text; dancing lines</p>
<ul style="list-style-type: none"> • Poor concentration and fatigue 	
<ul style="list-style-type: none"> • Disorganization 	
<ul style="list-style-type: none"> • Low level of self-esteem; sense of frustration, anger or failure; weak motivation 	
<ul style="list-style-type: none"> • Impulsiveness; restlessness; clumsiness 	

Table 1.1.1 Correlated feature of dyslexia

This list helps remember that each individual with dyslexia displays different and personal characterization of their problem; hence, it should not be assumed that they have the same common impairments or difficulties, neither should peo-

ple treat all the dyslexics in the same way. Manifestations vary from mild to severe and not all the symptoms might be exhibited by each person.

In spite of these problems, as the neurologist Norman Geschwind noted (Geschwind, 1982), dyslexics have talents in many fields and this fact cannot be a coincidence. He added that they would not be ill-at-ease in an illiterate world. Indeed, this disorder will be ignored in non-alphabetized societies, but nowadays, in the vast majority of countries and societies, it represents a great disadvantage (Wolf, 2007).

Wolf (2007) stresses that many individuals with dyslexia share high levels of creativity and are able to 'think outside the box'. She also gives example of famous and gifted dyslexics who are skilled doctors, engineers, computer experts, architects (Gaudi), painters (Leonardo da Vinci, Warhol, Picasso), actors (Johnny Depp, Whoopi Goldberg), mathematicians (Einstein).

1.2 Incidence

As there is no international agreement on definition, characteristics and symptoms of dyslexia, data about incidence vary according to the criteria used by scholars and organizations and should be treated with caution.

Data on Italian population, according to Stella, report that incidence oscillates from 1,25% to 7,5% depending on the criteria that are adopted (Simoneschi, 2010). He adds that, among pupils aged 8-13, 3,5-4% can be referred to be dyslexic. Similarly, the Italian Dyslexia Association estimates that about 3-4% of primary and secondary pupils are affected by dyslexia.

The dyslexia dilemma triggers a heated debate on several topics: origins, appearance, incidence statistical data, rights and laws (particularly regarding school), treatment. An article published in "Corriere della Sera", one of the major newspapers in Italy, reads: "Too much children diagnosed as dyslexics"¹⁴. This statement is the outcome of a research conducted by Federico Bianchi di Castelbianco, director of the Italian Institute of Orthophonology, that involved 1.175 pupils of primary schools and kindergartens in Rome. The study was carried out between September 2010 and June 2011. The director claims that in Italy one pupil out of five has specific learning disabilities; this does not mean that he or she is

¹⁴ Article available at http://www.corriere.it/salute/disabilita/11_dicembre_16/dislessia-troppe-diagnosi_79ca21ae-27d2-11e1-a7fa-64ae577a90ab.shtml. Or cf.: http://www.repubblica.it/solidarieta/volontariato/2011/12/20/news/apprendimento_passare_per_dislessici_senza_esserlo_un_progetto_per_evitare_recuperi_che_non_servono-26935034/index.html?ref=search

dyslexic, but nevertheless they undergo special educational programs. 23% of the sample investigated was claimed to be at-risk for learning disabilities; however, the research by Bianchi di Castelbianco found out that this percentage, if correctly re-examined, can be reduced to 4%. As far as primary schools are involved, the study decreased the ratio from 1:5 to 1:25.

Giacomo Stella, founder of the Italian Dyslexia Association and Professor of Clinical Psychology at the University of Modena and Reggio Emilia, replicated¹⁵ to the abovementioned investigation. He affirms that a research in Emilia Romagna (one of Italy's regions) estimates that diagnosed dyslexics are 1,47% of the school population of that region¹⁶, which is not a large number of diagnoses.

Other data on incidence are cited by International Dyslexia Association, which says that symptoms of dyslexia affect between 15% and 20% of the population as a whole. The vast majority (70-80%) of students with specific learning disabilities receiving special education services have reading deficits. Another estimate by the same Association calculates that the ratio is one to ten¹⁷.

Paulesu reports that: "Using one of the most respected behavioural definitions of dyslexia (word recognition accuracy in relation to IQ), the prevalence of dyslexia in Italy was half that in the United States"¹⁸ (Paulesu, *et al.*, 2001, p. 2165). This discrepancy may be attributed to the fact that these two languages pose different demands, phonologically and orthographically; hence, phonological awareness might be activated at different levels in English and in Italian (Costenaro, 2011). In the U.S. dyslexic rate is between 6-17% depending on criteria (Fletcher, *et al.*, 2007).

At least 22,750,000 EU citizens are affected by dyslexic disorders, which means 4,4% of the European population (www.neurodys.com).

Elliott & Place (2000) estimate that 10% of children suffer from mild dyslexic problems, whereas severe difficulties affect 4%.

On the other side, Hulme & Snowling (2009) calculate that 3-6% of children encounter dyslexic disorders.

As it will be clarified in chapter 2, dyslexia can differ across languages. For example, having investigated 8,000 schoolchildren in the Beijing region, it has

¹⁵ One can read the article at http://www.corriere.it/salute/disabilita/11_dicembre_20/troppe-diagnosi-dislessia-replica_b39dd896-2b22-11e1-b7ec-2e901a360d49.shtml?fr=correlati

¹⁶ The study was conducted by Ufficio Scolastico Regionale (Local Education Authority) and concerned 51% of all schools in Emilia Romagna.

¹⁷ These data can be consulted at www.interdys.org

¹⁸ Data are taken by Lindgren, *et al.* (1985).

been found that nearly 1.5% were dyslexic, that is far below the incidence in English-speaking countries (Butterworth & Tang, 2004).

1.3 Phonology, orthography and dyslexia

The core deficit in dyslexia picture is said to be the phonological processing deficit¹⁹, although some dyslexic children suffer from a visual-spatial deficit (White, *et al.*, 2006). Phonological processing and visual analysis are the basis of reading activity, but speed of information processing and short-term memory play a role in reading tasks as well (Wolf, 2007).

Phonological awareness²⁰ is the competence that allows us to segment and blend word letters and sounds. One of the most evident signs of dyslexia is the difficulty of print processing, with regard to decoding and encoding single words. This inability results from a lack of the alphabetic principle acquisition: individuals with dyslexia do not easily understand and fail to apply the grapheme-phoneme²¹ conversions that lead to word identification ability. The knowledge that words are constituted by little units (phonemes in spoken language, graphemes in written language) is not inborn, nor the fact that letters that create written words represent the sounds of spoken words²². In fact, phonological awareness does not develop with age, although young children share implicit phonological knowledge. In order to become explicitly aware of language structure, children need specific instruction. Finally, phonological awareness develops from larger units (syllable, onset, rime) to smaller ones (phoneme).

Children who are at-risk of dyslexia face difficulties in phonological manipulation and representation before they begin formal reading instruction.

Barbieri *et al.* (Stella, 2003) describe phonological awareness distinguishing between global and analytic phonological competence²³: the former develops before and independently of written language acquisition, spontaneously in four-

¹⁹ A more exhaustive explanation of the role of phonology and phonological awareness is given in chapter 2.

²⁰ Phonological awareness is different from phonemic awareness, which is a type of phonological awareness. The last one can be used for words, syllable, onset, rimes and phonemes, while phonemic awareness deals with single phoneme manipulation.

²¹ The grapheme is the smallest semantically distinguishing unit in a written language, analogous to the phonemes of spoken languages. A grapheme may or may not carry meaning by itself, and may or may not correspond to a single phoneme.

The phoneme is defined by the International Phonetic Association as the smallest segmental unit of sound employed to form meaningful contrasts between utterances.

²² Marchionni *et al.* report that until the age of four, children cannot analyze language sounds, but after this age they play with words, rhymes, assonances and begin to understand, unconsciously, word phonology (Stella, 2003). They conducted a research that involved 162 pupils in their first year of school (in Trasimeno Lake, Perugia, Italy). 65% of them wrote words without referring to their sounds. This is a piece of evidence that they do not think writing as transposition of spoken language phonology.

²³ See also Marchionni, F., Paolucci Ragni, N., Torlone, G., Volpe, L., Digeronimo, M. in Stella (2003)

year-old children; it can be seen as a preparatory stage of written language. It applies to phonological structure surface. Illiterate adults, pre-school children and individuals who use non-alphabetic orthographic systems share this kind of awareness: in fact, they can recognize and produce rhymes, recognize word onsets and divide words into syllables²⁴.

On the contrary, analytic phonological awareness deals with deep linguistic structure. It is a part of written language acquisition process, hence it characterizes individuals who use alphabetic orthographic systems and children who start to acquire written language.

Phonological awareness processes are described by Ziegler and Goswami (2005) in the following way:

- i. Word level: the reader recognizes single words in sentences;
- ii. Syllable structure level: word parts can be identified (usually consonant + vowel, vowel + consonant, rarely, vowel);
- iii. Word initial and final sound recognition level: the reader is able to recognize and create rhymes;
- iv. Individual sound recognition level: all phonemes are distinguished.

Snowling (Stella, 2003) stresses that the most accepted explanation of the phenomenon is that dyslexia originates from a **phonological deficit**: when they have to learn to read, dyslexics have less definite phonological representations than their peers. The way their brain encodes phonology is less efficient.

Stella (Simoneschi, 2010) claims that dyslexia has a genetic-constitutional origin that determines little but significant anomalies in brain areas that are involved in organizing cognitive-linguistic functions during reading. He adds that the disorder is neurobiological; however, there are some environmental factors which can facilitate or hamper reading skill acquisition. **Orthography** stands out against these factors: the shallower an orthography is, the easier it is to learn to read (c.f. 2.2).

Reading strategies result from the way an orthographic system encodes a given language. Indeed, letter-to-sound correspondences are acquired by Italian children in one year time; however, in case of deep orthography, grapheme-

²⁴ Trisciuzzi and Zappaterra (Simoneschi, 2010) recommend teachers to work on syllables rather than on phonemes, as analytic metaphonological skills are closely related to explicit written language instruction, whereas syllables can be manipulated also by pre-school children. They add that syllabic metaphonological operations are holistic as they allow immediate linguistic accessibility and availability. Indeed, syllables are naturally connected to verbal production and often coincide with articulation, thus they are more easily recognizable.

phoneme pattern acquisition may require two or three years. Interesting data are reported by Cornoldi (2007): at the end of the first grade, Greek pupils read 90% of words and 89% of non-words correctly²⁵, Italian pupils read 94% of words and 82% of non-words correctly²⁶, while English children, at the end of the second grade, read 70% of words and 45% of non-words correctly²⁷.

The **transparency** of a language is determined by the extent to which word pronunciation (phonology) can be predicted by its written form (orthography).

Deep, opaque or inconsistent orthography is a way of defining a language which has irregular representations of sounds, that is grapheme/phoneme correspondences are not easily foreseeable²⁸, as a letter or group of letters may represent more than one sound (e.g. English vowels: the letter 'a' can be pronounced as /ɑ:/ in 'farm', as /ey/ in 'lake', as /æ/ in 'lack', as /eɪ/ in 'waste', as /ɔ:/ in 'water') and a sound can be represented by more than one letter or group of letters (e.g. the sound /f/ in English can be written as 'f' in 'fault', as 'ph' in 'phenomenon', 'gh' in 'tough'). Examples of European deep orthographies are English, French and Danish.

However, "within any deep language, individual words will vary in their relative depth: some words will show one-to-one mapping in a similar manner to words in shallow languages; other words will have components of varying depth" (Spencer, 2007, p. 307).

On the other hand, examples of **shallow, transparent and consistent languages** are Finnish, German, Turkish, Hungarian, Italian and Greek. They have simple and regular grapheme to phoneme patterns, so that pronunciation and spelling are predictable (Costenaro, 2011; Nijakowska, 2010). For example, in the Italian alphabet there are 5 vowels, although 'e' and 'o' have double pronunciations (/e/ and /ɛ/, /o/ and /ɔ/), so that there are 7 phonemes for 5 vowels. Nevertheless, they are not distinctive, except in very few words. Furthermore, each vowel has only one orthographic rendition.

1.4 How we become readers

²⁵ These data are reported by Porpodas, *et al.* (1990).

²⁶ Cf. Cossu Cossu, *et al.* (1995).

²⁷ Data on English language are taken from Frith, *et al.* (1998).

²⁸ Think about 'write' and 'right', which share the same pronunciation /raɪt/.

Apparently, learning to read seems a fast and easy task, but this assumption proved to be false. It appears so automatic and simple that people often wonder how it is possible that someone finds it oddly difficult and struggles with reading acquisition.

Reading does not simply consist of letter decoding: it requires the ability to give each written symbol a meaning in a reasonable time for the communicative efficiency of the message.

Actually, reading is a complex task, which involves several types of competences and resources that are much different from each other and have to cooperate almost simultaneously. Reading, as well as spelling, requires more than one competence, as it is a linguistic activity that deals with: metalinguistics (based on language awareness), metacognition (cognitive processes involved have to be controlled) and pragmatics (which helps in grasping text meanings).

Therefore, what is involved in reading process? Not only vision processes, but also attention, working memory and motor abilities (for example in Chinese readers; see 2.2); moreover, sense organs and perceptual abilities are implicated; not to mention that cognitive and linguistic mechanisms, such as semantic and grammatical competence, which are necessary for connecting visual information to sounds and meanings²⁹, must be activated; finally, an inferential system has to start working (e.g. Pazzaglia in Cornoldi, 1985; Wolf, 2007). Additionally, learning to read implies some prerequisites which are usually acquired by children spontaneously during schooling: body schemata awareness, lateralization³⁰, orientation and spatial-temporal organization.

When a child has to learn to read, he or she should be able to segment speech into smaller units and to learn how his or her writing system represents these units (phoneme-to-grapheme patterns).

Wolf (2007) stresses that reading is possible thanks to the extraordinary brain capacity and plasticity to reorganize and rearrange itself beyond its original abilities, creating new circuits and forging new connections among structures. Indeed, reading uses existing brain structures - originally involved in visual activity and spoken language - in order to learn a new complex skill. However, unlike vi-

²⁹ Cognitive neuroscientist Swinney (1979) says that when we read a word, we do not give it only one meaning, but our brain tries to find out every kind of information about that word. The more lexicon we know, the more able we are at reading.

³⁰ Brain lateralization refers to the tendency for some types of process and functions to be developed and controlled by one hemisphere preferably.

sion or speech, reading has no genetic program. There are no specific genes for reading³¹.

Neuroscientist Dehaene calls this use of pre-existing structures **neuronal recycling hypothesis**: recycling pre-existing brain circuitry is the base for cultural acquisition, such as reading and arithmetic³², and for human ability to acquire it. Cultural learning is possible thanks to area re-converting process: areas which were in origins predisposed for a function are then exploited for new tasks that use similar cortical areas. Dehaene points out that word recognition ability exploits nervous circuits older in terms of evolution: these circuits are specialized in objects recognition (Dehaene, 2005).

Hence, as Wolf (2007) says, human brain strengths in reading and writing acquisition are:

- i. the ability to create new connections among pre-existing structures;
- ii. the ability to build specialized areas;
- iii. the ability to automatically recall and connect information from these areas³³.

These features give human brain the possibility to acquire one of the most shocking inventions made by the mankind. These three macro-abilities are the same used both by ancient people that first invented reading and writing and by pupils who start to learn to read nowadays.

Similarly, Stella (2004) lists the features he considered as required for skill acquisition:

- i. predisposition;
- ii. repeated stimuli exposition;
- iii. ease and stableness of sequences to learn;
- iv. sequence frequency (the more the sequence is frequent, the easier the acquisition).

³¹ As said by Wolf (2007), reading is based on a plenty of pre-existing processes, and it is so complex that no gene can originate all the types of reading difficulties by itself.

³² Dehaene pinpoints: "There is however an important difference between arithmetic and reading. On the one hand, there is a genuine precursor of number knowledge in primate evolution. Intraparietal cortex already seems to be involved in number representation in primates, and the cultural mapping of number symbols onto this representation significantly enhances, but does not radically modify, its computational capacity. On the other hand, the evolutionary precursor of the visual word form area is initially unrelated to reading. It evolved for object recognition, a function significantly different from the mapping of written language onto sound and meaning" (Dehaene, 2005, p. 147).

³³ Thus, human brain has linked visual areas to linguistic and cognitive ones.

These prerequisites are fundamental also in the case of reading.

1.4.1 Models of reading processes³⁴

Some scholars have studied the reading acquisition development in order to learn more about the nature of this process and about how a child can (or cannot) learn to read.

As it appears evident at first sight, reading is converting letters to sounds. Nevertheless, needless to say that decoding is not comprehending (Nijakowska, 2010; Wolf, 2007). Phonological, morphological, semantic and syntactic processes lead to comprehension, hence teachers and parents should not always take comprehension for granted: actually, many beginning readers may need to re-read a paragraph in order to understand its meanings, especially if figures of speech and ironic sentences are included in the text. Therefore, once matched graphemes onto phonemes, the reader has also to attach each symbol a meaning.

As it will appear clearer in the next pages, phonological development is one of the core components in reading acquisition, as it allows language decoding and manipulation. Orthography is another important issue since it teaches pupils how to recognize text visual aspects and word spellings; moreover, the morphological awareness helps the reading process because knowing what a word consists of allows us to read and grasp its meaning more easily; another element that turns out to be precious is the syntactic development: it helps pupils to understand how sentences are constructed (and it improves the knowledge about how events are related into a text); last but not least, semantic and pragmatic knowledge influences reading because it enhances and accelerates word recognition and comprehension skills.

Experts have proposed models³⁵ that proceed by stages. In most of phase models, the initial stage is a visual one, followed by a linguistic stage. Naturally, models vary in describing these phases, especially in specifying when the phonological component becomes truly vital.

The reading models that are fully described in next pages are:

³⁴ For a more detailed explanation as to how phonological awareness is involved in each reading model and for interesting teaching implications see: Costenaro (2011), chapter 3 "Phonological Awareness and Theories of Word Recognition".

³⁵ Costenaro (2011) reported that, up to now, 77 reading models have been proposed.

- i. Coltheart's Dual route cascaded model of reading aloud
- ii. Ehri's Phase model of word reading
- iii. Frith's Four-stage model of reading
- iv. Connectionist models
- v. Bakker's balance model of learning to read

Coltheart, et al. (2001) created a model of learning to read which has become commonly accepted and very influential, although it was the butt of criticisms. It is known as **dual route cascaded model of reading aloud**³⁶.

This model is based on the integration of different types of information: phonologic, visual, orthographic and semantic. When you read something, you have to turn print (letter feature detection) into meaningful representations (phonological output). The model distinguishes two ways (routes) of reading, namely the visual (lexical) route and the phonological (non-lexical or sub-lexical) route. The former uses orthographic representations and works for irregular word reading, while the latter is used for the pronunciation of new words and non-words (Manis, et al., 1996; Kormos & Smith, 2012).

The visual/lexical route consists of a lexicon storage that contains information about known words (for non existing words there are no entries). As exposure and practice make words familiar, readers can recognize common words by sight, as a whole unit, without dividing them into segments. Meaning is grasped because there exists a connection between the written form of the word and its meaning. This route is independent of phonological processing, which is activated only by the phonological, sub-lexical route (Costenaro, 2011). Thus, when phonological skills are impaired, word recognition is possible thanks to the visual route³⁷.

The sub-lexical route is based on grapheme/phoneme conversion and its job is to convert orthographic input into phonemes using a set of pronunciation rules. In this route written words are decoded letter by letter:

"After the learning period, a rule reflects the most frequent pronunciation of a grapheme [...]. Whereas the lexical route computes phonological information in parallel and the speed of processing is modulated by

³⁶ The dual route cascaded model is a recent implementation of the dual-route model. The lexical route mentioned in this model is a modified version of the McClelland and Rumelhart interactive-activation model. For further reading see Cortese (1998); Rastle & Coltheart (1999).

³⁷ Ehri criticized the lack of the phonological role in the visual lexical route for sight-word reading. In her model the visual route includes phonological processing. Cf: Ehri (1991, 1992).

frequency, the sublexical route generates pronunciation codes serially from left to right, and the rate of processing is constant". (Cortese, 1998, p. 653)

These two routes work in parallel and simultaneously, but the lexical one is more efficient in terms of time.

The lexical route consists of five parts: visual feature detection, letter identification, orthographic lexicon, phonological lexicon and phoneme system activation. On the other hand, the sub-lexical route involves the same first two phases, namely, visual feature detection and letter identification, but it adds the activation of two systems, the grapheme/phoneme conversion rule system and the phoneme system, respectively. Meaning is grasped thanks to letter-to-sound conversions and sound assembling.

Investigating dyslexia using the dual route model, Ziegler *et al.* point out that:

"[...] we know that some children with dyslexia have difficulties using the lexical procedure [...]. However, it is not always clear whether this deficit is due to impaired letter identification or impaired access to the orthographic lexicon. Similarly, most dyslexic children have phonological deficits [...]. However, it is not always clear whether these deficits only affect the non-lexical route (grapheme-to-phoneme conversion) or also the lexical route (access to the phonological lexicon). Previous research has identified two prominent subtypes of dyslexics who have relatively selective deficits when reading irregular words and non-words [...]. In particular, surface dyslexics are poor at irregular word but relatively normal at non-word reading. In contrast, phonological dyslexics are poor at non-word but relatively normal at irregular word reading. According to dual route hypothesis, surface dyslexics should show larger deficits on the lexical route (access to the orthographic and phonological lexicons), whereas phonological dyslexics should show larger deficits on the non-lexical route." (Ziegler, *et al.*, 2008, p. 154).

Back to reading models, one of the most known was developed by **Ehri** (1992) and is a developmental model (like Frith's), since it aims to explain the

stages that a pupil is supposed to pass through during literacy acquisition³⁸. Stage models assume that the understanding of the alphabetic principle is the key that leads to reading acquisition. Ehri's framework is constituted by five phases (Costenaro, 2011; Nijakowska, 2010; Simoneschi, 2010):

- i. In the pre-alphabetic phase the reader does not apply grapheme-phoneme mappings: indeed, he or she recognizes words due to visual clues, connecting them to their sounds.
- ii. The partial alphabetic phase is characterized by the creation of conventional, though still partial, letter-to-sound conversions. The reader knows letters' names and their pronunciation. Ehri has noted that readers remember most first and last letters. As long as children become aware of the alphabetic system, they are more able to understand and remember connections between printed words and their corresponding sounds.
- iii. The next stage is the full alphabetic phase in which the connections between letters and sounds are more stable. Moreover, children use analogy strategies to read words and are able to recognize words visually. They can decode unfamiliar words and store fully analyzed sight words in memory.
- iv. Finally, the last phase is the consolidated alphabetic phase: children's reading is automatized thanks to automatic letter-to-sound matches. In addition, they consolidate their knowledge of grapheme-phoneme blends into larger units that recur in different words (such as rhymes).

Uta **Frith**'s model of reading acquisition (Frith, 1985) is the most influential theory in this field. Each stage entails new procedure acquisition and already acquired competence consolidation. The model consists of four phases:

- i. Logographic phase. The reader perceives the word as a logo, a cluster of letters or as a shape. He or she does not apply any conventional conversion rules, but recognizes words (for example, their own name or famous brands) due to visual memory. Letter/sound relations are not yet integrated because the child has little orthographic and phonological

³⁸ A penetrating observation is made by Treiman and Bourassa (2000), who claim that it is better to interpret stages as periods in which a strategy is more used or helpful. This means that the reader can adopt a strategy of a different period simultaneously.

- knowledge. Hence, pupils connect salient graphic features to pronunciation.
- ii. Alphabetic phase³⁹. The reader is aware that words can be broken down into phonemic units; he or she tries to match them with grapheme conversion patterns. He or she is also able to discriminate letters. This ability to map phonemes onto letters is also known as the alphabetic competence, which is necessary but not sufficient to reading. At this stage, the reader can also read unknown words.
To be a skilled reader in English, both a logographic and an alphabetic processing strategies are required.
 - iii. Orthographic phase. The reading process becomes faster, effortless, more accurate and more automatized. The pupil knows regularities of the writing system and exceptions to the rules. Skilful readers share an increasing reliance upon orthographic knowledge. This stage begins when the reader can undertake word recognition tasks without using phonological processing but relying on visual recognition.
 - iv. Lexical phase: the reader can recognize known words directly and memorizes the graphic aspect of the most frequent words, building up a vocabulary in which orthographic information is stored. The reader uses the abovementioned strategies when new words or non-words are to be read. Reading is becoming fast and automatic.
For the English reader the lexical strategy is necessary in order to learn to read some words ("sight words") as English has a deep orthography, while for the reader of a shallower orthography the direct strategy is not mandatory.

Connectionist models⁴⁰ deserve a mention. They have an organization based on units, which in turns constitute a layer. Connections among units are fundamental in order to calculate the output. The majority of connectionist models consists of three types of units, i.e. input units (to which the stimulus is firstly presented), output units and hidden units, whose job is to connect the former with output units. In these models, a pivotal role is given to the "weight" of connections: if the output is far from the expected one, then the connections are

³⁹ Because of phonological processing difficulties, dyslexics are expected to find this stage as the most problematic (Kormos & Smith, 2012).

⁴⁰ They have been influenced by Seidenberg and McClelland framework of reading (Seidenberg & McClelland, 1989).

weakened. On the other side, if the desired output and the actual output are the same, then connections are strengthened. This is called backpropagation of error, which is one of the most common ways of adjustment used by the system.

Finally, Dirk **Bakker**, professor of child neuropsychology, has proposed the **balance model** of learning to read (Bakker, 1984), in which he focused on left and right hemisphere entailment (Cornoldi, 1999; Nijakowska, 2010; Trisciuzzi, Zappaterra in Simoneschi, 2010). The former is involved in skilled reading, the latter in beginning reading when spatial-perceptual information of letter shapes is to be analyzed, letters have to be named and unfamiliar words have to be recognized. When the reader becomes more confident, visual-spatial analysis develops into more automatized process, and syntactic and semantic processes prevail. This change in hemisphere dominance, from right to left, usually happens at the age of eight (Nijakowska, 2010).

Although these models are first arranged for the English language, they are said to be working for all alphabetic languages.

Finally, in order to broaden the understanding of how we become proficient readers, a classification of types of readers is reported. It brings out the changes that occur in each reader. It was elaborated by neuroscientist Wolf, director of Center for Reading and Language Research at Tufts University, who identifies five types of readers⁴¹:

i. Emerging pre-reader

For the first five years of a child's life, he or she listen to, play with, and learn sounds, words, concepts and stories. This linguistic, intellectual and social growth is pivotal to reading readiness.

ii. Novice reader

Most children guess that written symbols mean "something", but most of them do not understand that written words are constituted by spoken language sounds and that each letter or cluster of letters represents a sound or a group of sounds. Hence, the novice reader gains knowledge of the alphabetic principle, learn the most common grapheme-phoneme patterns and is also able to manipulate syllables. Moreover, the novice

⁴¹ For a more exhaustive discussion see Wolf (2007), chapter V. Her framework owes much to Frith's and Ehri's studies, but also to Chall (1983).

reader learns to read the sight words and words with an irregular orthography.

iii. Decoding reader

This reader is more self-confident: his or her reading is more continuous, almost fluent; more time is dedicated to comprehension and more attention to prosody. Decoding readers become exposed to many types of morphemes, such as prefixes and suffixes, and it is when they learn to read these as sight chunks that their reading and their understanding will speed up dramatically. Wolf stresses that a better comprehension does not arise as a result of fluency: fluency, which is not just a matter of speed, gives the reader more time to reflect, to draw inferences and to foresee, to make new hypotheses⁴².

iv. Fluent, comprehending reader

Decoding does not mean understanding. Sometimes, even if the reader has understood the meaning, there is a chance that deeper meanings (irony, metaphors, point of views) are not grasped. Nevertheless, this type of reader is able to activate their knowledge before, during and after the reading task; is also able to decide what is most important and to sum up. When fluency and comprehension are achieved, the limbic system, which is the centre of emotions, is more involved. Furthermore, brain specialized areas are very swift in recalling visual, phonological and semantic information. The more fluent the reading, the less bihemispheric activation: indeed, this is substituted by left hemisphere activation (ventral pathway)⁴³. Paradoxically, specialized activation of the left hemisphere allows a more bilateral management of comprehending processes.

v. Expert reader

At this stage, it usually takes the reader only one half second to read almost any word. Fusion of cognitive, linguistic and emotional processes is almost instantaneous; many brain regions are involved; billion of neurons are at work.

With regard to dyslexia, Trisciuzzi (Simoneschi, 2010) reports that Stella *et al.* (2003) hypothesize that individuals who suffer from this impairment follow some phases during written language acquisition:

⁴² For a more detailed definition see (Wolf, 2007). Furthermore, Wolf reports these data: between 30% and 40% of ten-year-old children do not totally master reading fluency with adequate comprehension.

⁴³ This what Pugh, Sandak and other neuroscientists assert. For more information see Sandak, *et al.* (2004).

- i. In the first year of school, children face difficulties and slowness in acquiring the alphabetic system and in applying grapheme-phoneme correspondences; they make mistakes in phonemic analysis⁴⁴; additionally, lexical access is limited or absent, although words are read correctly.
- ii. In the intermediate phases, from the second to the fourth grade (children aged seven/ten) pupils acquire the alphabetic system and the grapheme-phoneme relations, although these are not stable. They may encounter problems in complex orthographic mappings. Moreover, phonemic analysis is not well automatized and needs much effort; lexical access is slow and limited to most frequent words.
- iii. In the final stage (11-14 years old), students have a complete command of the alphabetic system and of letter-to-sound conversions. Phonemic analysis and lexical access become automatized, especially for frequent words. However, pupils have limited access to the orthographic lexicon. Finally, decoding and comprehension processes are not well integrated and, as a result, reading remains poor.

1.5 Causes and origins: theories and hypotheses

Probably, the aspect of the dyslexic disorder that fascinates most scholars is the understanding of the cause(s) that generates this disorder. Here follows a list of the main models of dyslexia explanation (Stella in Simoneschi, 2010; Ramus, *et al.*, 2003; Nijakowska, 2010; Biancardi & Milano, 1999; Vender, 2011):

- i. Phonological deficit theory (e.g. Snowling, 2001; Bradley & Bryant, 1978; Vellutino, 1979; Stanovic, 1988)
- ii. Automatization (cerebellar) deficit theory (Nicolson & Fawcett, 1990; Nicolson, *et al.*, 2001)
- iii. Visual deficit theory⁴⁵ (Lovegrove, *et al.*, 1980; Stein & Walsh, 1997)
- iv. Auditory deficit theory (Tallal, 1980)

⁴⁴ Phonemic analysis is similar to writing process; on the contrary, phonemic synthesis is similar to reading process.

⁴⁵ In the field of theories on visual system, some authors have put stress on eye movement: during reading, dyslexics have a disordered pattern of eye movement; moreover, movements are less regular and harmonious. On the other hand, some scholars have suggested that the eye movement pattern might be not a cause but a result of text comprehension difficulties. Furthermore, there is evidence that this pattern occurs in tasks which do not involve reading and comprehension. For a more exhaustive discussion see: Nijakowska (2010).

- v. Magnocellular deficit theory (Stein & Walsh, 1997)
- vi. Attentive deficit theory (Bosse, *et al.*, 2007)
- vii. Double-deficit hypothesis (Wolf & Bowers, 1999)

Figure 1.5.1 gives a clear picture of cerebral areas which these theories refer to. Additionally, mainly functions of these areas are reported.

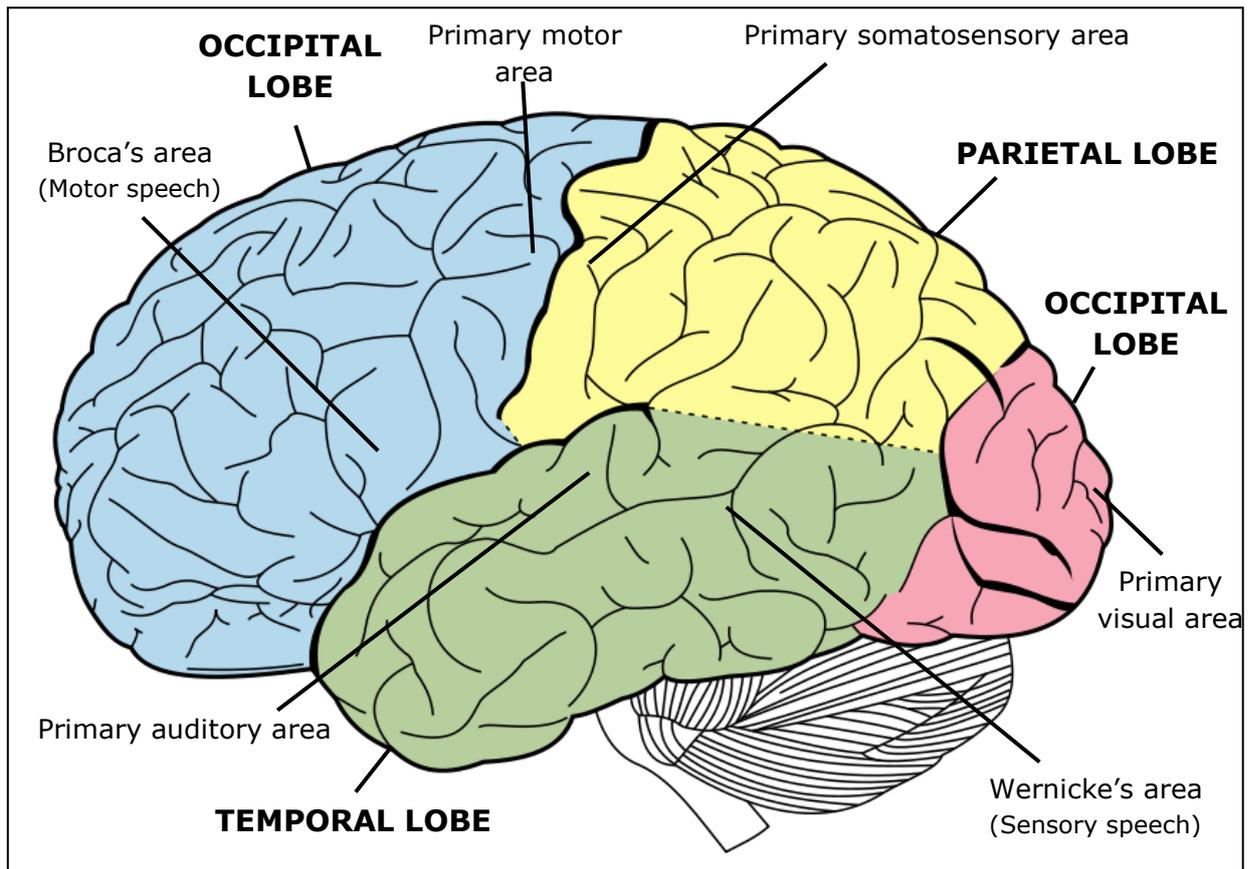


Figure 1.5.1 Brain areas and their primary functions (adapted from www.en.wikipedia.org)

- i. The **phonological deficit theory** indicates below average phonological processing skills as the main cause of reading problems. The specific impairment deals with representation, storage and/or retrieval of speech sounds. If representation, storage, manipulation or retrieval are weak, there will be repercussions on grapheme/phoneme correspondences; these patterns are required in order to master the reading acquisition of alphabetic systems.

Thus, dyslexics encounter problems in encoding and representing phonological information; maintaining the phonological information into

the working memory system; recalling it from the working memory; having explicit awareness of word phonological structure. They are less precise and less efficient at coding phonological information.

A clear symptom of this deficit is the difficulty of reading non-words fluently: these words need to be constructed by a strategy whose basis connects to phonological ability.

Stella (Simoneschi, 2010) reports that Ramus (2006) has studied that a genetic anomaly may lead to anomalies in the temporal-parietal cortex in the left hemisphere, which in turn may cause the phonological deficit of the short-term verbal memory, that it is considered the most proximal explanation of dyslexia.

Nonetheless, a weakness in this framework deals with the lacking of explanations on other linguistic difficulties which are common in dyslexics: rapid naming speed, vocabulary, grammar, and comprehension tasks. Additionally, it does not explain the co-occurrence of sensory and motor disorders.

- ii. Proponents of the **automatization deficit hypothesis**, Nicolson and Fawcett, assert that the cerebellar dysfunction obstructs the automatization of many skills, such as motor abilities, reading and implicit learning. In fact, the cerebellum plays an important role in automatization abilities and in motor control, as it contributes to coordination, precision and accurate timing. The cerebellum is also involved in attention and language.

Thus, people with dyslexia cannot make a task automatized, despite extensive practice; they need to activate voluntary attention and they find it difficult to do two or more tasks contemporaneously (i.e. decoding and understanding).

Even if a dyslexic masters literacy skills, his or her reading remains less rapid and automatic and requires more effort.

Studies in brain imaging have demonstrated some differences in dyslexics' cerebellum with regard to anatomy and activation (Rae, *et al.*, 1998; Nicolson, *et al.*, 1999).

According to Fawcett and Nicolson (2001), this underlying deficit is responsible for some problems that dyslexics are likely to encounter: motor coordination, poor quality handwriting, difficulties in articulation.

- iii. One of the first explanations given for dyslexia concerns the visual component of reading tasks, as hypothesized by ophthalmologist Hinshelwood and physician Orton (see chapter 1).

The **visual theory**, however, does not exclude a phonological impairment, although this one is claimed to be brought about by visual disorders.

“At the biological level, the proposed aetiology of the visual dysfunction is based on the division of the visual system into two distinct pathways that have different roles and properties: the magnocellular and parvocellular pathways. The theory postulates that the magnocellular pathway is selectively disrupted in certain dyslexic individuals, leading to deficiencies in visual processing, and, via the posterior parietal cortex, to abnormal binocular control and visuo-spatial attention.” (Ramus, *et al.*, 2003, p. 4)

Although this theory was proved inexact by Vellutino’s studies (e.g. Vellutino, 1979) which demonstrate that visuo-perceptual impairments do not actually play a significant role, the abovementioned definition shows that the visual theory fuels the magnocellular hypothesis (see below).

It seems that dyslexics, while reading, have different eye movements from normal readers (see footnote 45, p. 25); nevertheless, there exist studies that go against this hypothesis and claim that letter reversals are common among normal readers as well.

Furthermore, many studies have reported that visual impairments are not good and reliable predictors of reading acquisition and development.

- iv. The **rapid auditory deficit hypothesis** postulates that the auditory deficit is the direct cause of phonological impairments. This deficit hinders dyslexics from perceiving sounds that are short or appear in a rapid sequence. Studies have shown that individuals who suffer from dyslexia are poor at auditory tasks. Thus, according to this view, poor phonological

skills (and, as a consequence, reading and spelling problems) stem from auditory impairments⁴⁶.

However, Snowling (2001) and Ramus *et al.* (2003) reached other conclusions: auditory skills are well-functioning in some dyslexics, in spite of poor phonological abilities. These findings demonstrate that weak phonological skills are independent of auditory deficits.

- v. In her studies on visual stimuli, neuroscientist Livingstone (1991) identifies two pathways for auditory and visual stimuli elaboration: namely, the parvocellular pathway and the magnocellular pathway. The former is formed by littler cells and is used for detail analysis, small shape recognition, colour perception, slow processes, static images. The latter is constituted by bigger cells and its job is rapid processes elaboration: quickly moving stimuli, position, motion, profundity perception, contrast sensitivity.

According to the **magnocellular deficit hypothesis**, in dyslexics individuals the magnocellular pathway is affected by an impairment that is held responsible for poor visual processing. The faulty and disorganized magnocellular pathway makes it difficult to send visual information from the retina to the occipital cortex.

One of the consequences of this pathway impairment is unsteady binocular control, which determines the lines of sight to move over each other. This in turns gives dyslexics the impression of letters moving around the page, merging with each other, blurring and modifying in terms of size. Thus, "[...] magnocellular sensitivity can [...] predict the visual orthographic component of the reading skill of good and poor readers" (Nijakowska, 2010, p. 58).

Some studies have shown that both pathways are affected by slowness in dyslexics; that is why Nicolson and Fawcett (2008) proposed a "pansensory magnocellular hypothesis".

Nonetheless, sight cannot be said to be the main cause of dyslexia, because the magnocellular impairment cannot be found in all dyslexics and, moreover, it may affect individuals without dyslexia. Furthermore,

⁴⁶ Moreover, brain hemispheres have different auditory competences: the left ear (which sends information to the right hemisphere) is better at sound timbre analysis, whereas the right ear (which communicates with the left hemisphere) is very efficient in language comprehension (and temporal structure of the message). According to (Helland, *et al.*, 2008), the phonological deficit, which is the core deficit in dyslexia, often goes with a reduced right ear advantage in dyslexics.

this framework does not give evidence for the absence of sensory and motor disorders in a significant proportion of dyslexics.

- vi. The **attentive deficit theory** postulates that, independently of phonological impairments, a visual attention span difficulty also contributes to poor reading in some dyslexics. Disorders in allocating attention across letters bring about poor quality of multi-element processing. Hence, the number of letters that can be simultaneously elaborated diminishes.

"The visual attention span is defined as the amount of distinct visual elements which can be processed in parallel in a multi-element array. Both recent empirical data and theoretical accounts suggest that a V[isual] A[ttention] span deficit might contribute to developmental dyslexia, independently of a phonological disorder." (Bosse, *et al.*, 2007, p. 198)

In fact, in many dyslexics the phonological deficit does not turn out to be the core impairment.

According to the connectionist model of reading proposed by Ans *et al.* (1998), a different involvement of the size of visual attention and phonological skills is entailed in reading procedures (precisely, a larger visual attention span is usually necessary for global processing).

The authors showed that if the visual attention window is affected by a mild reduction global reading might be impaired.

- vii. Wolf and Bowers (1999) have elaborated the so-called **double-deficit hypothesis**. This framework takes account of the phonological deficit and the naming speed impairment, but does not allow the phonological deficit to play an exclusive role. Not only is naming speed independent of phonological deficits⁴⁷ and is a reliable predictor of dyslexia⁴⁸, but it is also typical and distinctive for dyslexia. The phonological deficit makes reading inaccurate, because grapheme-to-phoneme conversions are difficultly mastered, while the naming speed deficit generates a slow reading, as the

⁴⁷ Vukovic and Siegel (2006) raised doubts on this independence.

⁴⁸ Processes and structures underlying naming are part of processes and structures used in reading (Wolf, 2007).

retrieval of linguistic information from the long term memory is considerably slow.

Naming speed is measured by RAN⁴⁹, which stands for Rapid Automatized Naming tests. In these tests, visual stimuli are presented to subjects, who have to give them verbal labels as quickly as possible. Dyslexics usually perform poorly since rapid naming is a task that requires: seriality, rapid rate, attention, memory, lexicon and visual and articulation skills. All of these features have to be quickly integrated. Particularly, the first two, seriality and rapidity, seem to appear troublesome for children with dyslexia. The authors suggest that there may be a more general timing deficit beneath dyslexia, but pinpoint that such assertion needs more evidence.

New technologies help researchers to make other hypotheses about dyslexia's origins and causes. Particularly, PET (Positron emission tomography) neuroimaging measures brain activity correlated to specific psychological processes or disorders. It is assumed that if radioactivity is high it means that the brain is activated.

Oliverio (2001) thinks that the cause of dyslexia is to be identified in left inferior frontal cortex (gyrus) deficit. He adds that left hemisphere is designed for diverse linguistic functions: a part of occipital lobe cortex is engaged in written letter recognition; the medial part of the temporal lobe identifies word meanings; a part of the inferior frontal cortex deals with phonological processes. This proves true for males, while females have bilateral phonological process elaboration (that is, it takes place in left and right inferior gyrus). This explains why girls learn to talk and write before boys and are less affected by dyslexia⁵⁰.

Oliverio (2001) argues that the core deficit in phonological dyslexia is caused by inferior frontal cortex deficit in the left hemisphere. This is not damaged, but it suffers from a retardation of growth and it is said to be lazy, as it

⁴⁹ RAN tests prove reliable in all the languages that have been investigated so far (Wolf, 2007).

⁵⁰ There are contradictions among experts on dyslexia sex ratio.

For example, Snowling (1987) reports that dyslexia affects 3.3 boys to every girl. ICD-10 also claims that males are more affected by reading difficulty disorders than females. Tánčzos *et al.* (2011) support this view too, adding that this problem is more common among left-handed individuals.

On the contrary, Singleton (Genovese *et al.*, 2010) reports that preview findings derived from studies that concern more males than females. He reports data on English universities: in 1995-96 the ratio is 1,7 boys to 1 girl, but in 2006-07 is 1,2 girls to every boy.

Finally, International Dyslexia Association, reports that "Dyslexia affects males and females nearly equally" (www.interdys.org/FAQHowCommon.htm).

processes information using ten times the time used by non-dyslexics. He explains that the vast majority of children spend 40 milliseconds to elaborate a phoneme, while dyslexics need 500 milliseconds⁵¹.

Wolf (2007) puts stress on the three principles that shape the reading brain:

- i. Pre-existing structure re-adaptation in order to create new neuronal circuits;
- ii. Neuronal circuit ability to specialize in recognizing information schemata;
- iii. The ability to recall and connect this information automatically.

That being stated, four possible causes are delineated by Wolf (2007)⁵²:

- i. A developmental deficit in linguistic and visual structures (e.g. neuronal groups of these structures cannot specialize);
- ii. A lack of automaticity, that is an insufficient elaboration speed⁵³; this means that the reader has no time to understand what he or she is reading;
- iii. A deficit in circuit connections among structures;
- iv. A neuronal circuit which is new and completely different from that usually employed by non-dyslexics in a specific writing system. Individuals with dyslexia lack left hemisphere dominance or they achieve it lately. This dominance is crucial for choosing the right orientation of letters (*p/q*) and clusters of letters (*ten/net*). On the contrary, they exploit the right hemisphere, perhaps as a compensating tool^{54, 55}.

⁵¹ According to Wolf (2007), compared to a normal reader, the dyslexic reader is late as from 150 millisecond during reading.

⁵² Some causes may exist in all writing systems, whereas one cause may be characteristic of a particular writing system (Wolf, 2007).

⁵³ Researches have demonstrated that many dyslexics see just one image if two images are shown in rapid succession. The same thing happens to auditory stimuli (Wolf, 2007). Other interesting studies were conducted by the psychiatrist Peter Wolff (e.g. Wolff, 2002), who has studied motor tasks in dyslexics, and has concluded that they encounter problems in coordinating two or more components of a behaviour in a rapid, precise and sequential manner. Psychologist Breznitz (2006) claims that individuals with reading disorders share slowness in elaboration; moreover, she finds that there is a gap between visual and auditory processes, which she calls *asynchrony*. Perfetti says that if there is asynchrony between visual information and phonological representations there will be no automatic integration between graphemes and phonemes (Wolf, 2007).

⁵⁴ Reading circuits in right hemisphere: are they causes or consequences of reading difficulties? The brain is forced to use the right hemisphere because the left one has something wrong or the right hemisphere is dominant and is prone to get hold of tasks usually fulfilled by the left hemisphere?

⁵⁵ Brilliant and several researches on hemisphere differences were carried out by neurologist Albert Galaburda.

As it is clear from the previous paragraphs, despite the great amount of research, a unanimous and definitive explanation of dyslexia's causes is still to be reached.

1.6 Types of dyslexia

1.6.1 P-type, L-type, M-type dyslexia

In his balance model of learning to read (see 1.4.1), Bakker (1992) proposes a distinction between three types of dyslexia:

- i. P-type (perceptual) dyslexia
- ii. L-type (linguistic) dyslexia
- iii. M-type (mixed) dyslexia

The P-type stems from an overuse of perceptual strategies, the L-type derives from an overuse of linguistic strategies.

Apparently, many dyslexics fail to apply the right strategies at the right time. In P-type dyslexia hemispheric dominance (from right to left) takes place too late, whereas in L-type dyslexia too soon.

"A child with P-type dyslexia fails to utilise the left-hemispheric strategies, necessary to achieve reading fluency, at the same time heavily relying on the visual-spatial features of the texts. That is why reading is slow, fragmented, but still characterized by relatively high accuracy."
(Nijakowska, 2010, pp. 20-21)

P-type dyslexics seem to be stuck in the early stages of reading, as they strive their best to reach speed and fluency. They fail to show shift in hemispheric dominance and rely too much on thorough decoding strategies, which belong to the right hemisphere.

Conversely, L-type dyslexics are claimed to adopt linguistic (left-hemispheric) strategies from the very beginning of learning to read, they lack the automatic ability to recognize letter shapes and strings. Since they do not focus on the surface (visual-spatial) features of the text, they

read relatively quickly, however, they tend to produce numerous substantive mistakes (low accuracy), which in turn may lead to comprehension problems.” (Nijakowska, 2010, p. 21)

Visual awareness of text features has not time to develop on the right hemisphere. L-type dyslexics activate linguistic anticipation strategies too early.

Finally, there is the M-type dyslexia, which stands for “mixed type”, which is characterized by slowness and a great number of mistakes. Children cannot adopt either kind of strategy, perceptual and linguistic.

These three types differ on: reading speed, accuracy, types of errors, prevalent hemispheric activation during reading tasks. With regard to types of errors, it is possible to distinguish two types: substantive and time consuming. Substantive errors are typical in L-type dyslexia as they consist of omissions, letter sequence changes, letter deformations; they result from left hemisphere dominance. Time consuming errors, on the other hand, arise from right hemisphere control and are to be expected in P-type dyslexia. They are, for example, reading letter by letter, pauses, repetitions (Facoetti, *et al.*, 2003).

1.6.2 Phonemic awareness deficit subtype, naming speed deficit subtype, double deficit subtype

According to the double-deficit hypothesis whose proponents are neuroscientists Wolf and Bowers (1999) (see chapter 1.5), dyslexia can be divided into three categories due to the type of impairment that is predominant:

- i. Phonological deficit
- ii. Naming speed deficit
- iii. Phonological and naming speed deficit

In Wolf and Bowers studies, 25% of English-speaking readers share only one deficit, the phonological one, while 20% is affected by fluency impairments (Wolf & Bowers, 1999). Slow word reading is a manifestation that takes place more frequently in languages with transparent orthographies rather than in deep languages (Wimmer, *et al.*, 2000) (see also 2.2).

Individuals with phonological deficit are readers who exhibit normal naming speed but have a phonological processing impairment. On the other hand,

individuals with naming speed disorder demonstrate average standard phonological abilities but are less-skilled in naming speed.

The most common type of dyslexia is the third one, in which phonological and naming speed deficits coexist.

Unfortunately, 10% of poor readers do not fall into one of the abovementioned categories. Furthermore, severe dyslexics appear also to be suffering from a short-term memory deficit (Morris, *et al.*, 1998).

Katzir *et al.* (2008) have conducted researches on poor readers referring to the double-deficit hypothesis. Their results run as follows: the double-deficit category includes 46% of their sample; 25% encounter problem in tasks in which phonological awareness is involved but exhibit average naming speed; 18% of reading-disabled individuals have naming speed impairment but standard phonological skills, and finally, 11% of the sample cannot be categorized according to the double-deficit framework.

1.6.3 Surface and phonological dyslexia

The dual route model of reading hypothesizes the existence of two distinctive pathways: the direct one (lexical) and the indirect one (sub-lexical). The routes may encounter problems during reading acquisition. Thus, two types of dyslexia emerge:

- i. phonological dyslexia (deficit in letter-to-sound rules)
- ii. surface dyslexia (deficit in whole word recognition)

In the first case, individuals find it difficult to read non-words and have troubles in phonological awareness (dividing and blending phonemes), whereas surface dyslexics are able to read regular non-words as they rely on phonological patterns, but struggle to read irregular words because these have unconventional grapheme/phoneme rules (they are claimed to be poor on orthographic tasks). According to the model, surface dyslexia stems from a lexical procedure impairment (it entails sub-lexical route dominance), while phonological dyslexia derived from sub-lexical procedure damage (lexical strategy dominance). However, many dyslexics have difficulties in reading both non-words and irregular words (Manis, *et al.*, 1996; Youman, 2011; Nijakowska, 2010; Caglar-Ryeng, 2010).

Furthermore, further researches and studies have not provided much support for these subtypes of dyslexia as they involve skills that change due to reading skill acquisition and time⁵⁶.

⁵⁶ For further readings: Hulme & Snowling (2009); Castles & Coltheart (1993).

2 Dyslexia and Foreign Language Learning

*"Ma sopra tutte le invenzioni stupende,
qual eminenza fu quella di colui
che s'immaginò di trovar modo di comunicare
i suoi più reconditi pensieri a qualsivoglia altra persona,
benché distante per lunghissimo intervallo di luogo e di tempo?
[...] e con qual facilità?
Con i vari accozzamenti di venti caratteruzzi sopra una carta."¹*
Galileo Galilei, Dialogo sopra i due massimi sistemi

In this chapter the focus shifts towards the relationships between dyslexia and foreign languages, as it will be clear that orthography has a bearing on the reading disorder and that the manifestations may vary according to the type of language which a person is exposed to. This influence is also reflected in brain activation during reading tasks, as reported in following paragraphs.

2.1 Different readers, different brains

Reading acquisition changes the brain, its structures and its functioning.

Brain areas are differently involved in beginning readers and adults (skilled readers); in literate and illiterate people; in readers of different languages².

Raichle and Posner (Petersen, *et al.*, 1989; Posner & Raichle, 1994) have studied brain area activation during the following task: subjects are shown symbols; some are meaningless, while some are meaningful and forming letters, non-words and real words. Outcomes bring out the fact that, when seeing meaningless symbols, only limited areas of occipital lobe (primary visual cortex) become activated. On the other hand, when individuals reckon that these symbols have a meaning (real words), cerebral activation is two or three times more intensive. When a symbol is given a meaning, not only are primary visual areas involved, but also temporal and parietal lobes (used for linguistic, auditory and conceptual processes) and association areas³ (important for visual and auditory tasks and for their representations).

¹ "But surpassing all stupendous inventions, what sublimity of mind was his who dreamed of finding means to communicate his deepest thoughts to any other person, though distant by mighty intervals of place and time! [...] and with what facility, by the different arrangements of twenty characters upon a page!"

² One illuminating example concerns a bilingual reader (English/Chinese) who had suffered from alexia: after the ictus, he was no longer able to read Chinese, but reading skills in English were not affected by the brain injury (Lyman, *et al.*, 1938).

³ Neurologist Geschwind has defined the angular gyrus as the association area of the association areas, as it is in a perfect position for putting together different types of information. Neurologist Dejerine has demonstrated that a damage in the angular gyrus brings about reading and writing impairments (Wolf, 2007).

Hence, in order to read something, it is mandatory to connect visual representations to linguistic and conceptual information.

Differently from a skilful reader, in the so-called novice reader (see 1.4) (Wolf, 2007) the first big area involved in reading is a vast part of occipital lobes; all in all, more activity is observed in both hemispheres⁴: some parts of temporal and parietal lobes, angular gyrus, Wernicke's area. Adults resort to these areas when they come across difficult words. In the beginning reader areas originally designated for vision, motion and language have to learn to work together (Wolf, 2007).

More precisely, expert readers share cognitive and linguistic processes that take place in parallel in a great number of cerebral regions involved. As pointed out by Wolf (2007), each word 'last' 500 milliseconds. This is the time required by a skilled reader to recognize a word, connecting letters to sounds and orthography to phonology and recalling semantic and grammatical information.

Evidence for cerebral area activation working differently in literate and illiterate people is given by Morais *et al.* (1979) in their research in Portugal's rural areas. The experimental group was constituted by illiterate people, while the control group differentiates from the former just for one aspect: its participants were taught literacy. This group performed better than the experimental group in tasks where phonological discrimination in mother tongue was assessed. Moreover, illiterate subjects proved to be less skilled at repeating pseudo-words and at manipulating phonemes. Years after, participants of both groups were asked to undergo brain scans. Illiterate individuals used frontal lobes for linguistic tasks, while literate people exploited linguistic areas of temporal lobes (Peterson, *et al.*, 2001).

In 2004, in a Postnote, the British Parliamentary Office of Science and Technology⁵ briefly explains brain differences that can be noticed in individuals with dyslexia: an area which is fundamental during listening and reading tasks, the left *planum temporale*, is smaller in dyslexics than in others; in addition, dyslexics use some left hemisphere areas less than skilled readers; finally, larger portions of frontal areas are activated in dyslexic individuals during reading.

In an experiment conducted by Bennet and Sally Shaywitz (2002), dyslexic children showed to use frontal areas more than normal readers but demonstrated less activation in posterior left areas, particularly in the left angular gyrus

⁴ On the contrary, skilled readers exploit the left hemisphere more than the right one.

⁵ www.parliament.uk/documents/post/postpn226.pdf

(Horwitz, *et al.*, 1998), which seems to be disconnected⁶ from the other linguistic areas of the left hemisphere during reading and phonological processing.

In summary, dyslexic brain activates right hemisphere areas which are usually not working when a normal reader carries out reading tasks. In non-dyslexic readers the portions of the right hemisphere which are involved are: a small posterior area (occipital lobe) in visual recognition tasks (0-100 milliseconds); a portion of the temporal lobe and of the frontal region in semantic elaboration (200-500 milliseconds).

In normal reading, the occipital lobes of both hemispheres process the visual information; the visual information of the right visual areas is sent to the left visual areas as it has to be submitted to linguistic elaboration (which is left hemisphere's 'privilege').

2.2 Different languages, different brains

It is becoming widely discussed the fact that languages and their writing systems have a clear influence on reading- and, of course, on dyslexia and its manifestations. Researches confirm that orthography, since it deals with grapheme/phoneme conversions, has a high impact on reading disorders.

However, how far is reading acquisition affected by language or orthography?

The reader of alphabetic systems uses less cortical surface of some areas; in this reader a great part of posterior left hemisphere is exploited (occipito-temporal and temporal-parietal regions), while the activity of visual cortical regions in both hemisphere is reduced. Moreover, frontal and parietal lobes, Broca's area and a superior area in the temporal lobes, are also designed for phonological processes, thus, they are much used by readers of alphabetic writing systems. The right hemisphere does not appear pivotal in reading tasks in English. On the contrary, a Chinese reader makes use of visual areas in both posterior hemispheres. Differences between these two readers are also seen in frontal-dorsal and frontal-ventral regions. Additionally, motor memory areas in frontal lobes are activated when Chinese read, as they spend a lot of time and effort in copying

⁶ This is a piece of evidence for the deficit in circuit connections among structures (cf.: chapter 1.6)

Chinese characters in order to acquire them. Furthermore, Japanese readers⁷ do not use frontal-ventral regions (Wolf, 2007).

By and large, there are three common areas used diversely by readers of different languages: i. occipito-temporal area (visual analysis); ii. Broca's area (phoneme and meaning processes); iii. superior part of temporal lobes and inferior part of parietal lobes (auditory and semantic information) (Wolf, 2007).

As well highlighted by Wolf (2007), different writing systems create different brain structures. Readers of shallow orthographies (e.g. German, Spanish, and Italian) become fluent and efficient sooner than readers of deeper orthographies, such as English. Neuroscientist Wolf stresses that writing systems play a role in creating diverse neuronal configurations. Furthermore, learning Chinese creates specific demands on brain areas involved in remembering visual patterns; on the contrary, reading in English requires more use of phoneme processing areas.

In consistent languages, even patterns which are not as shallow as others are easily learned. Therefore, the smaller number of explicit rules that explain inconsistent words, the easier the reading acquisition (Aro & Wimmer, 2003).

Dyslexia will have different nuances according to features that are involved in learning to read a language (fluency, visual and spatial memory, phonology), which, not very much surprisingly, become the best dyslexia predictors in that specific languages.

In fact, in deep languages phonology plays an important role in acquiring the writing system and its rules (and exceptions): thus, phonological awareness and decoding accuracy are the best predictors in that languages. Therefore, struggling readers make a lot of errors in decoding. Conversely, when phonological skills are less fundamental, namely in transparent languages, the best predictors of reading abilities become speed and, to some extent, text comprehension. Hence, in these shallow languages struggling readers are weak at reading fluently.

For example, Zoccolotti *et al.*'s research deals with the examination of four Italian dyslexics. Their findings point out that the major problem encountered by those boys was severe slowness and, in some cases, a text comprehension defi-

⁷ In the Japanese language there are two writing systems: *kana* and *kanji*. The former follows a syllabic setting, whereas the latter is similar to Chinese (logographic). When reading *kana*, brain area activation is similar to that used by readers of alphabetic writing systems; when reading *kanji*, neural circuits are similar to those involved in reading Chinese. Furthermore, researches have shown that words written in *kana* are more time-saving than those written in *kanji*.

cit⁸. In languages with a deep orthography if phonological word analysis is impaired, the most apparent symptom is the number of mistakes, whereas in more transparent orthographies the number of errors is smaller because phonological analysis works correctly, but dyslexics read very slowly (Zoccolotti, *et al.*, 1999).

Seymour, Aro and Erskine (2003) carried out a large-scale research across twelve European languages aiming at discover whether basic decoding skills develop differently (namely, more slowly and less effectively) in English than in the other languages, which vary significantly in terms of orthographic complexity.

The term “orthographic complexity” refers to syllabic complexity and orthographic depth.

Romance languages share a simpler syllabic structure (predominance of open CV⁹ syllables with few initial or final consonant clusters), while Germanic languages have several closed CVC syllables and complex consonant clusters.

Orthographic depth deals with grapheme/phoneme patterns, which have a one to one correspondence in the shallowest orthographies, while deep orthographies have inconsistent grapheme/phoneme correspondences, irregularities, context dependent rules and morphological effects (c.f. 1.3).

Seymour and colleagues created tasks that assessed accuracy and speed in: familiar word reading, simple non-word reading, writing to dictation and letter knowledge at the end of grade 1. Before this time limit the majority of children from most European countries could read accurately and fluently; exceptions were English, Portuguese and French.

With regard to accuracy and speed in letter knowledge tasks, there lacks evidence which confirms that complex syllable structure and orthographic depth delay reading skill acquisition, as all groups showed a high performance (90%).

On the other hand, when accuracy in very familiar word reading was assessed results changed: in consistent languages accuracy was about 90% at the end of grade 1, while English children delayed in achievement of that level (real words: 34% correct, non-words: 29%): they lag behind more than two years. This is attributed to orthographic depth.

Finally, non-word reading proved to be more correct for readers of languages with shallow orthographies and with a simple syllabic structure. English

⁸ Indeed, slow reading, even though accurate, can affect reading comprehension as reading is so laborious, effortful and slow that meanings are not captured.

⁹ ‘C’ stands for Consonant, whereas ‘V’ stands for Vowel. An open syllable is a syllable with only one vowel that occurs at the end of the syllable, whereas a closed syllable has only one vowel, but the syllable ends in a consonant.

readers' results demonstrate that these readers delay in establishing non-word decoding skills.

Authors' conclusions claim that the acquisition of foundation literacy skills does not parallel across languages: English is found to be the slowest¹⁰. In conclusion, these skills are sooner mastered by readers of languages with a shallow orthography and with a simple syllabic structure. Syllabic complexity effects especially emerge in simple non-word reading tasks. The effects of orthographic depth were evident both in familiar word reading and in simple non-word reading tasks.

Seymour and colleagues hypothesized that the shallower an orthography and the simpler the syllabic structure, the easier it is to learn to read that language.

In their research, Paulesu *et. al* (2001) compared three groups of dyslexics (whose mother tongue were Italian, English and French) with three control groups matched for language, age and IQ, but who were not affected by dyslexia. They found that the Italian dyslexic group read better in terms of accuracy than French and English dyslexics; however, Italian with dyslexia performed worse than their controls (Italian who do not suffer from reading disorders) in phonological tasks. Authors demonstrated that there exists a reduced activation in some brain areas of the left hemisphere¹¹ that constitute an unitary characteristic of this disorder in the three groups.

Paulesu and colleagues reported:

"Is dyslexia a disorder with a universal neuroanatomical basis, or is it a different disorder in shallow and deep orthographies? Our results are clear-cut. They show that dyslexia has a universal basis in the brain and can be characterized by the same neurocognitive deficit. Clearly, the manifestation in reading behavior is less severe in a shallow orthography. [...] Although Italian dyslexics read more accurately than French or English dyslexics, they showed the same degree of impairment on reading latencies and reading-related phonological tasks relative to their controls. We conclude that a phonological processing deficit is a universal problem in dyslexia and causes literacy problems in both shallow and deep orthographies. However, in languages with shallow orthography, such as Italian, the impact is less, and dyslexia has a more hidden existence. By

¹⁰ Costenaro (2011) reported that while Italian children are able to read most words after one year of schooling, English-speaking pupils need ten years to achieve an adult standard.

¹¹ Namely, differences occur among middle, inferior, and superior temporal cortex and in the middle occipital gyrus.

contrast, deep orthographies like that of English and French may aggravate the literacy impairments of otherwise mild cases of dyslexia.” (Paulesu, *et al.*, 2001, p. 2167)

This kind of neurocognitive hypotheses are not free from blame. For example, Hadzibeganovic *et al.* (2010) do not share the above-mentioned presumption (Paulesu, *et al.*, 2001) that all dyslexics share the same type of brain abnormality¹², with no regard to language orthographies, and share the same reading impairments. In fact, Hadzibeganovic *et al.* insist that different dyslexia subtypes occur even within a single orthography. Given that specific sound and print correlations belong to a given language, authors support the idea that these patterns result in brain circuits involved in reading which are subject to cross-linguistic variations.

Another interesting research was conducted by Landerl *et al.* (1997), who replicated a previous study by Wimmer and Goswami¹³. Landerl and colleagues investigated differences between German and English children with dyslexia and their peers without the disorder. Orthographic consistency was taken into account as being the core feature in performance variations. According to their view, it seems that orthographic depth has an effect on reading impairments in terms of nature and degree. The more an orthography is opaque, the more a child with phonological deficit will struggle to acquire how prints map onto speech.

One of the strengths in Landerl *et al.*'s paper lies in the fact that, since German and English share a common linguistic root, stimuli presented to subjects were similar in pronunciation and spelling¹⁴. They expected to find that grapheme/phoneme consistency would impact on phonological system in non-word reading tasks, leading to different performances. Outcomes show that English dyslexic children are affected by a more severe difficulty than German dyslexic children (in terms of speed and accuracy), above all in non-word reading tasks, as non-words require phonological decoding skills. Also German dyslexic children, compared to reading level controls, exhibited a below-standard performance in

¹² “It is not possible that these many different varieties of developmental dyslexia are all characterized by the same type of neural impairment. [...] the two papers [one by Paulesu *et al.*, the other one written by Silani *et al.*] assert that all individuals with dyslexia have a phonological deficit, which is not the case. There are examples in the literature where individuals with dyslexia did not show any phonological impairment” (Hadzibeganovic, *et al.*, 2010, p. 1314).

¹³ Wimmer and Goswami examined German and English children: the latter were poorer at non-word reading tasks. The number of errors indicates that German count on grapheme to phoneme conversion strategies, whereas English exploit direct lexical strategies for word recognition (Wimmer & Goswami, 1994).

¹⁴ For example, Lindgren *et al.* (1985) compared Italian and US children with dyslexia, highlighting that the latter was weaker at non-word reading than the former. However, according to Landerl and colleagues (1997) these data are controversial as non-word stimuli vary between the two orthographies.

non-word reading tasks. These differences between the two languages were also observed in normal reader control groups. This means that, in spite of the shallow orthography, German dyslexics' phonological impairment cannot be compensated.

Another replication of Wimmer and Goswami's study concerns Spanish and Portuguese children, whose accuracy in pseudo-word reading was similar to that of German children and better than the performance of English children in the aforementioned studies (Defior, *et al.*, 2002).

A similar study was carried out by Aro and Wimmer (2003), whose report brings out the fact that, by the end of the first year of schooling, German, Dutch, Swedish, French, Spanish and Finnish but English readers share almost perfect abilities in non-word reading (Widjaja & Winskel, 2004).

Various studies on normal reading development acquisition stress that deep orthographies weighs on struggling readers. Researches have demonstrated that Italian, German, Spanish and Turkish readers perform better in independent word recognition than English readers¹⁵. In these consistent orthographies there is little evidence for phonological recoding impairment (Rack, *et al.*, 1992). In a study conducted by Wimmer (1996), German dyslexic children appear to be suffering from a speed deficit when assessed in non-word reading tasks.

As these studies stressed, grapheme to phoneme patterns pose less of a problem in shallow orthographies¹⁶. An important feature in these languages consists on fluent reading rather than phonological accuracy.

Aro and Wimmer pinpoint:

"The present observations concerning pseudo-word and number word reading fluency [...] point towards various orthographic factors. One, of course, concerns how uniformly the letters of an orthography map onto speech sounds. This factor may have slowed down English children's reading of pseudo-words in addition to exerting an effect on accuracy. An orthographic factor, which may have negatively affected German children's reading fluency of pseudo-words, is the substantial number of complex graphemes (two letter graphemes, letters with diacritics)." (Aro & Wimmer, 2003, p. 630).

¹⁵ For more precise references on cross-linguistic researches see: (Landerl, *et al.*, 1997).

¹⁶ It is worthy of note Aro and Wimmer's finding on Finnish, the faster in their study. "The most impressive finding with regard to fluency is certainly the high reading speed of the Finnish children for both pseudo-words and words. [...] Apparently, even with a relatively high number of letters, the perfectly reliable association between letters and sounds is advantageous for accessing an existing pronunciation. Furthermore, reading instruction of the Finnish children is strictly phonic-based and they start school at a relatively older age. This triple advantage stands in stark contrast to the triple disadvantage of the English children." (Aro & Wimmer, 2003, p. 631).

With regard to its orthography, English has 26 letters and 44 phonemes. Conversely, Italian has 21 letters (26 if 5 letters of foreign origin, such as 'j', 'k', 'w', 'x', 'y', are taken into consideration) and 30 phonemes¹⁷. As reported by Butterworth & Tang (2004), Italian children have to learn 26 rules; pupils that learn to read and write English face with several hundred rules and a great number of irregularities.

The role that orthography plays in learning to read is important and it becomes more significant in case of reading impairments, as this quotation illustrates:

"[...] the orthography of the Hungarian language is highly transparent; therefore a high number of dyslexic students with good compensatory skills remain undiagnosed, and their reading disability only becomes apparent when they start learning foreign languages, especially English."
(Kormos, *et al.*, 2009, p. 118)

Obviously, the earlier an individual is diagnosed as dyslexic, the more efficient intervention programs (Nijakowska, 2010)¹⁸.

As emerged in this paragraph, many scholars agree that a writing system can influence the ways and the rate of learning to read. The firsts that have theorized this phenomenon are Katz and Frost (Frost, *et al.*, 1987; Katz & Frost, 1992). Their hypothesis asserts that differences in reading acquisition depend on orthographic depth of a given language and that transparent orthographies should be easier to read using word recognition processes than opaque orthographies. Furthermore, pupils learn to read a shallow language faster than an inconsistent one. Additionally, according to the authors, learners of deep languages use different strategies of reading at different stages of development.

In transparent orthographies reading is based on phonological processes and, following Coltheart's dual route model of reading (see 1.4), reading in these languages exploits the sub-lexical (phonological) route thanks to unambiguous grapheme to phoneme relations. On the contrary, in order to read deep orthographies readers have to rely on the lexical route (whole word recognition) as correspondences are unreliable and lead to incorrect pronunciation.

¹⁷ 21 consonant phonemes, 2 semi-consonants and 7 phonemes that represent vowels.

¹⁸ In her study, Sarkadi (2007) reported that undiagnosed dyslexic students whose special educational needs were not taken into consideration at school had negative experiences about language learning and had a negative language attitude.

Transparent languages appear to have an advantage as phonological demands are smaller in the early stages of reading and spelling. Nonetheless, even transparent languages may pose problems to weak readers. Smythe and Everatt say that problems encountered by Hungarian dyslexics, although their language is shallow, may be attributed to the fact that visual processing is weighted down by diacritical marks and auditory short-term memory is complicated by the fact that Hungarian is an agglutinative language¹⁹; they report this curious example: *diszlexiaveszélyeztetettség*, the Hungarian word for 'at risk of dyslexia' (Smythe & Everatt, 2000).

However, the point is not whether a language is better than another one; the main thing is that the majority of readers in all languages achieve high levels of accuracy, speed and automatization. Hence, the alphabetic writing system does not build a better brain, but "simply" a brain that is different from non-alphabetic script brain. Maybe one can wonder how easily a reader of different languages (alphabetic and non-alphabetic) can achieve fluent reading. Factors such as the number of symbols and phonemes, orthographic regularity, abstraction level and body movements have an influence in terms of efficiency and neural circuits, which in turn determine the ease of fluent reading acquisition. Thus, *kana* symbols are read sooner than *kanji* logograms by Japanese readers and readers of regular orthographies achieve fluency and efficiency earlier than readers of irregular orthographies.

		Orthographic depth				
		Shallow▶		Deep	
Syllabic structure	Simple	Finnish	Greek	Portuguese	French	
	↓		Italian			
	↓		Spanish			
	↓		German	Dutch	Danish	English
	↓		Norwegian	Swedish		
	Complex		Icelandic			

Table 2.2.1 Seymour et al.'s classification of European languages involved in their study

¹⁹ An agglutinative language is a language in which, given a word root, affixes and suffixes represent grammatical and syntactical information in a one-to-one relation. These affixes do not change form or become fused with others. An example from Hungarian: *haz* "house", *haz-ak* "houses", *haz-ban* "in the house", *haz-ak-ban* "in the houses".

The table above shows how Seymour and colleagues classified the languages involved in their research according to two parameters: syllabic complexities and orthographic depth (Seymour, *et al.*, 2003, p. 4):

With regard to the role of phonological and orthographic consistency, many studies have been examining grapheme to phoneme and, vice versa, phoneme to grapheme consistency.

In his study on English spelling and reading difficulties derived from factors such as word frequency, phonemic length and orthographic depth and complexity²⁰, Spencer (2007) gives some example on how language's orthography can be studied with regard to the direction of grapheme/phonemes correspondences: German and Greek are regular in reading (orthography-phonology), but more complex in spelling (phonology-orthography); English shows irregularities in both directions and, on the contrary, Finnish and Turkish are highly transparent in both spelling and reading. Diversely from deep languages, in shallow orthographies pronunciation can be predicted thanks to spelling and vice versa.

Spelling-sound inconsistency has an influence on visual word recognition. Words that are pronounced in a non-predictable way (like 'muscle', 'yacht', 'choir') are read more slowly than regularly spelt words (like 'bed' or 'spy'). Indeed, words that have a higher degree of regularity are read more quickly. The above-mentioned examples deal with spelling-to-sound direction. But also the other direction -from sound to spelling- can have ambiguities and delay naming and lexical decision tasks. For example, the rime /eɪl/ can be spelt as 'ail' ('mail') and as 'ale' ('male'); similarly, the rime /aɪt/ can be spelt as 'ight' ('sight') and as 'ite' ('site') (Borgwaldt, *et al.*, 2005).

In their research across some European languages (Dutch, English, French, German, Hungarian, and Italian) with regard to word-initial sound-to-spelling patterns, Borgwaldt *et al.* (2005) assert:

"[...] a (feedback) phoneme-to-letter entropy²¹ value is dependent on two factors, first the number of distinct spellings for the word-initial phoneme, and, second, the probability of each spelling. If a phoneme always corre-

²⁰ With regard to frequency, low-frequency words are read more slowly than high-frequency words, which, in some languages, are also read quite accurately. Length affects reading in terms of slowness and, sometimes, of accuracy (a long word is read more slowly and less accurately, especially by less-skilled readers). Another factor can enhance or delay reading: orthographic neighbourhood, which is the number of words that can be built by changing a single letter in a given word (for example: neighbours of 'pen' can be: 'hen', 'pin', 'pet'. The more orthographic neighbours, the more accurately and the faster the word will be read (Nijakowska, 2010).

²¹ Entropy is a measure of uncertainty or disorder, first applied in physics. In linguistics entropy is a measure for ambiguity.

sponds to one letter, then its entropy will be zero, as its spelling is completely predictable. The more alternative spellings a phoneme has, the higher its entropy value is. In addition to the number of different spellings, their relative frequencies contribute to the ensuing entropy value. If some of the spellings appear only very rarely, and if there is one truly dominant spelling, the entropy value is lower than in the case of all spellings occurring with approximately the same frequency." (Borgwaldt, *et al.*, 2005, p. 214)

According to their results, this level of transparency has not been achieved by any of the languages examined (with regard to word-initial phoneme-to-letter mappings). Outcomes demonstrate that French has the least predictable orthography; then follow, in descending order, English, German, Dutch, Italian, and Hungarian.

Above-cited and other researches have stemmed from the hypothesis by Stone, Vanhoy, and Van Orden (1997) on visual word recognition, which appears to be affected not only by the consistency of spelling-to-sound mappings (consistent pronunciation of orthography) but also by the consistency of the sound-to-spelling mappings (whether phonology is spelled consistently) (Ziegler & Petrova, 2008).

2.3 Phonological awareness and other predictors

In dyslexia definition it is clear that this type of disorder arises when the child has to learn to read. Hence, although it is closely related to written language acquisition, there exist some predictors which can allow experts to intervene and set specific helpful programs.

An amount of empirical evidence highlights the correlation between phonological abilities and skilful reading attainment. Both children and adults suffering from dyslexia demonstrate slowness and inadequateness in phonological coding tasks, as well as weak phonological representations (see also 1.3).

Specifically, a vast body of research has investigated whether phonological awareness is a language-specific feature or a general competence which can be shared and transferred across languages. A great number of studies²² support the assumption that phonological awareness is not a language-specific construct but

²² For a review see: Costenaro (2011), chapter 6 "Phonological Awareness across Languages".

is a universal competence that occurs in both alphabetic and non-alphabetic languages. More important, after being established in one's mother tongue, this skill can be transferred in an additional language.

Almost all scholars agree that phonological awareness is a necessary but not sufficient condition for reading and writing acquisition, as it has been demonstrated that some children have severe difficulties in reading although they have good phonological skills²³ (Trisciuzzi & Zappaterra in Simoneschi, 2010).

In pre-school years, in addition to phonological awareness, it is possible to spot other signs: spatial-temporal disorganization, memorization difficulty, spoken language delay. Teachers should pay attention to factors such as perceptive (visual and auditory), motor (fine-motor coordination), linguistic, attentive and mnemonic skills (Trisciuzzi & Zappaterra in Simoneschi, 2010). The best predictors, according to Trisciuzzi (Simoneschi, 2010), are familiar incidence and language retardation or deficit. If a child has difficulty in language acquisition, he or she is likely to have trouble acquiring written language.

According to Reid (1998), some skills are crucial in order to learn to read: phonemic knowledge, manipulation skills (segmenting and blending), grapheme-to-phoneme patterns, letter knowledge, word pattern recognition, visual memory.

Phonological awareness is one of the pivotal features in successful reading acquisition and an important part in language knowledge:

"A vast body of research [...] conducted in a variety of alphabetic languages has convincingly demonstrated that a powerful relationship exists between phonological awareness and literacy development. Indeed, a child's knowledge of phonological awareness has been described as the best single predictor of reading performance." (Costenaro, 2011, p. 62)

Literature has put stress on the correlation between phonological awareness and reading performance. In fact, explicit awareness of word phonological structure helps to link the spoken form to the written representation of a word. Studies investigating deficits in phonological awareness are one of the best demonstrations of the role that the phonological knowledge plays in reading.

Phonological knowledge means knowledge that each word of speech is constituted by discrete phonemes; this is fundamental to the acquisition of grapheme/phoneme correspondences, which in turn are important to learning to read.

²³ For further information see Iozzino, *et al.* (1998).

As already explained, phonological awareness consists on: i) the knowledge that spoken language is constituted by smaller units; ii) the capacity to perceive, distinguish, analyze and manipulate those units.

Phonological information is crucial in processing spoken and written language. Problems with phonological awareness imply that phonological information is not easily used in word recognition processes.

As already mentioned, phonological awareness has an unconscious form in young children, but requires a specific and explicit instruction to develop to the full extent²⁴. Reading acquisition is not as natural as it may appear to an expert reader, both on cognitive and linguistic point of view. It is widely acknowledged that we are not born to read, since we are biologically predisposed to spoken language (acquisition and processing), whereas we are not biologically predisposed to process written language. Unlike learning to read, spoken language is (usually) acquired by children in few years, thanks to exposition, without formal and explicit instruction and almost without using metalinguistic skills (Wolf, 2007; Costenaro, 2011).

Although they can get compensated thanks to instruction and practice, phonological deficits in dyslexics tend to persist over time, as demonstrated by numerous longitudinal researches and by researches on dyslexic adults.

As a strong and valid predictor of reading skills, phonological awareness in preschool children has been investigated in several languages, i.e., English, Swedish, Spanish, French, Italian, Russian²⁵.

According to some scholars it is possible that phonological and orthographic awareness develops as a function of salient aspects of one's mother tongue. Several studies have shown that:

"Phonological awareness may indeed function as a common underlying competence, but may also vary in rate and pattern of development in speakers of different alphabetic phonological systems, i.e., to some degree phonological awareness skills are language-specific and follow from children's familiarity with the oral forms in their particular L1." (Costenaro, 2011, p. 220).

²⁴ See the study on illiterate Portuguese, chapter 2.1. Furthermore, phonological awareness emerges in a developmental sequence, from syllables to phonemes.

²⁵ For specific references see Costenaro, 2011, p. 71.

The author reported researches conducted for Italian, Greek, Turkish, Spanish, Dutch, German, Portuguese.

Penge (Simoneschi, 2010) stresses that individual or social factors that are likely to increase dyslexia chances exist before specific learning disorder onset. She complains about the fact that there are no efficient tools that can measure and predict risk factors; additionally, developmental variability is huge and this makes it difficult to identify at-risk children. Indeed, some at-risk children do not develop specific learning disorders and, vice versa, some non at-risk children find themselves ill-at-ease in literacy acquisition.

Some risk factors cannot be modified, whereas others can be given explicit intervention programs in order to decrease their influence. It is important to stress that, even though dyslexia is a lifetime and chronic condition, specific interventions can modify the severity of the impairment, the ease of literacy acquisition and scholastic success, which in turn enhances self-esteem, that is typically low in students with learning disabilities (e.g. Stella, 2004; Nijakowska, 2010;) (see also 3.1).

Social-economical factors are related to social-economical level of parents²⁶, familiar incidence and education. Penge (Simoneschi, 2010) reported that if children have relatives with a specific learning disorder, there is a 400% probability of developing a disorder. Moreover, family is important due to two aspects: beyond genetic features, poor reading exposition and experience worsen the situation. If an individual is diagnosed as dyslexic, there has to be someone else, in the family, with the disorder (Wolf, 2007).

Wolf (2007) puts stress on environmental factors: one of the best predictors of reading skills is how often a story is read to a child. Indeed, children who have been listening to a great number of stories are much advantaged than children who have had no chance to listen a story. She reports a research conducted by Hart and Risley among American children: those who come from culturally disadvantaged contexts know 32 million words less than peers who live in culturally stimulating environment (Hart & Risley, 1995, 2003). Not only is it a quantitative divide, but it is also a qualitative gap: if you do not listen to a word, you miss the concept conveyed by that word; if you are not aware of some syntactic structures you will fail to understand connections among events; if you do not know tale forms you will be not so good at drawing inferences and predictions.

²⁶ Moats noticed that three-year-old children who live in poverty use less than half of words pronounced by their peers (Moats, 2001).

The more parents read to their child, the more lexicon he or she will acquire. Fairy-tales enhance the opportunities to expand and develop phonological, semantic, syntactic, morphological and pragmatic skills because they have specific structures and characteristics that do not fit spoken language. More important, stories allow children to develop conceptual features, comprehension strategies (the so-called expectancy grammar) and deduction skills.

According to Wolf, the two best predictors of reading skills are: sound awareness²⁷ and denomination speed (see chapter 1.5).

Prediction studies have been carried out in order to support the Linguistic Coding Differences Hypothesis (see chapter 2.5). In two experiments Sparks and colleagues found that native language skills (listening, speaking, reading, writing) are the best predictors to determine foreign language proficiency. Another reliable predictor was language aptitude measured by Carroll and Sapon's Modern Language Aptitude Test, which tests four abilities: phonetic coding, grammatical sensitivity, rote learning and inductive language learning ability (Sparks, *et al.*, 1995). In another study, the best predictors appeared to be the end of first-year grade in the foreign language (for oral and written proficiency) and foreign language word decoding, which directly measures phonological and orthographic features of the foreign language (hereafter, FL). Native language vocabulary skills were found to be good predictors in one experiment only (Sparks, *et al.*, 1997a).

2.3.1 Clarification on phonological awareness

In more regular orthographies phonological decoding is less demanding; therefore, it does not represent one of the strongest predictors for at-risk readers, which becomes the performance on naming-speed tasks (Wolf, *et al.*, 2000; de Jong & van der Leij, 2003). However, this is a controversial conclusion, as, on one hand, some studies have reported results that support this claim (e.g. Georgiou, *et al.*, 2008), but, on the other hand, others point out that RAN (Rapid Automated Naming) tests parallel across languages (Patel, *et al.*, 2004).

Ziegler and colleagues (2010) conducted a research that involved more than 1200 children coming from five different countries (Portugal, Finland, France, Hungary, The Netherlands). Contrarily to their expectations, they found that RAN was a weak feature in assessing reading development, as it influences reading

²⁷ Sound (phonological) awareness is strengthened by rhymes, alliterations, nursery rhymes, assonances and repetitions. Thanks to these devices children are able to discriminate words on a phonological basis.

and decoding speed but it is not affected by orthographic transparency. This is in contrast to outcomes coming from other studies which highlight the importance of RAN in transparent orthographies rather than in inconsistent ones.

Ziegler *et al.*'s findings on phonological awareness run as follows:

"[...] the strong claim that phonological awareness is the most important factor in all languages was not entirely confirmed, as it was the most important factor in only four of the five languages. The claim that phonological awareness is equally important in all languages [...] was not supported because the impact of phonological awareness on reading and decoding was systematically modulated by script entropy, with phonological awareness being more important in less transparent languages. Together, then, the results strongly support the weak claim that phonological awareness is important in all languages but that its impact is modulated by script entropy." (Ziegler, *et al.*, 2010, p. 556).

According to their view, reading predictors are relatively universal; however, orthographic consistency, which is a key component, plays a role in determining their precise impact.

Among predictors, phonological awareness, despite its important role, diminishes its importance in transparent languages. Ziegler *et al.* (2010) claim that phonological awareness and reading skills have a bidirectional link, as the former influences the latter and vice versa: if child's phonological awareness is strong when he or she begins to learn to read, they will be expected to reach high levels of competence in reading. At the same time, if that child has a high awareness of letters and sounds, he or she could easily construct grapheme/phoneme patterns, which in turn help reading in its decoding aspect.

Finally, Goswami has speculated that onset and rime awareness is a good predictor of reading skills in English, but not in Norwegian (Goswami, 1999). Thus, Helland and Kaasa (2005) conclude that onset and rime practice (that is not much used in Norway's schools) may be a good teaching method in order to teach English as a foreign language to Norwegian pupils. Similarly, also in Italy the onset and rime teaching method is not commonly used, as Costenaro explains:

"Instruction in Italian letter-sound correspondences has traditionally been syllabic [...]. This means that, while an English-speaking beginning reader would be typically taught letter-onset, letter-rime, and letter-syllable cor-

respondences, Italian-speaking peers would be primarily introduced to letter-syllable correspondences. The methodological consequence of the prominence of onset-rime awareness in English, when introducing Italian preschoolers to EFL [English as a foreign language], will be a special focus on the onset-rime unit." (Costenaro, 2011, p. 292)

In inconsistent orthographies onset and rime awareness proves to be fundamental in skilled reading. Readers should be able to recognize word common beginnings and endings, rimes, similar neighbourhoods and analogy in new words. However, as already stressed, onset-rime and phonological awareness does not predict reading attainment at the same extent in all languages (Nijakowska, 2010).

2.4 Differential dyslexia hypothesis

The nature of a language - and the skills needed to learn to read it - influence reading disorders. Dyslexics are expected to face fewer difficulties in more transparent orthographies than in deep ones (e.g. Nijakowska, 2010; Goswami, 2000).

Since the dyslexic impairment depends also on orthographic depth, is it possible to be dyslexic in one language and not in another one?

English has one of the deepest orthographies among alphabetic languages. Is it correct to assume that, for example, a Spanish individual finds him- or herself dyslexic only when he or she begins to learn English? Or it could be the contrary: an English reader finds out to be dyslexic in his or her mother tongue but not in Spanish.

According to Smythe and Everatt (2002; 2004), although relatively rare in literature, it is possible to be dyslexic in one language and not in a second one, as a given underlying weakness may cause difficulties in one of the languages that a dyslexic can speak. Nevertheless, the underlying cognitive deficits, e.g. short-term memory impairment, impact irrespectively of languages.

According to this hypothesis, dyslexia can acutely affect second language development than first language.

Proponents of this idea provide some studies as evidence. Firstly, Kline and Lee (1972) studied Chinese children who were learning to read and write in both

Chinese and English. Among their sample, some individuals have dyslexia difficulties in English but not in Chinese and vice versa.

Secondly, an interesting case study was conducted by Wydell & Butterworth (1999), who examined reading impairments in a bilingual boy (English-Japanese). His reading performance in (syllabic) *Kana* and (logographic) *Kanji* was equivalent to those of Japanese graduates, but his English reading and writing skills were poorer than his Japanese peers that start to learn English at 12 years old, even though his parents are English mother tongues and speak English at home. Authors found that there is a discrepancy between boy's ability to read and write in both languages; this dissociation allowed Wydell and Butterworth to claim that he was dyslexic in English but not in Japanese. They added that phonological processes may be organised differently for English and Japanese.

Finally, other evidence comes from a study by Miller-Guron and Lundberg (2000). In their research, some dyslexic adults who claim to prefer reading in English (L2) rather than in Swedish (L1) were tested in the two languages. Subjects read and wrote English better than their mother tongue, even though Swedish has a much more transparent orthography than English. Authors suggest that early reading instruction in transparent languages (such as Swedish) is often build on sounding out the words phoneme by phoneme (see chapter 2.3.1). Although this strategy proves valid for the majority of pupils of those languages, it may cause problems for students with weak phonological skills. Hence, these children may prefer deeper orthographies (where grapheme-phoneme patterns are not fundamental because of their inconsistency) and the use of orthographic structures to recognize words (as this way of reading is less phonologically demanding).

These abovementioned researches underline that different languages might require different levels of phonological awareness and have different cognitive demands. Additionally, they call into question the notion that dyslexic individuals, who have difficulties with their mother tongue, will encounter problems with foreign or second language acquisition (Costenaro, 2011; Smythe, 2004; Viskari, 2005).

Even if supported by a number of studies, this hypothesis on differential dyslexia has rise fair doubts. In fact, many scholars only accept a "soft version" of this framework, which asserts that a language can enhance individual's reading deficit but it is unlikely that one is dyslexic in a language and not in another one.

2.5 Linguistic Coding Deficit Hypothesis

In foreign language classrooms all over the world there are underachievers who struggle with foreign language acquisition.

In the 1960s, Pimsleur (Pimsleur, 1968; Pimsleur, *et al.*, 1964) has investigated poor foreign language learners and has concluded that the problems encountered by those students were brought about by sound-symbol difficulties and weak sound discrimination ("auditory ability"), rather than by lack of motivation and low intelligence²⁸. Dinklage (1971) asserted that some of Harvard students who were weak at foreign language learning had language difficulties similar to those that are characteristic of dyslexia: reading and spelling difficulties, letter or symbol reversals, sound confusion, problems with sound discrimination and weak verbal memory.

Since the 1980s, Sparks and colleagues have investigated foreign language learning difficulties in learners who exhibit native language problems. This group of FL underachievers is constituted both by learning disabled individuals and learners without apparent learning disabilities.

Sparks and Ganschow (1986) proposed an interesting explanation of the phenomenon that previous (and their) research has observed (Ganschow, *et al.*, 1998); their framework is known as **Linguistic Coding Differences Hypothesis** (LCDH) (Sparks & Ganschow, 1991). According to authors, difficulties in foreign language learning might be caused by difficulties in native language skills, mainly phonological/orthographic, syntactic and semantic competence. That is, an individual who struggles with their mother tongue is likely to encounter problems in foreign language learning, as these skills are transposed when learning an additional language. Difficulties in one's L1 might be evident as well as subtle. The more serious the difficulties in the L1 (phonological, orthographic, syntactic and semantic), the more the L2 or the FL will be affected. This has been confirmed by several and further researches (e.g. Ganschow, *et al.*, 1998; Sparks, *et al.*, 1995; 1997a, 2006).

Hence, according to this point of view, native language skills are the basis and the predictors of foreign language learning achievement. Therefore, students who well master a foreign language have been found to have strong native language skills and a great foreign language aptitude (Ganschow, *et al.*, 1992;

²⁸ In their research, Ganschow and Sparks found that similar IQ was exhibited by good and poor foreign language learners; moreover, lack of motivation and weak attitude were consequences rather than causes of foreign language difficulties.

1998). In addition, authors speculate that phonology and orthography of a foreign language represent the harshest aspects in learning an additional language in the majority of underachievers (Ganschow, *et al.*, 1998; Sparks & Ganschow, 1991).

In Gajar's study (1987), students with learning disabilities were compared to peers without diagnosis of specific learning disorders on FL aptitude, measured by MLAT, which is the Modern Language Aptitude Test (Carrol & Sapon, 1959). The former showed a lower performance on tasks that assess auditory comprehension, sound-symbol association, vocabulary, word visual memory and grammar structure sensitivity.

The development of FL abilities can enhance the parallel skill development in the L1; however, this can happen if the learner has a good level of proficiency in the FL (e.g. Nijakowska, 2010; Wolf, 2007).

Since Sparks and colleagues have conducted several interesting investigations in this field, only the most significant studies will be reported.

In a study by Sparks and colleagues, problems in foreign language learning encountered by secondary and post-secondary students were attributed to the possibility of pre-existing difficulties in phonological and orthographic components. Even though these difficulties get compensated in native language, they re-emerge as fundamental and have to be re-set when these pupils have to learn a new language (Sparks, *et al.*, 1995).

In other researches conducted across secondary and post-secondary poor FL students with and without learning disabilities, Sparks and colleagues spotted that there were not great differences between the group of students with learning disabilities and the group without learning disabilities with regard to cognitive, native language and foreign language aptitude measures (Sparks, *et al.*, 1998c).

According to Sparks, scientific research gives evidence that learning disabilities are not reliable predictors for the ease of foreign language acquisition (Sparks, 2006), as in their studies many participants without learning disabilities find it hard to learn a foreign language (Ganschow, *et al.*, 1998) and students with diagnosed learning disabilities not always failed in FL requirements (Sparks, *et al.*, 2003).

Native language skills have a direct impact on a second language, which leans on mother tongue abilities. As a consequence, learners with poor or impaired native language competences are likely to find it hard to learn an additional language as linguistic factors are principal causal determinants for proficiency in a

FL. This does not entail that students with weak native language skills cannot master a foreign language (Ganschow, *et al.*, 1998).

In another study, intelligence, foreign language aptitude, native oral and written language, and math were measured. Subjects were successful and unsuccessful college foreign language learners. The formers exhibited stronger native language skills (phonological, orthographic and syntactic, but not semantic skills), performed better at written and oral language tests and showed a greater foreign language aptitude than unsuccessful learners. However, the two groups did not differ very much on intelligence and reading comprehension measures. The linguistic fields in which unsuccessful learners were poorest were syntax and phonology (Ganschow, *et al.*, 1991).

In another Sparks *et al.*'s study, outcomes demonstrated that strong connections exist between native language competence (listening comprehension, reading, spelling, receptive vocabulary) and second language learning and aptitude. IQ measures showed that intelligence is not a valid predictor for FL achievement. Authors added that instruction in phonological and orthographic features of the L1 are likely to form a strong basis for future FL acquisition (Sparks, *et al.*, 2006). Several preceding studies showed similar outcomes (Sparks, *et al.*, 1992a; 1992b).

Summing up, Foreign language difficulties (aptitude, achievement, proficiency) encountered by students with and without learning disability diagnosis can be attributed to poor native language skills (Sparks, 2006). For students diagnosed as learning disabled and for students who are not ascertained as learning disabled learning a new system with new sounds and symbols may be very demanding, as their difficulties in the L1 system have repercussions on additional language learning. Consequently, teaching a foreign language to dyslexic students is a challenge that teachers of today should be able to meet. Scholars claim that tests on both L1 and L2 skills (with regard to their several components, such as phonological awareness, native and additional language aptitude, orthographic measures, spelling, pseudo-word reading) are pivotal in order to assess difficulties in both languages (Nijakowska, 2010).

3 Foreign language teaching to pupils with dyslexia

«Exams were the worse. Couldn't understand questions therefore couldn't answer and when I did know the answer I couldn't write the answer down.»

Cole Janis, Embracing dyslexia

As it appears evident in the former chapters, individuals with dyslexia are likely to encounter problems in foreign language acquisition, primarily due to their native language impaired skills, as well demonstrated by Sparks and colleagues in several papers (e.g. Sparks, 2006; Sparks & Ganschow, 1991; Ganschow, *et al.*, 1991).

Teachers who have –or think they have– students with dyslexia in their classrooms do not have to surrender to the difficulties that these pupils are likely to encounter, neither have they to abandon their students. As teachers, they have a mission, that is teaching.

Dyslexic foreign language learners are not impossible to teach, they are not stubborn or lazy, nor are they less intelligent than non-dyslexics. They simply need more time and effort from both sides: from themselves and from instructors. It is teachers' job to find out strategies that are the most effective, effortless and useful for that specific students.

Sometimes teachers do create problems: they require dyslexic pupils to learn at the same pace and with the same methods as their unimpaired peers, not taking into consideration that the normal learning "pathways" and channels are affected by the deficit. Educators should schedule attainable goals based on pupil's profile.

Several dyslexics have reported their disastrous experiences at school: humiliation, failure, low self-esteem, pain, fear and other negative feelings¹.

One of the objectives of teaching is to ease and favour pupils' learning, regardless to deficits of any origin, as every person has the right to learn. Educators should bear in mind that if someone does not learn, it is not always his or her fault: maybe, also the teacher is not using the appropriate method.

That being stated, next pages are dedicated to good teaching practice.

¹ In one of her non-fiction novels, Hayden (1981) describes a girl who was not able to learn to read and write due to a trauma caused by her father. Her teacher repeatedly forced her to read aloud in class and one time she felt so sick that she vomited. Although her reading impairment does not mirror dyslexia features (particularly with respect to the cause of the inability to read and write), the humiliation can be the same.

3.1 Foreign language affective variables

What does FL teaching involve? There are many competences and contents in a foreign language syllabus. It is like a cube with its several faces. Indeed, the field of language education is a result of contributes from other fields, such as psychology, psycholinguistics, pedagogy, language sciences.

Of course linguistic aspects stand out: learning a FL entails competence in listening comprehension, speaking, reading comprehension and writing; grammar (phonology, syntax, morphology); vocabulary.

Furthermore, there are some features that do not fall into the linguistic category: teaching a language automatically means teaching, or better, handing down, a culture. This aspect is sometimes forgotten as, for example, in English teaching, which often becomes a *lingua franca*, omitting to make pupils aware of its culture.

Other skills involved in FL learning are socio- and pragmatic skills. As stressed by Kormos and Smith, “[...] it is not enough to have [...] declarative knowledge of the language, but we have to be able to use this knowledge appropriately in the given context.” (Kormos & Smith, 2012, p. 61). Additionally, the learner of a foreign language should master an extra-linguistic proficiency.

According to Bachman and Palmer (1996), language competence is constituted by textual and grammatical competence, which in turn consists of syntax, vocabulary, phonology and orthography.

Among the other types of specific learning disabilities, such as dyscalculia or dyspraxia, dyslexia is the most hindering as its impairments in key components of language learning are very debilitating: phonological short-term memory difficulty, slow and inaccurate word recognition, phonological awareness difficulty (Kormos & Smith, 2012).

Summing up the linguistic difficulties which may hamper dyslexics’ linguistic career, the most experienced are: poor phonological processing; grapheme-to-phoneme conversions; word recognition; reading speed; spelling; vocabulary; word retrieval; auditory discrimination; (phonological) short-term memory; slow speed of processing; automacity; articulation (Schneider & Crombie, 2003; Kormos & Smith, 2012).

Many teachers and educators are convinced that, since the areas that are most impaired by dyslexia are reading and writing, pupils with dyslexia will have

no difficulties in speaking and oral comprehension² (Schneider & Crombie, 2003). Light should be shed on this misconception. Perceiving and producing oral language are tasks that are not independent from phonological skills as they rely on sound-discrimination abilities (e.g. Kormos & Smith, 2012). As phonological processing is impaired also in speech, in terms of accuracy and speed, the oral performance of individuals with dyslexia might be overestimated. Additionally, in several cases, also the phonological short-term memory is not as capable as in non-dyslexics (Fletcher, *et al.*, 2007).

With respect to FL learning, as reported by Krashen (1982), research has spotted several affective variables that influence FL acquisition. Krashen divided them into three categories: i. **motivation**³, ii. **self-confidence**, iii. **anxiety**.

i. **Motivation**

If the student –with or without dyslexia- has a strong and integrative motivation⁴ and exhibits high levels of self-esteem, he or she is likely to face FL success. Of course negative experiences (like failure) can negatively affect FL motivation⁵.

The lack of motivation is often advocated by teachers as the cause of FL failure; as underlined by Ganschow, Sparks and colleagues (Ganschow, *et al.*, 1998; Sparks, *et al.*, 1998b), it is the linguistic difficulties that bring about low level of motivation, sense of frustration or anxiety and negative attitude as well. Moreover, as stated by Daloiso (2012), it is not in dyslexics' nature to be demotivated.

Teachers play a fundamental role in motivating students, for example with tasks that arise their interests: "The help, support and care shown by teachers has a motivating effect on students." (Cubukcu, 2007, p. 138)

With regard to motivational conditions, outcomes of Kormos *et al.*'s (2009) study demonstrates that supportive atmosphere, special attention, methods of assessment and teaching were the most important factors.

ii. **Self-confidence**

Dyslexic students often think they will be not able to success and this

² The speech difficulties are considered function integration problems rather than a language disorder (Stella, 2004).

³ For more information about the role of motivation cf. Dörnyei (2001).

⁴ Integrative motivation deals with the desire to be like speakers of the foreign language studied.

⁵ Kormos *et al.* (2009) investigated 15 students with dyslexia, who confirmed that motivational teaching strategies are very important in teaching a FL to dyslexics. According to the study, when the teacher does not (or refuses to) care about dyslexia's problems, basic motivational conditions are unlikely to be established.

sense of frustration leads to low-level of self-confidence. Positive feedbacks highlight their strengths rather than their weaknesses and increase their self-esteem.

Maintaining one's "face" in front of peers is fundamental, as well as gaining one's confidence thanks to tasks that are feasible. Students with dyslexia tend to think that they are the cause of their fiasco and blame themselves for their failures; additionally they may exhibit a distorted self-perception (Daloiso, 2012).

iii. **Anxiety**

Many pupils dyslexia exhibit high levels of anxiety and stress when they attend foreign language classes or have to fulfil FL tasks⁶ (e.g.: Kormos, *et al.*, 2009; Sparks & Ganschow, 1991). For instance, in a study conducted by Sparks and colleagues, students were grouped according to the level of foreign language anxiety (high, average, low). The three groups showed great differences in oral and written FL proficiency: learners with a low-level of FL anxiety, strong skills in the L1 and great aptitude in the FL are the ones who exhibited highest levels of FL proficiency (Sparks, *et al.*, 1997c).

Language learning anxiety is a situation-specific factor, hence it arises in certain situations only. For instance, when pupils are asked to complete an oral task in front of their peers anxiety can affect their performance, but it may negatively influence the working memory capacity as well, and the vocabulary learning (MacIntyre & Gardner, 1994). Moreover, the ability to take in, process and retrieve information can be subject to anxiety effects⁷. The three major areas on which language anxiety impinges are: communication; test (fear of failure); (negative) evaluation by both teacher and peers (Cubukcu, 2007).

In Piechurska-Kuciel (2008) research, findings show that dyslexic students exhibit higher level of anxiety than non-dyslexic students in a foreign language learning context.

In her research across university students learning a foreign language, Cubukcu (2007) found that the factors that make learners most anxious

⁶ This is what a learner says: "Before the lessons I always look for the teacher in the corridor. I always hope that she won't come. The other thing that I always check is whether she has brought some tests with her." (Sarkadi, 2007, p. 191)

⁷ "Anxiety makes learners unreceptive to language input" (Cubukcu, 2007, p. 134).

are: tests (16%), presenting before the class, making mistakes, losing face in front of the class, inability to express oneself, failing, teacher's behaviour, and fear of living up to standard expectations (9%).

In his response to the LCDH hypothesis with regard to the restricted role of anxiety in language learning, MacIntyre (1995) asserts that learning a language requires encoding, storage, and retrieval. Each of these processes might be affected by language anxiety due to a "divided attention scenario" (MacIntyre, 1995, p. 96) since they concentrate both on the task to be completed and on their feelings.⁸

Furthermore, research has shown that dyslexia often correlate with emotional problems (e.g. Boetsch, *et al.*, 1996; Alexander-Passe, 2010), which may become severe. One of these is depression:

"Research indicates that as many as 20 percent of children with dyslexia also suffer from depression and another 20 percent suffer from an anxiety disorder [...]. The majority of dyslexic children do not have an emotional disorder, but these children are more at risk than typical learners." (Ryan, 2004)⁹

Krashen (1982) hypothesized the existence of an affective filter, which, if it is strong, inhibits foreign language acquisition as the filter prevents the so-called language acquisition device¹⁰ from being reached by the input. Situations that do not increase filter levels are the best ones in which learning and acquisition are possible and effective also in the long run. As Krashen says:

"[...] comprehensible input and the strength of the filter are the true causes of second language acquisition. Other variables may relate to second language success [...] but in all cases in which language *acquisition* is attained, analysis will reveal that the relationship can better be explained in terms of comprehensible input plus filter level." (Krashen, 1982. Internet edition July 2009, p. 33)

⁸ Tobias (1986) has created a model which describes the effects of anxiety on input, processing, and output. In short, as far as input is concerned, if it is said too fast or if it is written in complex sentences, difficulties are likely to increase. On the other hand, anxiety affects cognitive processing when tasks are difficult, reliant on memory and poorly organized. Finally, organization and speed of the output might feel the effects of anxiety (MacIntyre & Gardner, 1994).

⁹ Data are taken by Willcutt & Gaffney-Brown (2004).

¹⁰ This device is postulated by Noam Chomsky (e.g. Chomsky, 1965).

In the very beginning of their carrier as FL learners, dyslexics are likely to experience difficulties¹¹, from mild to severe. To facilitate their learning and to impede the “trigger” of the filter, it is advisable to set activities which do not undermine students’ self-perception and that do not create anxiety. Sense of success, positive feedbacks and awareness of one’s progresses are some of the aspects that can increase motivation and, in turn, performance.

Pointedly, the more the dyslexic pupil is given support, the more he or she is likely to overcome affective and emotional problems.

3.2 Teaching/teacher behaviour

“This failure and the way her English teacher reacted to her problems had a destructive effect on her attitude to language learning.”. This quotation is taken from Sarkadi (2007; p. 188); it is perfect for showing how teachers’ behaviour conditions FL performance of students with dyslexia, and, of course, of students without learning disabilities (Kormos & Smith, 2012).

According to the National Reading Panel (2000), there are some crucial issues that are related to reading instruction success: i. alphabetics, ii. fluency, iii. comprehension, iv. teacher education, v. reading instruction, vi. computer technology (Giess, 2005).

It is worthy stressing that dyslexics are not impossible to teach, they simply have a different style of learning. Teachers should take it into consideration and exploit *that* style. Therefore, educators should allow pupils to learn thanks to the way they prefer, without modifying the contents of the syllabus.

Among other qualities that describe a good teacher, there is one that is fundamental: flexibility (Schneider & Crombie, 2003). The instructor should be prone to change their mentality, their methods and should keep up-to-date with scientific progress in his or her field. If a technique seems inappropriate or does not work efficiently, then the teacher should be able to note that and to think about alternative techniques that can better suit pupils’ needs.

Very often it seems that educators are afraid of modifying the way they teach. Of course it is not as simple as it appears, but it is worthy trying.

¹¹ Cornoldi (1994) stresses that the majority of emotional and motivational difficulties that are connected with learning are consequences of specific learning disabilities. He adds that it is almost impossible that a pupil who suffers from a specific learning disability does not go through particular emotional and affective experiences due to their disability.

Refusing to modify methodologies and teaching techniques when a dyslexic learner is in the classroom can lead to miss that student and his or her possibilities. Not setting specific intervention programs means that the student is not allowed to improve their strengths and achieve proficiency through other ways.

Teachers can help learners with dyslexia by modifying the environment of the classroom (furniture, light, temperature), by adapting the teaching materials and contents, tasks and assessment¹².

Moreover, teachers should treat all students differently, rather than in the same way, allowing them to learn at their own pace and according to their own learning style. This is called 'differentiation' and deals with tasks, assessment and expectations.

By and large, the teacher is expected to create a non-threatening and positive learning environment, in which collaboration and support are enhanced, self-esteem is encouraged and where there is no room for anxiety.

Teachers' personality and teaching styles are crucial, along with knowledge about dyslexic difficulties and emotional problems and along with openness to fulfil students' needs (Schneider & Crombie, 2003).

The interview study conducted by Kormos *et al.* (2009) is very helpful in showing the importance of teacher's behaviour: no problems were encountered by participants who study in schools specialized in learning disabilities, as teachers were aware of the nature of the problem; positive attitude was demonstrated when dyslexia was accepted by teachers; teacher enthusiasm, support, motivating materials, clarity in explanations and presentation, appropriate pace and assessment accommodations were features that participants valued in a great positive way. The study also demonstrated that individuals with dyslexia are very sensitive to good teaching. During the interviews, it emerged that a great number of participants had positively valued private tutors of FL as these tutors were sensitive to their pupils in terms of attention, rhythm of learning and progress. Furthermore, some interviewees that had a good teacher, claimed that having an effective teacher enhances their attitude to FLs and their self-perceived progress. Finally, according to participants' view, the factor which is most influent in determining positive or negative FL learning experience is teachers' attitude towards dyslexia.

¹² Accommodations and teaching advice are treated in detail in the next chapter, 3.3.

Negative teachers' behaviour or disposition to give special educational attention to pupils who suffer from dyslexia might worsen negative experiences, such as anxiety and failure.

Summing up, achievement in FL learning does not only depend on the learner but also on the teacher, to the extent that the FL educator adapts the teaching to the learners, since it is his or her responsibility to alter the curriculum in order to match different skill levels.

3.3 Overcoming difficulties: useful teaching techniques

Some of traditional teaching methods are doomed to fail when it comes to dyslexic learners, as they are very different from the ideal learner, who makes progress thanks to exposure, without explicit explanations, who recognizes language patterns and remembers rules, who speaks fluently and who has a good pronunciation (Tánczos, *et al.*, 2011).

The teaching techniques that are to be dealt with in this chapter will be presented according to the areas of difficulties in which they are most effective.

As explained in the previous chapters, FL learners with dyslexia are very likely to have: low-level of self-esteem; lack of motivation; classroom anxiety; reduced pace of learning; poor concentration; automatization difficulty; short-term memory disadvantage; weaknesses in vocabulary acquisition; difficulties in recognizing grammar rules; difficulties in listening, reading, writing and speaking tasks.

Finally, teaching accommodations towards special educational need pupils cover all aspects of foreign language learning, e.g. environment (furniture and light of the classroom); learning materials (structure, contents and layout); curriculum (rhythm, lesson and activity structure, tasks); communication (instruction and feedbacks); testing and assessment (time management during tests, the use of a scribe or a reader, test strategy teaching, evaluation criteria); technology (Kormos & Smith, 2012).

3.3.1 Self-esteem

As far as self-esteem (chapter 3.1) is concerned, teachers should avoid tasks that are too much demanding and challenging. Unfeasible tasks, as well as failure, are enemies of self-confidence. Assigning exercises that can be successfully fulfilled by pupils is a good strategy, along with highlighting learners'

strengths ('can dos') rather than weaknesses ('cannots'). Self-esteem is built when the individual is aware of his or her potential and is at ease in the learning environment, which is a place in which anxiety and stress are not contemplated. On the contrary, progresses and commitment are taken into consideration.

Another feature that can make self-esteem go down is making mistakes. Although it is absolutely inevitable that a foreign language learner make errors while speaking or writing, pupils with dyslexia are likely to make a lot of mistakes in writing tasks most. Hence, it is essential to set clear evaluation criteria, but also to not take into consideration spelling errors and, more important, to help students in organizing an essay, a composition or an article. In Kormos, *et al.* (2009) an interviewee asserts to be more relieved ("butterflies in the stomach", see also chapter 3.5.2) as his teacher did not assess spelling and this accommodation helped him to do better. Obviously, the awareness that every learner makes mistakes might play down the role of errors. Evaluation is a delicate issue of the learning process; it is focused in chapter 3.5.

In self-confidence establishment, two features play a vital role: teacher feedbacks and evaluation. Positive – but honest – and constructive feedbacks on how to do better are essential, as they show the learner what their strengths are and what areas need to be reviewed.

3.3.2 Motivation

Motivation (see also 3.1) is a key feature in learning and in foreign language learning as well.

Sense of success is extremely motivating (Kormos & Smith, 2012), thus carrying out a number of exercises that are attainable and apt is fundamental. Hence, the level of difficulty has to be commensurated with the competence level of the learner. On the contrary, inborn curiosity and motivation diminish as long as the pupil faces failure.

All in all, lessons and tasks should be motivating: they should match pupils' age and interests, in order to arise learner's curiosity. In other words, they should be relevant.

With regard to motivation in second language acquisition, according to Schumann's models of "stimulus appraisal" (Schumann, 1999; Schumann, *et al.*, 2004), the brain evaluates ("appraise") whether to take in the stimuli (in this

case, the FL input). The stimulus appraisal deals with motivational and emotional relevance of the stimulus, which is measured according to five criteria:

- i. Novelty: whether the stimulus is new or it is experienced before;
- ii. Pleasantness: whether the stimulus is attractive and enjoyable;
- iii. Goal relevance: whether the stimulus is relevant to and useful for ones' needs;
- iv. Coping potential: whether the stimulus is appropriate to one's competence;
- v. Self and social compatibility: whether the stimulus enhances one's self-esteem or whether it undermines one's public "face".

Neuro-biological evidence in his studies suggests that emotions have a pivotal role in learning: for example, the amygdale is involved in novelty and pleasantness assessment, whereas the orbito-frontal cortex participates in appraisals of goal relevance, coping potential and self and social image (Schumann, 1999; Schumann, *et al.*, 2004).

The abovementioned criteria are useful in establishing whether a task or a lesson is motivating or not. However, in the case of dyslexic students there are several clarifications to be covered. Firstly, with regard to novelty, many dyslexics find it hard to connect pre-established knowledge and new information. Hence, when presenting new materials, make it clear how they can be linked to pre-existing knowledge. Furthermore, new information (e.g. rules) should be taught explicitly, hence pupils with dyslexia have difficulties in deducing on their own rules, patterns and mechanisms from the input (e.g. Kormos & Smith, 2012). Additionally, lessons built on novelty (e.g. based on surprise, new experiences, unexpectedness) are more attracting. However, pupils with dyslexia benefit from classroom routines, which, in fact, might be boring, but increase confidence. Hence, the FL educator should balance these two parameters, novelty and routine. A suggestion is to create two moments: one at the beginning of the lesson, in which occurs the presentation of topics and activities that will be covered; the other one at the end of the class, in which the teacher and the students sum up what has been achieved.

Novelty and variety of teaching techniques and materials might confuse the dyslexic learner, who does not recognize the objectives, the contents and work

phases. Orderliness is very important, as well as frequent summaries (Daloiso, 2012).

Secondly, attractiveness can be misleading: the graphic aspect of teaching materials is very important: too many items and types of items per page are often confusing. Clear and well-organized materials are preferable.

With regard to the other parameters, goal relevance, copying potential and self and social compatibility see chapter 3.3.1.

3.3.3 Anxiety

Anxiety effects can be dramatic as they interfere in dyslexics' life with regard to cognitive, academic, social and personal aspects.

As regards foreign language learning, the lesson should be enjoyable and anxiety-free for all learners. Thus, it is of high importance that the teacher avoids unfeasible tasks. For example, speaking in a foreign language is a task that might aggravate pupils' anxiety, above all in the first stages of learning and if the activity is impromptu and not well-structured. Daloiso (2012) suggests the use of "prompts"¹³, which can be helpful tools as they help struggling learners to remember key words (e.g. thanks to images), to build the structure of the speech production (e.g. suggesting what to say in order to do something) and to recall the linguistic structures.

Anxiety mainly emerges in test taking as pupils "play for high stakes", that is grades. Test and evaluation topics will be covered in chapter 3.5.

3.3.4 Reduced pace of learning

In their interview study, Kormos *et al.* (2009) reported that some interviewees preferred to learn a foreign language with private tutors, as these ones followed their rhythms, whereas, when these participants attended classes at school without the support of the private tutor, they lagged behind their peers and felt to be abandoned.

Since dyslexic pupils have a reduced pace of learning (e.g. Kormos & Smith, 2012), the FL educator may organize materials so that the fundamental materials can be acquired in the fixed time and the other materials is the objec-

¹³ A model of prompt is available at <http://www.utetuniversita.it/catalogo/scienze-umane-e-sociali/lingue-straniere-e-dislessia-evolutiva-3459/risorse-web/daloiso-lingue-straniere-dislessia-evolutiva-68>

tive of self-study (overlearning plays an important role in FL learning; indeed, it is a core feature in the MSL approach, see 3.4). Input and materials given at a slower pace and in logical chunks are better processed and remembered by those learners.

In the survey conducted for this paper, learning slowness turns out to be the third most encountered problem according to respondents (c.f. 6.9.2.1).

3.3.5 Poor concentration

Individuals with dyslexia often exhibit a shorter concentration span (see 1.5). This is a debilitating impairment, especially when pupils are older and the level of concentration required increases.

For instance, Schneider and Chrombie (2003) suggest alternating the types of activities (writing, speaking, listening and reading tasks). Moreover, the task should require 15 minutes maximum of workload. Authors also recommend agreeing with the dyslexic student on an activity that helps to recharge concentration (such as a stressball).

Concentration and attention are fundamental prerequisites in order to process the input and learn linguistic materials. Due to this problem, repeated exposure may be needed (Schneider & Crombie, 2003). Furthermore, a useful aid is dividing the lesson into clear chunks, so that the learner does not get confused and can focus on an issue per time.

Additionally, because of the lack of reading processing automaticity (see also the following paragraph, 3.3.6), dyslexics are prone to use high levels of attention and energies during reading tasks and this means they are likely to get tired sooner than their peers. Thus, too much attention-consuming activities should be avoided, as loss of concentration may derive from loss of energies.

3.3.6 Automatization

Automatization is extremely important in human behaviour and learning, because if one task or activity (e.g. reading, driving, riding a bike) becomes automatized the load of concentration required for that task diminishes and the individual can focus on other activities (Nicoletti & Rumiati, 2006).

The less an activity is automatized, the more expenditure of energy. This proves true for foreign languages as well, e.g. in rule application (the '-s' to form the third singular person in English), in sentence formation (the question form), in category formation (in Italian almost all the nouns which end in '-o' are masculine). Several learners automatize the application of rules, even though they are not able to explain why they have said or written something ("gut feeling", Kormos & Smith, 2012, p. 121. See also chapter 6.3).

The cerebellar deficit hypothesis (cf. 1.5) connects the problems of dyslexia to an automatization deficit. As the cerebellum is involved in several motor tasks it appears plausible that this area is implicated also in language tasks, reading included. Hence, skill automatization is very demanding and effortful for dyslexics, in spite of practice, age and intelligence. This lack of automatization capacity has dramatic effects on the learning process, as it entails a high level of attention and energies for completing tasks that are easily fulfilled by unimpaired peers.

In conclusion, the important consequence is that, since automatization is not achieved, they spend a lot of time and concentration doing tasks that appear easy and effortless. Given a skill, if a child without dyslexia spends 100 hours in order to master it, a dyslexic child is likely to spend ten times this amount of hours (Nijakowska, 2010).

Since reading is one of the most apparent impairments in dyslexia, an instruction which is characterized by long-term and explicit teaching (see also 3.4) in grapheme-to-phoneme patterns and which focuses on phonological awareness is highly recommended (c.f. 2.3) as it can facilitate the automatization of reading (Nicolson & Fawcett, 2001).

Additionally, with regard to speech production, the L1 is far more automatic than L2 speech, as, when speaking a foreign language, speakers have to pay attention not only to the content of the message, but also to linguistic aspects that in the mother tongue are automatic: grammar, syntax, morphology, phonology.

Also in this case, overlearning may be helpful, as it gives the opportunity to practice extensively a linguistic structure or concept.

3.3.7 Short-term memory disadvantage

Memory plays a crucial role in verbal information storage. Due to short-term memory disadvantage, difficulties in the storage and in the retrieval of new infor-

mation may arise. In addition, vocabulary memorization might not function effectively.

Short-term memory difficulties can be auditory as well as phonological. In the first case, a slower speed of oral input and information presentation can partially resolve the problem. In the second case, teachers do not have to expect dyslexic learners to gather information thanks to exposure without explicit instruction. For instance, English dyslexics might fail to recognize that 'oy' in English is pronounced as 'eu' in German (Schneider & Crombie, 2003). Accordingly, language information should be taught repeatedly.

In oral and written tasks, pupils may take advantage of tables, maps and outlines which aid the learner to recall linguistic data that are useful in order to fulfil that specific task (c.f. 3.3.3).

3.3.8 Vocabulary acquisition

What does memorizing new words entail? Generally, phonological and spelling information; knowledge of the meaning; grammatical information. Last, but not least, knowledge of idiomatic and pragmatic uses is important.

Since the phonological short-term memory of students with dyslexia is less efficient in terms of "storage capacity" than that of students without dyslexia, dyslexic pupils struggle to learn vocabulary items (e.g. Kormos & Smith, 2012; Nijakowska, 2010).

Usually, children with specific learning disabilities exhibit a smaller vocabulary also in their mother tongue (Fletcher, *et al.*, 2007). With regard to an additional language, they have to learn new words that do not correspond to L1 phonological rules and have to remember the order of word sounds. If correspondences between prints and speech are not regular (like in English), difficulties will increase.

Knowing what there is inside a word makes reading that word easier (Wolf, 2007). For example, "unpredictable" is constituted by the prefix 'un-' (meaning negative, lack, opposite), the verb 'predict' and the adjective suffix '-able' (meaning able to be, subject to or having the quality to). Furthermore, focusing on the suffix, it comes from '-able' (French) that in turn comes from 'abilis' (Latin). Teaching a foreign language should also involve explicit instruction in word formation and word families.

Additionally, also the retrieval of words can be impaired, as learners with dyslexia often mix up word sound order, similar sounding words and similar meaning words. A sound advice is avoid teaching similar sounds in the same session and avoid teaching words that may confuse the learner in the same lesson: for example, the couples "hot-cold" can be confusing for an Italian student, as in the corresponding words "*caldo-freddo*", "*caldo*" (hot) has a similar sound and spelling to "cold" which, however, has the opposite meaning. Independently from learning disabilities, confusion between similar words is frequent and acceptable, but in the case of dyslexia teacher's attention to these details should be greater.

It is advisable to teach a few new words per lesson and practice them a lot and in different context. Kormos and Smith (2012) highlight that unintentional learning, that is learning new words thanks to reading and listening tasks, is difficult for student with learning disability. Therefore, vocabulary acquisition should be conducted thanks to explicit teaching. One lesson has not to be assumed sufficient for word storage in long-term memory. Exposure to new vocabulary items should be more frequent. Colours may represent a useful aid: genre or number of names may be labelled according to a given colour.

Finally, Kormos and Smith (2012) suggest that educators teach the sound-meaning pattern first, and, when this correspondence is learnt, learners can acquire the other information: spelling, additional but less common meanings, morphology.

Interesting tools that help memorization are: sound clues colour-coded cards, word-image associations, acronyms. Vocabulary notebooks, in which ways to remember, examples and images of words are stored, are also useful (Kormos & Smith, 2012; Schneider & Crombie, 2003).

3.3.9 Grammar rules

As already explained, dyslexia hinders grammatical pattern recognition. Direct and explicit instruction is fundamental to make pupils aware of the grammatical structure of the FL. Hence, FL educators do not have to rely on L1 grammar knowledge of dyslexic students, which can be not very strong, and, let us stress it again, do not have to expect these students to infer linguistic patterns spontaneously.

Grammar summary charts may be useful equipment: pupils, with the help of the teacher, write down the rule (e.g. to form the simple past I add '-ed' at the end of the verb), the ways to remember that rule and its exceptions and some examples. Also colour-coded strategies may work well for word patterns and sentence structures: for instance, the ending suffix of "walked, added, jumped, printed" will be coloured with the same colour; with regard to sentence structure, the direct object is always given a specific colour (Schneider & Crombie, 2003). As suffixation and conjugation rely on morphological awareness, which is not solid in the case of dyslexia, explicit teaching in recognition and usage of that rules are recommended.

Kormos and Smith (2012) found that individuals who suffer from dyslexia find applying grammatical rules more difficult than learning them. Indeed, in (Hill & Roed, 2006) investigation, some of dyslexic students that were interviewed claimed that they appreciate grammar instruction when learning a foreign language. Rules and structured practice were perceived as good bases for learning an additional language.

As suggested by Nijakowksa (2010), simple activities that involve playing, moving and manipulating are interesting devices that should be given a try, as these activities allow pupils to practice and learn grammar rules thanks to enjoyable experiences. After all, grammar must not be boring.

3.3.10 Difficulties in listening, reading, speaking and writing tasks

As already mentioned, in dyslexia's picture literacy based skills (reading and writing) appear to be more affected than listening and speaking abilities. Nevertheless, problems in the last two areas often arise¹⁴.

Teachers should not forget that in FL oral comprehension phonological processing is extremely important. Weaknesses (and strengths) transfer between first and second language, hence phonological skills will be weak in second language discrimination.

The first advice is to slow down speech speed. One can think about the perception of hearing a speaker of an unknown language: the unintelligibility derives from the fact that one is not able to divide the oral speech and does not understand where word limits are. In fact, differently from prints, there are no clear

¹⁴ Interesting examples of activities that enhance literacy skills are available at www.readingrockets.org/strategies/. The tasks are divided into: Print awareness, Phonological awareness, Phonics, Fluency, Vocabulary, Comprehension, Writing

boundaries between words in oral speech. Indeed, we speak at a speed of 125-180 words per minute, without auditory vacuums between adjacent words (Yeni-Komshian, 1998).

Dyslexic students are likely to need more time and repeated speech inputs in order to process linguistic materials effectively and to carry out comprehension activities.

Before oral texts, teachers should make some adaptations, such as checking that the text complexity is appropriate to learners' competence (e.g. in terms of grammatical structures) and that the text contains a small number of unknown words and words that are similar in sound. Furthermore, FL educators should bear in mind that dyslexic pupils' attention is not long-lasting and that phonological memory is usually weak. Finally, in order to reach comprehension, pre-listening tasks are very useful (e.g. tasks that activate expectancy grammar and background knowledge), and images as well (Kormos & Smith, 2012). Once global comprehension of contents is achieved, further tasks can focus on smaller details.

Kormos and Smith (2012) pinpoint that tasks parallel to listening (e.g. taking notes) should be avoided, as they distract the dyslexic learner from the main task.

Obviously, the impairment in phonological processing skills has tremendous effects in L2 listening. The first thing to do in order to relieve this problem is to teach L2 phonology explicitly. In FL classrooms it may be not a consolidated routine, since that learners are expected to infer FL sounds spontaneously (except from very difficult ones). Nevertheless, direct instruction in foreign language phonology is the best way to enhance pupils' phonological skills. Explanations should deal with how to pronounce sounds (vocal apparatus characteristics) and how a sound corresponds to a letter (see chapter 3.4).

In a similar way, as far as reading is concerned, grapheme and phoneme mappings have to be taught explicitly, unless they are unpredictable. As already stressed, learners with dyslexia struggle with linguistic pattern recognition.

When phonological instruction is combined with letter-to-sound training better results are observed (e.g. Nijakowska, 2010). Nonetheless, research outcomes (Gustafson, *et al.*, 2007) showed that if pupils have predominant phonological difficulties they benefit most from phonological than from orthographic training, whereas orthographically deficient children improve their reading skills

thanks to orthographic based intervention. Thus, intervention programs should concentrate on learners' weaknesses.

It has been suggested that these struggling learners ought to begin to read texts after have been trained in oral language for a longer period and after have developed reading skills at a word level. This basic level is necessary for further and more complex readings. Thus, there should be a path that proceeds following an ascending order: from shorter texts to longer ones, from simple and manageable texts to digressive and tangled readings. It is possible and beneficial to split longer texts up into paragraphs; this tool might be useful to highlight key concepts or also to make it clearer the text structure (e.g. introduction, exposition, supporting examples, conclusions).

It is a good practice to check whether the reading contains a lot of unknown words, as learners with dyslexia find it difficult to guess their meanings from the context. Unfamiliar words, grammatical structures, as well as new syntactic constructions, are likely to impede understanding.

Similarly to listening activities, reading tasks have to be chosen according to some parameters (e.g. age and interests of learners, connections with former knowledge, relevance) and have to be motivating. Furthermore, pre-reading activities that arise expectancy grammar and background knowledge should be carried out, as they facilitate understanding. Teachers ought to be sure of learners' understanding.

Without a doubt, individuals with dyslexia have not to be asked to read aloud in class. Some authors (e.g. Kormos & Smith, 2012) propose allowing dyslexic learners time to prepare the lines they will have to read. However, this solution does not appear a good strategy for two reasons: i. it makes learners concentrate only on their passage and not on the text itself; ii. reading accurately absorbs a huge quantity of dyslexics' concentration; this means that, although they read quite appropriately, they may not understand what they have read.

To enhance reading performance without creating anxiety or humiliation, students can record their reading and check errors, fluency, pronunciation on their own. They can give records to FL educators to obtain additional feedbacks.

With regard to speaking, it is one of the most anxiety provoking tasks. That being stated, it is advisable not to force FL learners to speak unless they feel enough confident. Kormos and Smith (2012) divide the speech production into four steps: conceptualization, formulation, articulation and self-monitoring. For-

mulation and articulation are automatic in L1 oral production, whereas in L2 speech they require conscious attention. When speaking a foreign language, several components have to be integrated: grammar, vocabulary, phonology, syntax as well as message contents. That is why L2 speech production is often slower and more hesitant than that in L1. Hence, if dyslexic individuals exhibit reduced attention span and phonological memory difficulties, they are likely to struggle with oral text production.

The areas in which students with dyslexia are likely to encounter problems in L2 speaking are: retrieving words quickly, remembering correct pronunciations, articulating words correctly, constructing sentences grammatically and oral text coherently (e.g. Kormos & Smith, 2012; www.dyslexiascotland.org.uk). Dyslexic learners involved in Gyarmathy *et al.*'s investigation, consider learning new words and the correct pronunciation as the biggest problems (Gyarmathy, *et al.*, 2009). However, these areas of difficulties are often ignored by trainers.

In addition, the more the oral task is spontaneous and not pre-established, the more difficulties. Hence, the suggestion is to give learners useful prompts (see above 3.3.3) which help them review linguistic structures.

Last, but not least, writing. There are several prerequisite skills for writing tasks: planning abilities, phonological and orthographical pattern awareness, syntactic knowledge, cohesion and coherency, knowledge of genres, registers and styles. Not all these abilities can be transferred from the L1 into the FL.

In teaching writing it is fundamental to explicitly teach how sounds map onto letters. Specifically, it is advisable to begin with more common and regular patterns and then pass to complicated syllables. Moreover, italics are more complicated to acquire than capital letters. Teachers should leave learners the possibility of choosing the one that is easiest for them.

Teachers should take into consideration the possibility of not assessing spelling mistakes. Hence, they ought to praise contents rather than criticize errors.

Organizational aspects of composing might require explicit instruction and can be the focus of pre-writing activities as well as elicitation of background knowledge. Writing tasks should follow an ascending order, so that pupils practice short compositions (e.g. postcards, text messages, emails) before longer and complicated ones (e.g. articles, essays).

Once the writing task is fulfilled, the learner may consult a list of elements that should be checked: connectives, capitalization, punctuation, verb conjugation (at the beginning: one item per task). Not to be forgotten that dyslexic individuals might have difficulties in spotting their own spelling mistakes.

Learners with reading disabilities can benefit from computers, as they relieve students with dyslexia from handwriting, which is often poor quality and effortful. Similarly, spellcheckers are useful tools that correct misspelled words and suggest the right form. Furthermore, common writing software have dictionaries and translator. Nevertheless, there exist specialist software for writing that have more specific devices¹⁵.

3.4 Multi-sensory structured learning (MSL) approach

The neuropsychiatrist Orton (see chapter 1) with the collaboration of Anna Gillingham and Bessie Stillman created a remedial programme for children with reading disabilities that is known as **Orton-Gillingham (OG) instructional approach** (Gillingham & Stillman, 1960). It has been later developed by Sparks and Ganschow (e.g. Sparks, *et al.*, 1991; 1992b). Nowadays it is one of the most popular, used and effective approaches for teaching literacy skills to individuals suffering from reading disorders.

Gillingham and Stillman developed the instructional program created by Orton. The base line of his reading instruction approach asserts that it should:

“[...] attempt to capitalize [students’] auditory competence by teaching them the phonetic equivalents of the printed letters and the process of blending sequences of such equivalents so that they might be able to produce for themselves the spoken form of the word from its graphic counterpart.” (Orton, 1937, p. 159)

The core features in the MSL approach are: phonological awareness, sound-symbol correspondences, oral and written syllable identification, morphology, syntax (grammar) and semantics.

The pivotal principles are listed below (e.g. Nijakowska, 2010; Kormos & Smith, 2012; Sparks, *et al.*, 1991; 1998a):

¹⁵ E.g.: “Kurzweil 3000”.

Principles	Examples of how to put theory into practice
Simultaneity and multisensoriality : different learning channels (visual, auditory, kin-aesthetic and tactile) are activated simultaneously.	When teaching new or unfamiliar sounds ask the student to imitate the teacher's modelling of mouth movements and to trace the letter pattern while saying and spelling the sound. It is also useful to trace letters on different surfaces (sand, plasticine, air).
Systemacity and structure (sequentiality): items follow an ascending and logic order in terms of complexity.	Teach only one or two new sounds at time and follow an order: from most common to rarest, from simplest items to most difficult ones. Make pupils aware of the relationships between past learning materials and new materials.
Cumulativeness and repetition : overlearning and frequent revision are recommended.	Provide opportunities for the student to practice and review a concept frequently to assure automaticity. For example, create different types of exercises and activities that focus on the same linguistic concept (e.g. interrogative forms in the FL).
Directness: explicit instruction	Nothing is left to inference. Teach directly all the linguistic aspects of the target language (grammar, vocabulary, pragmatics), learning and test-taking strategies. Also metacognitive skills are to be taught directly. Give clear instructions on how to fulfil oral and written tasks.
Automacity	Extra practice and overlearning help pupils to reach automacity. Give them several exercises and activities that are different in types but not in contents.
Synthesis and analysis	Teach how to break words into phonemes (or morphemes) and how to blend them together.
Metacognition	Break the concept or skill into small working steps and model for the student how to think through a concept. Make the learners "language detectives" (Schneider & Crombie, 2003).
Slow pace of instruction	Avoid teaching too many items per lesson as they give the dyslexic learner a sense of confusion. Break down the lesson into smaller and logically sequenced chunks. At the beginning of the lesson tell pupils what the structure of the lesson will be. At the end of the lesson make sure that students have understood what learning chunks you have faced.

Table 3.4.1 Practice examples of MSL principles

One of the most important features is explicit and direct instruction in all aspects: metacognition, grammar, vocabulary. Explicit instruction is a key point in teaching a foreign language to pupils with dyslexia:

"[...] second and foreign language instruction today is based on the assumption that individuals will learn the oral and written code of the new

language through exposure, that is, intuitively or implicitly as they learned

their native language. Instruction based on this assumption is called 'natural' or 'communicative'. [...] The teacher avoids explicit, systematic explanations of grammar or vocabulary patterns because they would conflict with a natural learning environment. Students are expected to discover and understand underlying language patterns on their own without explicit instruction. Though many do learn through a communicative approach, students who struggle with language are at a disadvantage." (Schneider & Ganschow, 2000, p. 75)

This multisensory-based method has numerous "followers": for example, The Hickey Multy-sensory Language Course by Augur and Briggs, Units of Sound by Bramley, the A-Z of Teaching Reading Writing and Spelling (Hornsby).

The engagement of unaffected pathways is fundamental to reading acquisition and the fact that more than one learning route and sensory channel is involved guarantees retention.

The O-G approach provides dyslexic learners with repetition, revision and overlearning in order to master a linguistic feature. These elements are key components for automatization and long-term memory retrieval. Other important aspects which the MSL approach puts stress on are metacognition and learning strategies. Students with dyslexia may take advantage of direct learning strategy training. As stressed by Kormos & Smith (2012) explicit teaching of linguistic features, slower pace of teaching and revision are the elements that differentiate teaching languages to individuals with dyslexia from teaching languages to students without dyslexia.

The O-G approach was originally developed in order to teach literacy skills to people with dyslexia in their mother tongue; however, Sparks and colleagues adapted this approach to individuals who are at-risk foreign language learners as an alternative to natural communication-based approaches (Sparks, *et al.*, 1991). Results demonstrated that oral and written native language skills as well as foreign language aptitude benefitted from that methodology (e.g Ganschow, *et al.*, 1998; Sparks, *et al.*, 1991; 1992b)¹⁶.

¹⁶ A dissenting point of view is supported by Ritchey and Goeke (2006) who claim: "[...] research is currently inadequate, both in number of studies and in the quality of the research methodology, to support that OG interventions are scientifically based. Given the inconclusive and mixed nature of the extant research findings, it may be premature to reconsider the implementation and use of OG reading instruction programs for children with reading disabilities. OG instructional programs continue to be implemented by teachers who find it an effective reading instruction program in a variety of settings. However, it is necessary to scientifically determine (a) if OG

For example, in one of Sparks and colleagues' experiment (Sparks, *et al.*, 1998a) participants, namely, high-school students learning Spanish as a FL, were divided depending on whether they were at-risk and not-at-risk foreign language learners. The at-risk group was subsequently divided according to the type of instruction students received: i. multisensory instruction in self-contained classrooms, ii. traditional instruction in self-contained classrooms and iii. traditional instruction in not self-contained classes. In the group formed by not-at-risk students Spanish was taught thanks to traditional instruction in regular classes.

Outcomes showed that all the at-risk groups improved their native language skills; this means that the teaching method was not a crucial parameter in mother tongue skills. However, as far as foreign language was concerned, better results on foreign language aptitude and native language measures of reading comprehension, word recognition, and pseudoword reading, as well as on oral and written FL proficiency were shown by the group that was assigned MSL instruction and by the not-at-risk group. Moreover, after two years of instruction, both groups did not differ in FL proficiency.

One of the best merits of MSL instruction deals with phonology and orthography: gains are made both in native and in foreign language (Sparks, *et al.*, 1995). Learners with difficulties in foreign language learning benefit in these fields thanks to direct multisensory instruction (Sparks, *et al.*, 1992b). However, despite positive evidence on MSL effectiveness, other studies by Sparks suggested that it is possible that at-risk learners still lag behind their not-at-risk peers with respect to phonological and orthographic competence and show lower scores in FL aptitude tests (e.g. Sparks, *et al.*, 1991; 1995; 1997b).

Hence, it is clear that individuals with dyslexia, who have weak phonological processing skills, are likely to benefit more from explicit multisensory instruction than from traditional instruction with regard to the phonological structure of the foreign language (Nijakowska, 2010). As already mentioned, this type of instruction is likely to have positive effects in native language phonology as well. Additionally, memorization of linguistic features is promoted by the simultaneous usage of several sensory channels as they make learning more memorable and enjoyable. Finally, several pupils with a specific learning disorder struggle with encoding information that is presented verbally due to their phonological impair-

and OG-based instructional interventions are effective for all students with reading disabilities, (b) for which children OG reading instruction is most effective, (c) the effectiveness of OG-based reading programs in comparison to other remedial approaches, and (d) the specific conditions under which OG is most effective. Only then can the scientific basis of such reading instruction be assured (Ritchey & Goeke, 2006, p. 182)

ments. Thus, different pathways are to be preferred, since they make dyslexics' weaknesses counterbalanced.

The result is that in the O-G approach weaknesses in phonological abilities are compensated thanks to the use of additional sensory channels.

Multisensory techniques for:

Phonology	Teach the learners that the vocal apparatus (mouth, tongue, nose and vocal cords) is the core part in pronunciation: 'f' and 'v' share the same distinctive features (they are fricatives and labiodentals) but the first one is voiceless and the second one is voiced. Hence when pronouncing 'f' our vocal cords do not vibrate and if we put our hands to the throat we can experience this lack of vibration. Another activity can be finger-tapping (tapping one finger per sound or per syllable).
Orthography	Show pupils that when writing 'b' we first draw the straight line and then the circle. On the other hand, when writing 'd' we do the opposite: first the circle and then the straight line.
Vocabulary	Connect body motions and colours with affixes: for instance, the prefix 'in-' ('un-', 'il-', 'im-', 'ir-') means the opposite or lack of something. With learners' help, try to find out which gesture can best represent these suffixes (e.g. a finger moving from left to right).
Grammar	Use different colours to mark different morphemes. Use flash cards to form word families (e.g. close, enclosed, closely, disclosure).

Table 3.4.2 Examples of multisensory techniques for language aspects

3.5 Testing and assessment

A key part in foreign language teaching, actually, in teaching generally, is testing and evaluation. Teachers and learners have great expectations about these two components of the teaching/learning process.

Teachers should take into account that, as many of the skills usually examined in the FL classrooms are the ones in which dyslexic learners are weak or hampered, test results may not precisely mirror the level and the competence of the pupil.

The test is defined as a specific proof which verifies whether a goal is achieved or not, while the evaluation phase as the interpretation of test results (Daloiso, 2012). The aims included in foreign language programs are linguistic goals, which have to be carefully "calibrated" on learner's difficulties, strengths and special needs¹⁷.

¹⁷ Daloiso (2012) recommends that teachers (possibly with the help of learners) create a "personalized language program" (Piano Glottodidattico Personalizzato). These programs help teachers to focus on learner's personal data, former education, impaired skills, learning process and style, required accommodations in each school sub-

3.5.1 Testing

Testing means data collection in order to measure whether objectives are achieved. Surely, it is the most dreaded aspect of foreign language learning at school.

Testing accommodations provide adequate opportunities for dyslexic learners to demonstrate their knowledge and competence, and allow them to be in the conditions of being able to take the test without disadvantages.

Not to be forgotten that when a test is taking place anxiety is likely to arise and this probability is higher among individuals with dyslexia in testing situations (Kormos & Smith, 2012). Hence, teachers should be aware of this problem and avoid anxiety-provoking situations (e.g. never-done exercises, too many items per page, long instructions) (see also chapter 3.3.3).

When creating a test, it is important to set clear parameters (Balboni, 2008b; Kormos & Smith, 2012):

- i. What are the linguistic features that are to be verified?
- ii. What are the tasks and methods that suit the measurement?
- iii. What kinds of accommodations dyslexic learners will need in order to fulfil the tasks?
- iv. What kinds of parameters are most reliable?

With regard to the third point, in the table below there are some advisable examples of good testing practices that may benefit individuals with dyslexia (Schneider & Crombie, 2003; Hill & Roed, 2006).

The list of advice illustrated in Table 3.5.1 consists of test strategies that are easy to put in practice. Obviously, advantage depends on learner's characteristics, hence, teachers and students have to agree on which accommodation suits best learners' needs.

Before the test	<ul style="list-style-type: none"> Put a small number of items per page Modify the graphic layout (larger size of fonts) and use coloured papers Prepare learners specifically on test tasks (e.g. mnemonic devices, multisensory and structured studying, summary charts). Test one skill per time (punctuation; grammar; vocabulary) Use the L1 in task instructions Give concise instructions orally Diminish the linguistic complexity and the length of tasks instructions Set suitable types of tasks (motivating, already experienced, appropriate and not causing difficulties), avoiding cloze tasks
During the test	<ul style="list-style-type: none"> Give learners more time and recommend them to do time management Give the test in a private/special session Give the test in more than one session/day Diminish distracting stimuli and give the learner a stress ball Allow the learner to answer orally Allow the learner to dictate answers to another person Allow the learner to answer via a computer Allow the learner to have the tasks learnt by another person (or thanks to a speech synthesizer) Allow the learner to use online dictionaries Allow the learner to use text editing programs Allow the learner to use spellcheckers and grammar checkers

Table 3.5.1 Advisable testing practices

Schneider & Crombie (2003, chapter 5) recommend a careful selection of test tasks. For example, many written exams have cloze tasks, which are texts with gaps that the examinee has to fill in. These types of tasks should be avoided in case of dyslexic learners, even if choices are given. If not possible, it is advisable to teach pupils cloze-task strategies explicitly (e.g. thought-provoking metalinguistic dialogues that help the learner to decide how and why an option is correct).

It is also useful to give learners tables and charts with metalinguistic questions such as "Do I respect the word order?", "Do I conjugate verbs in the right way?", "Do I have doubts on how to spell this word?". These metalinguistic strategies are lifesavers.

Nevertheless, not only are some accommodations superfluous, but also wrong as they can invalidate test results. For instance, if in reading comprehen-

sion tasks decoding skills are not to be tested, than the teacher can read aloud the text without invalidating the exam. On the contrary, when reading the text is part of the test, if the teacher reads aloud the measurement of pupils' decoding skills in the FL will be invalidated.

3.5.2 Assessment

According to Hill & Roed (2006), accuracy assessment in foreign language learning is a field of dyslexia research which has yet to be fully analyzed.

Teachers might find it problematic to evaluate linguistic accuracy of dyslexic learners, as in many cases it is not clear whether a mistake is due to the reading disorder or due to the fact that the learner has not grasped a linguistic rule¹⁸. Additionally, several teachers use their own discretion when assessing dyslexic pupils' tests (Kormos & Smith, 2012).

As pinpointed by Kormos and Smith:

"[...] assessment procedures should be valid, that is, they should give accurate information about the learners' competence, and fair, that is, they should provide adequate opportunities for learners to display what they know." (Kormos & Smith, 2012, p. 146)

The first thing to say about assessment deals with clear parameter selection. This holds true for all types of students and classroom situations.

For each test it should be highlighted what will be assessed, what tasks will be used, what accommodations will be needed and how the results will be evaluated. These devices help teachers and students, as they can focus on specific criteria.

A valid evaluation should be guaranteed by a range of tasks that can measure abilities and skills. A single task is much often not sufficient to lead to a valid and fair judgement (Kormos & Smith, 2012).

Assessment accommodations are very useful in order to relieve anxiety as this quotation explains: "[...] if your spelling is not assessed, it will be easier for you, and you don't have butterflies in your stomach anymore [...]. Once you are relieved of this stress, you will do better." (Sarkadi, 2007, p. 191).

¹⁸ In the survey conducted by the researcher, the problem of error identification is emerged when respondents were asked what types of difficulties they face during the assessment phase (c.f. 6.9.2.4).

Hence, assessment accommodations are essential. This does not mean inappropriate testing practices such as editing pupils' work, helping students, changing the content in any ways or giving hints.

Efficient assessment accommodations may enhance dyslexic pupils' success as calibrated assessment does not evaluate the linguistic aspects that might be impaired due to the reading deficit. Tests completed with accommodations should be graded the same way as those completed without accommodations.

There exist different types of classroom-based assessment (Kormos & Smith, 2012; Harris, *et al.*, 2008; Daloiso, 2012; Schneider & Ganschow, 2000):

- i. **Summative assessment** gives an overview of what skills and competencies pupils have acquired at some point in time. It does not deal with learning processes and it often makes pupils more concerned about grades than learning itself. The focus of summative assessment is on the product rather than on the process.
- ii. On the other side, **formative assessment** deals with learning and acquisition development. In formative assessment the teacher feeds information back so that pupils can improve their learning.
 - i. **Continuous assessment** does not take place at pre-determined intervals. It collects information on how students are progressing in their language learning. This information helps the teacher to make instructional decision. This type of assessment proves useful for students with learning disabilities as it verifies whether pupils have mastered the prerequisites required to take a step forward. It also indicates to whom extra support might be given. Evaluation will be seen as an integral part as well as an on-going part of the learning process.
 - ii. **Dynamic assessment** involves teacher/examiner intervention on how to perform better on individual items or on the test as a whole. Results display the difference between pretest (before learning) and posttest (after learning) scores. Usually, the dynamic assessment consists of pre-test, mediation, revision at home and post-test. During the mediation phase the teacher identifies students' problems in pre-test and gives them the right help to perform better on post-

test. The final scores are precious learning scores. This type of assessment is very useful for learners with specific learning disorders as it provides in-depth information that allows the teacher to create a personalized educational intervention.

- iii. The strength of **self-assessment** is that it promotes critical reflection on effectiveness of learning. This monitoring increases self-awareness.

Of course, the more types of assessment the more in-depth information on knowledge and competence will be grasped.

Finally, it is of great importance that the teacher asks the student whether test-taking and assessment accommodations are efficient.

4 Research methodology

Chapter 4 is dedicated to the method used in this investigation especially conducted for this paper in order to gain a deeper understanding of foreign language teaching to students with dyslexia.

The chapter covers the aims and design of the present research.

4.1 Research aims

The objectives of this study are to investigate the existence and the effective usage of practices and strategies that benefit dyslexic pupils in their foreign language learning. The linchpin deals with teaching accommodations towards learners who suffer from dyslexia.

The questions that have to be answered are:

- i. Are there teaching accommodations that can ease foreign language learning to dyslexic learners?
- ii. Are there accommodations that can be put in practice in testing and assessment?
- iii. Do foreign language teachers implement these accommodations in their classroom?
- iv. Are there parameters that might have a bearing on the implementation of teaching accommodations?

4.2 Research design

Research design consists of four steps: i. identifying which information is required in order to meet research aims; ii. establishing a method of collecting the data needed; iii. arranging the sampling plan; iv. collecting and analyzing data. Information is mainly taken by Malhotra & Birks (1999); Bailey (1982).

4.2.1 Identifying which information is required in order to meet research aims

This research connects two fields: dyslexia and foreign language learning/teaching. Hence, an understanding of nature and characteristics of the reading disorder is fundamental. This information is discussed in the first two chapters of this paper, whereas the third one is dedicated to teaching a foreign language to pupils with dyslexia.

In addition to literature review, further information has been gathered thanks to the work of some authors: Kormos & Kontra (2008) investigated Hungarian teachers' perceptions on difficulties exhibited by dyslexics when learning a foreign language. In Gyarmathy *et al.*'s (2009) study several issues were covered: methods and difficulties in teaching dyslexics; learning methods for dyslexics; resources needed in teaching dyslexics and in learning for dyslexics. The international project EMBED (www.embeddyslexia.eu) makes available a questionnaire which aims to identify how dyslexia-friendly the school and teaching is. Additionally, an interesting study was carried out by Hill & Roed (2006), whose aims were to see how universities cope with special needs of dyslexic foreign language learners and what assessment methods are most advisable. Finally, Sarkadi (2007) has examined feelings and learning strategies that Hungarian dyslexic students applied to overcome foreign language problems.

Thus, whilst the above mentioned data are secondary data, the following ones are primary data, as they have been collected from foreign language teachers specifically for this study. In fact, as the focus of this research is analyzing FL teachers' methods in teaching a foreign language to pupils with dyslexia, data on accommodations and teaching strategies are to be collected and elaborated. In addition to teaching strategies, as some characteristics of respondents (attendance of training courses on dyslexia and specific learning disorders, language taught, grade of school and school location) are expected to have an effect on the use of these strategies, such features have to be analyzed.

4.2.2 Establishing a method of collecting the data needed

Information on dyslexia and foreign language learning/teaching has been gathered thanks to studies, newspaper articles, journal articles and essays.

For primary data, according to the information that has to be collected - namely accommodations that foreign language teachers put into practice in order to make foreign language learning easier for dyslexic learners - a structured data collection (i.e. a questionnaire) is a useful method of gathering this information. This method ensures the comparability of data and increases accuracy and speed (as explained previously). It consists of a set of questions, asked in a prearranged order, with the aim of getting information from respondents. As in any other questionnaire, the information needed is translated into questions that will be answered by respondents, motivating them to cooperate and fulfil it.

The questionnaire, which can be found at Appendix A: Annotated questionnaire (p. 192), consists of three parts: the first one is a general part, in which personal information is asked (e.g. type of language taught, attendance of training courses on dyslexia and/or specific learning disorders, perceptions of respondents' attitudes towards dyslexia). The next part deals with teaching practice: learning materials, accommodations in teaching a foreign language and consultations with the dyslexic learner on accommodations' effectiveness. The third and last part of the questionnaire investigates testing and assessment accommodations.

At the beginning of each item, the instructions are provided for respondents, clearly explaining which tasks they have to do. In most of the items of the questionnaire question's instructions explain to respondents that their answers should be referred to the usage of the accommodation under consideration towards dyslexic learners (and not to a general usage in a situation in which there are no learners with dyslexia).

For the survey unstructured (or open-ended) questions were used, where respondents can answer using their own words. These questions were used throughout the whole questionnaire in order to let respondents better express attitudes and opinions, which cannot be gathered so deeply by fixed-alternative questions. Moreover, the researcher can get a broader insight into the addressed issue by using open-ended questions. As a drawback, it is difficult to code the answers (time- and cost-consuming) and respondents are required more effort to express their own feelings. It is also to be underlined that respondents are less likely to write their subjective views than to verbalize them, so they tend to be shorter. Therefore, the amount of unstructured questions is less than that of fixed-alternative ones.

The vast majority of the items are fixed-response alternative questions, where respondents select one of the responses provided by the researcher. Advantages of using this type of questions include:

- i. consistency of data, as respondents have to choose among the alternatives provided;
- ii. interviewers cannot influence the results;
- iii. it is simple to administer, code, analyse and interpret the questionnaire.

On the other hand, respondents may find it hard to fit their subjective information, such as beliefs, motives and feelings, into a fixed-response alternative question.

With the only exception of three questions, which are dichotomous, fixed-alternative questions are multiple-choice: respondents have to choose one or more responses among a choice of answers provided by the researcher. The given alternatives include all possible answers and another one named "other(s)", so that respondents can also write their own answer if not provided – even though respondents tend to choose among the items provided. All the listed answers are mutually exclusive.

The three dichotomous questions allow respondents to choose between two alternatives, i.e. "Yes" and "No", with a neutral alternative, "I do not know/do not remember".

Regarding fixed-alternative questions, the vast majority of the questions asked in the questionnaire are in the form of non-comparative itemized rating scales, where objects are scaled independently of the others and each one is evaluated at a time; hence, differently from comparative scales in which respondents have to choose one of the objects (e.g. the most preferred, the most used), in non-comparative scales respondents are asked to give an answer to each object presented.

Itemized rating scales have a scale which is constituted of a number (or description) that is associated with each category. Categories are ordered in terms of scale position (Malhotra & Birks, 1999) and respondents choose among the categories the one that best matches with their attitude or feeling.

In addition, the Likert scale was used in order to indicate the level of agreement–disagreement with multiple statements, based on a 5-item scale,

ranging from "Strongly agree" to "Strongly disagree". This type of scale is easily understood by respondents, although their effort is high, since they have to carefully read and reflect on each statement on the list. Besides, a semantic differential scale was also used in order to measure the extent to which teachers found it difficult to assess the foreign language competence of learners with dyslexia. The labels are positioned at the two ends of a five-point scale. These labels have a bipolar meaning, i.e. "Very easy" and "Very difficult"¹⁹. The values used in the scale range from 1 to 5.

The scales employed in the questionnaire are balanced, as they have equal negative and positive responses, plus a neutral one. This type of scale is to be preferred in order to obtain objective data as, if there had been more positive answers than negative ones, this might have influenced the respondents to choose a positive answer. Moreover, the scales have five categories (except from one scale, ranging from 1 to 10) and it was chosen to have odd numbers because the middle one was considered as neutral and it was expected from respondents to have a neutral opinion on some of the issues covered. Each category is labelled with a verbal description (e.g. "0% never"), in order to reduce scale ambiguity and the scales are presented horizontally, with categories presented as discrete lines and without numbers.

Despite the fact that a questionnaire is a good and efficient method for data collection, there are some response errors that have to be considered: respondents may not want to answer, may not remember, may not be able to articulate the answer or may give false or inaccurate answers. Causes are several (Bailey, 1982):

- i. some respondents might refuse to complete the questionnaire saying that they have already done something similar;
- ii. respondents may say they have short time;
- iii. respondents might think that information will be used against them, or information will encroach on their privacy;
- iv. respondents may answer according to the way they think they should answer²⁰;
- v. as some answers may demonstrate a low level of intelligence, competence or knowledge, respondents might refuse to give sincere answers;

¹⁹ In the Annotated questionnaire (Appendix A: Annotated questionnaire) all the labels are included.

²⁰ For social desirability see the paragraph below, 4.2.4.

- vi. respondents might refuse to answer as they have less experience and/or knowledge on topics covered by the questionnaire.
- vii. if respondents feel embarrassment or their prestige/self-image is threatened, they are not willing to answer the question;
- viii. they tend to ignore and hence skip a question (or more than one) if they are not able to articulate the answer – sometimes leading to refusal of filling in the questionnaire;
- ix. respondents may be not willing to answer if:
 - i. a question requires too much effort for them;
 - ii. the context is viewed as not appropriate;
 - iii. they do not see a legitimate purpose of the questionnaire;
 - iv. the information required is sensitive;
- x. respondents may be unable to recall an event;
- xi. they may remember some events, which actually took place less recently than it actually occurred;
- xii. respondents may remember events that never took place.

The event that has to be remembered, the time passed by since the event occurred and the presence/absence of aided recall can influence the respondents' ability to remember. In order to fully cover the different accommodations that can be used by respondents, the researcher provided a comprehensive list of accommodations, so that respondents do not have to rely on their own memory.

In order to compensate for these inconveniences, firstly, it is important to set questionnaire purposes clearly (i. and ix.iii.) in order to avoid answers such as "I've already done it recently". In this survey, indeed, the aim of the study is provided before respondents take part in it. In this way the willingness of respondents increases and the questionnaire seems legitimate.

Secondly, it is useful to minimize the effort required from respondents, so that the task of completing the questionnaire is not onerous and the time required for the filling in is reduced (ii. and ix.i.).

Thirdly, explaining why the data are needed can lead respondents to not be afraid of their privacy and give sensitive information that may arouse embarrassment and threat of respondents' self-image (iii., iv., vii. and ix.iv.). Moreover, sensitive questions should be placed at the end of the questionnaire, when a rela-

relationship with respondents is already created and they fully understand the purpose of the research.

Additionally, when questions may be perceived as compromising to respondent's intelligence or knowledge, the researcher should make it clear that there is no correct or incorrect answer, as the aim is to know what the opinion of the respondents is (v.). This solution can be applied also when respondents claim to have little knowledge or experience (vi.).

Besides, the researcher should aim at creating a context – situation in which respondents feel that answering the questionnaire is appropriate and justified (ix.ii.).

Finally, a filter question is asked at the beginning of the questionnaire: respondents have to declare if they have or not taught to dyslexic students. With this question, researcher can understand how familiar and experienced respondents are. If their answer is "I have never taught" or "I do not know/remember", it implies that they do not have much experience with dyslexic pupils. Their knowledge is further investigated by the following question, which asks if respondents have attended courses on dyslexia and/or on specific learning disorders (viii., x., xi. and xii.).

4.2.3 Arranging the respondent target

"Sampling design begins by specifying the target population. This is the collection of elements or objects that possess the information sought by the researcher and about which inferences are to be made." (Malhotra & Birks, 1999, p. 358)

For this study the population consists of foreign language teachers who teach in the schools of Verona city and province. The list is provided by *Ufficio scolastico regionale per il Veneto* (Veneto Office Education) and is updated on September 2012 for the school year 2012-2013, therefore there is no issue of outdated or incomplete sampling frame list.

The research involves teachers of compulsory education, which is divided into three sections in the Italian education system: *scuola primaria* (primary school – from 6-year-old children to 11-year-old children), *scuola secondaria di primo grado* (first level secondary school – from 11 to 14 years old) and *scuola*

secondaria di secondo grado (second level secondary school – from 14 to 19 years old) which precedes university.

The questionnaire has been distributed via email. Emails were sent to principals of all schools in Verona (city and province), either public or private, except from kindergarten²¹. Because of privacy matter, it could not be possible obtaining email addresses of FL teachers of Verona. Hence, principals were asked to forward the email to foreign language teachers teaching in their school/institute. A link that leads to the questionnaire was attached to the email.

Since the sampling frame has been obtained, it is possible to do a census. The choice of using a census instead of a sample was made due to the fact that the response rate of Internet interview is claimed to be low (Malhotra & Birks, 1999), so that a greater amount of respondents is expected to be better in order to obtain more data.

4.2.4 Collecting and analyzing data

The last step of the research design deals with data collection method.

“No survey method is superior in all situations. Depending upon such factors as information requirements, budgetary constraints (time and money), and respondent characteristics, none, one, two, or even all methods may be appropriate.” (Malhotra & Birks, 1999, p. 200)

That being stated, the method used in this work, i.e. Internet interviews, have pros and cons.

Regarding the advantages: it is less time-consuming (for the interviewer) than a telephone interview and less expensive than mail and telephone interviews, for instance because there is no need for printing questionnaires. Furthermore, each school/institute has an institutional email address and it is highly presumable that also teachers use emails for communication purposes. Additionally, respondents can answer at any moment, they can take the time they consider it is necessary to think about questions and they can avoid feeling embarrassed (or under pressure) towards the interviewer.

²¹ The exclusion of kindergarten is due to the fact that the vast majority of dyslexia diagnoses are made after the first years of school, only after literacy exposure has started, as the acquisition of reading and writing skills play a pivotal role in dyslexia recognition. Nonetheless, it is possible to find reliable predictors of upcoming reading difficulties already in preschool children. For further information see (Scarborough, 1991).

One of the greatest advantages of this method of data collection relies on the fact that Internet interviews, as well as telephone interviews, provide instantaneous feedback. Thus, speed with which a questionnaire can be created and distributed and speed with which data can be gathered make this method the fastest in order to obtain data from a large number of respondents (Malhotra & Birks, 1999). Another merit of Internet interviews is related to statistical analysis: for instance, "Google docs" – which is the program used in this research in order to create the questionnaire available online – automatically process answers in the form of charts.

Another advantage that has to be considered is related to the so-called perceived anonymity of the respondent, which is the perception of respondents that there will be no disclosure on their identities. It is relatively high in the case of Internet interviews (Malhotra & Birks, 1999), because of the absence of personal interaction between the interviewer and respondents. Due to this perceived anonymity, respondents are more likely to give some type of sensitive information²² and less influenced by social desirability, which is the tendency to give answers that are socially acceptable, even though they are false. The fact that Internet interviews do not involve any social interaction makes respondents feel more free to give such information than in face-to-face interviews.

Sensitive information may include questions about age, gender, educational level, etc. In this survey, none such questions are asked to respondents. In addition, it is clearly stated, before they take part to the survey, that the questionnaire is completely anonymous.

Since there is no personal interaction, the interviewer cannot bias the results by selecting respondents, asking further or omitting questions, asking questions in another way than the presented one, or offering examples that can lead respondents choosing some particular answers.

On the other side, the absence of interaction has a negative consequence: it might be difficult to use (and, in case, explain) complex questions, or the interviewer cannot clarify ambiguities and he or she cannot ensure that respondents do not rush through the questionnaire, answering untruthfully. However, since respondents see the questions, they can go back to question instructions whenever they like (on the contrary, in the case of telephone or personal interviews, if the

²² Nevertheless, respondents may be watchful with regard to sensitive information (e.g. tax payment) as they may think they might be tracked down.

respondent does not understand clearly what they have to do, they have to ask the interviewer for repetition).

Of course, responses can be biased by who is answering the questionnaire (e.g. if one or more respondents answer more than once). In addition, the researcher cannot control if the questionnaire is answered or not. The absence of social interaction has a negative influence also in this case: the interviewer cannot arise interest regarding the questionnaire, motivate respondents to answer carefully spending more time on the questionnaire. Therefore, the degree of sample control in this work is rather low.

Unfortunately, the most debilitating disadvantage of Internet interviews is brought about the low response rate – defined as the percentage of the total attempted interviews that are completed (Malhotra & Birks, 1999).

In particular, respondents decide to take part to a survey based on the benefits they perceive they can get from it. Therefore, it is highly important to clearly state and explain the objectives of the survey at its very beginning, in order to catch and keep respondents' attention. As response rate is low, non-response bias is high.

On the other side, the length and duration of the questionnaire do not generate more response rate in case of a short questionnaire (unlike personal interviews). As a consequence, rather long questionnaires can be administered to respondents. This in turns means that the questionnaire used in this survey is more detailed than it would be in case of another interview method.

Moreover, interviewers have no control on the context in which respondents answer questionnaires. Since context does influence responses (e.g. because respondents are distracted by people or events), it should be taken into account when deciding which collecting method to use. In this case, control over context is low, as the interviewer cannot see respondents' environment.

This method has another drawback: more effort is required from respondents to complete the questionnaire than in personal interviewers, as they have to fill in the questionnaire on their own in its entirety: question instructions and answers provided.

Lastly, it is important to observe that sample control is high in this case. It is defined as the ability to address each element of the sample (in this case, census) in an effective way (Malhotra & Birks, 1999). With Internet surveys it is possible to gain control on who receives the questionnaire and to reach a very large

number of respondents simultaneously, not to mention that researchers can have access to geographically dispersed respondents.

4.2.5 Arranging the questionnaire

Given that respondents are all teachers, the language used in the questions matches their vocabulary level and technical terms could be used (e.g. metalinguistics, speech synthesizer, automatized spell-checkers). Nevertheless, it was chosen to use ordinary words as much as possible, and great care is placed on questions' wording. In particular, the researcher tried not to use leading questions but be as neutral as possible, so that respondents' answers are not biased. Moreover, for some questions, e.g. asking how often respondents use some particular accommodations, it was decided to use percentages rather than categories such as "often" and "sometimes", which can lead to misinterpretation of the answer categories. The researcher used five categories, ranging from "0% (never)" to "100% (always)", and in this way categories are clearly defined and there is no room for interpretation by respondents.

Concerning the Likert scales, since studies proved that the wording (meaning the directionality of the sentence) influences the answer, the researcher used negative and positive statements, the so called "dual statement" approach.

The sequence of the questions is based on respondents' logical order: items addressing the same topic are placed below each other in the same part and transitions can be found at the beginning of a new part in order to help respondents understand the end of the topic and the start of a new one. It is to say that questionnaire's items do not follow the order of the research questions but the one perceived by respondents.

Since the opening questions are of great importance – they build trust between respondents and the researcher –, it was decided to ask simple questions, e.g. what language respondents teach or in which grade of school. Besides, after asking if they have ever attended courses on dyslexia/specific learning disorders, respondents are free to express the difficulties they face while teaching to dyslexic pupils. This unstructured question, as explained in chapter 4.2.2, is highly suitable at the beginning of a questionnaire because it allows respondents to express their opinions and feelings towards dyslexia. Furthermore, questions do not address

sensitive issues, like age or gender, as no information on socio-economic or demographic characteristics is needed.

For this questionnaire the “funnel approach” was used, namely general questions are positioned before specific questions, e.g. “What language do you teach?”. The reason behind this choice is that if general questions were positioned afterwards, the specific ones can bias the answer of the general items.

As explained earlier, the questionnaire is divided into different parts and questions are numbered sequentially. Question numbers do not appear to respondents when they fill in the questionnaire, but are used by the researcher as numbering facilitates the coding of the questionnaire. The questionnaires themselves are not numbered in order not to give respondents the feeling that their answers are traced. Only once questionnaires are completed and sent to the researcher they are numbered sequentially, based on date of submission.

This method of collecting questionnaire, i.e. Internet interviews, avoids the problem of reproducing questions on a single page, since in “Google docs” items are grouped so that they are not split into two pages. Therefore, each item always appears with its response categories and respondent are not misled.

Instructions are given to respondents before they start the questionnaire and at the beginning on each part. In the introduction, the aim of the questionnaire is stated and it is indicated by whom it should be answered, as well as the time required to fill in the questionnaire; finally, the fact that it is anonymous is remarked.

4.2.6 Data preparation process

Once questionnaire are submitted, the researcher checked for their acceptance, completeness and quality: if some questionnaires are incomplete, if answers given suggest that respondents did not understand the questions or if there is little variance in the answers, questionnaires can be considered unacceptable. In this survey only one questionnaire is partly answered and it was including in the data analysis just for the part which is fully completed. Moreover, the eventuality of an unqualified person answering the questionnaire is very low in this survey, because the first questions clearly identify if respondents are part of the population or not.

After this first step is finished, editing takes place. In this phase, questionnaires are checked for accuracy, consistency and precision. Being an Internet survey, all answers are legible but this does not prevent the possibility of having ambiguous answers or responses which are difficult to interpret. This is particularly true for unstructured questions, where sometimes answers were excluded from responses (see also chapter 6.9.2.1).

The third and last step is coding and transcribing the data obtained: a value is assigned to each possible answer/answer category and for each individual questionnaire item. For this purpose, a codebook (see Appendix C: Codebook, p. 279) was developed, containing the instructions for the researcher to transcribe the data into "IBM SPSS Statistics", i.e. the question name and number in the questionnaire, variable name and values assigned to each answer. Unstructured questions are coded after the researcher obtained all the questionnaires (post-coding): the list of all given answers is created and values are developed by the researcher based on responses. The categories created are mutually exclusive and collectively exhaustive: they do not overlap and each answer can only be included in one category. Besides, all the answers fit into one of the categories created – for this purpose an additional category is provided, i.e. "other" in order to include those responses that do not fit with the other categories.

5 Respondents' characteristics

The entire population of foreign language teachers who work in the school of Verona (city and province) is divided as follows: 155 teachers of *scuola primaria*; 394 teachers of *scuola secondaria di primo grado*; 320 teachers of *scuola secondaria di secondo grado*. The total amount is 869 foreign language teachers.

Questionnaire responses are 42, thus the response rate is extremely low, about 4,8%.

Needless to say that it would have been better to have much more feedbacks, as the analysis of data would give a more deepened picture of the situation.

5.1 Composition analysis

As evident in the pie chart below, the vast majority of respondents (light pink) have taught a foreign language to dyslexic learners, while 14% (6 teachers) have no experience of FL teaching to pupils affected by dyslexia.

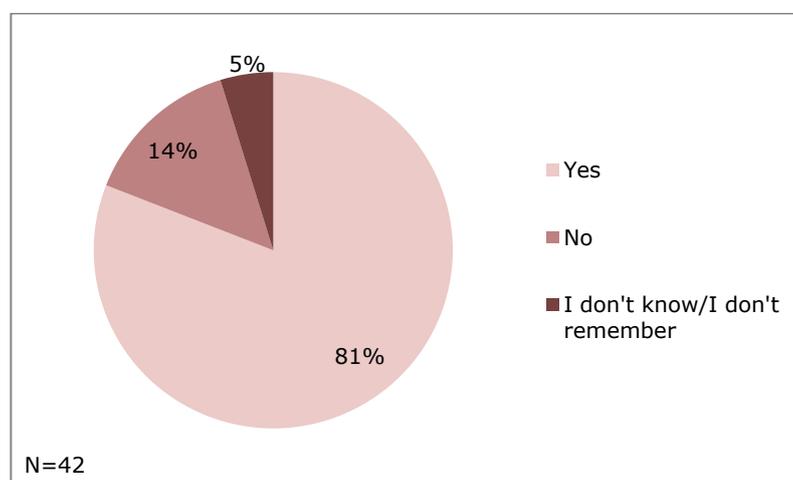


Chart 5.1.1 Teaching experience towards dyslexic learners

Languages taught by respondents are distributed as follows:

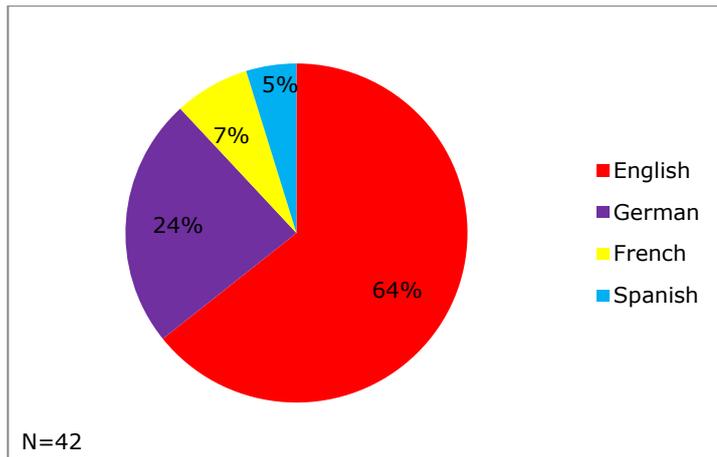


Chart 5.1.2 Languages taught

As portrayed in the chart below, data on types of school indicate that: 57% of respondents are teachers who teach in *scuola secondaria di secondo grado*, while 21% is the percentage of teachers of *scuola primaria* and 22% are educators of *scuola secondaria di primo grado*.

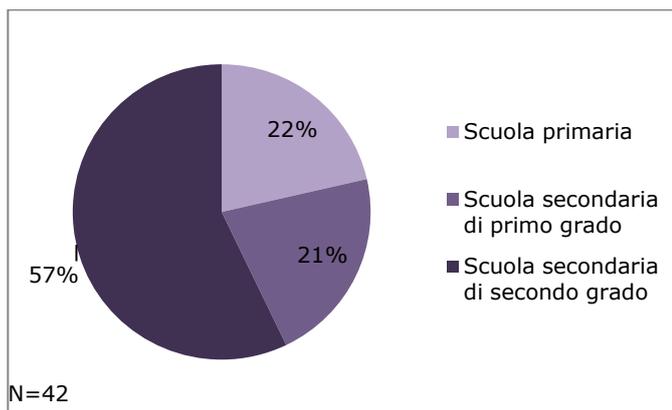


Chart 5.1.3 Grade of school

Results on attendance of training courses indicate that the majority of respondents have not attended training courses on dyslexia (60%) and on specific learning disorders (62%).

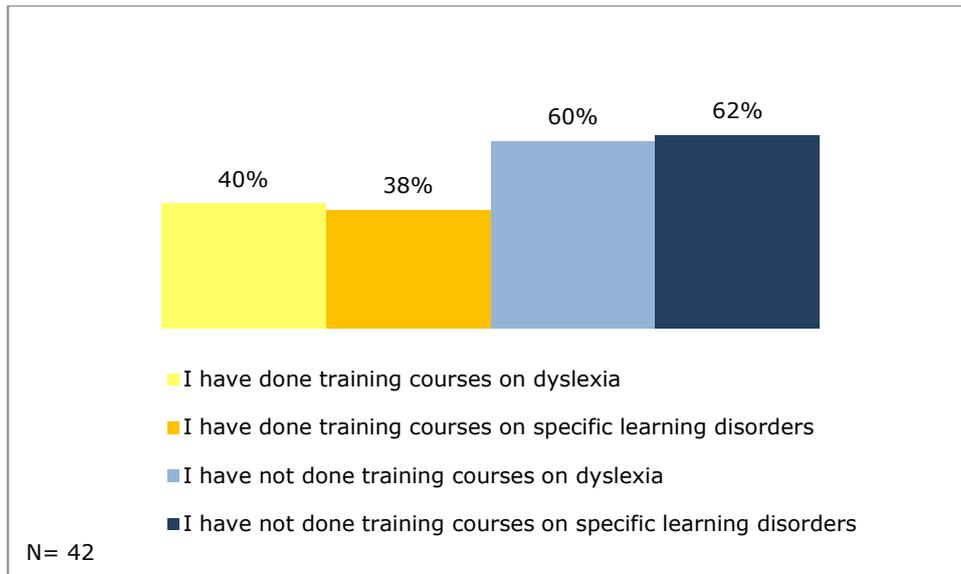


Chart 5.1.4 Attendance of training courses

Finally, outcomes on school location are distributed as follows:

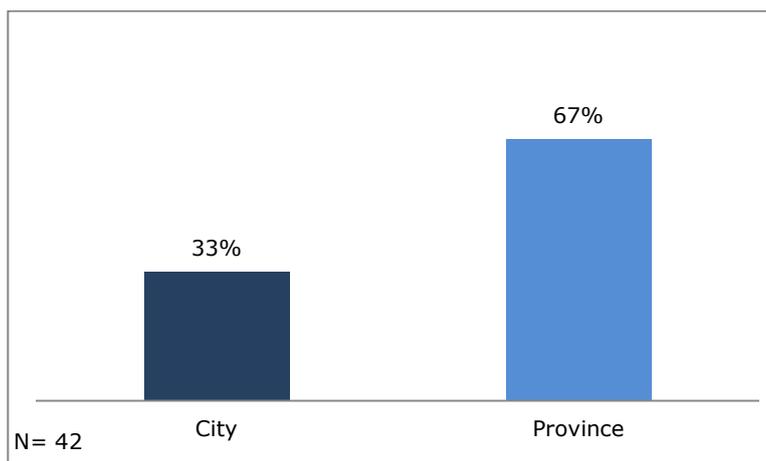


Chart 5.1.5 School location

Data on training courses have been crossed with the grade of school, and it emerged that the majority of teachers that have done training courses are primary teachers. In the chart below yellow colours stand for teachers who have attended training courses, whereas blue bars represent teachers who have not done training courses on dyslexia and on specific learning disorders.

The percentage of attendance (yellow bars) goes down as the grade of school grows up, as shown in Chart 5.1.6 .

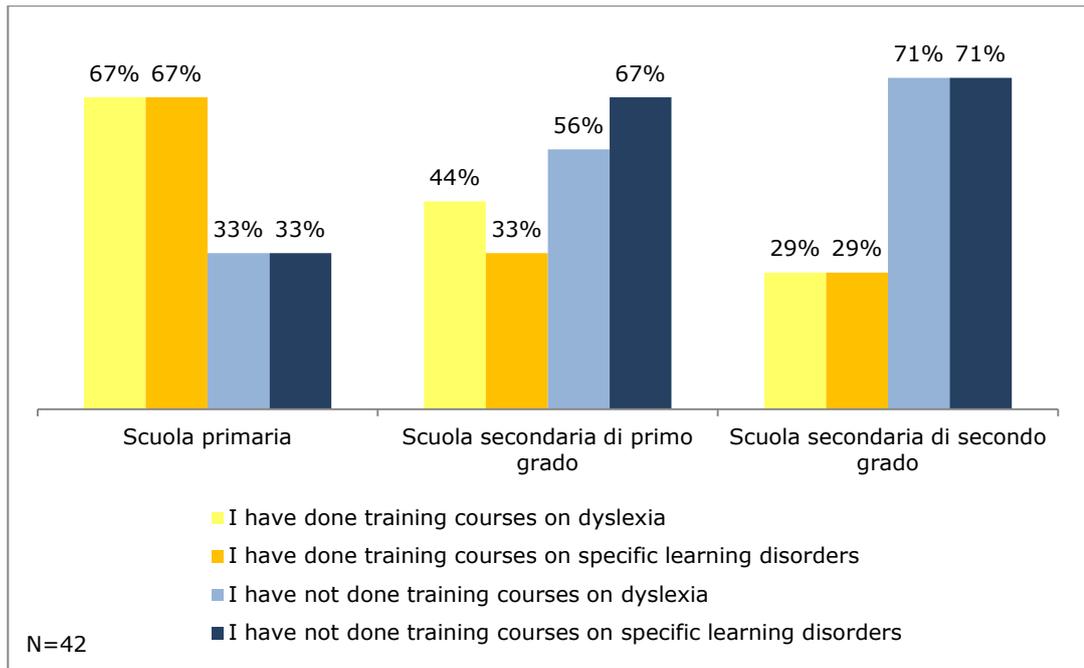


Chart 5.1.6 Attendance of training courses: comparison among schools

School location demonstrates not to be a determining factor, as percentages of attendance and non-attendance of training courses do not differ a lot from city and province.

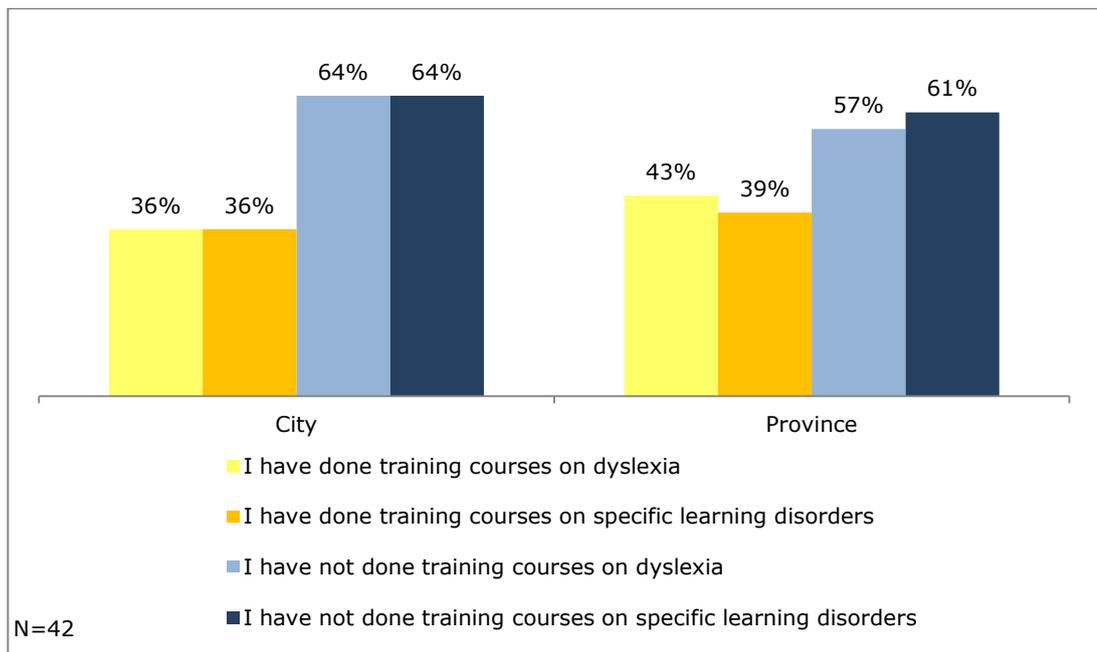


Chart 5.1.7 Attendance of training courses: comparison between city and province

6 Discussion on findings

This chapter covers questionnaire results in great detail. Features examined in the following chapters cover useful teaching practices that have been fully discussed in chapter 3. In chapter 6.9 teachers' perceptions on some aspects of FL teaching are analyzed.

Each item examined is crossed with the some parameters (namely, attendance of training courses, grade of school, school location and language taught) in order to verify whether they have a bearing on responses.

Each chart refers to data illustrated by tables at Appendix B: Reference tables.

6.1 Phoneme teaching

In this paragraph, questionnaire results on teaching practice towards dyslexics are to be discussed. In previous chapters (2. and 3.) it has been well highlighted that phoneme instruction is a crucial aspect in language teaching towards students with dyslexia, since these learners exhibit below-standard phonological skills.

A group of items of the questionnaire aims to know whether foreign language teachers use particular accommodations that ease the phonology acquisition of the L2.

Hence, results on the usage of these accommodations will be discussed in the next paragraphs.

6.1.1 Explicit foreign language phoneme instruction

Usually, in a FL classroom pupils are exposed to the FL sounds and, as expected by their teachers, succeed in learning how to pronounce letters and words spontaneously. Phonology instruction should be as explicit as possible, since learners with dyslexia struggle with recognition of phonological patterns that are given for granted (Schneider & Crombie, 2003), such as the correct pronunciation of foreign words.

Because of their disorder, dyslexic learners will benefit a lot from explicit training in phonology and in spelling rules. This proves to be more useful when the L1 and L2 orthographies differ from each other and when the L2 is an opaque language (for a definition of the type of language see 1.3 and 2.2).

Beginning with explicit FL phoneme instruction, half of respondents does teach foreign language phoneme explicitly when a dyslexic learner is in their class, as seen in the following chart.

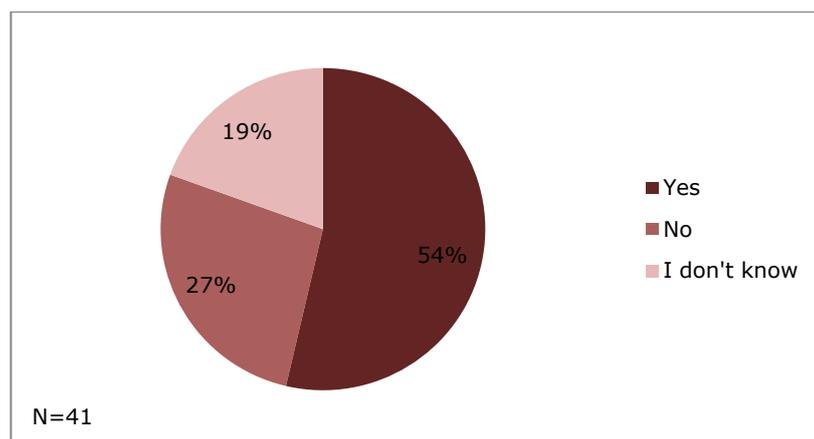


Chart 6.1.1 FL phoneme instruction: general use

With regard to explicit instruction of FL phonemes, there are not great differences brought about by attendance of training courses. However, noteworthy is the fact that the greatest percentage of those that do not teach phonemes explicitly is represented by teachers who have attended training courses on dyslexia (35%).

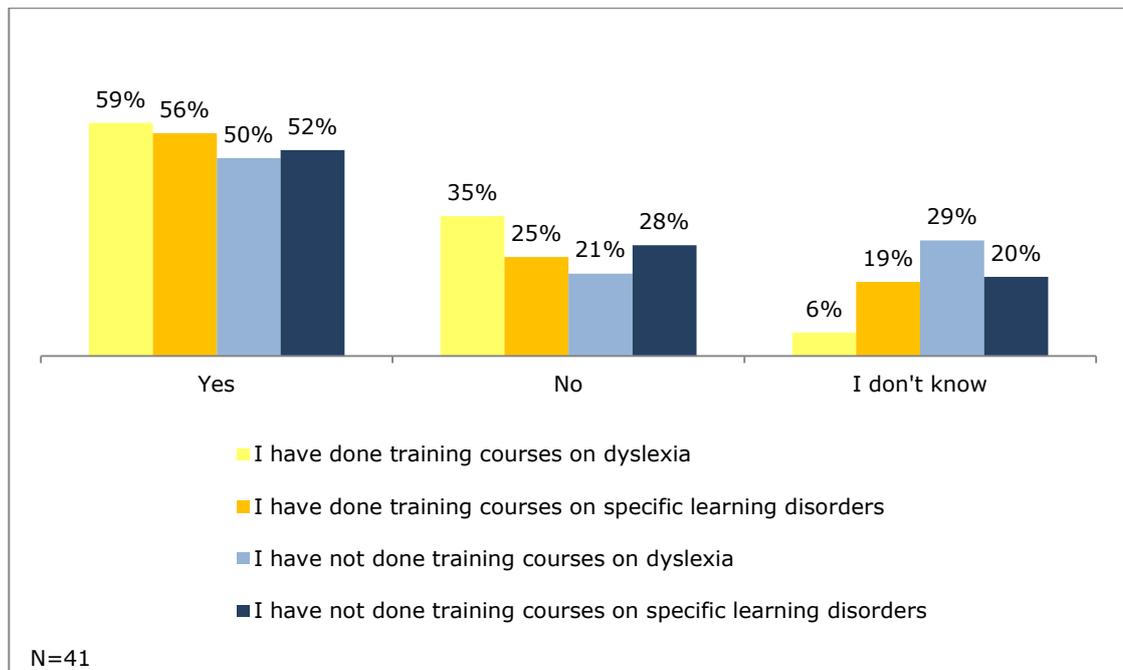


Chart 6.1.2 FL phoneme instruction: comparison between trained and not-trained teachers

6.1.2 Explicit instruction of grapheme/phoneme patterns

As already stressed, grapheme to phoneme conversions represent a crucial ability in the development of literacy skills, but these skills are usually weak in dyslexic learners, especially if the language to be acquired is inconsistent (c.f. 1.3 and 2.2).

As pinpointed by Kormos & Smith (2012), spelling instruction is not a common issue in foreign language teaching. Nonetheless, explicit explanations on how sounds map onto letters turns out to be a precious element for dyslexic learners' special needs. The authors add that the teaching of similar sound-letter patterns in consecutive sessions should be avoided, as it is likely to confuse the dyslexic pupil (c.f. 3.3.8 and 3.3.10).

The following chart examines whether FL teachers do teach grapheme-to-phoneme conversions explicitly: in fact, half of the respondents implements this accommodation towards learners with dyslexia.

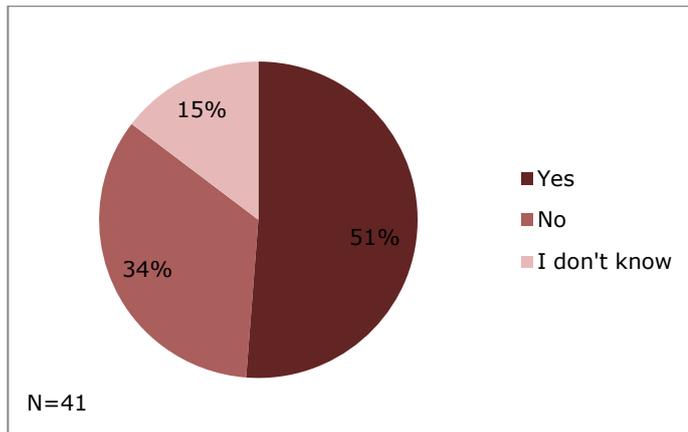


Chart 6.1.3 Explicit instruction of grapheme/phoneme patterns: general use

Data have been examined according to the attendance of training courses. More or less, half of each group of respondents (the two groups of trained teachers and the two groups of not trained teachers) says that they teach letter/sound patterns explicitly when they have dyslexic learners. Among teachers who have attended training courses there is still a great percentage (namely, 41% of dyslexia-trained educators and 31% of teachers that have done courses on specific learning disorders) that does not use this teaching accommodation. Hence, in this case, the attendance of training courses is not a discriminating factor, as the differences brought about by training courses are very narrow in both “Yes” and “No” groups.

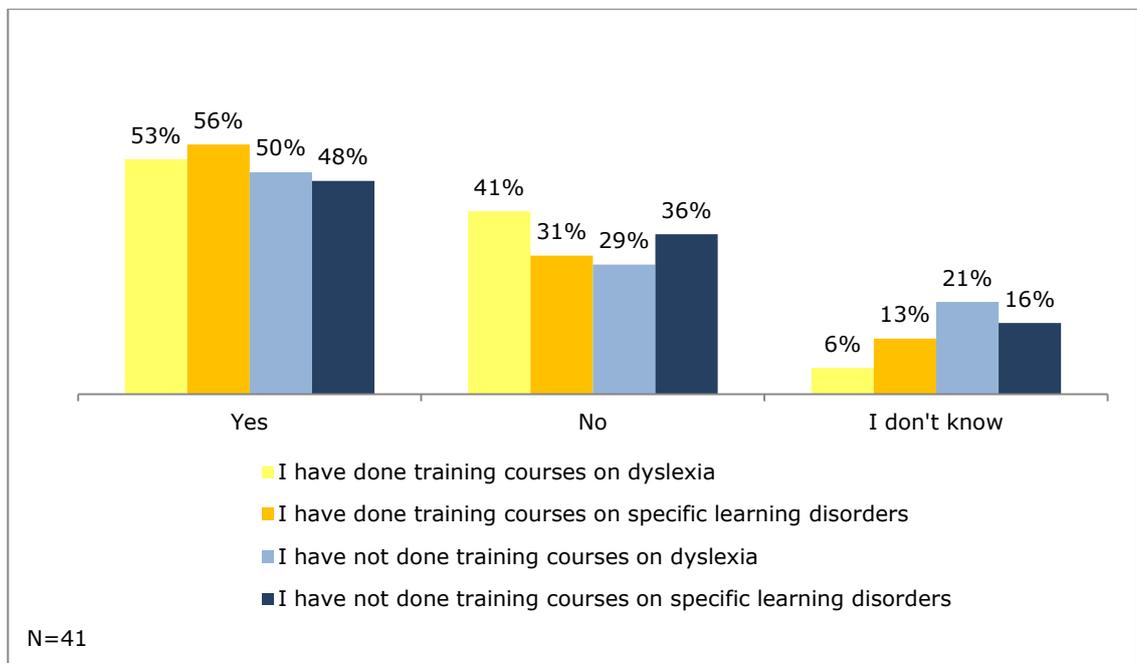


Chart 6.1.4 Explicit instruction of grapheme/phoneme patterns: comparison between trained and not-trained teachers

6.1.3 Phoneme progression order

Chart 6.1.5 deals with phoneme progression order, which is a simple but effective way of teaching FL phonology in order to make it easier for pupils with dyslexia to acquire the new sounds of the foreign language.

58% of instructors follow a precise order when teaching FL phonology: this order may be from most common phonemes to rarest ones and/or from simplest phonemes to most difficult sounds, as suggested in the question itself (see Appendix A: Annotated questionnaire, p. 192).

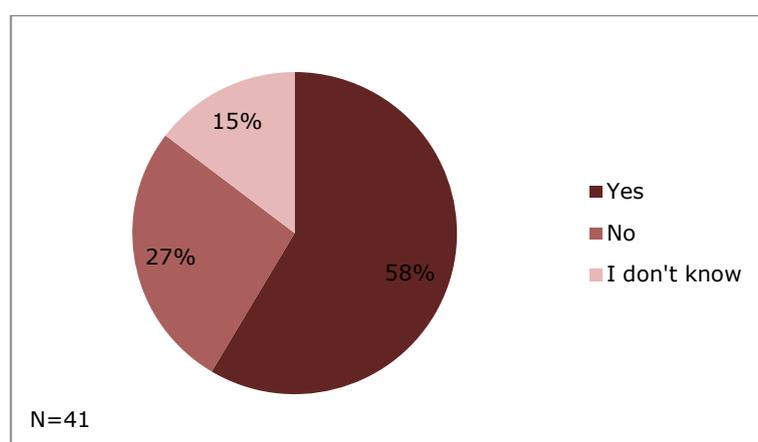


Chart 6.1.5 Phoneme progression order: general use

Differently from the previous ones, with regard to this parameter, the attendance of training courses makes FL educators more prone to following a progression order when introducing new sounds. The difference brought about by training courses is 20 or more percentage points. The number of negative responses among trained teachers is quite low (18% and 13%), which is an additional indicator of training courses effectiveness in this case.

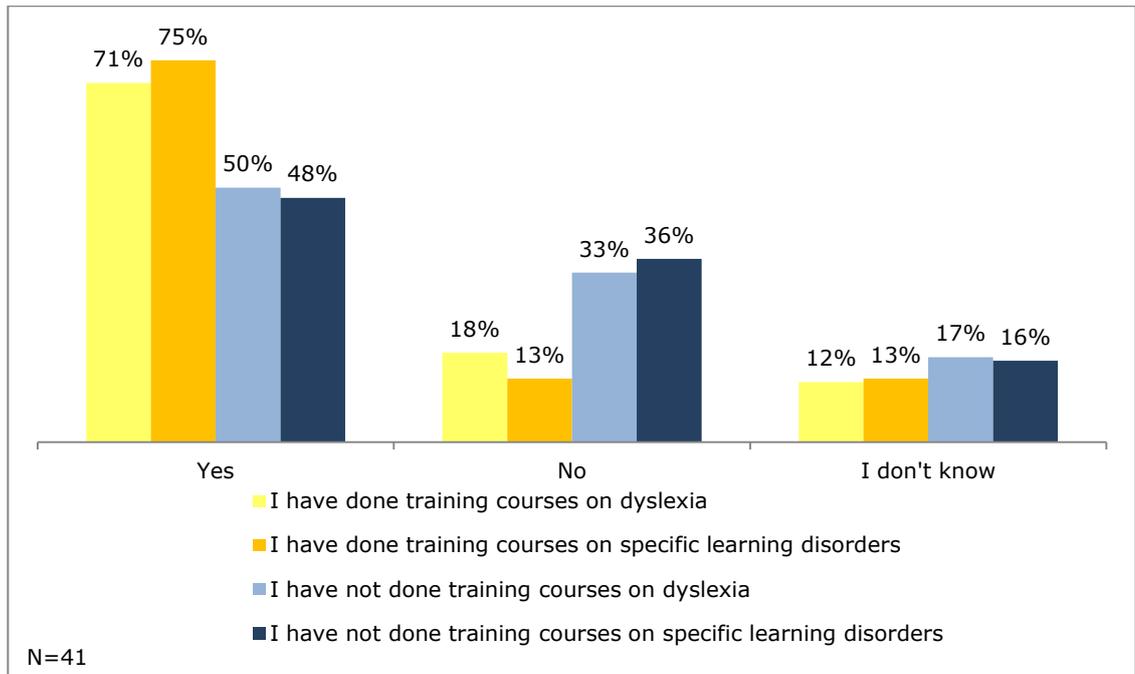


Chart 6.1.6 Phoneme progression order: comparison between trained and not-trained teachers

Connected with progression order is the teaching of one phoneme per time, since both phonological and short-term memory of pupils with dyslexia are limited and weak. Scientific literature also recommends avoiding teaching similar sounds in adjacent sessions (e.g. Kormos & Smith, 2012) (c.f. 3.3.8 and 3.3.10).

By and large, half of teachers answered “Yes” to the question “Do you teach one phoneme per time?”.

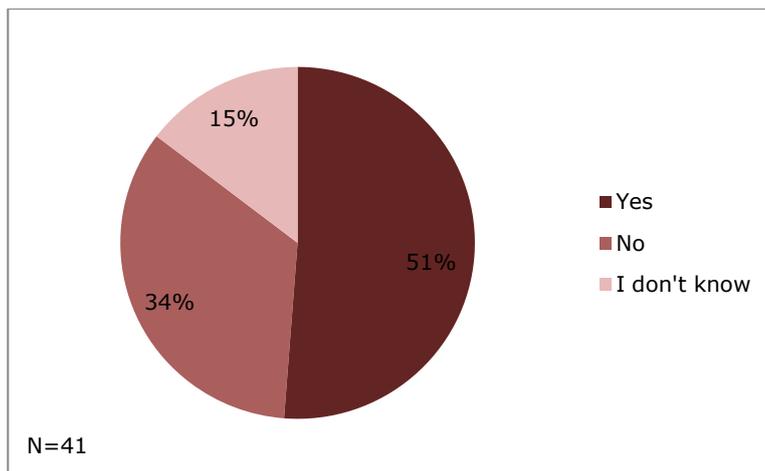


Chart 6.1.7 Instruction of one phoneme per time: general use

The chart below shows that, with respect to this accommodation, a training course specifically focused on dyslexia is slightly more useful than a course on specific learning disorders.

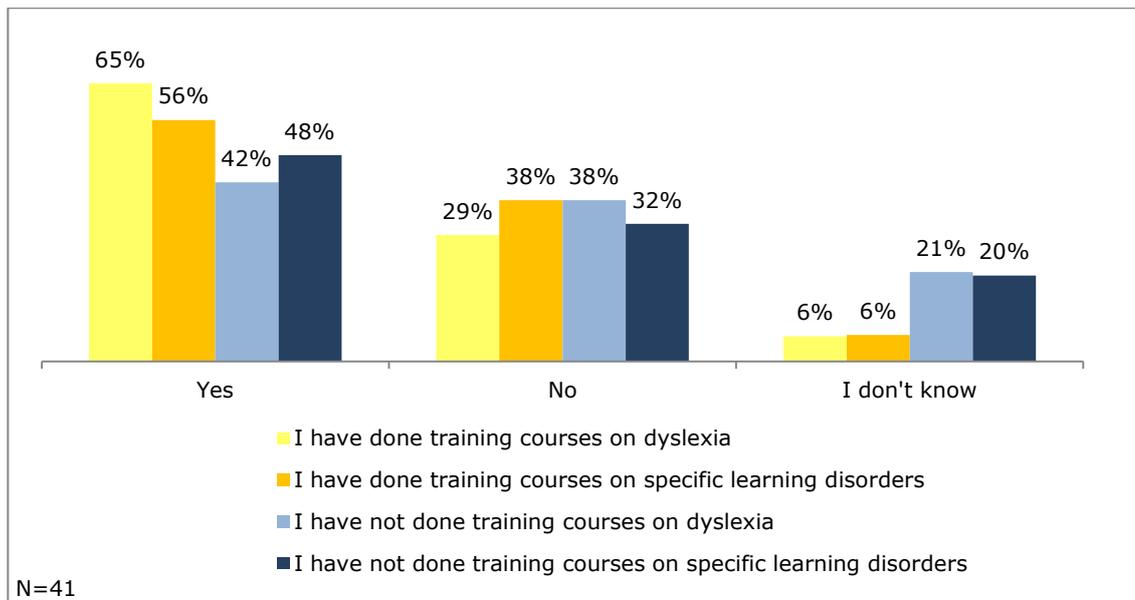


Chart 6.1.8 Instruction of one phoneme per time: comparison between trained and not-trained teachers

6.1.4 Explicit instruction of first language phonemes

Another interesting -but neglected- feature in phoneme instruction deals with native tongue phonology, which is often taken for granted by FL trainers. Teaching L1 phonemes is a good way to make pupils more aware and sensitive to language phonology. The native tongue serves as a facilitator for the recognition and understanding of rules and regularities, which are deduced by dyslexic learners with difficulty (Kormos & Smith, 2012). As evident in Sparks and colleagues investigations (e.g. Sparks, *et al.*, 1992b; Sparks & Ganschow, 1993), it is important to develop L1 skills parallel to L2 acquisition as they are fundamental to learn a foreign language (for a review of evidence on this topic see 0).

As expected, a great number of positive answers is missing.

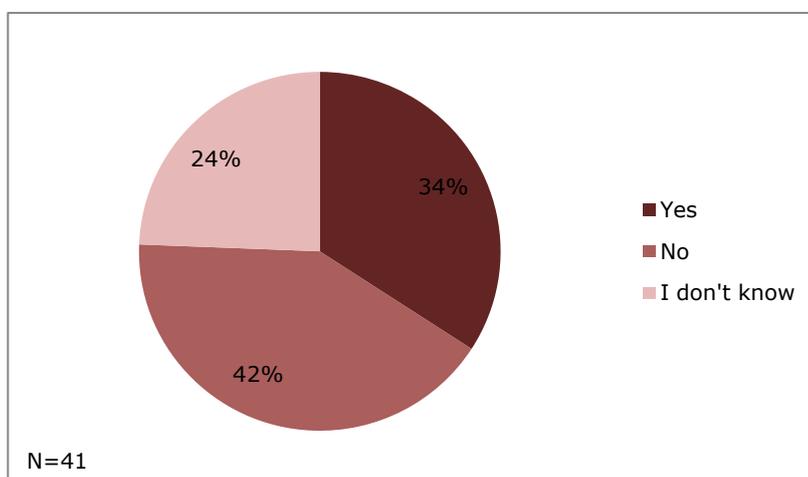


Chart 6.1.9 First language phoneme instruction: general use

Even among trained instructors there is a great number of negative answers. However, the number of “Yes” is slightly higher in teachers who have done courses on specific learning disorders rather than among teachers that have attended dyslexia-centred courses, whose percentage is similar to that of teachers who have not done courses on dyslexia (light blue bar).

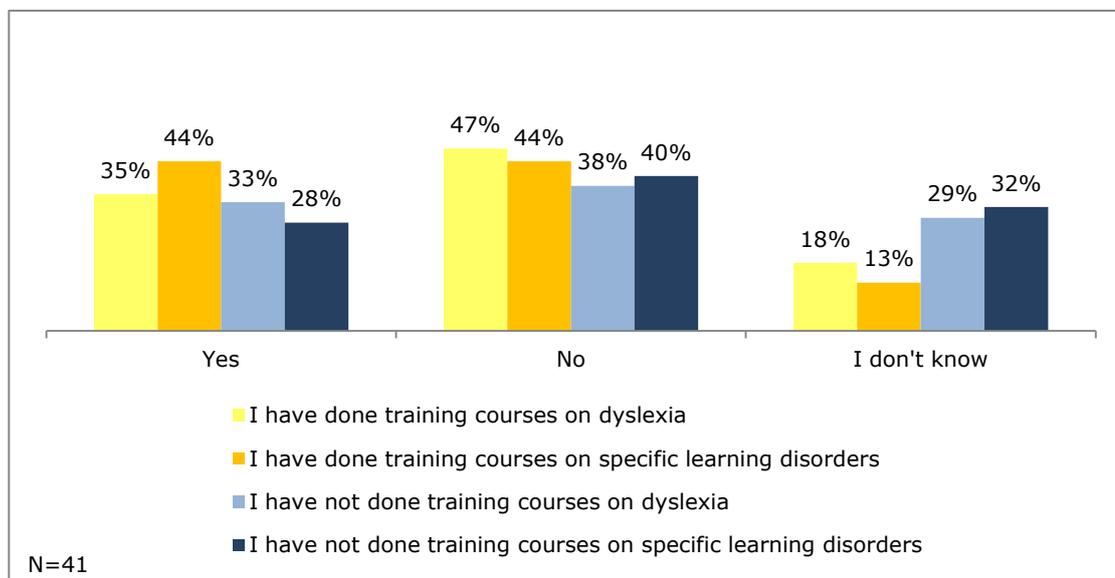


Chart 6.1.10 First language phoneme instruction: comparison between trained and not-trained teachers

6.1.5 Influence caused by other parameters

As explained in chapters 2. and 3., the type of language has its influence in foreign language learning. Obviously, phonology is one of the aspects that is most affected by the type of language.

The researcher concentrates the analysis on English - which is the most learnt language in Italy and the most taught in this survey - and French because, since they are opaque languages, learners with dyslexia are expected to have more difficulties with this type of language rather than with Spanish or German that are transparent languages (for a deeper discussion see 1.3 and 2.2).

As it is an opaque language, correspondences between letters and sounds are not predictable in English and so pronunciation may vary. Thus, it is advisable to use accommodations that can ease phoneme acquisition. Teachers of French, which is another example of deep language, implement more accommodations than their English colleagues when teaching English phonology to dyslexic pupils. The table below reports an overview of the results of positive answers with regard to the above mentioned techniques.

N=41	Do you teach phonemes explicitly?	Do you teach grapheme-to-phoneme patterns explicitly?	Do you use a precise progression order in teaching phonemes?	Do you teach one phoneme per time?	Do you teach L1 phonemes?
English	54%	46%	62%	54%	23%
French	67%	67%	67%	100%	67%

Table 6.1.1 Phoneme instruction: comparison between English and French teachers

Another aspect that should be covered in order to get a deeper view deals with the grade of school in which FL educators work. Results indicate that the above mentioned accommodations cannot be estimated as childish, as in many cases they are more used in *scuola secondaria di secondo grado* than in *scuola primaria*.

N=41	Do you teach phonemes explicitly?	Do you teach grapheme/phoneme patterns explicitly?	Do you use a precise progression order in teaching phonemes?	Do you teach one phoneme per time?	Do you teach L1 phonemes?
	Yes (%)	Yes (%)	Yes (%)	Yes (%)	Yes (%)
<i>Scuola primaria</i>	44	44	67	67	22
<i>Scuola secondaria di primo grado</i>	63	63	75	50	25
<i>Scuola secondaria di secondo grado</i>	54	50	50	46	42

Table 6.1.2 Phoneme instruction: comparison among schools

Data on school location show that teachers who work in schools located in the city of Verona use three of these accommodations more than instructors of the province (namely, phoneme progression order, teaching of one phoneme per time and L1 sound teaching).

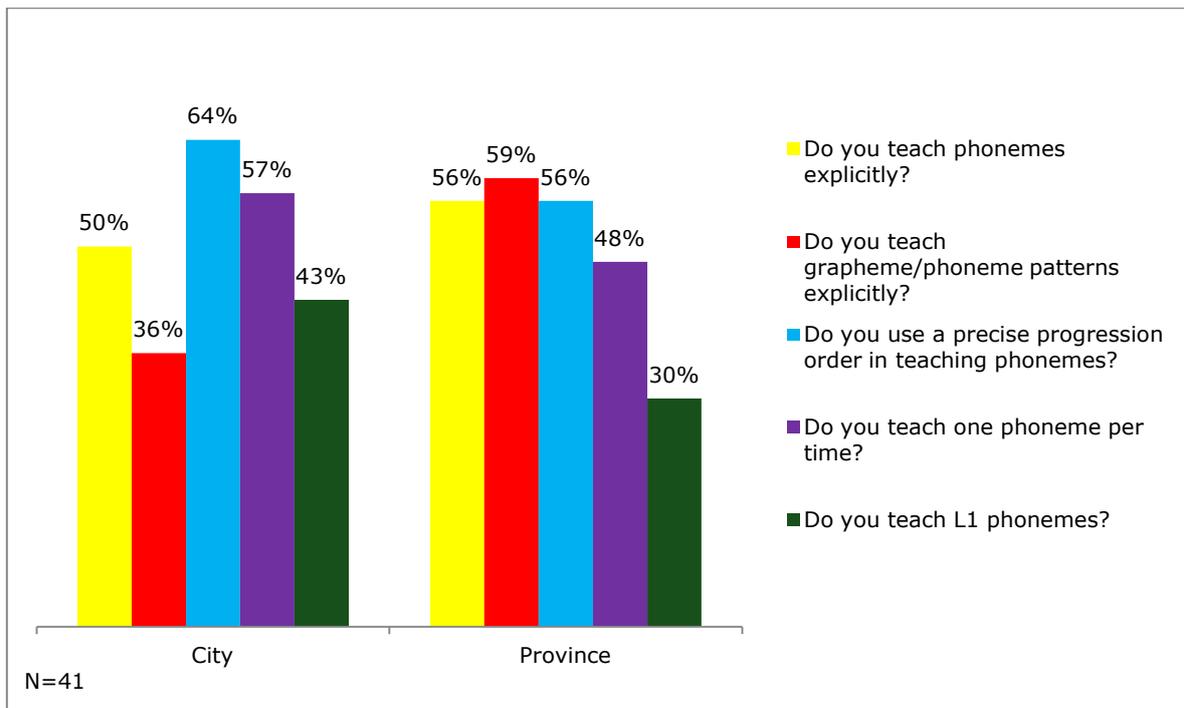


Chart 6.1.11 Phoneme instruction: comparison between city and province

6.2 Multisensory techniques

In chapter 3.4, stress was put on the effectiveness of the multisensory structured learning (MSL) approach to train dyslexic learners. Exercises and activities that simultaneously activate different learning channels, which are not affected by dyslexia, promote success in FL acquisition. Thus, next chapters will analyse the use of those activities that facilitate linguistic item encoding and that do not exploit the impaired phonological pathway.

Questions covered in the following chapters are slightly different from the previous ones, as in the items examined in next paragraphs respondents are asked how often they use an accommodation, instead of whether they use it or not. Respondents have to choose according to a scale: 0% (never), 25%, 50% (frequently), 75%, 100% (always) (see chapter 4.2.2).

Additionally, in almost all cases, a partial cumulative percentage is reported: it groups together two answers, namely 75% of lessons (very frequently) and 100% (always), as they indicate that an item is very often used. This frequent and constant use is assumed as a good predictor of a greater benefit for dyslexic learners. On the contrary, if the accommodation is implemented never (0%) or seldom (25% of lessons), it means that the dyslexic pupils is less likely to take advantage of the accommodation under consideration.

6.2.1 Motor activities

The graphic below shows the usage of motor activities when a dyslexic learner is in the class. Light colours indicate infrequent use of the accommodation, while, on the other side, the darker the colour used, the greater the implementation.

Only 6 respondents (15%) answered they make use of motor activities very frequently (75%)/always (100%).

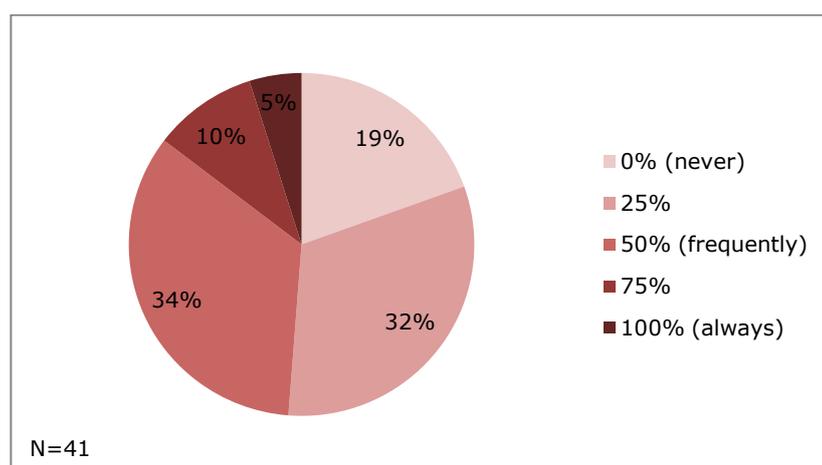


Chart 6.2.1 Motor activities: general use

Thus, analysis of influence of parameters, such as attendance of training courses, grade of school and school location, are not analyzed due to the small number of responses.

6.2.2 Tactile activities

In Table 3.4.1 Practice examples of MSL principles (chapter 3.4) one can see that writing letters on different surfaces is of service in the case of dyslexic pupils. Also finger-tapping of each sound in a syllable is a useful device. These are two examples of multisensory activities.

Results on the implementation of tactile activities are striking: only 7% (3 respondents) answered they use these activities very often/always.

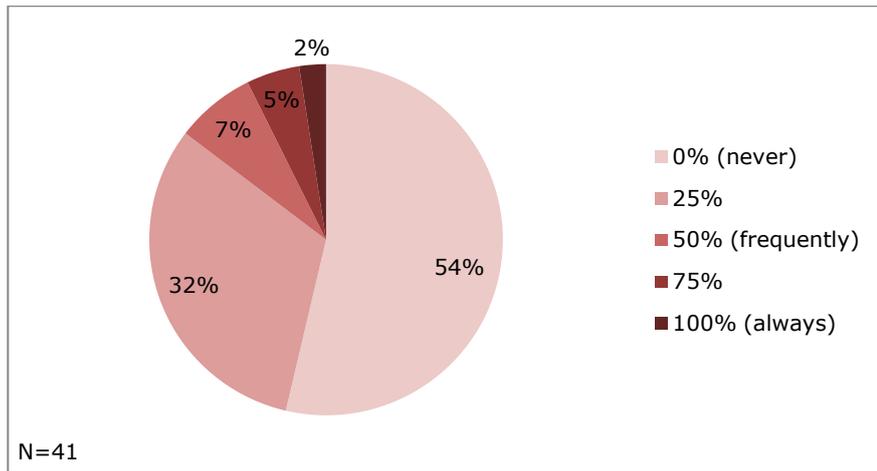


Chart 6.2.2 Tactile activities: general use

Hence, as before, further analyses on influencing factors such as attendance of training courses, grade of school and school location, will be not reported.

6.2.3 Images

Results on the use of images during foreign language classes are very different from the previous ones. Only 2 respondents (5%) answered they never use images at all.

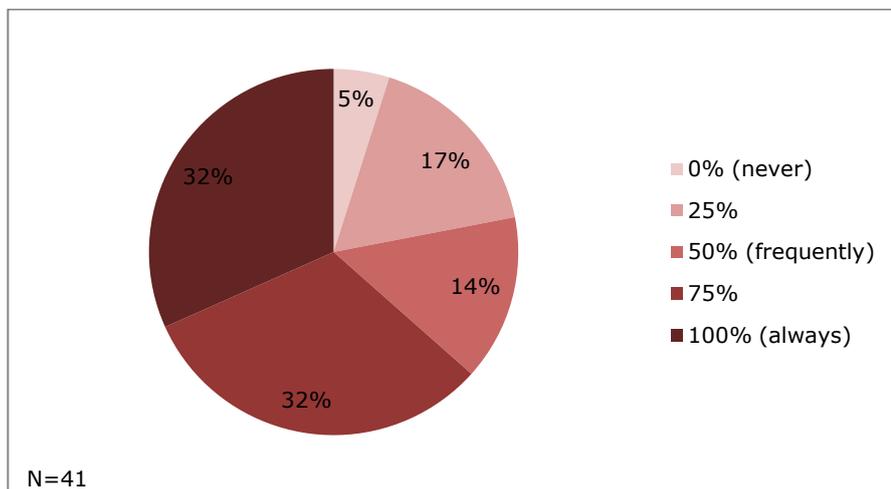


Chart 6.2.3 Images: general use

Additionally, the use of images is well used by all teachers, regardless the attendance of training courses. However, trained educators are more prone to using images than their colleagues.

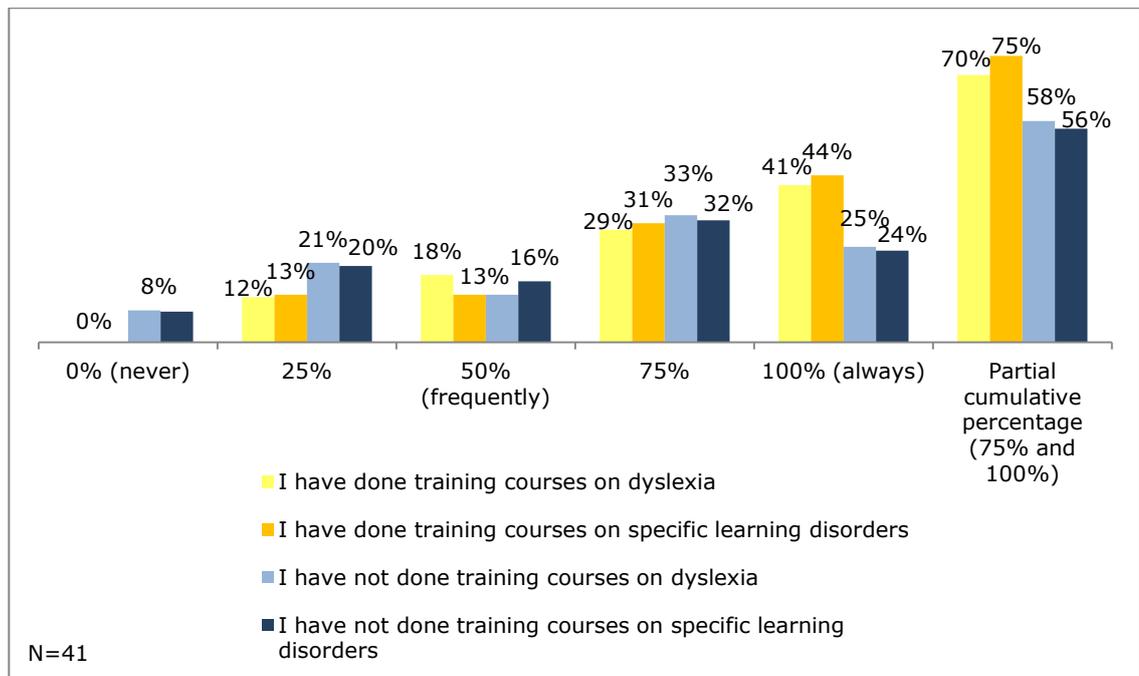


Chart 6.2.4 Images: comparison between trained and not-trained teachers

Regarding the grade of school, partial cumulative percentages on very frequent use (75% and 100%) are distributed as follows: 100% in *scuola primaria*, 38% in *scuola secondaria di primo grado* and 58% in *scuola secondaria di secondo grado*. Thus, it cannot be claimed that images are perceived as childish, because in that case, percentage of *scuola secondaria di secondo grado* would have been lower than that of *scuola secondaria di primo grado*.

Finally, results do not vary a lot due to school location.

6.2.4 Multimedia

Multimedia is a label which groups together different tools: for instance, computers, CDs, DVDs, Internet and the interactive whiteboard. Since they gather several types of languages and forms, multimedia devices make it possible to learn something thanks to different channels (prints, music, audio, images) and arouse interest especially in young learners¹.

Results of this survey show that 37% of FL educators use multimedia very often (22%)/always (15%) when they teach a foreign language to dyslexic learners.

¹ For a deeper discussion on how new technologies can help learners with specific learning disorders see e.g. Stella, *et al.* (2006); Schneider & Crombie (2003) or visit the British Dyslexia Association New Technologies Committee at www.bdatech.org.

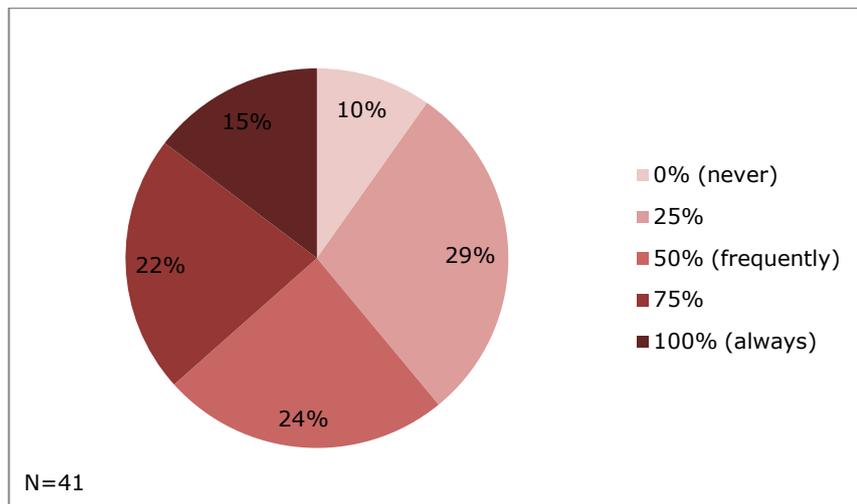


Chart 6.2.5 Multimedia: general use

According to the attendance of training courses, the only visible difference is that educators that have not done training courses on dyslexia (light blue bar) lag behind their colleagues (partial cumulative percentage).

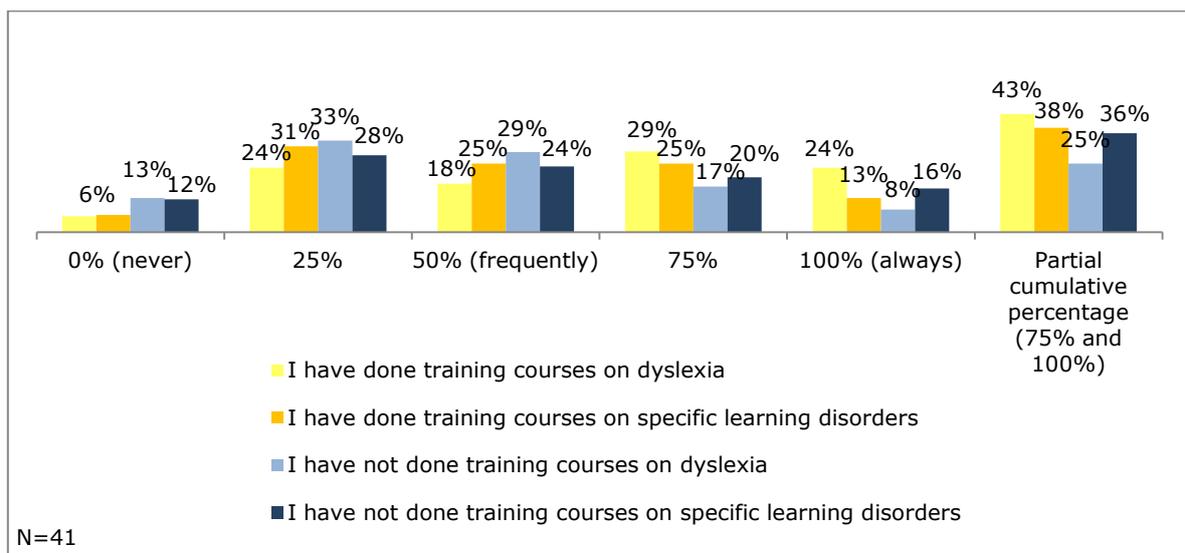


Chart 6.2.6 Multimedia: comparison between trained and not-trained teachers

Outcomes on the type of school illustrate that less than half of teachers of *scuola primaria* (44%) and *scuola secondaria di secondo grado* (42%) use multimedia very often/always, against 13% of instructors of *scuola secondaria di primo grado*.

When results on multimedia are crossed with school location, this parameter appears not to be an influencing factor, as results do not differ a lot from each other.

6.2.5 Hand and mouth movements

One example of multisensory activities is the demonstration of hand movements while writing. As already mentioned, many individuals with dyslexia have fine- and gross-motor skill impairments, so that they may exhibit an odd pen grip and an unintelligible handwriting (see also Table 1.1.1 and chapter 2.3).

Only 2 respondents (5%) answered they always show hand movements when teaching a foreign language to dyslexic individuals:

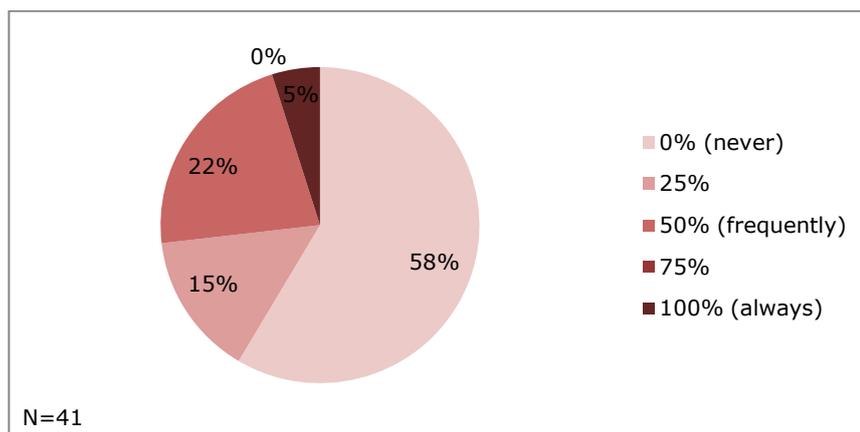


Chart 6.2.7 Explicit instruction of hand movements: general use

Since the very small number of responses, analysis on influencing factors will be under the influence of this low number.

Very far from data on hand movements, results on mouth movement teaching demonstrate that a considerable number of teachers (represented by dark colours) show how to pronounce words very frequently (14%)/always (27%), that is 41% of respondents.

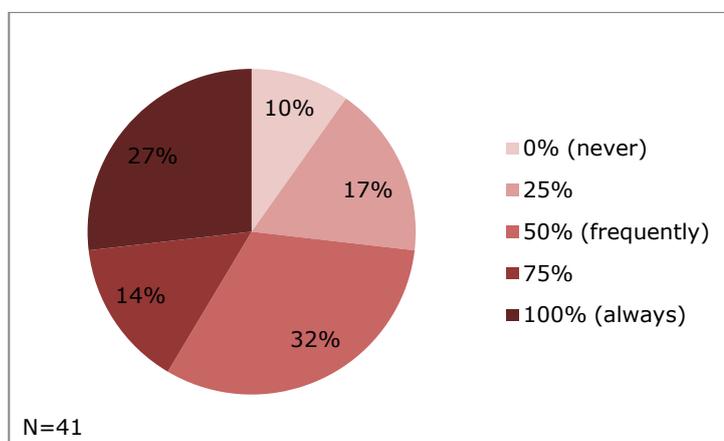


Chart 6.2.8 Explicit instruction of mouth movements: general use

More crushing are differences between trained and not-trained groups on mouth movement instruction. With regard to partial cumulative percentage, data portrayed in the chart below illustrate that teachers who have attended training courses on specific learning disorders (69%) use this accommodation more than educators that have done training courses on dyslexia (53%).

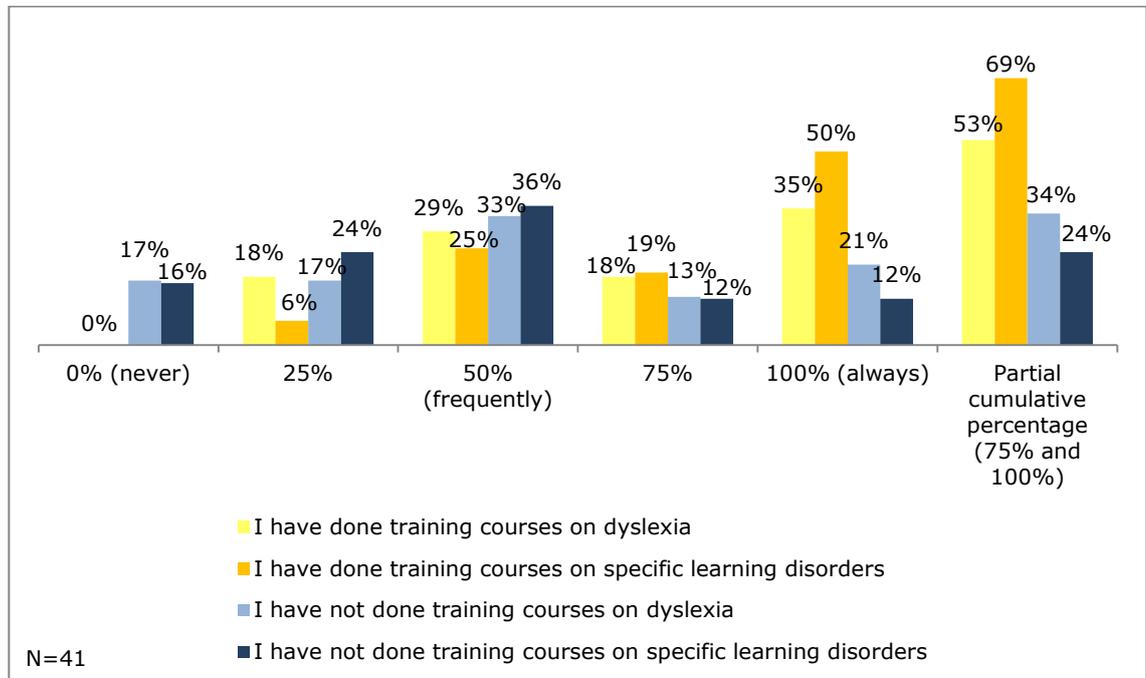


Chart 6.2.9 Explicit instruction of mouth movements: comparison between trained and not-trained teachers

Differences brought about by the grade of school (Chart 6.2.10) demonstrate that half of teachers of primary schools show how to pronounce words very frequently/always, whereas this percentage decreases in upper grades (38%). Perhaps this is due to the fact that this accommodation is recognized as childish or that educators may think that teenagers can grasp word pronunciation autonomously. Nonetheless, due to their phonological impairment or, at least, weaknesses, individuals with dyslexia need explicit instruction on phonology as they are much less skilled in understanding word pronunciation thanks to merely exposure (see also 3.3.7 and 3.4).

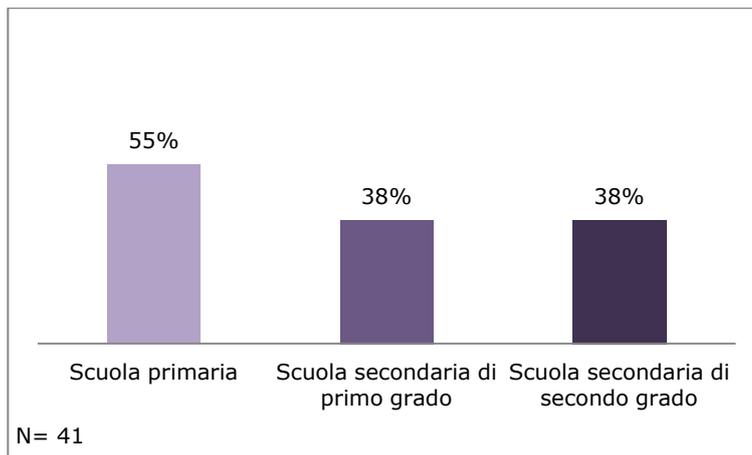


Chart 6.2.10 Explicit instruction of mouth movements: comparison among schools (partial cumulative percentage)

Results on school location demonstrate that schools located in the city of Verona reached a higher partial cumulative percentage concerning the use of this accommodation:

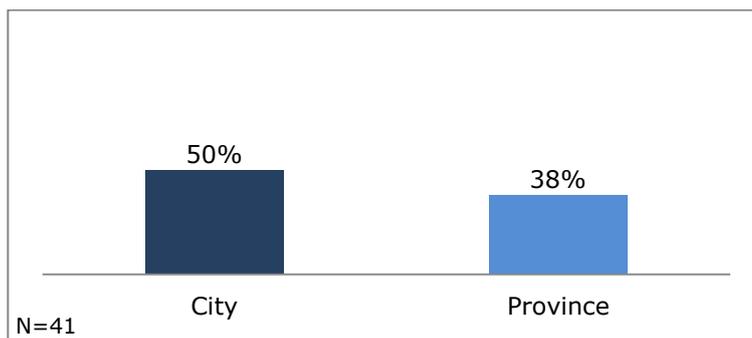


Chart 6.2.11 Explicit instruction of mouth movements: comparison between city and province (partial cumulative percentage)

6.3 Metalinguistic practice

Metalinguistic skills help learners making the learning process explicit so that the learner is able to intervene in that process and makes it work better whenever possible.

Being aware of and having a control over the learning process is a very valuable instrument in foreign language acquisition, as the L2 is not as automatic as the native tongue:

“Most advanced learners will internalize these rules and thus the decision-making becomes automatic – they may even be unable to articulate why they have chosen a particular usage, citing ‘gut feeling’ as their guide. For

learners with an SpLD [Specific Learning Disorder] who may find it harder to develop this automacity, it may be beneficial to develop routines that enable them to work out the answer each time, and check their choices.” (Kormos & Smith, 2012, p. 121)

Teachers should aid the implementation of metalinguistic techniques, as the effects of explicit language concept explanations may be dramatic in terms of success. Educators should provide several opportunities for problem-solving strategies. Schneider & Crombie (2003) estimate metalinguistic thinking as lifesaver when it comes to dyslexic pupils.

Not only does metalinguistic practice suggest why we should choose an item/form instead of another (e.g. the past perfect instead of the present perfect), but it also helps to find out the best ways for linguistic features memorization and retrieval. Thus, the two following chapters will cover the use of memorization and metalinguistic strategies.

Finally, the foreign language educator ought to provide incentives for metalinguistic dialogues and to monitor the underlying thinking steps (Schneider & Crombie, 2003).

6.3.1 Memorization strategies

Foreign language educators should promote the use of different mnemonic devices, so that a given learner will choose the one that works better in his/her case (examples of mnemonic devices are given by Schneider & Crombie, 2003).

Back to survey outcomes, almost half of respondents (48%) teaches how to memorize linguistic features (e.g. new words, articles, verbs, word formation and so on) very frequently (24%)/always (24%). Nevertheless, a fourth of respondents uses this accommodation very rarely (light colours).

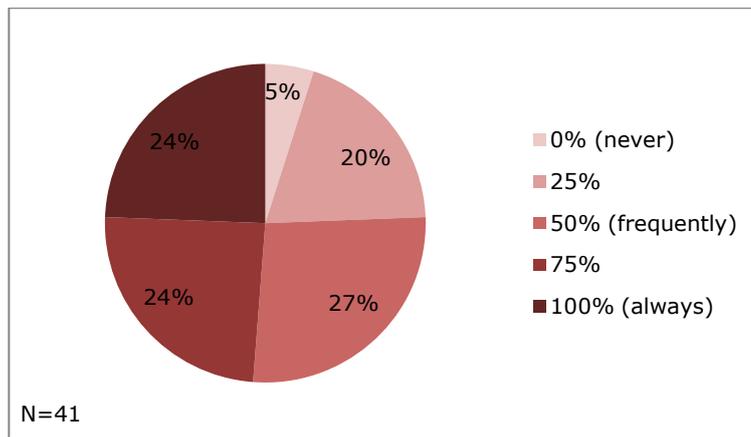


Chart 6.3.1 Memorization strategies: general use

To the question “How often do you teach memorization strategies?” trained teachers say “never” less than not-trained ones. Nonetheless, cumulative percentage on frequent use (75% and 100%) indicates that there is no significant difference between trained and not-trained educators.

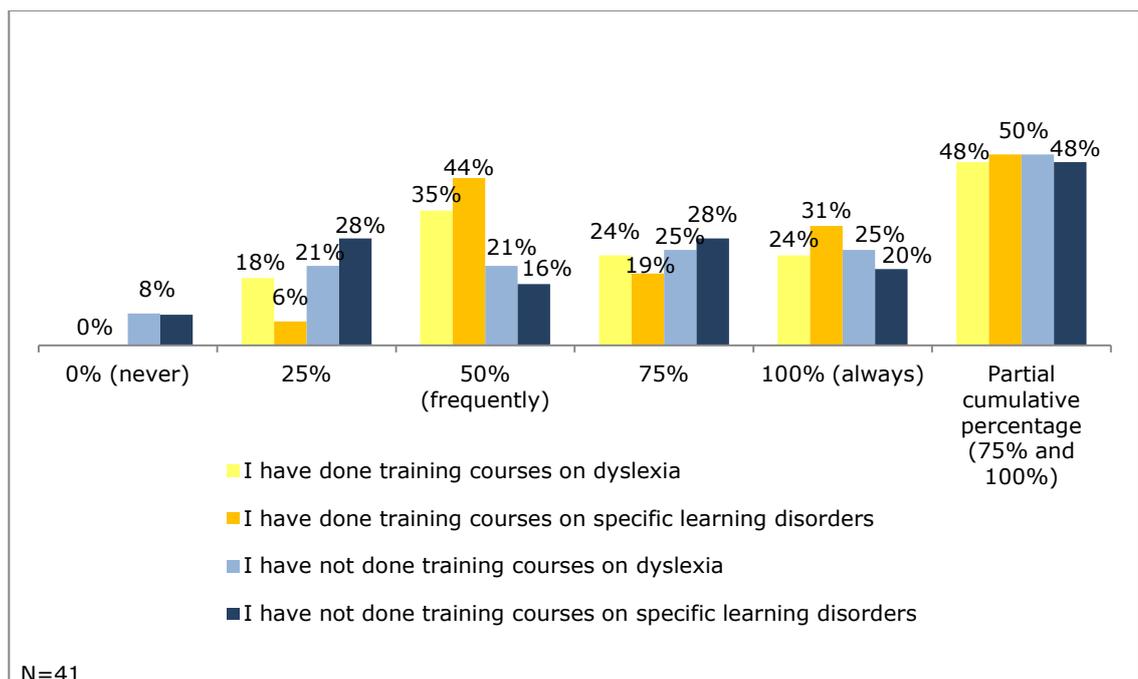


Chart 6.3.2 Memorization strategies: comparison between trained and not-trained teachers

To see whether the teaching of memorization strategies goes under the influence of the type of school in which teachers work, responses have been crossed with this parameter. As showed by chart Chart 6.3.3, it cannot be said that the use of this accommodation goes down or grows up in upper grades, as similar results are observable in both *scuola primaria* and *secondaria di secondo grado*, while *scuola secondaria di primo grado* exhibits a lower percentage (38%).

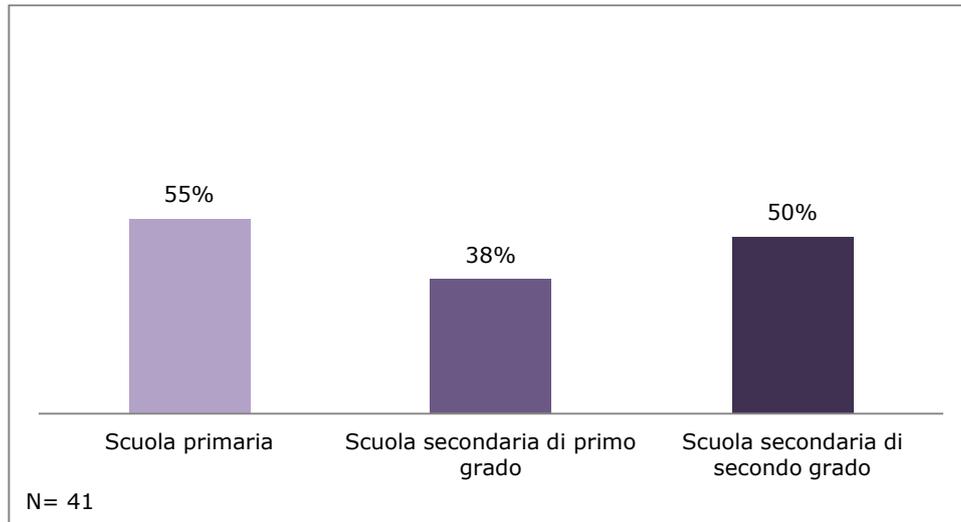


Chart 6.3.3 Memorization strategies: comparison among schools (partial cumulative percentage)

Difference between city centre and province goes in favour of schools located in the city (57% versus 45%).

6.3.2 Metalinguistic strategies

About a third of respondents teaches metalinguistic strategies to dyslexic pupils very frequently (12%)/always (20%).

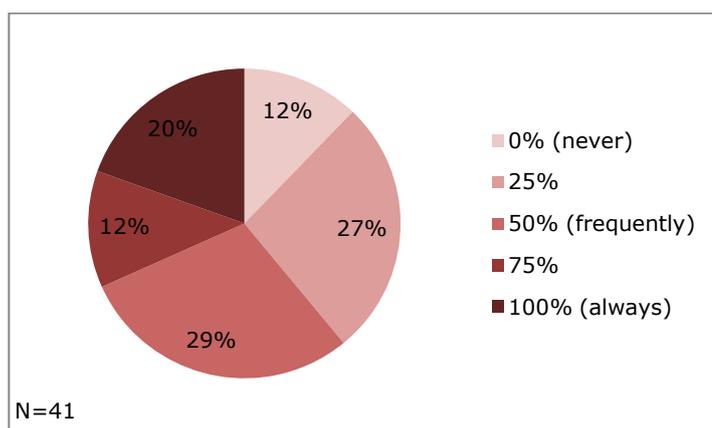


Chart 6.3.4 Metalinguistic strategies: general use

On the other side, data on metalinguistic strategies are unexpected as the partial cumulative percentages show that teachers who have not attended training courses on dyslexia (light blue bar) use this accommodation more than the other groups. Surprisingly, the lowest percentage is represented by instructors who have attended courses on dyslexia (18%; light yellow bar). Nevertheless, teach-

ers who, after all, never teach metalinguistic strategies are not-trained educators (17% and 20%).

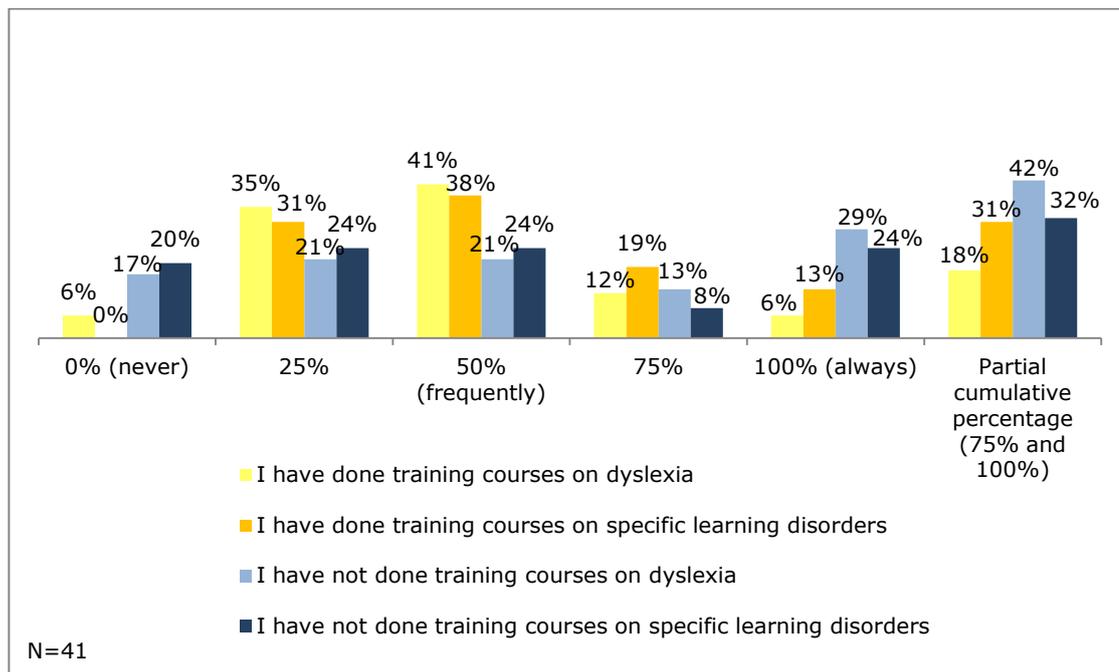


Chart 6.3.5 Metalinguistic strategies: comparison between trained and not-trained teachers

Partial cumulative percentages of the three types of school show that metalinguistic strategies are more taught in *scuola secondaria di secondo grado* (42%) than in the other schools. Maybe teachers suppose that metalinguistic strategies work better with older pupils, but outcomes do not get along with this hypothesis, as in primary schools they are more taught than in *scuola secondaria di primo grado* (22% versus 13%).

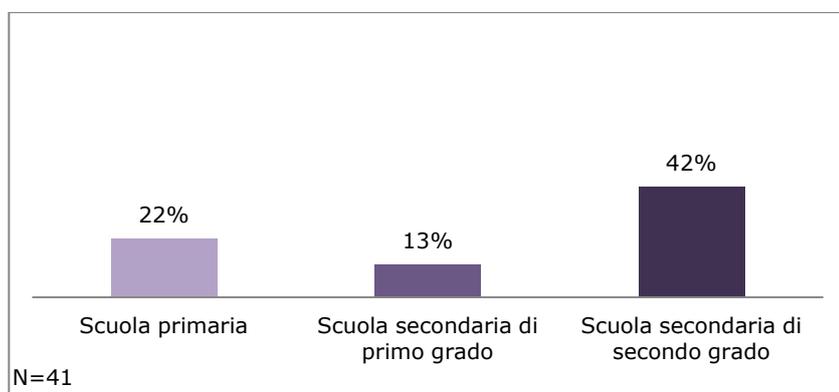


Chart 6.3.6 Metalinguistic strategies: comparison among schools (partial cumulative percentage)

Finally, data on city and province are more substantial than the previous ones, as there is a significant difference brought about by school location: half of teachers of city schools implements metalinguistic strategies very frequently/always, whereas only 22% of FL educators of schools located in the province use them.

6.4 Explicit instruction

It has been repeatedly said that dyslexic learners are much likely to benefit from explicit training in many fields of foreign language learning as they are hampered in recognizing linguistic regularities both in the native tongue and in the foreign language. Thus, they need explicit instruction at all levels of the L2 system and direct teaching with regard to other aspects of FL learning (e.g. study methods and lesson structure) (Kormos & Smith, 2012; Schneider & Crombie, 2003; Nijakowska, 2010).

6.4.1 Exercise aim explanations

The vast majority of teachers explain to their dyslexic learners what activities and exercises aim to. Educators know what activity purposes are, but learners –with or without apparent dyslexia- might struggle with exercise aim identification. This habit will help them recognize what contents they are learning, so that they will see the structure of class activities. Additionally, clear guidelines are very useful for dyslexic learners so that they are allowed to know what has to be focused.

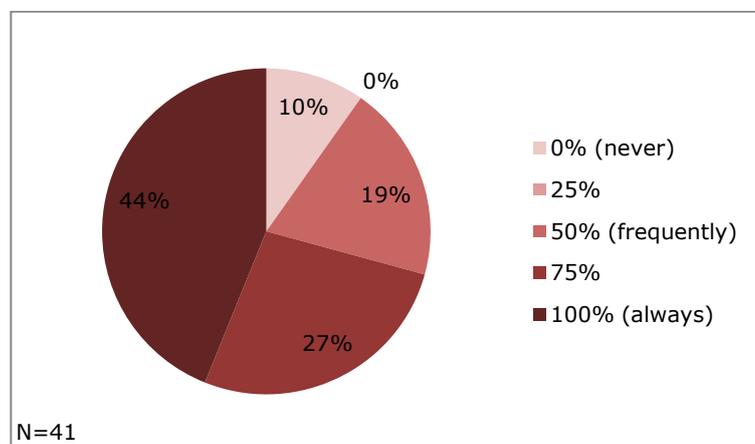


Chart 6.4.1 Exercise aim explanation: general use

Data confirm the trend seen before: among “never”, higher percentages are exhibited by those instructors that have not done training courses on specific learning disorders. Cumulative percentages indicate that trained teachers are used to explaining exercise aims more than not-trained colleagues.

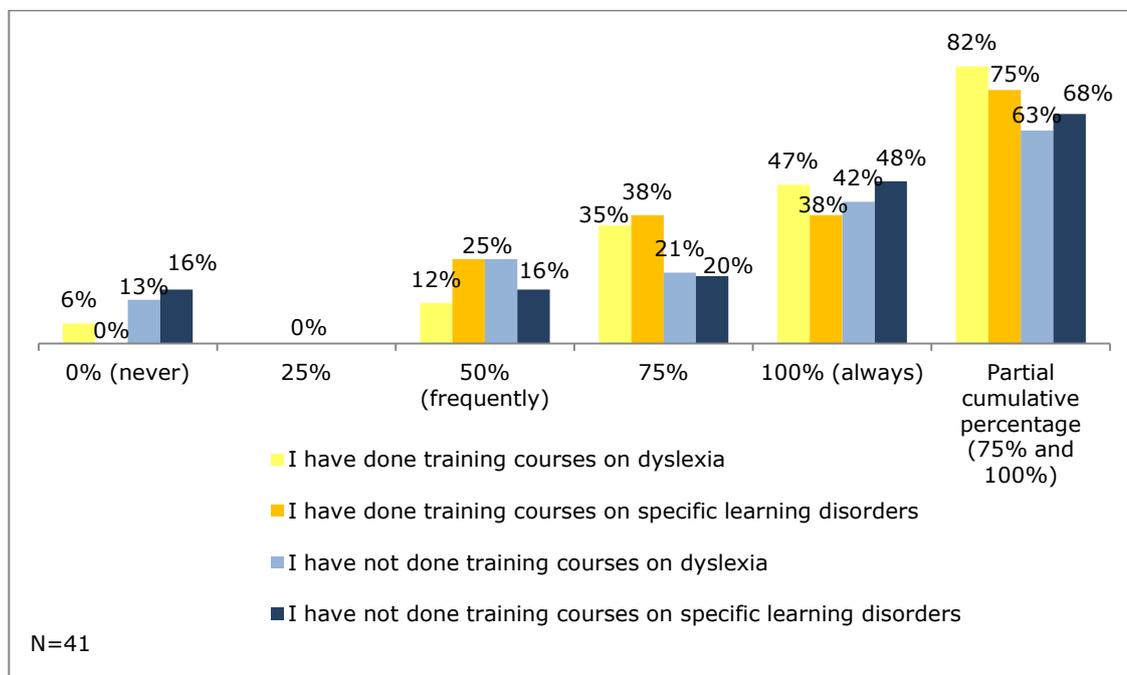


Chart 6.4.2 Exercise aim explanation: comparison between trained and not-trained teachers

With regard to the type of school, pupils of primary schools are less informed (33%) on exercises purposes. According to partial cumulative percentages, very frequent explanations are given much more in upper grades (88% in *scuola secondaria di primo grado* and 79% in *scuola secondaria di secondo grado*). As portrayed in the chart below, the use of this accommodation is more implemented in schools located in the city of Verona rather than in the province, with a difference of 25 percentage points.

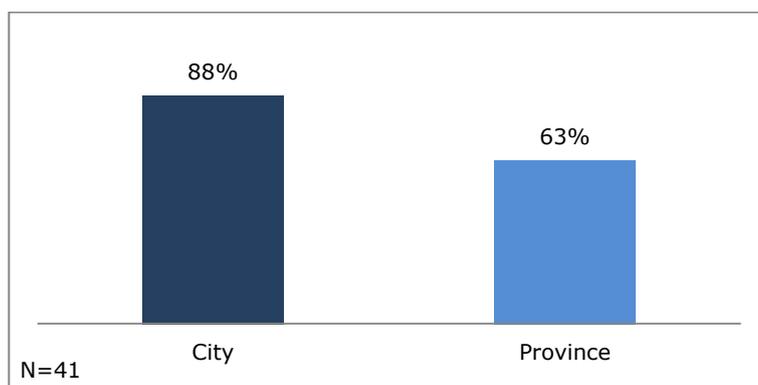


Chart 6.4.3 Exercise aim explanation: comparison between city and province (partial cumulative percentage)

6.4.2 Explicit connections

A simple but effective way of introducing new learning materials is making connections with the past knowledge, as pupils with dyslexia might struggle in recognizing associations (see also 3.3.7) – this habit is recommended also by the MSL approach (it is explained in chapter 3.4).

The chart below shows that more than half of respondents explains how to connect past knowledge with new materials very often/always.

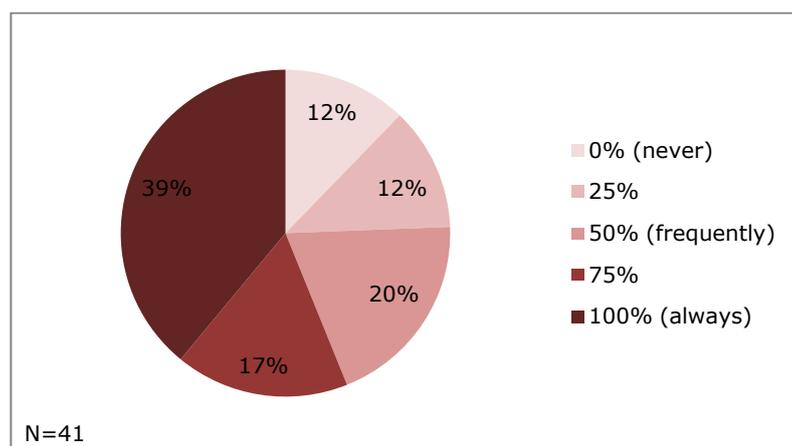


Chart 6.4.4 Explicit connections: general use

Data show that training courses can make the difference, as trained teachers say “never” less than not-trained ones and use this accommodation more often than their colleagues who have not attended any courses.

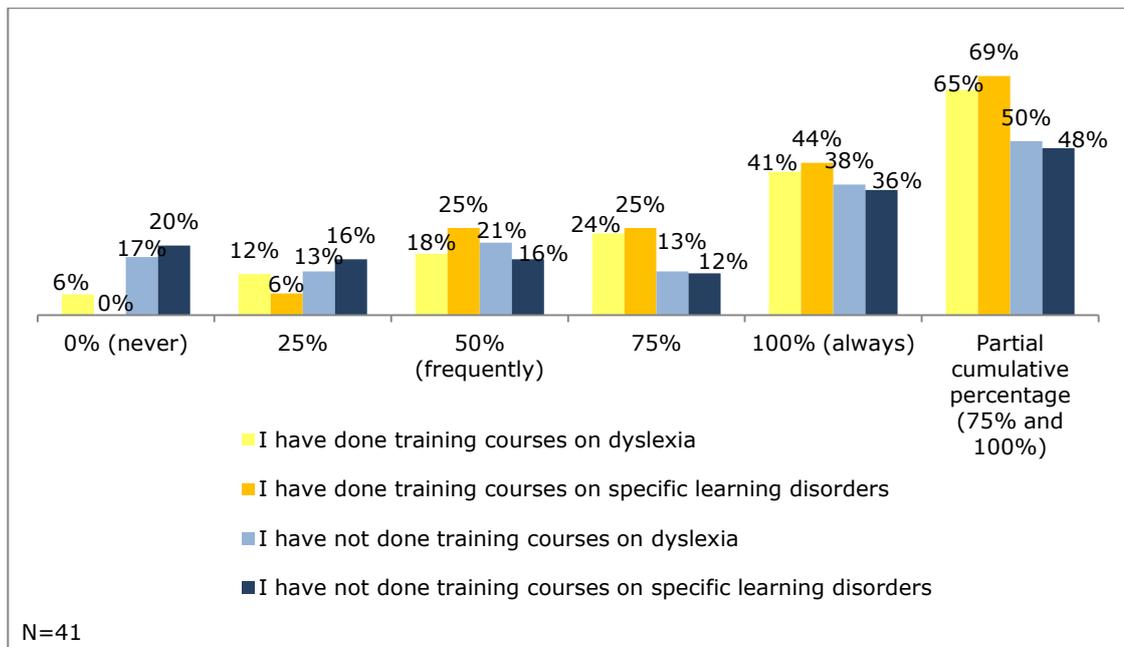


Chart 6.4.5 Explicit connections: comparison between trained and not-trained teachers

With regard to the grade of school in which this accommodation is implemented, partial cumulative percentages indicate that explicit connections are made more often in upper grades (88% in *scuola secondaria di primo grado* and 79% in *scuola secondaria di secondo grado*) than in primary schools (33%).

Finally, as before, schools located in the city reaches a greater partial cumulative percentage on the use of this accommodation towards dyslexic pupils.

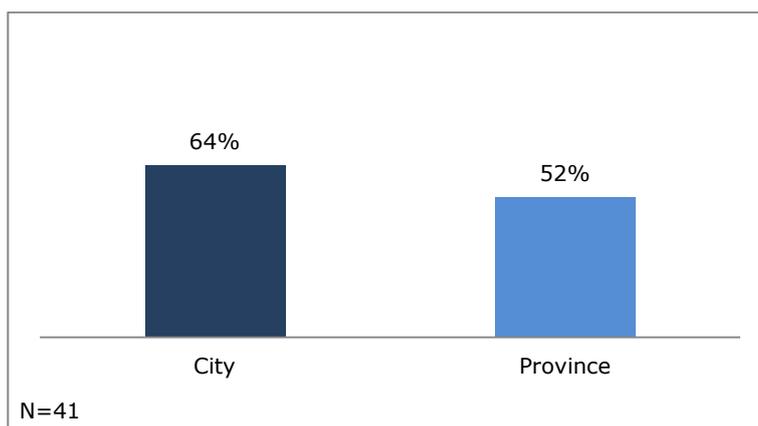


Chart 6.4.6 Explicit connections: comparison between city and province (partial cumulative percentage)

6.4.3 Lesson structure

Similarly to exercise aim explanation, teachers always know what the lesson consists of: unit purposes and contents, activity aims, types of exercise,

grammar and culture issues covered. However, several learners - with and without learning disabilities - find it difficult to discover the lesson structure. Make it explicit is a way of establishing what topics will be covered and what new learning materials will be faced. The lesson plan should include an introductory time in which past knowledge is recalled and a "sum-up" time that is focused to ascertain new item memorization. This provides overlearning and frequent revision, which are fundamental features in the MSL approach.

As evident in the chart below, the majority of respondents (63%) has answered they clarify what lesson contents will be on a very frequent basis (19%)/always (44%).

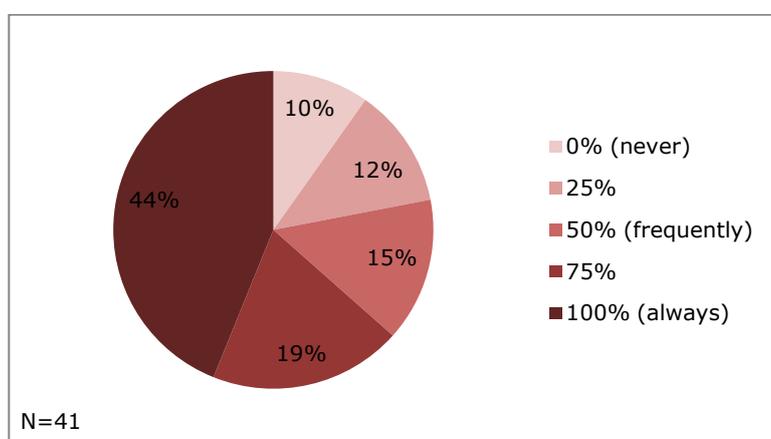


Chart 6.4.7 Lesson structure: general use

With regard to parameters that may have influenced responses, it has to be said, according to partial cumulative percentages, that: there are no differences among trained and not-trained teachers; the percentage related to this accommodation grows up as grade of school grows (from one fifth of primary educators to about four fifths of instructors of *scuola secondaria di secondo grado*, as portrayed in Chart 6.4.8); and, finally, considering school location, the trend seen before is confirmed, as very frequent use of this accommodation goes in favour of schools located in the city (78% vs. 55%).

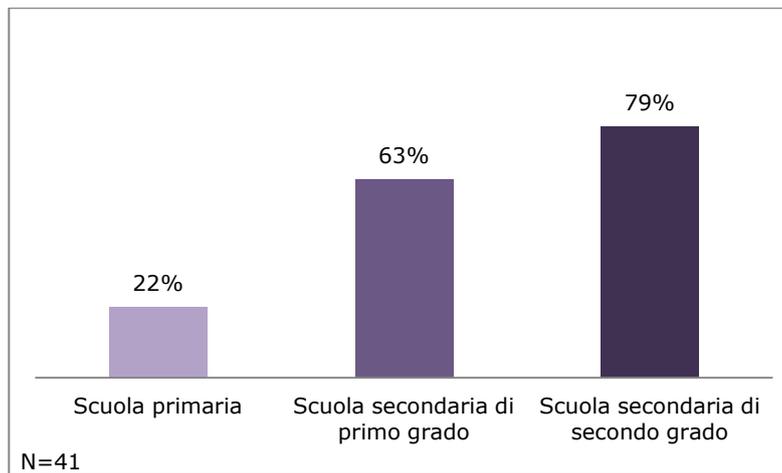


Chart 6.4.8 Lesson structure: comparison among schools

6.4.4 Study method

Study skills are a pivotal feature in each type of learning. In this context, they help the memorization of lexical, morphological and syntactical items which can be hardly recognized or remembered by learners with dyslexia. Explicit teaching of studying strategies is of help when it comes to dyslexic learners.

An additional valuable aid in study method teaching is time management: many learners with dyslexia find it difficult to use time appropriately or may underestimate the time required for completing a task (Kormos & Smith, 2012).

68% of respondents teaches a study method to dyslexic pupils very frequently (29%)/always (39%).

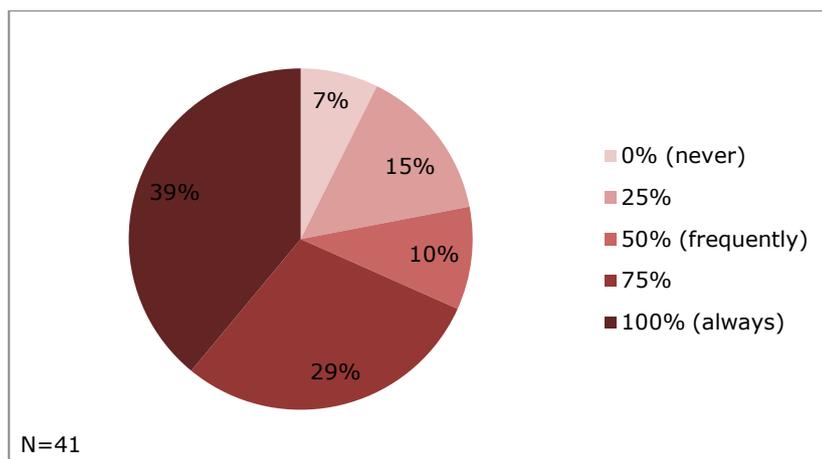


Chart 6.4.9 Study method: general use

Unsurprisingly, results show that trained teachers teach a study method more than not-trained ones and, moreover, no one of trained educators said "never". Thus, it can be claimed that in this case the attendance of training

courses on dyslexia and specific learning disorders is an incentive for adopting a good teaching strategy (i.e. study method teaching) towards dyslexic pupils' needs.

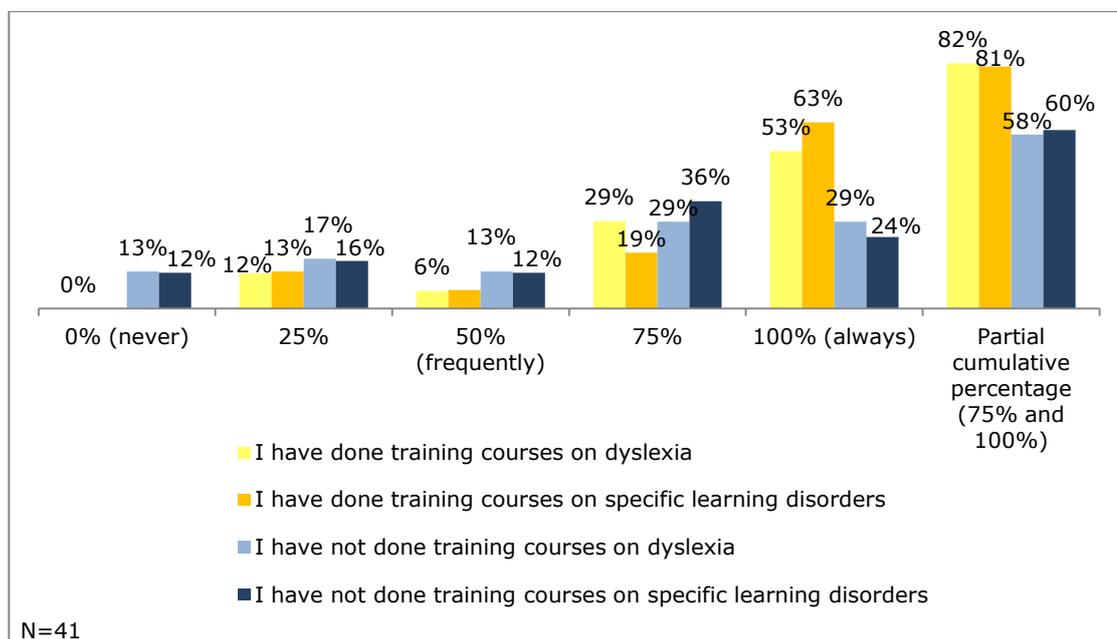


Chart 6.4.10 Study method: comparison between trained and not-trained teachers

Differences among school grades with regard to teaching a method for studying a foreign language are reported in the chart below. Maybe study skills are less taught in *scuola primaria* as in that grade of school pupils' study-load is expected not to be excessive. On the contrary, study skills play a vital role in upper grades.

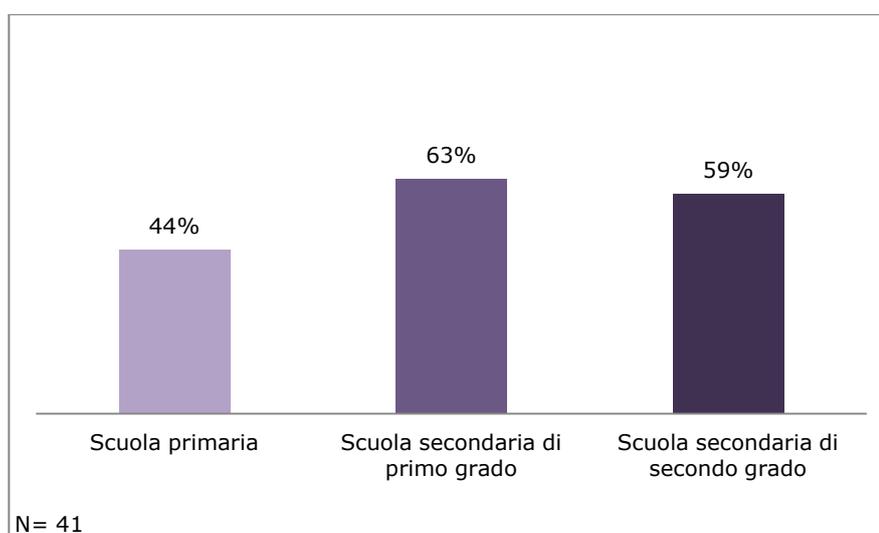


Chart 6.4.11 Study method: comparison among schools (partial cumulative percentage)

No significant differences are caused by school location (city: 71%; province 66%).

6.4.5 Morphology, syntax, semantics and pragmatics

Explicit instruction should be given in all aspects of foreign language acquisition: semantics, syntax, morphology, and pragmatics, as learners with dyslexia struggle to identify regularities and rules (Kormos & Smith, 2012; Schneider & Crombie, 2003). Thus, this chapter is divided into four sections in order to analyze the outcomes of each linguistic field in detail.

Partial cumulative percentage (75% and 100% of use) indicates that syntactic rules are the most taught, although there are not considerable differences among the other linguistic categories.

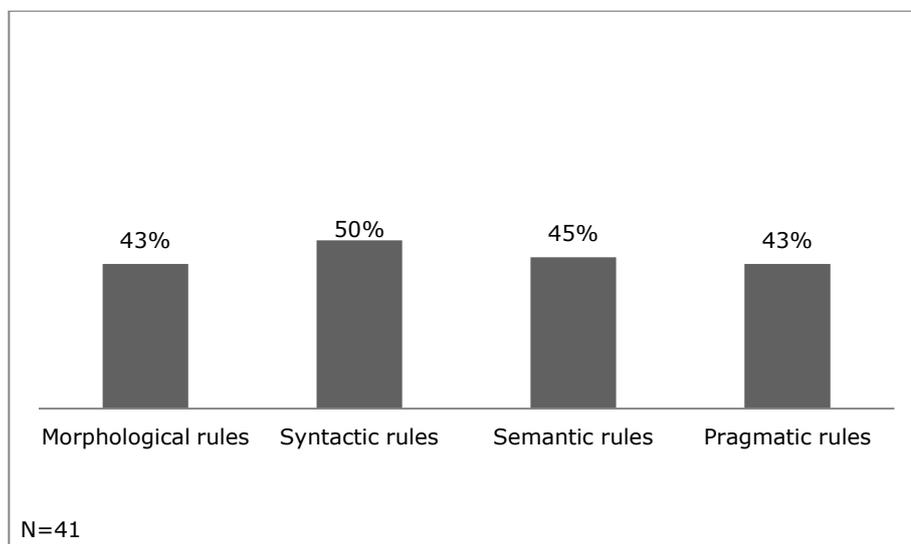


Chart 6.4.12 Rules: general use

6.4.5.1 Morphology

In the case of morphological rules, the attendance of training courses does not have effects on teachers' behaviour: surprisingly, although differences are narrow, according to partial cumulative percentages, teachers who have not attended any types of training courses teach morphological rules explicitly more often than trained teachers.

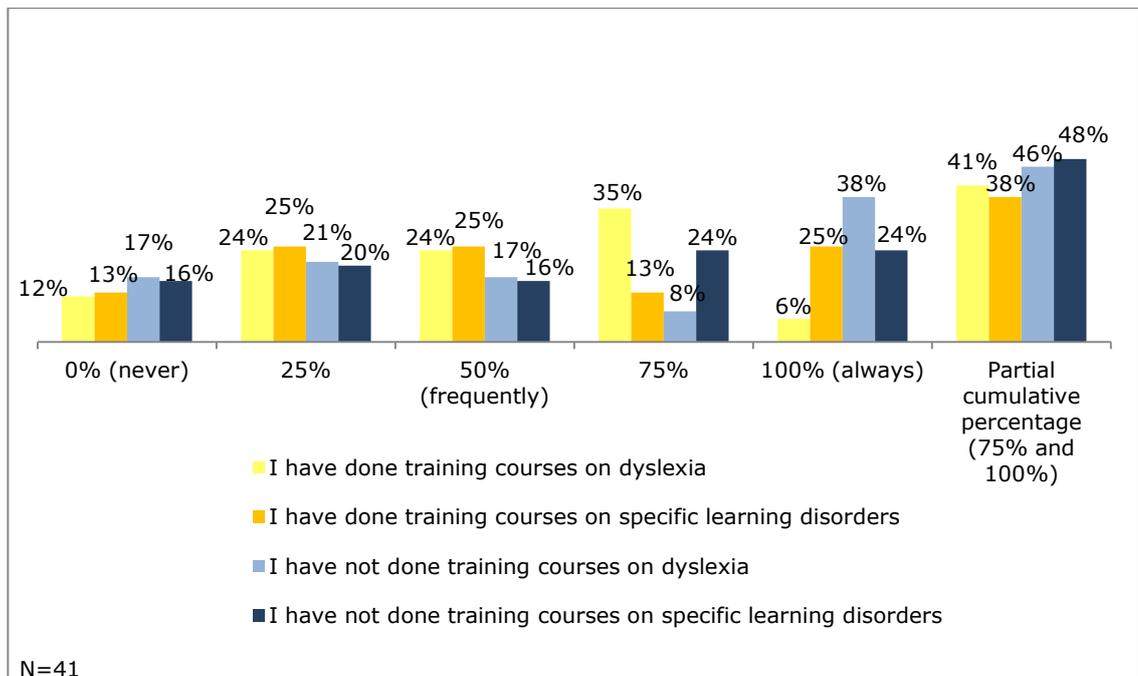


Chart 6.4.13 Morphological rules: comparison between trained and not-trained teachers

It is worthy of mention the fact that morphological rules are taught very frequently/always by a small group of primary school teachers, as illustrated in the chart below.

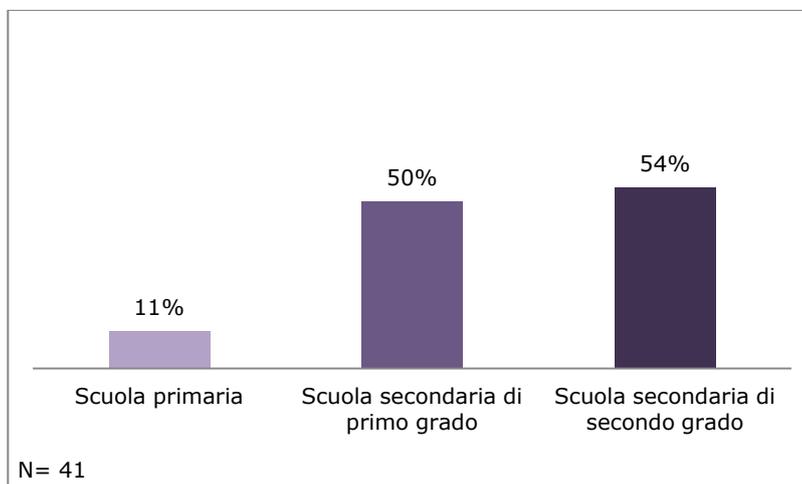


Chart 6.4.14 Morphological rules: comparison among schools (partial cumulative percentage)

Significant differences are reported also with regard to school location: schools of the city obtain 57% in partial cumulative percentage, the ones located in the province 38%.

6.4.5.2 Syntax

No significant differences brought about by attendance of training courses come out from data with regard to syntactic rule teaching.

As previously, regarding the grade of school, syntactic rules are more taught in upper grades: *scuola primaria*: 22%; *scuola secondaria di primo grado*: 50%; *scuola secondaria di secondo grado*: 63% (data refer to partial cumulative percentage).

As before, partial cumulative percentages of very frequent use indicate that syntactic rules are more taught in schools located in the city (65%) than in the province (44%).

6.4.5.3 Semantics

The chart below illustrates that differences on semantic rule teaching go in favour of not-trained teachers. The most surprising result is that 0% of teachers who have attended training courses on dyslexia have answered "always" - against almost 30% of teachers that have not attended courses on dyslexia. Moreover, about one fifth of each group says they never teach semantic rules explicitly.

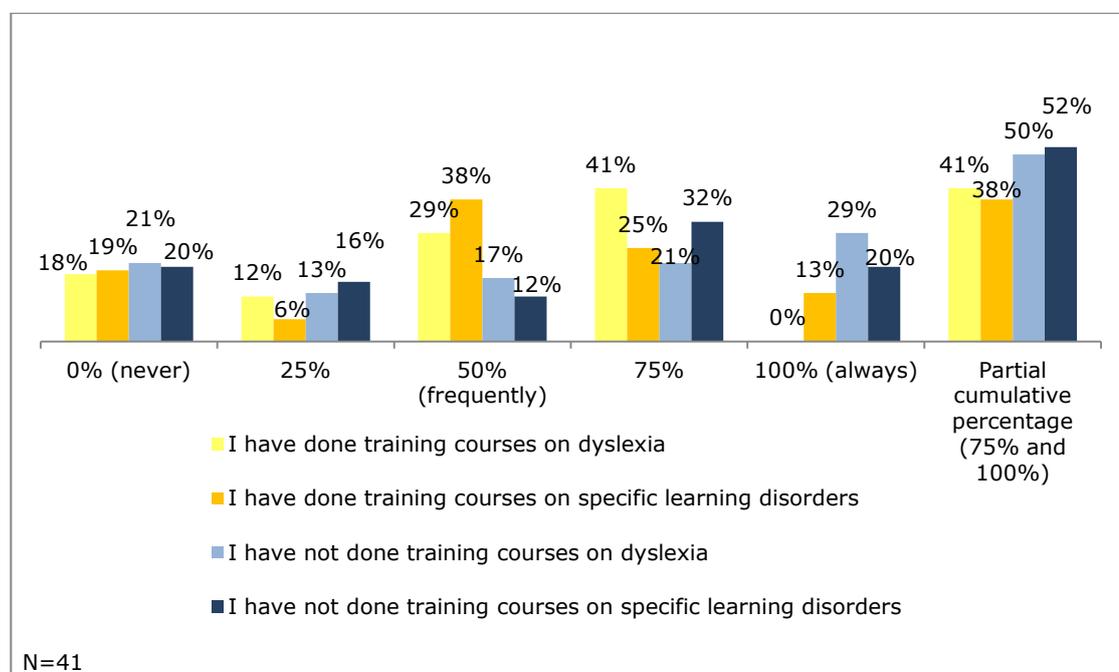


Chart 6.4.15 Semantic rules: comparison between trained and not trained teachers

Again, as for morphological rules, data of cumulative percentage show that in primary schools semantic rules are taught explicitly only by 11% of teachers, whereas in upper grades this percentage reaches or surpasses 50%.

Cumulative percentage demonstrates that the trend between city (58%) and province (41%) is confirmed also in the case of semantic rules.

6.4.5.4 Pragmatics

Although pragmatics – which is at the base of the functional approach (Balboni, 2008a; Balboni, 2008b) – is less likely to be affected by dyslexia, it may need explicit instruction as it undergoes cultural factors, so that pragmatic grammar in one’s L1 may not be entirely transferred to the L2.

As far as pragmatics is involved, slight differences are reported in favour of dyslexia-trained teachers:

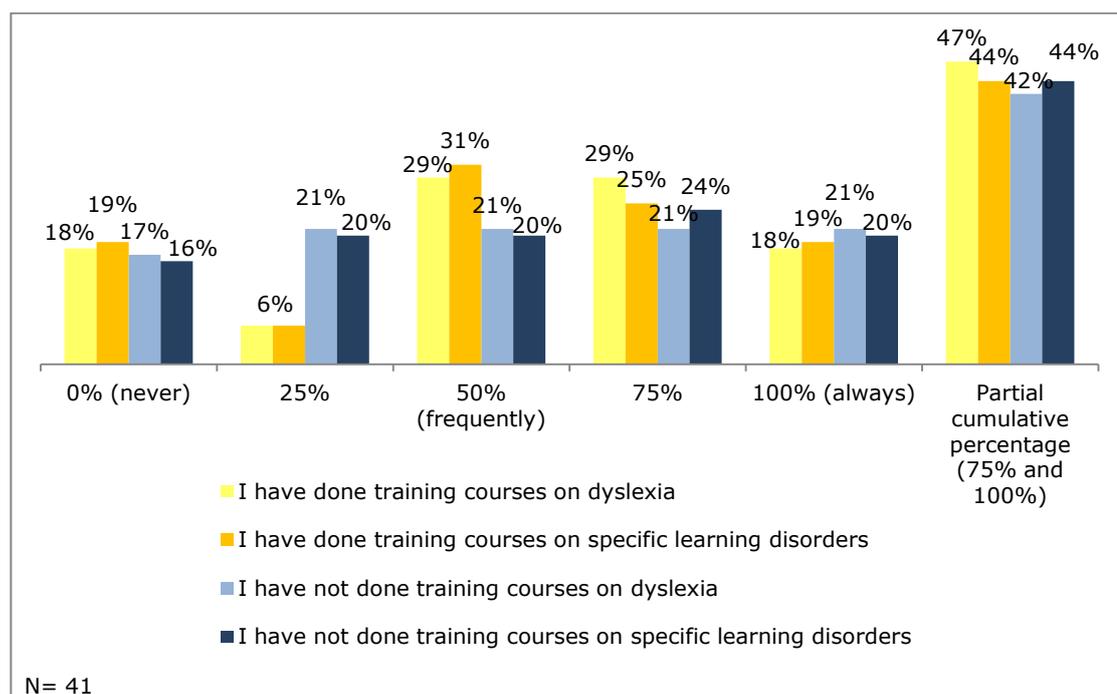


Chart 6.4.16 Pragmatic rules: comparison between trained and not-trained teachers

As for the other types of rules, pragmatic ones are more taught explicitly in upper grades of school according to data on cumulative percentages.

Finally, as previously, schools of the city turned out to be the ones in which cumulative percentages of very frequent use of pragmatic rule teaching are greater (58% versus 37%).

6.5 Motivation

In chapter 3.3.2 light was put on motivation, which is a leading aspect in foreign language learning, as well in each type of learning. It should be stressed again that lack of motivation is a consequence rather than a cause of foreign language difficulties faced by pupils with dyslexia. Furthermore, success boosts motivation; therefore it is of great importance to give the learner apt activities and attainable goals (Kormos & Smith, 2012; Schneider & Crombie, 2003).

Therefore, it is important that teachers motivate their dyslexic learners, as well as pupils without learning disabilities, so that they remain engaged with the target language.

Three fourth of respondents boost motivation very often/always. Only 8% of them motivate their dyslexic learners never (5%) or seldom (3%). It has to be said that the great number of positive responses may have been caused by social desirability (see 4.2.4).

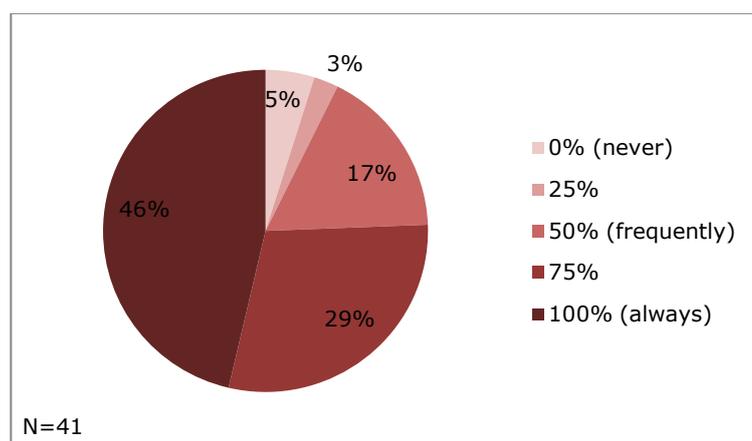


Chart 6.5.1 Motivation stimulation: general use

Looking at partial cumulative percentages, positive results are exhibited by all teachers; however, compared to other groups of teachers, teachers that have attended training courses on dyslexia are used to encouraging motivation more often.

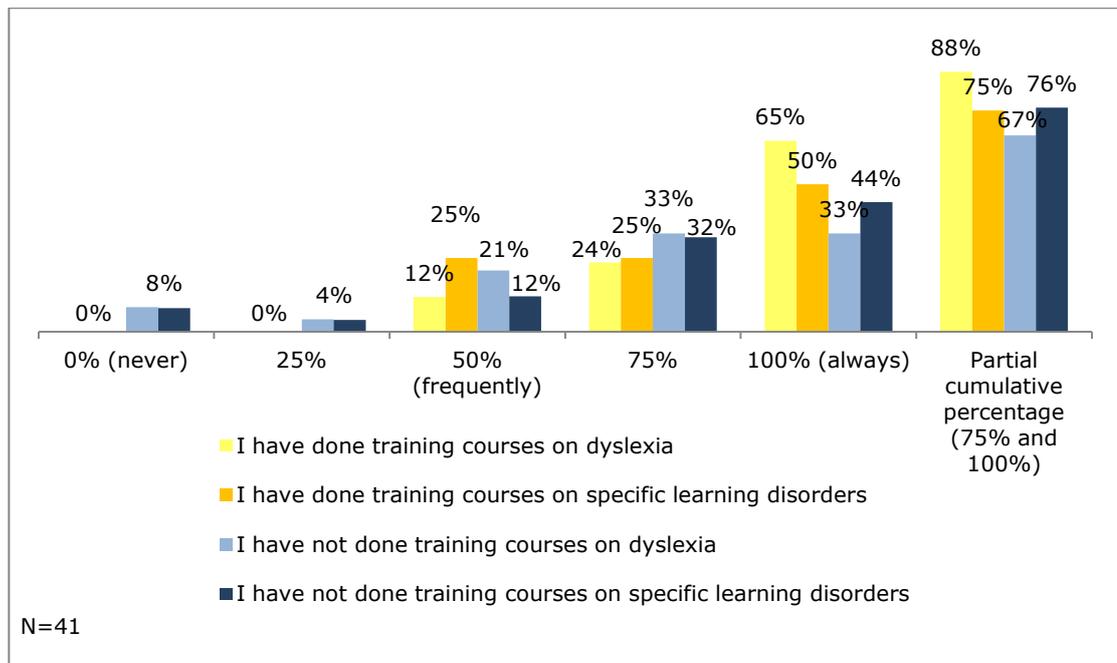


Chart 6.5.2 Motivation stimulation: comparison between trained and not-trained teachers

According to partial cumulative percentage, the grade of school proves to be more influencing in *scuola primaria* (89%) and *scuola secondaria di primo grado* (88%) rather than in *scuola secondaria di secondo grado* (67%).

Data on motivation and school location indicate that teachers of schools located in the province of Verona (81%) are more used to boosting motivation than their colleagues of city schools (64%) according to partial cumulative percentage.

6.6 Consultation

As every pupil with dyslexia has his or her peculiar characteristics, it is essential to set accommodations that are as individualized as possible in order to meet learner's needs and help him or her with their weaknesses. So, teachers should establish a good relationship with the pupil (and parents) to exchange opinions on progresses or difficulties and on accommodation effectiveness.

Results of this survey show that 39% of teachers make consultations very often/always. Nonetheless, for one fourth of respondents regular consultation takes place very rarely.

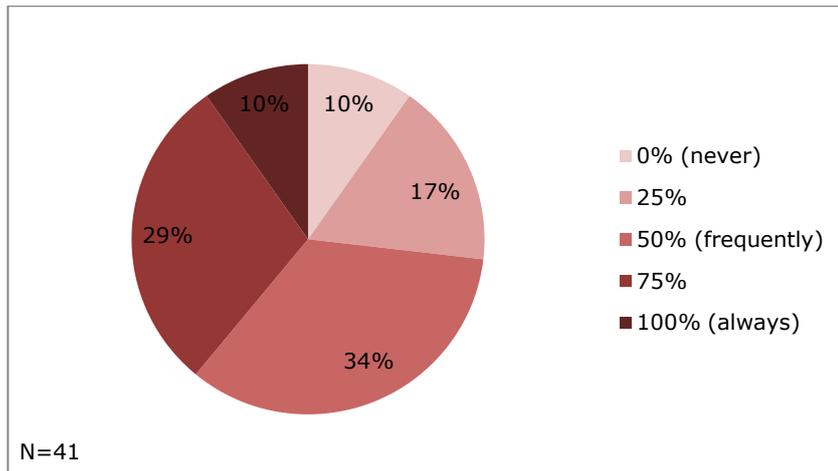


Chart 6.6.1 Consultation: general use

Although not substantial, differences on regular consultation with regard to partial cumulative percentage go in favour of trained teachers, whose percentages of “never” are equal to 0.

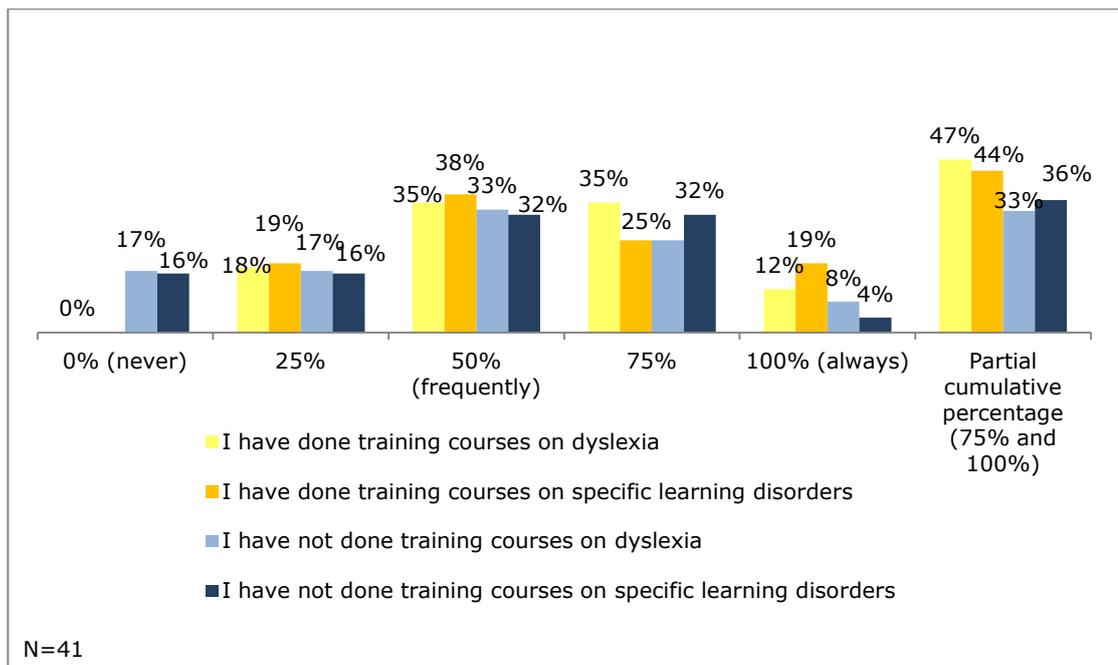


Chart 6.6.2 Consultation: comparison between trained and not-trained teachers

Data of partial cumulative percentage indicate that regular consultation takes place mainly in *scuola secondaria di primo grado* (50%) - in which, however, one fourth said that they never use regular consultation - and in *scuola primaria* (44%).

Partial cumulative percentage of very frequent use shows that regular consultation is more common in schools located in the city of Verona (50%) than in the province (34%).

6.7 Test strategies

This chapter covers the analysis of some test administration strategies (see also 0). Some of them are very easy to put in practice and require little effort and time. Again, FL educators should teach these strategies directly and encourage their learners to find out what strategies work better according to their preferences and situations.

A large group of respondents (46%) have claimed they teach test taking strategies to learners with dyslexia, but almost a third of teachers has answered negatively.

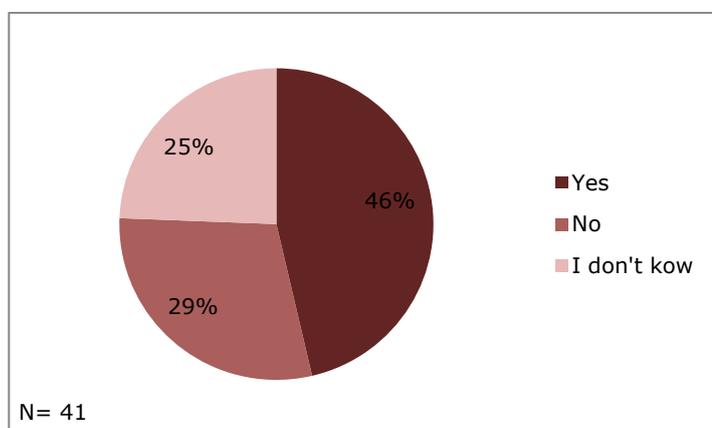


Chart 6.7.1 Test strategy teaching: general use

The attendance of training courses proved to be an influencing factor as far as test taking strategies are concerned. Moreover, educators that have attended courses on specific learning disorders achieved a greater percentage (69%) of "Yes".

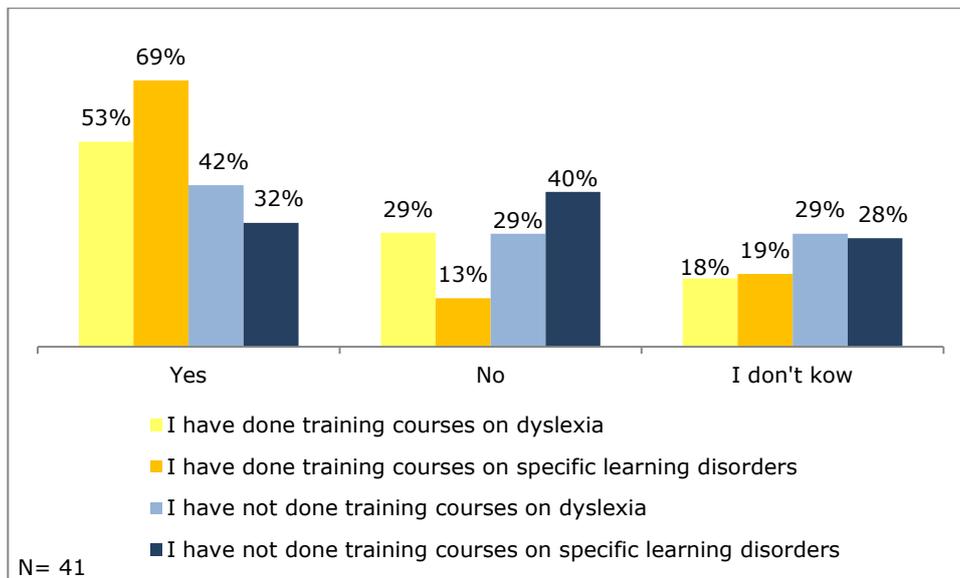


Chart 6.7.2 Test strategy teaching: comparison between trained and not-trained teachers

With regard to the grade of school, best results have been obtained by *scuola secondaria di primo grado*. *Scuola primaria* demonstrates to be the one in which test taking strategies are far from being taught, as it has the lowest percentage of “Yes” and the greatest of “I don’t know”.

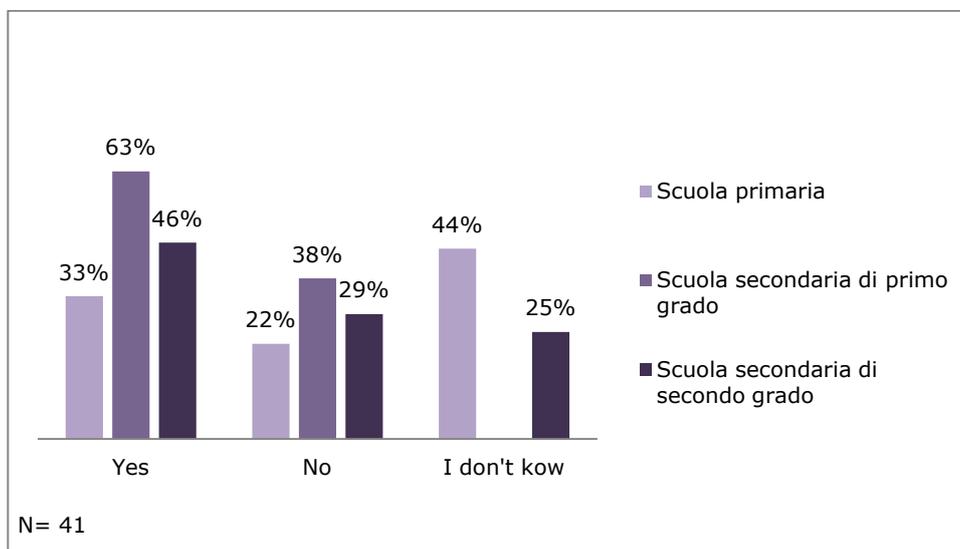


Chart 6.7.3 Test strategy teaching: comparison among schools

Differences caused by school location are not significant, thus this factor proved to be not an influencing parameter.

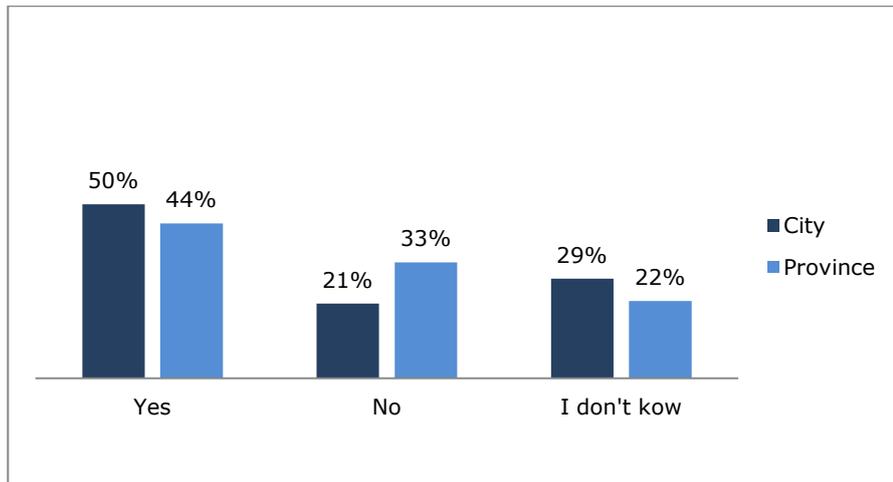


Chart 6.7.4 Test strategy teaching: comparison between city and province

In Chart 6.7.5 it is reported which types of test taking strategies teachers said they use. 6 respondents (38%; red bar) answered they teach strategies that help the test taker focus on the main things (e.g. work on an item per time; isolate sentences with a piece of paper; concentrate on question functions). The second most used strategy deals with clarification and repetition (light blue bar): FL instructors suggest their dyslexic pupils ask for more detailed explanations during the test.

The grey bar ("other") groups together several different strategies, namely personalizing evaluation; reducing the items that will be assessed; recalling class-made diagrams; explaining assessment objectives; using marks, colours and tables to remember grammatical concepts (e.g. sentence polarity, verb-subject agreement, verb paradigm); making the learner at ease.

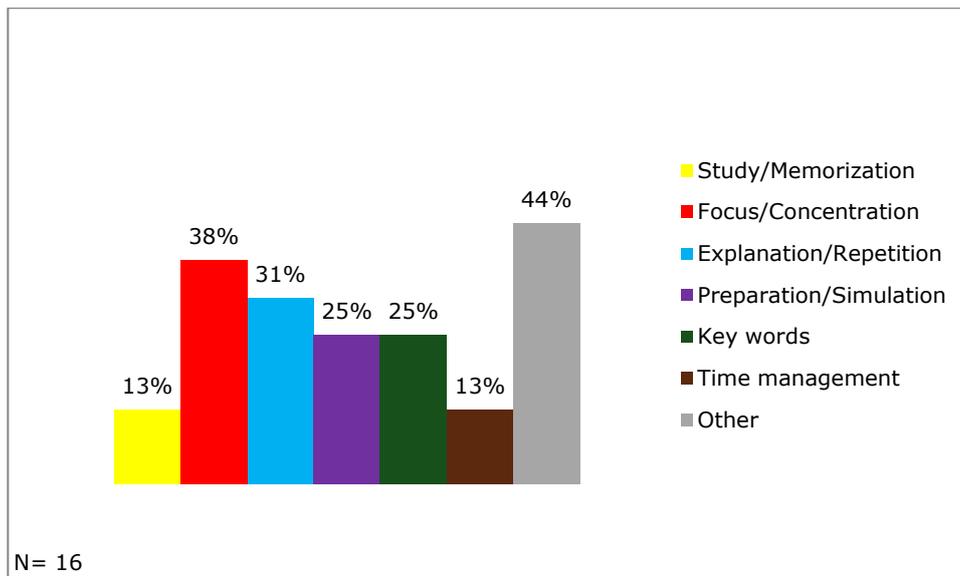


Chart 6.7.5 Types of test strategies

Test strategies that are discussed in the following chapters deal with the use of: coloured papers, large prints, reader, speech synthesizer, extra time, oral presentation of test instructions, dictionaries, text editing programs and spell-checkers, test preparation, oral answers and answers via computer.

6.7.1 Coloured papers

Two simple but useful accommodations are the followings: coloured papers and large prints, which have proved to be effective in many cases (Schneider & Crombie, 2003). Of course, not only may tests be coloured, but also each type of text used in the class.

As suggested by Hill & Roed (2006), texts should be posted online so that learners can modify colours and font of the text according to their preferences.

As evident in the chart below, an overwhelming majority of respondents never use coloured papers. Only three respondents (7%) claimed they use them very frequently/always.

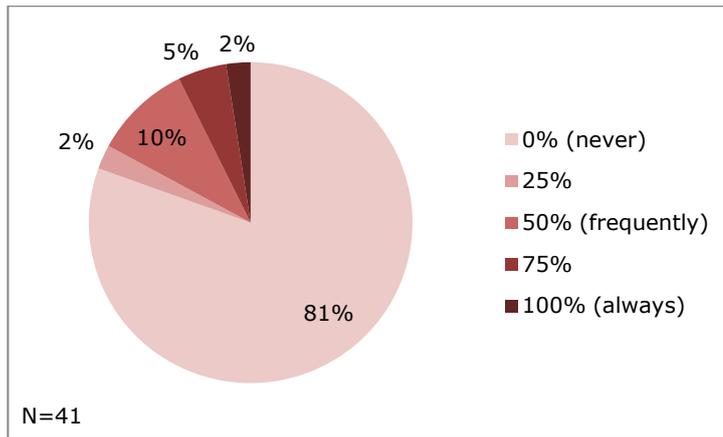


Chart 6.7.6 Coloured papers: general use

Since only three respondents use coloured papers during test administration, it was decided not to proceed with the analysis of the extent to which attendance of training courses, grade of school and school location can influence this usage, due to the fact that differences are very likely to be influenced by the low number of responses.

6.7.2 Large prints

Layout of tests (and texts) is not a petty feature when it comes to individuals affected by dyslexia: texts should be written with large prints (at least 12), without justification – as spaces between words can be compressed so that boundaries between words are less visible –, without too much capital letters and with few items per page, as too much can be confusing (Hill & Roed, 2006). It is apparent that these modifications are very simple to put into effect.

Almost a fourth of respondents uses large prints always when administering a test to dyslexic pupils (dark pink).

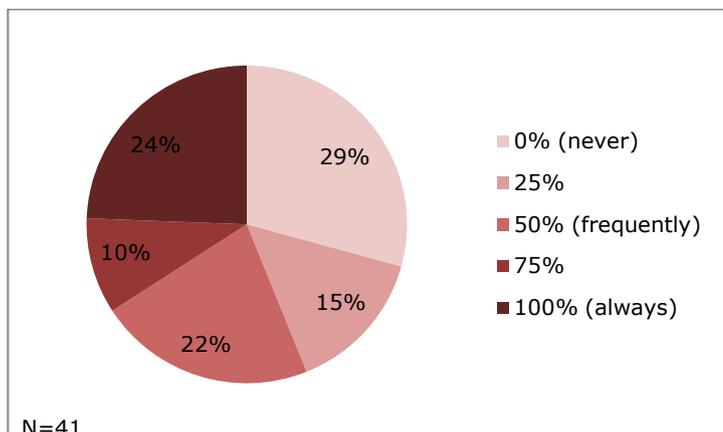


Chart 6.7.7 Large prints: general use

Attendance of training courses on dyslexia appears to have a bearing on the use of large prints. Indeed, trained teachers exhibit better results with regard to partial cumulative percentage (above all, dyslexia-trained group).

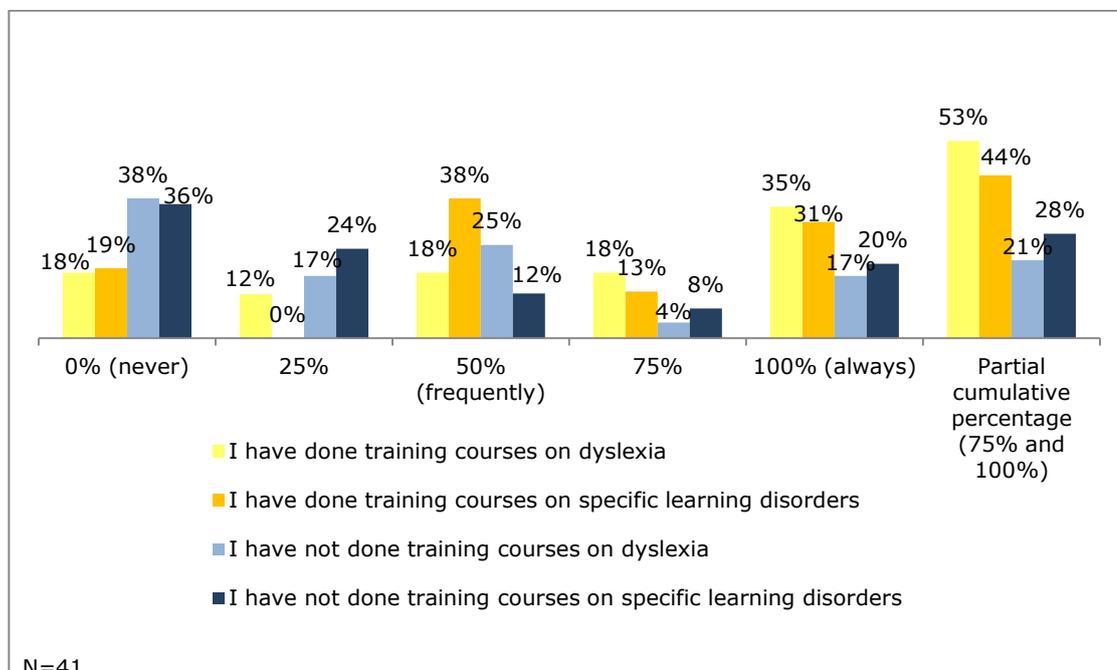


Chart 6.7.8 Large prints: comparison between trained and not-trained teachers

Data on large prints and the grade school are reported in Chart 6.7.9: the greatest partial cumulative percentage is found in *scuola primaria*. A very small group (13%) of teachers of *scuola secondaria di secondo grado* uses large print versions of tests very frequently/always.

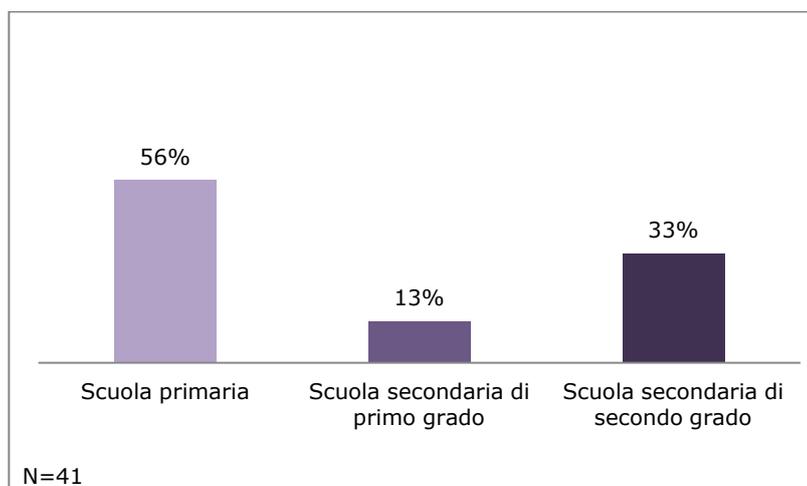


Chart 6.7.9 Large prints: comparison among schools (partial cumulative percentage)

With regard to school location, teachers of schools of the city are more prone to use this accommodation during tests (higher than 13 percentage points).

6.7.3 Reader

Dyslexia is a lifelong condition, but it undergoes some changes brought about by education, age and therapeutic activities. Indeed, the reading disorder can be fully or partially compensated, hence some behavioural symptoms are likely to alter during the years. Nevertheless, many adults with dyslexia still read at a slow pace - although decoding is correct - and make orthographic mistakes. Occasionally, severely dyslexic adults may still exhibit an incorrect decoding and difficulties in reading: probably, their compensation mechanisms did not work well (Nijakowska, 2010).

Summing up, fluency can be said to be a good discriminating issue that tells adults and children with dyslexia apart from not-impaired individuals. Hence, the use of a reader may be assumed as an accommodation more suitable for younger pupils. Nonetheless, if an older learner with dyslexia asks for this help, the implementation of a reader does not have to be discarded as childish.

The use of a reader that reads test items in place of the dyslexic learner is quite used: notwithstanding the fact that 39% of teachers never exploits a reader, 34% uses this accommodation very frequently (24%)/always (10%).

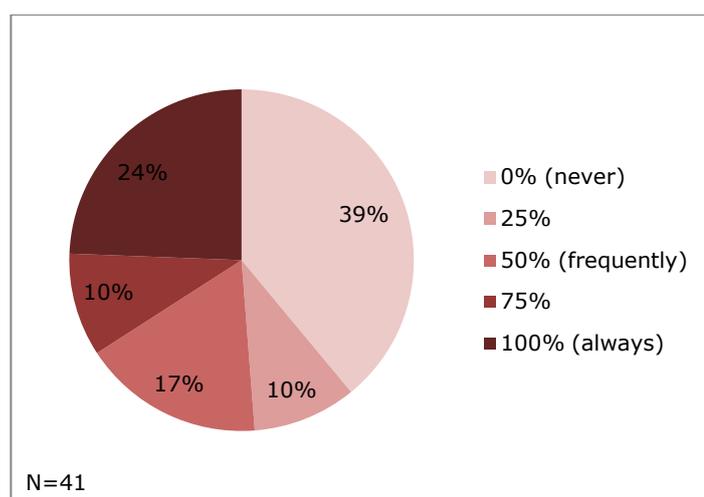


Chart 6.7.10 Reader: general use

It has to be verified whether attendance of training courses, type of school and school location have an effect on the usage of the above mentioned accommodations.

In the first case, the attendance of training courses is a discriminating factor as partial cumulative percentages of not-trained teachers are far lower than those of trained teachers (respectively, about five times lower and two times lower).

Maybe this is due to the fact that not-trained FL educators do not thoroughly know the difficulties caused by dyslexia and that reading is one of the most challenging tasks for dyslexic individuals. Furthermore, this probably hampers not-trained teachers from being aware that many individuals with reading disorders use a huge quantity of energies and attention while reading; that deprives them of resources for next tasks (c.f. 3.3.5; 3.3.10 and 6.7.6).

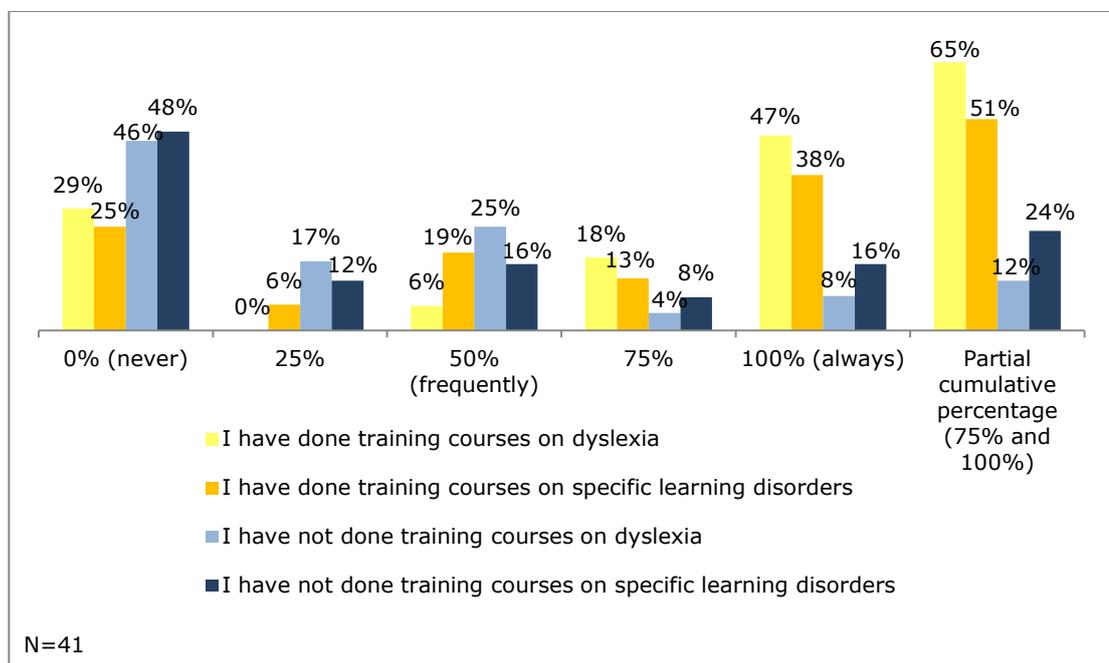


Chart 6.7.11 Reader: comparison between trained and not-trained teachers

As expected, data on school grades reflect the above mentioned assumption: i. the reader is very used in primary schools; ii. percentages decrease in upper schools. Indeed, as portrayed in Chart 6.7.12, the gap between *scuola primaria* and the two *scuola secondaria* is more than 50 percentage points.

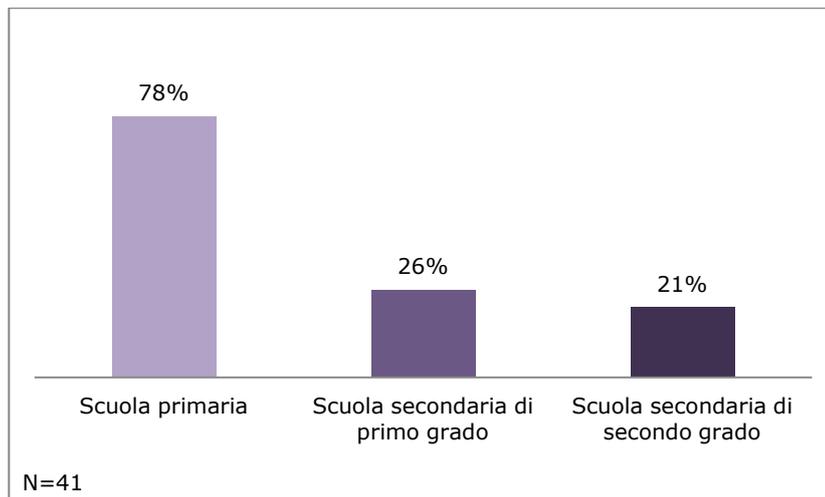


Chart 6.7.12 Reader: comparison among schools (partial cumulative percentage)

Finally, concerning school location, the use of a reader is more used in schools located in province (41%) rather than in city (21%).

6.7.4 Speech synthesizer

The speech synthesizer works like a reader: it is a device which translates texts into sounds that are similar to human voice. It is a precious tool for people with visual impairments or reading disorders as it allows them to listen written texts.

Nowadays, on many computer operating systems there are speech synthesizers. It is one example of how new technologies can ease the learning process of pupils with specific learning disorders, as, for instance, this tool spares the dyslexic pupil the stress and difficulties of reading tasks. Nevertheless, data demonstrate that quite often new technologies are not as used as they should be (causes can be several: lack of knowledge of how technologies work, lack of time for using them, lack of money to buy these technologies or other).

Anyway, results presented in Chart 6.7.13 indicate that 78% of teachers involved in the questionnaire declared that they never exploit a speech synthesizer during tests. Only 6 respondents use this valuable accommodation very often (5%)/always (10%).

Thus, analyses on influences caused by parameters such as attendance of training courses, grade of school and school location are not reported.

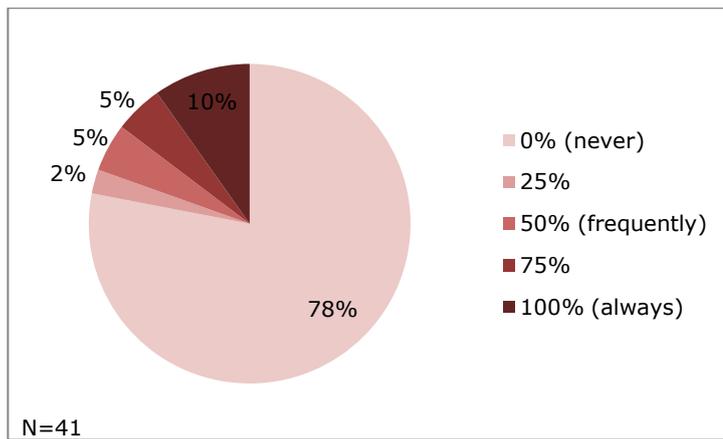


Chart 6.7.13 Speech synthesizer: general use

6.7.5 Extra time

As explained in chapter 6.4.4, time management needs training and practice, for its use is often a problem source for many dyslexic learners.

The concession of additional time in order to carry out the exam is a very used accommodation: 78% of respondents give more time to dyslexic pupils very often (17%)/always (61%).

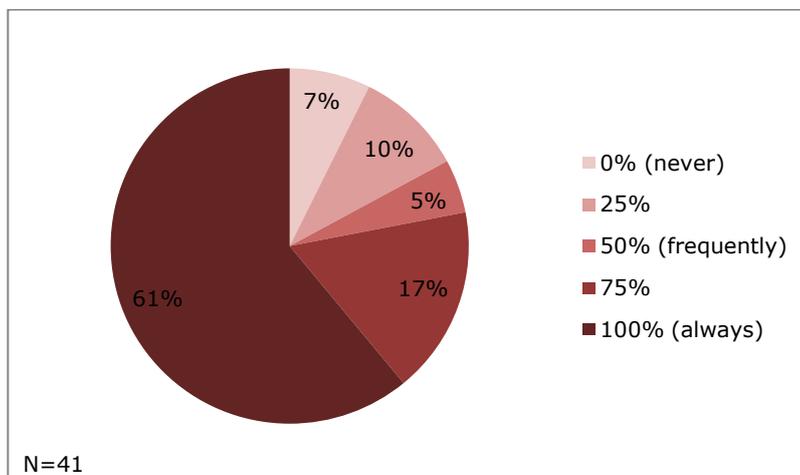


Chart 6.7.14 Extra time: general use

With regard to additional time concession, results are much positive regardless the attendance of training courses.

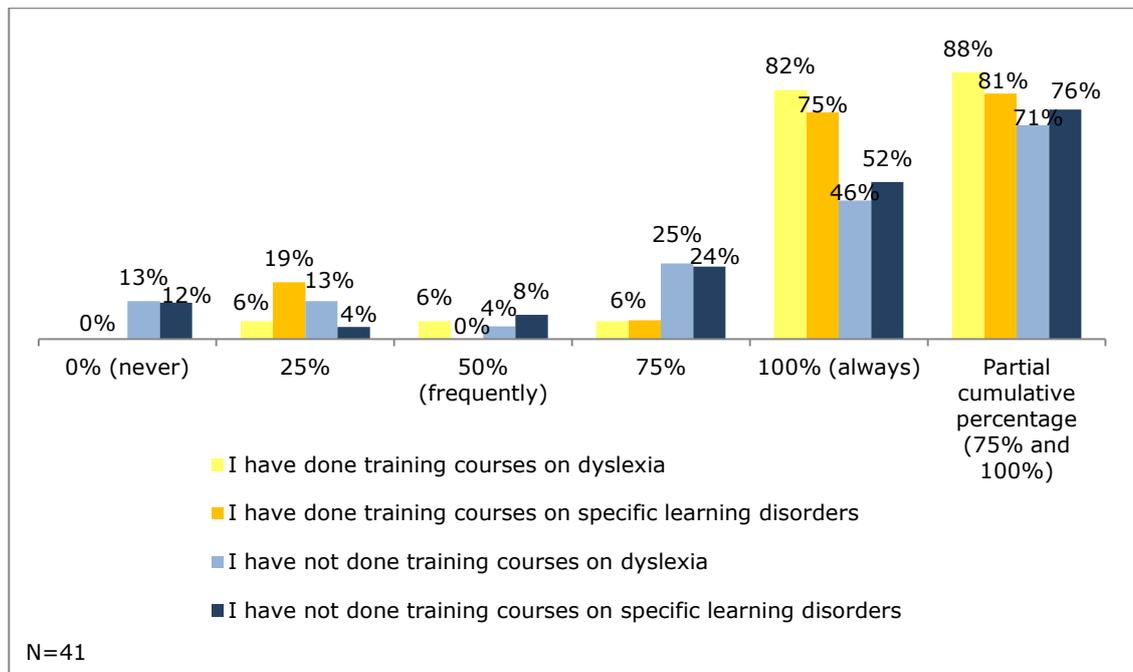


Chart 6.7.15 Extra time: comparison between trained and not-trained teachers

Extra time concession towards pupils with dyslexia achieves resounding success among all types of school.

Finally, same partial cumulative percentages of very frequent use (i.e. 78%) are reported by schools located in the city and in the province.

6.7.6 Oral presentation of test instructions

For their impairment, learners with dyslexia struggle to read texts as they may make a great effort in order to do that, especially if the text is long and/or complicated. Thus, they are likely to lose energies in reading test instruction, rather than focusing on test tasks. Hence, in order to make instruction reading easier and less time and attention consuming, it is advisable to read aloud test instructions and to use simple and clear instructions. Nonetheless, this does not mean that written ones should be cleared, as, since they are written, they are permanent, so that the test taker can read the instruction as many times they want.

Questionnaire outcomes show that oral test instructions instead of written ones are used very often (10%)/always (54%) by 64% of respondents.

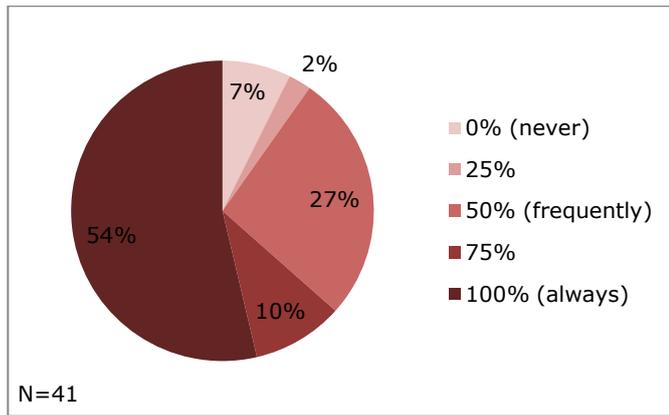


Chart 6.7.16 Oral test instructions: general use

The chart below illustrates that oral test instructions are more used by trained teachers, with a 30 percentage point difference with regard to partial cumulative percentages. Therefore, in this case, attendance of training courses proved to be an influencing parameter.

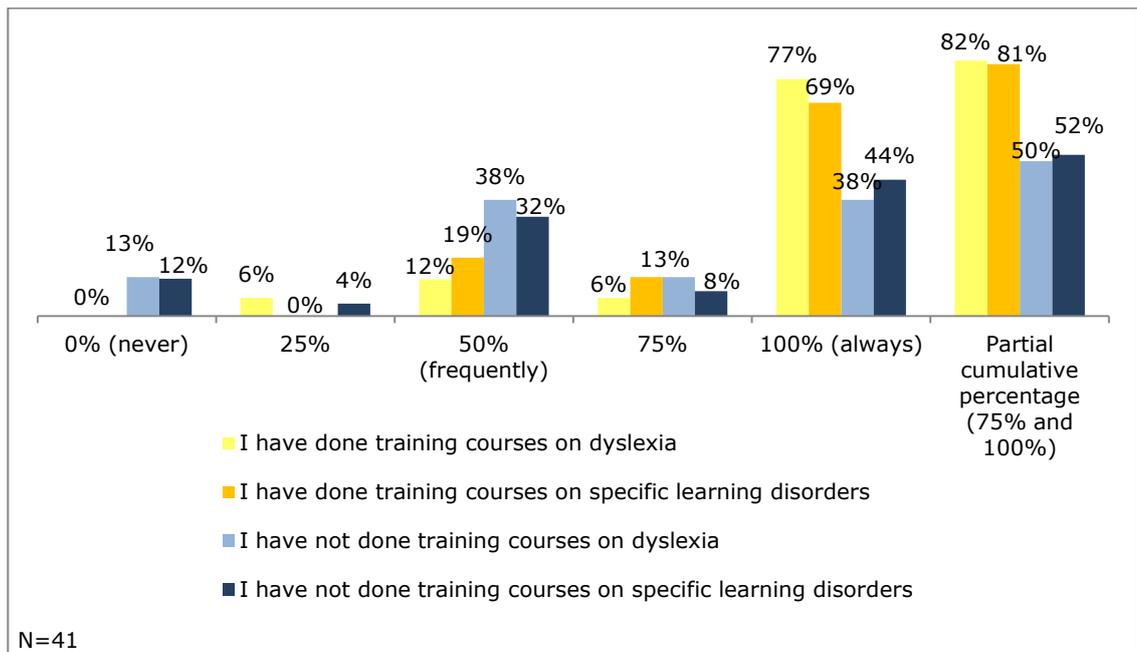


Chart 6.7.17 Oral test instructions: comparison between trained and not-trained teachers

Similarly, the use of oral instructions instead of written ones is very often used in *scuola primaria* (100%) and in *scuola secondaria di primo grado* (75%). Less than half of teachers of *scuola secondaria di secondo grado* exploits verbal instructions during exams.

Slight differences can be noted between city (57%) and province (67%).

6.7.7 Dictionaries

During the test it is possible to allow students with dyslexia to use some devices that help them carrying out writing tasks: dictionaries, text editing programs, automatized spell-checkers.

With regard to dictionaries, it is worth to saying that paper dictionaries are not as useful as online dictionaries, as if a pupil with dyslexia has to look up a word it will take her or him too much time, effort and attention, whereas in the case of online dictionaries he or she has to write the word without looking it up letter by letter. In addition, several online dictionaries (e.g. www.thefreedictionary.com and www.wordreference.com) provide the phonemic transcription of the word according to IPA (International Phonetic Alphabet) and, moreover, you can listen to its pronunciation.

Unfortunately, looking at the charts below, paper dictionaries are more allowed than online dictionaries, as the great majority of respondents have said they never allow dyslexic learners to use online dictionaries (as portrayed in Chart 6.7.18). This is an additional example of the rare implementation of technologies in mainstream classroom contexts.

As only four respondents answered "always" (10% of respondents), no further analyses will be reported with regard to online dictionaries.

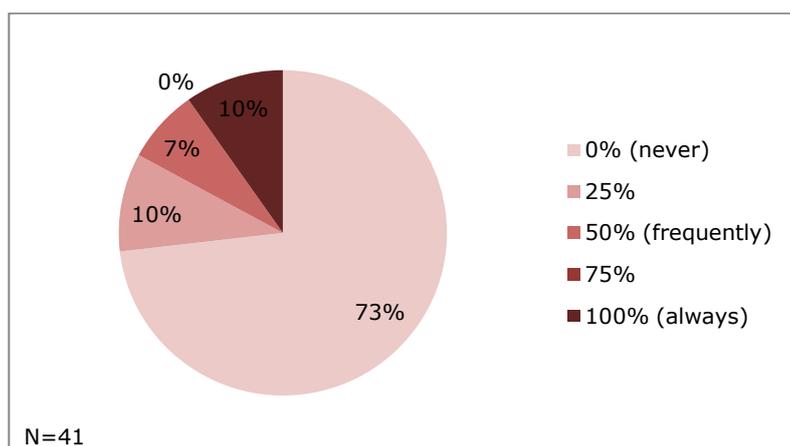


Chart 6.7.18 Online dictionaries: general use

As shown in Chart 6.7.19, almost half of respondents never allow paper dictionaries during tests. However, a fourth of teachers allow pupils to use them very frequently/always.

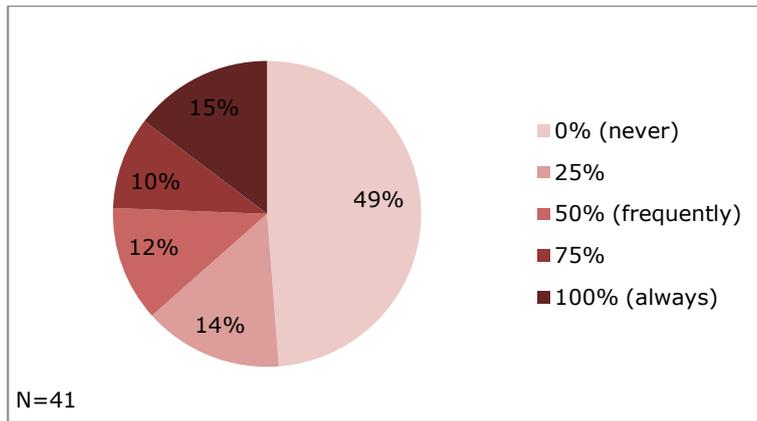


Chart 6.7.19 Paper dictionaries: general use

Data on training course attendance show that trained teachers allow the use of paper dictionaries more than their colleagues and that the dyslexia-trained group has reached best results (66%).

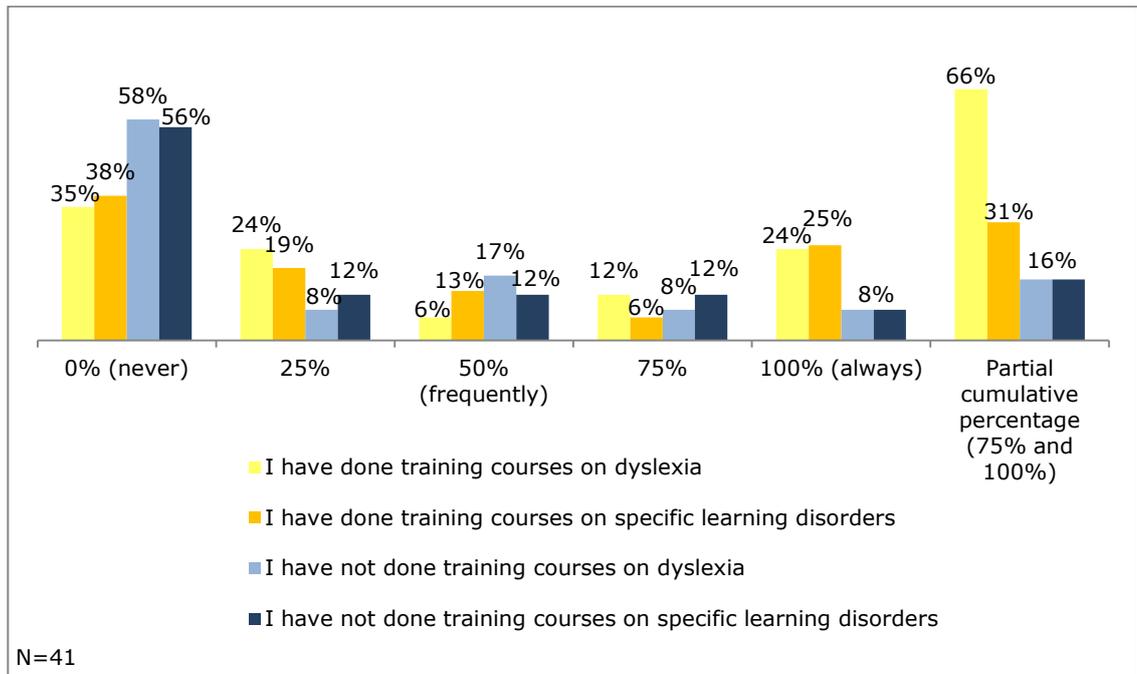


Chart 6.7.20 Paper dictionaries: comparison between trained and not-trained teachers

It is worth examining whether the use of paper dictionaries depends on the type of school. Results demonstrate that paper dictionaries are most frequently used in *scuola primaria*.

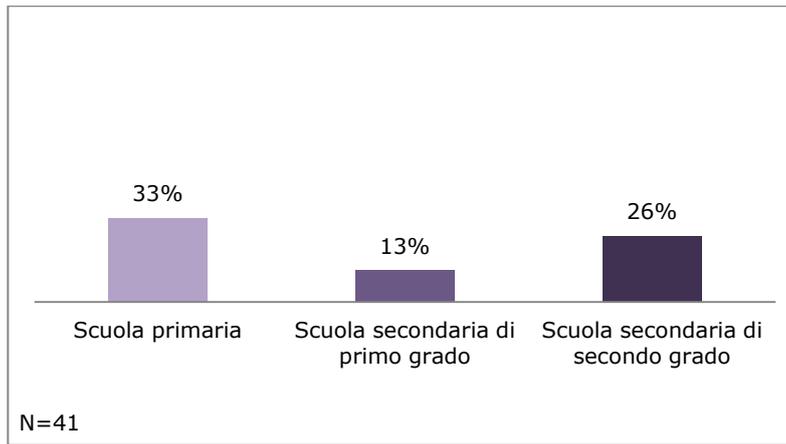


Chart 6.7.21 Paper dictionaries: comparison among schools (partial cumulative percentage)

No great differences on partial cumulative percentage are reported between schools located in the city (28%) and schools located in the province (22%).

6.7.8 Text editing programs and spell-checkers

In addition to online dictionaries, there are other devices that technology offers for people with –and without- specific learning disorders.

In this paragraph text editing programs and spell-checkers are under consideration. They are very useful tools that prevent pupils with dyslexia from being hindered with grammar and spelling; furthermore, these aids ease the passage of ideas into text organization (Kormos & Smith, 2012).

As well highlighted by the graphics below, the majority of teachers do not allow their dyslexic pupils to use text editing program (66%) and spellcheckers at all (64%).

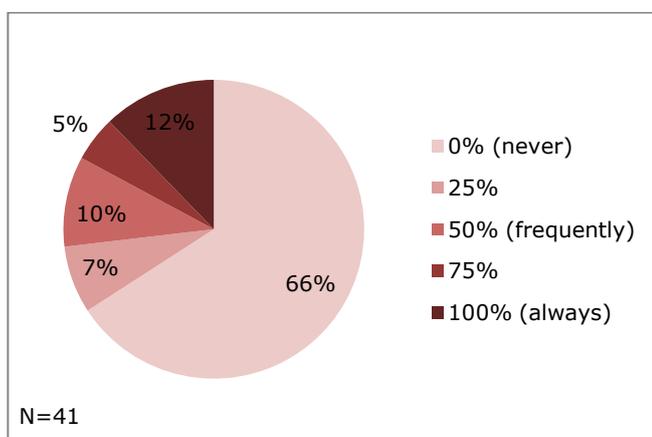


Chart 6.7.22 Text editing programs: general use

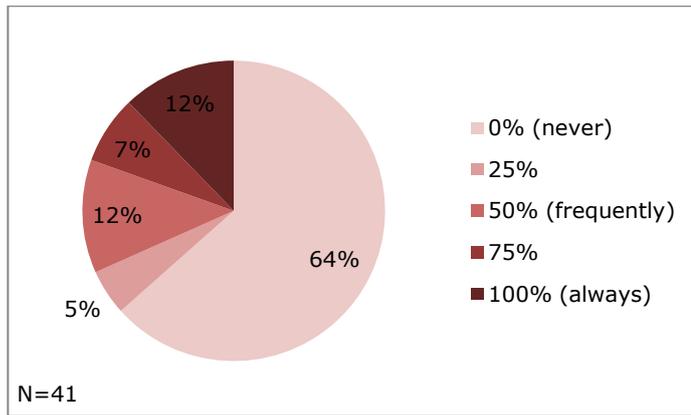


Chart 6.7.23 Spell-checkers: general use

Thus, no further analyses on parameters that might have influenced question responses are reported, as their outcomes will feel the effect of the small number of responses.

6.7.9 Test preparation

Before the test takes place, specific preparation should be given in order to make the dyslexic pupil more at ease and prepared on test tasks. Additionally, mock exams give the learner a clear idea of what the test will be about, so that anxiety can be reduced. Data indicate that a good percentage of teachers (44%) always prepare dyslexic learners for the test, whereas test simulations are not as used.

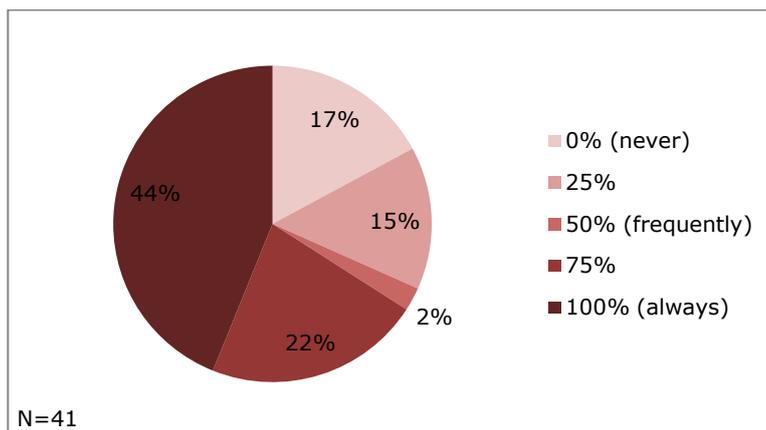


Chart 6.7.24 Specific preparation: general use

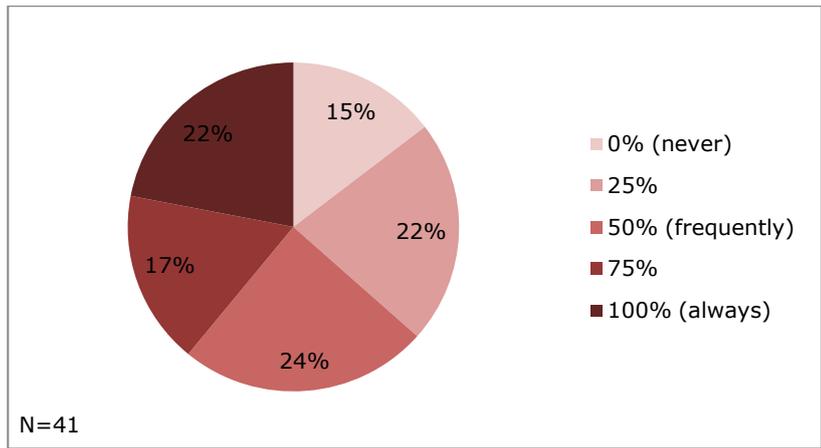


Chart 6.7.25 Test simulation: general use

Specific preparation for tests is given by trained teachers more often than not-trained instructors (with a difference of about 30 percentage points), as illustrated by results of partial cumulative percentage:

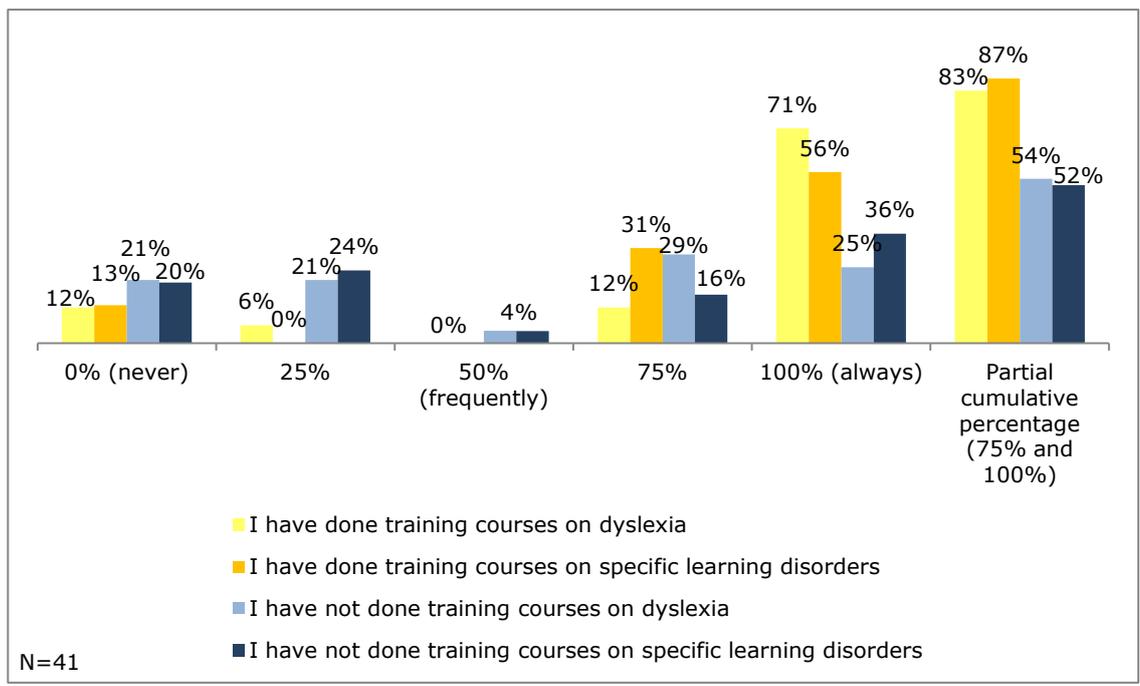


Chart 6.7.26 Specific preparation: comparison between trained and not-trained teachers

Although differences are not as significant as before, results of partial cumulative percentage on test simulation go in favour of trained teacher.

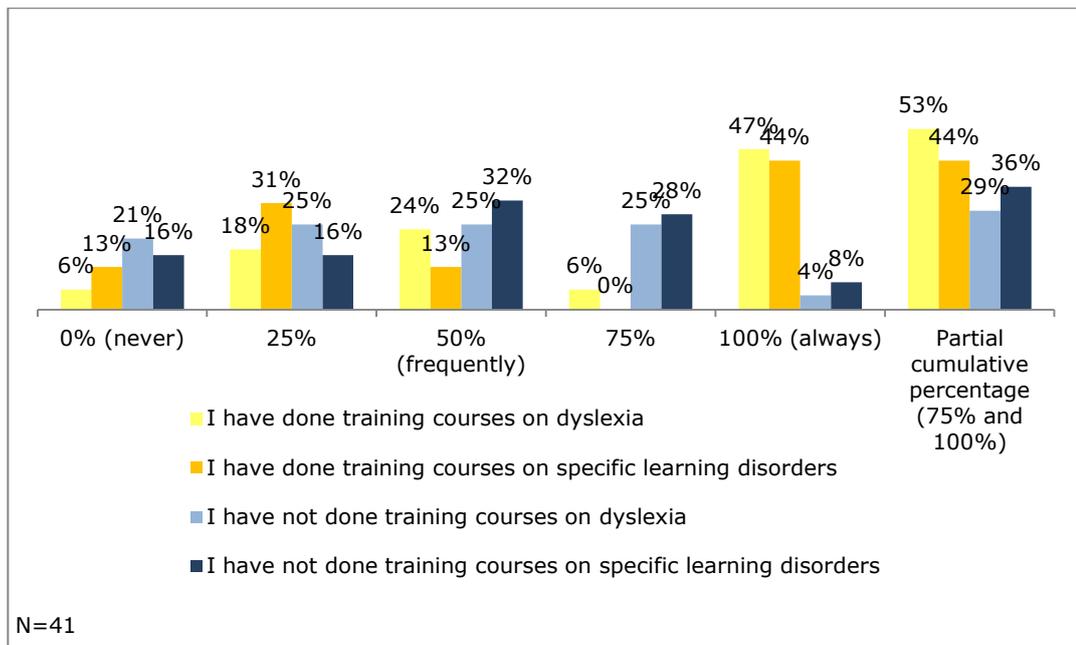


Chart 6.7.27 Test simulation: comparison between trained and not-trained teachers

These two accommodations might be under the influence of the type of school in which teachers work: indeed, in primary schools test preparation and test simulations reach a greater percentage than in the other types of schools.

Surprisingly, test simulation usage collapses in both *scuola secondaria*.

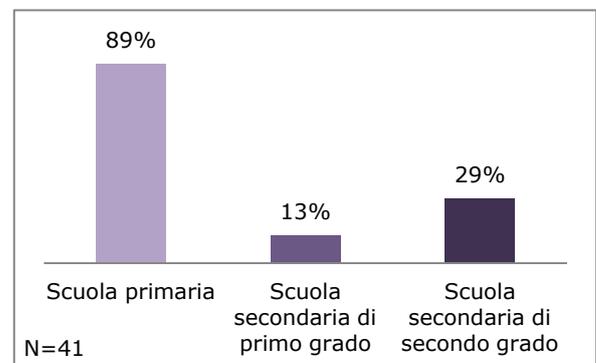
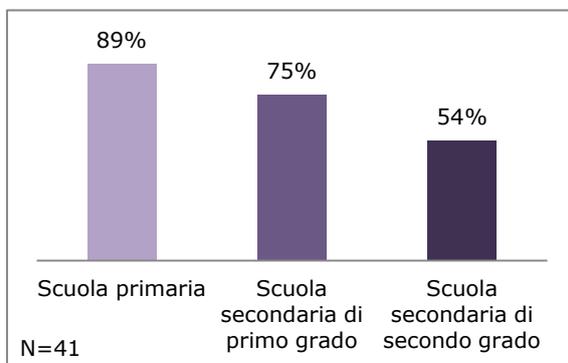


Chart 6.7.28 Specific preparation and test simulation: comparison among schools (partial cumulative percentage)

With regard school location, in both cases schools located in the province make use of these two accommodations more than schools located in the city of Verona, although difference in test simulation usage is very narrow.

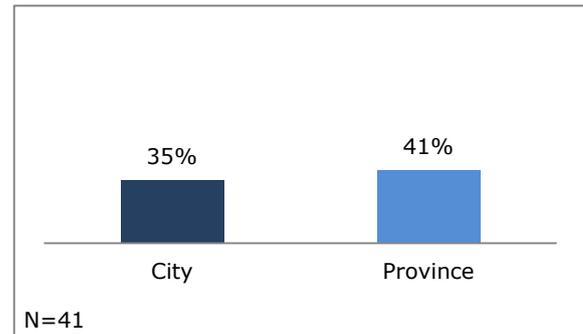
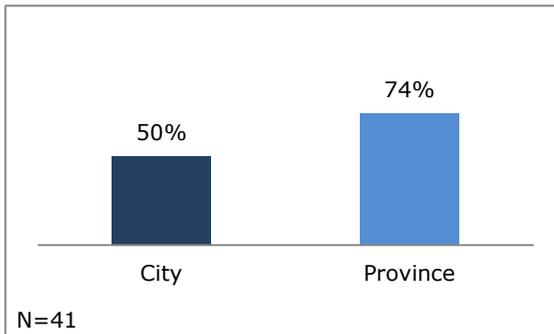


Chart 6.7.29 Specific preparation and test simulation: comparison between city and province (partial cumulative percentage)

6.7.10 Oral answers and answers via computer

The last test accommodations that will be discussed in great detail in this chapter deal with responses: oral answers are to be preferred, as very often dyslexic pupils encounter fewer difficulties in oral speech than in written tasks. However, this assumption has to be verified as the phonological impairment may have dramatic effects also in oral production (see 3.3.10) and, not to be forgotten, anxiety during oral tasks may alter dyslexic pupil's performance.

Written answers can be replaced also by computer written ones. This option proves to be very effective for learners with poor handwriting, since it reduces pressures associated with writing and spelling. Additionally, computers allow more autonomy (pupils can modify the text according to their needs and preferences and work at their own rhythm) and enhance motivation (Singleton, 1994).

As expected, the concession of answers via computer is not very frequent; however, more than a third of respondents allow the dyslexic learner to use a computer during tests very often (17%)/always (17%).

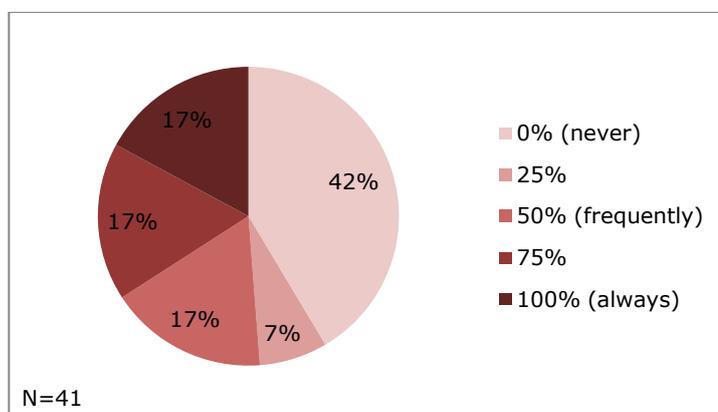


Chart 6.7.30 Answers via computer: general use

Furthermore, slight differences can be noted in favour of dyslexia-trained teachers, as shown in the chart below.

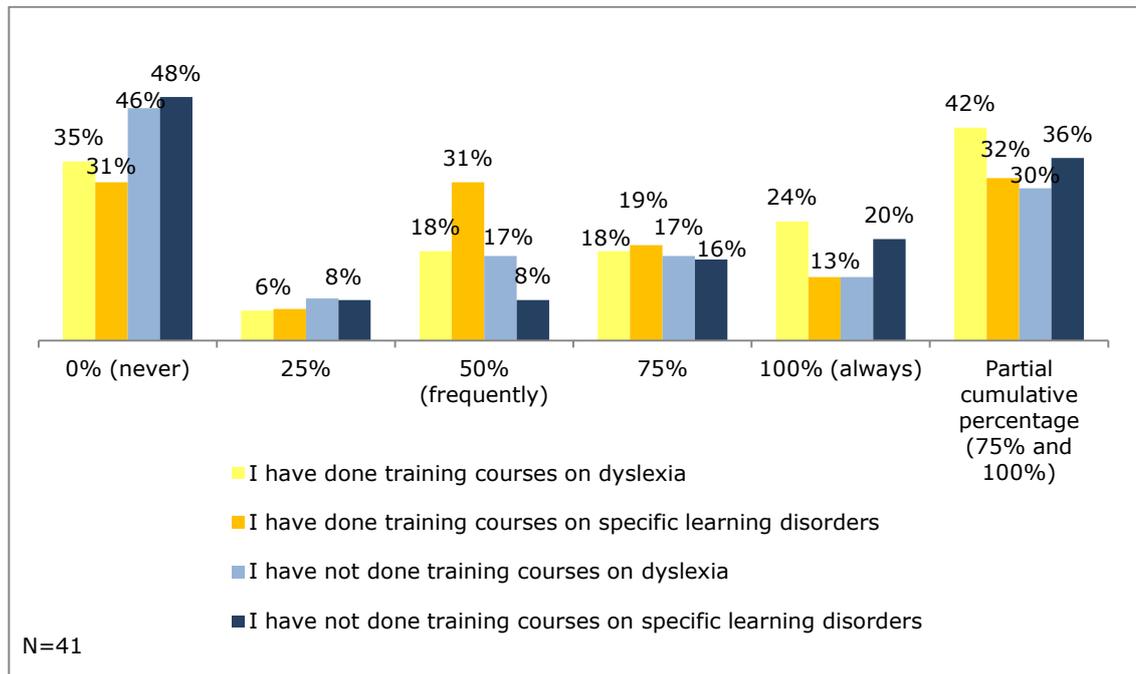


Chart 6.7.31 Answers via computer: comparison between trained and not-trained teachers

Partial cumulative percentages on school location go in favour of schools located in the city (42%; province: 30%).

Finally, the graphic below illustrates differences brought about by the grade of school: as apparent, differences are quite narrow; hence the use of computer for dyslexic learners is not influenced by school grade.

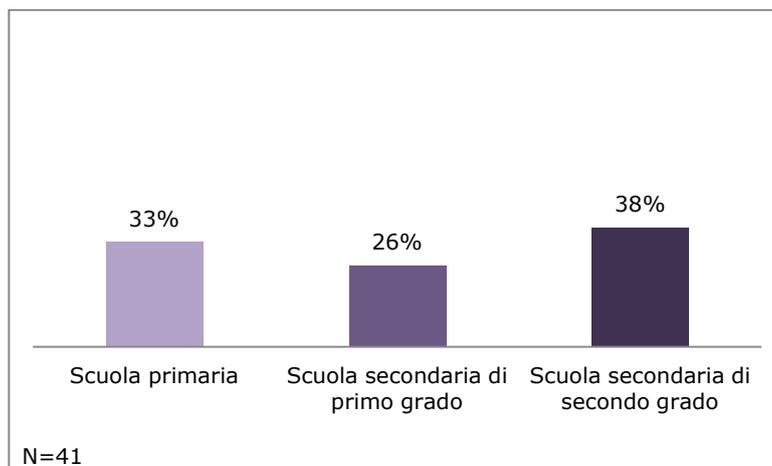


Chart 6.7.32 Answers via computer: comparison among schools (partial cumulative percentage)

With regard to oral answers, little more than a third of FL instructors allows the dyslexic pupil to answer verbally very often (15%)/always (22%).

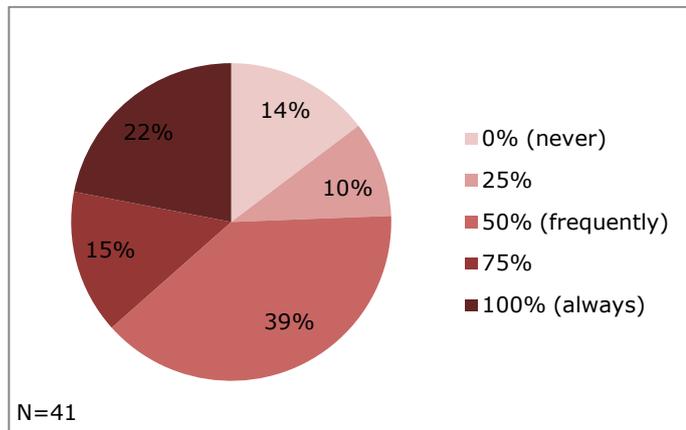


Chart 6.7.33 Oral answers: general use

Oral answers are more allowed by those educators that have done training courses on dyslexia, followed by those that attended training courses on specific learning disorders. In this case, attendance of courses focused on dyslexia turned out to be the most effective, as differences among dyslexia-trained teachers (light yellow bar) and the other three groups are consistent.

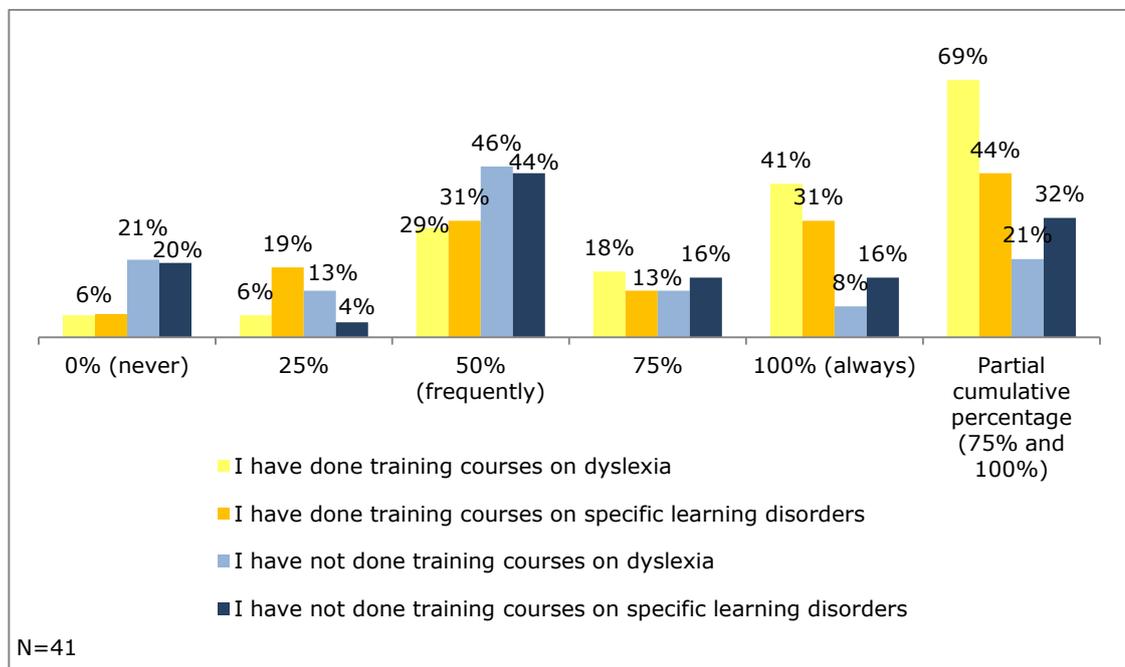


Chart 6.7.34 Oral answers: comparison between trained and not-trained teachers

Results on grades of school are more crushing than those of computer-based responses (Chart 6.7.32), as no one of primary teachers answered "never" or "rarely" (25%).

Percentages of very frequent use indicates that, in fact, primary schools are the ones in which oral answers are most allowed. This value collapses in both *scuola secondaria*:

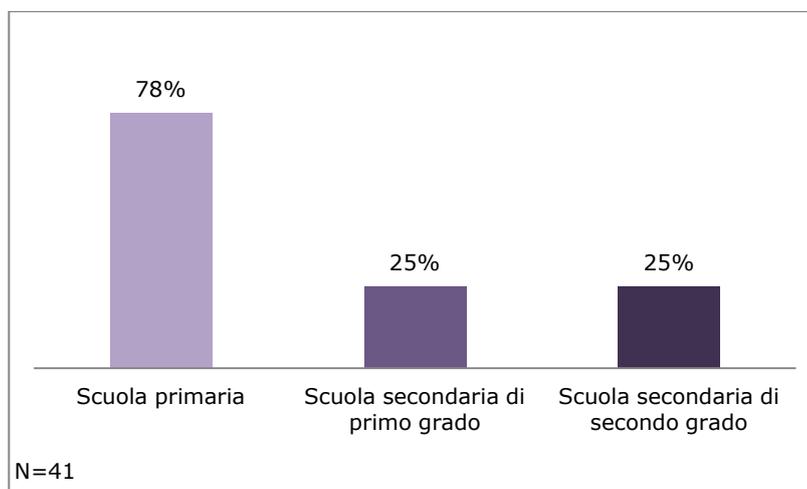


Chart 6.7.35 Oral answers: comparison among schools (partial cumulative percentage)

Concerning school location, schools of the province reached a greater percentage on very frequent use.

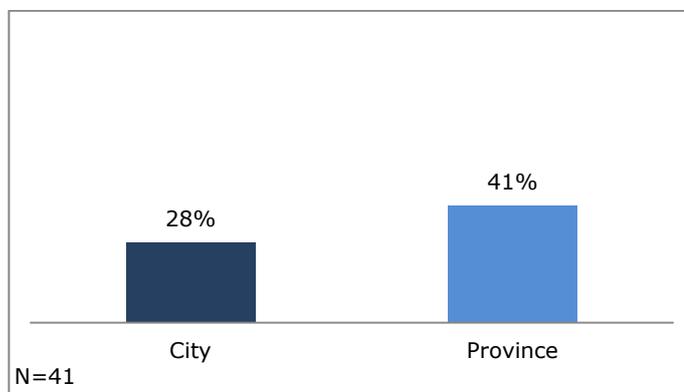


Chart 6.7.36 Oral answers: comparison between city and province

6.8 Assessment

As already mentioned (c.f. 3.5.2), accommodations towards dyslexic learners should be implemented also during the assessment phase, in order to evaluate those skills that are not affected by dyslexia.

This chapter is divided in two parts: assessment of written tasks and of oral tests.

6.8.1 Written assessment

This chapter covers foreign language teaching assessment phase. Teachers were asked to check what linguistic aspects they assess when evaluating dyslexic pupils' written tests.

As evident in Chart 6.8.1, content (red bar) and communicative effectiveness (grey bar) are the most evaluated features of written tests; the other criteria lag behind them. Spelling, one of the most difficult skills to be achieved by dyslexics, is assessed by one respondent only (2%).

Generally speaking, the outcomes of this question indicate that respondents choose good assessment procedures.

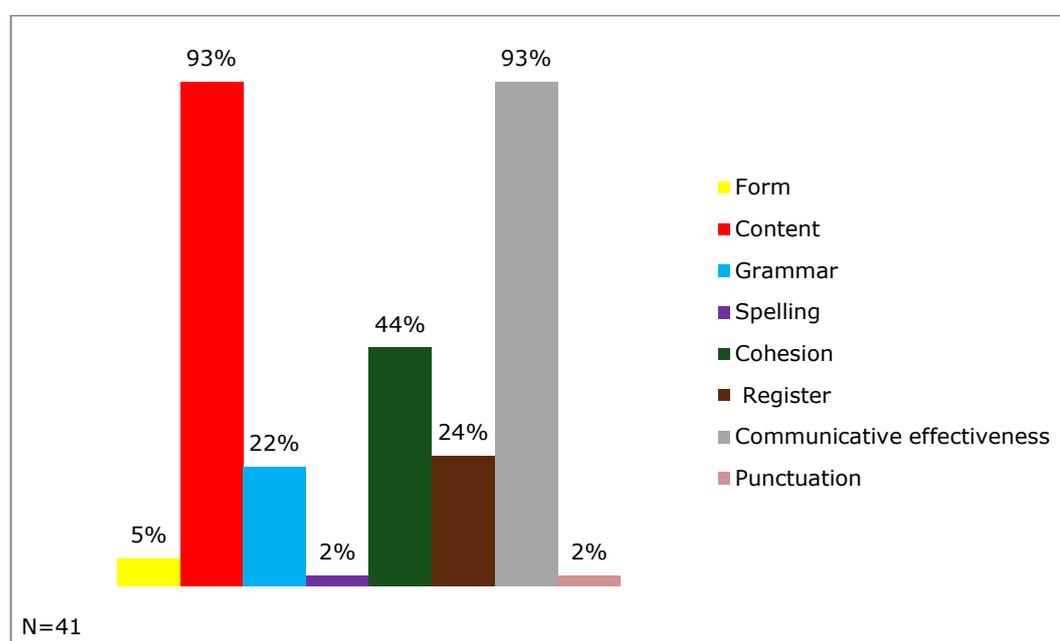


Chart 6.8.1 Written assessment criteria

Assessment criteria have been crossed with the type of language, i.e. deep or transparent (for a deeper definition see 1.3).

A positive result lies in the fact that a very little part of respondents (namely, 4% of English teachers and 0% of French teachers) evaluate spelling errors. It has to be stressed again that spelling is one the most affected literacy skills in dyslexia, mainly in languages which have inconsistent orthographies, such as English and French, as relations between letters and sounds are not predictable and stable. Hence, avoidance of spelling error evaluation is a good assessment accommodation in the case of dyslexic pupils.

As evident in the chart below, the most used criteria are content, communicative effectiveness and cohesion (green bar).

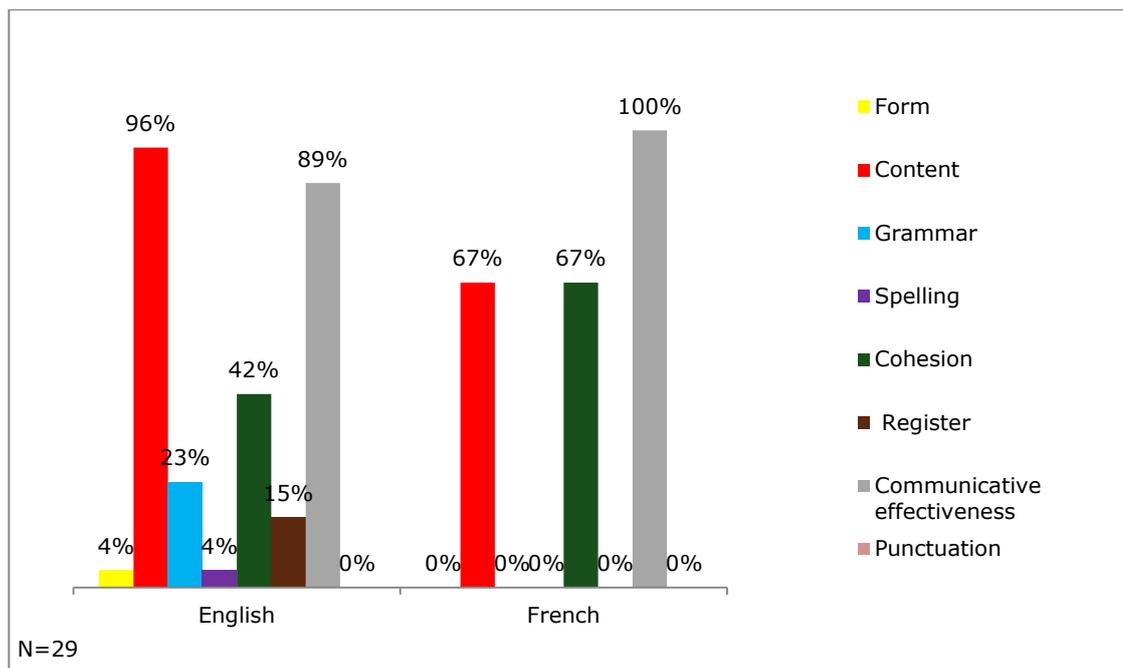


Chart 6.8.2 Written assessment criteria: comparison between English and French

With regard to transparent languages, the great majority of German teachers take into account content (red bar) and communicative effectiveness (grey bar), and half of them also register (brown bar). All Spanish instructors evaluate content, communicative effectiveness and cohesion (green bar). Half of them assess grammar (light blue) and register. Spelling is not evaluated at all by both subgroups, and form and punctuation are given no or very little attention, respectively by Spanish and German educators. Considering the latter, it has to be stressed that pronunciation often represents a hurdle when it comes to dyslexic learners' written production skills (Connelly, *et al.*, 2006).

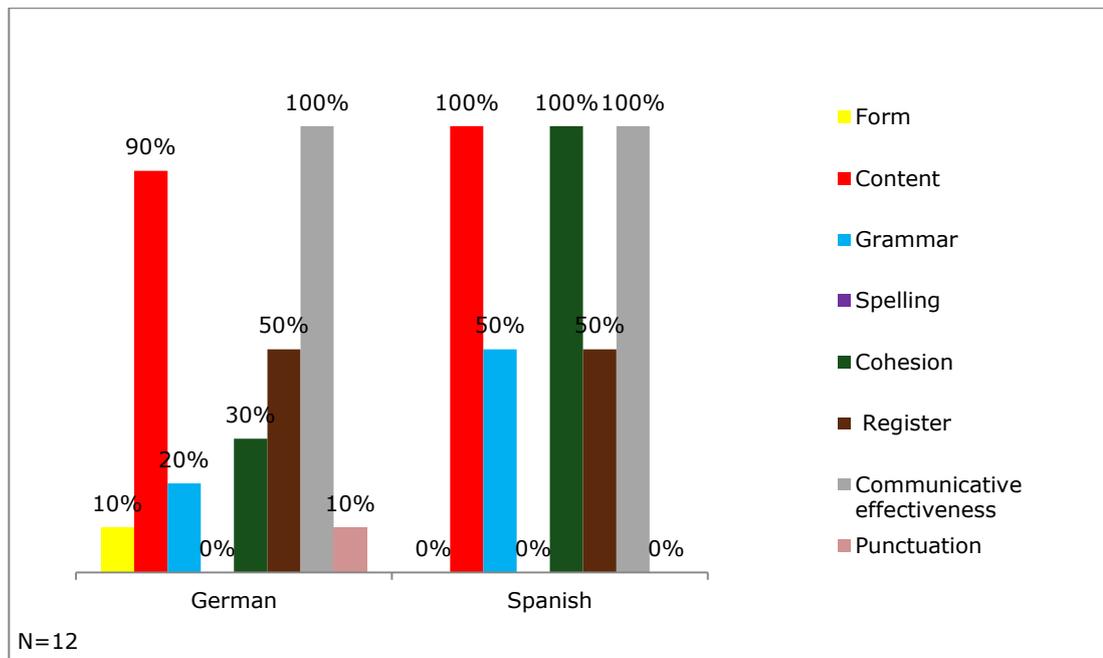


Chart 6.8.3 Written assessment criteria: comparison between German and Spanish

By and large, written assessment parameters that have been chosen by respondents are the most appropriate in the case of dyslexic learners, although grammar is still highly regarded.

In the graphic below (Chart 6.8.4) it is possible to see whether the attendance of training courses is a powerful factor that can have influence in teachers' assessment practice. Looking at the chart, training courses appear to be determining with regard to grammar assessment, as the difference between trained teachers (yellow bars) and not-trained instructors (blue bars) is the most evident. This does not mean that grammar has not to be assessed at all, but that grammatical correctness should be taken into account carefully, since learners with dyslexia might encounter problems with understanding and applying grammatical concepts, remembering word order, suffixation and verb conjugation (Kormos & Smith, 2012).

Outcomes on register are controversial, as teachers who have attended training courses on specific learning disorders (31%) exhibit the almost same percentage of educators that have not attended courses on dyslexia (33%), and, moreover, dyslexia-trained teachers display the lowest result (12%).

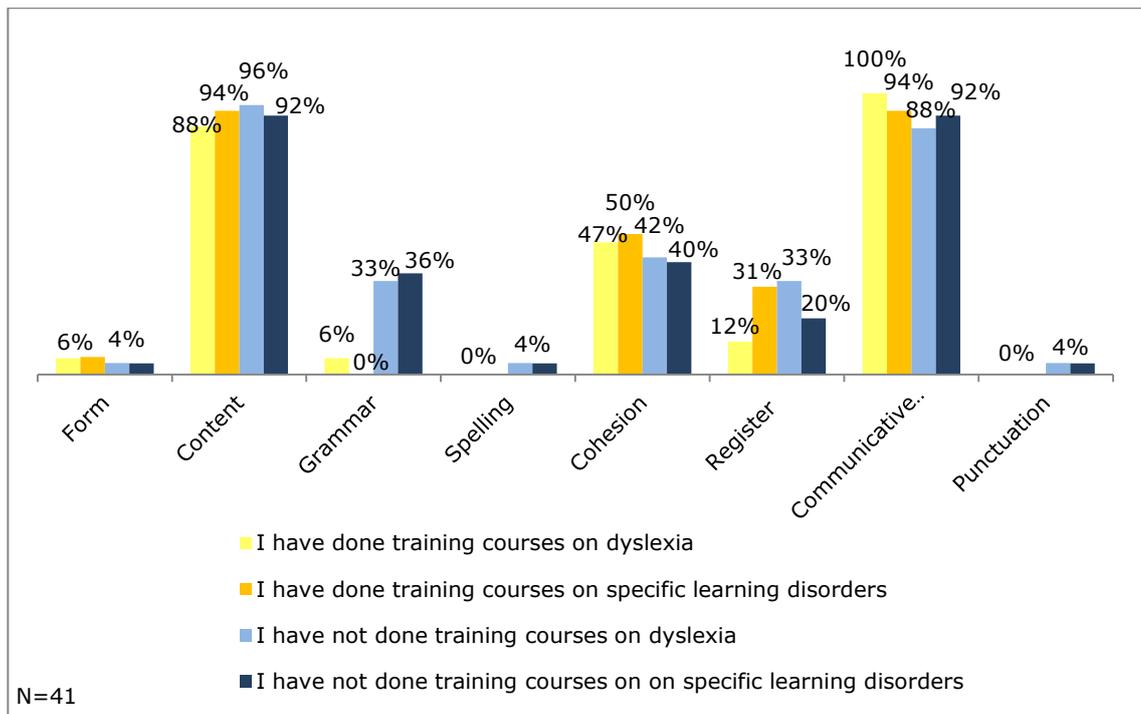


Chart 6.8.4 Written assessment criteria: comparison between trained and not-trained teachers

Another parameter that might have a bearing on written assessment criteria is the grade of school. Maybe, spelling and cohesion are not assessed in young learners' written production. Each type of school exhibits similar results on content and communicative effectiveness. Grammar and cohesion follow a proportional trend, as their percentage grows as the grade of school goes up. Hence, it is possible to say that the type of school (and the age of pupils) has influence on the assessment of these criteria.

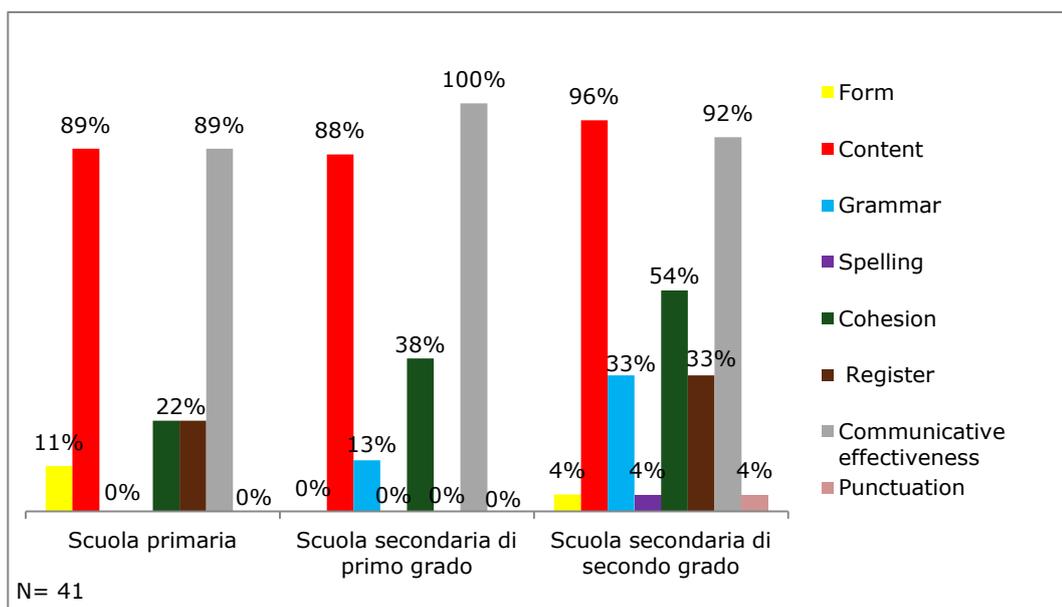


Chart 6.8.5 Written assessment criteria: comparison among schools

6.8.2 Oral assessment

As already mentioned (3.3.10), oral exam tasks are a good alternative method to written tests as, usually, oral language skills are less affected by dyslexia, although this did not prove to be true for all individuals suffering from dyslexia (Nijakowska, 2010), as some of them might find speech production problematic due to reduced attention span and phonological short-term memory. Teachers ought to bear in mind that oral production involves formulation and articulation automaticity, which is a core problem in dyslexia picture (Kormos & Smith, 2012). Even though they are to be preferred, oral tests present some weaknesses that, however, can be mitigated: immediate forced response should be avoided; tasks and instructions should be given ahead of time and may be written or recorded; performance anxiety should be controlled and taken into account.

When L2 understanding is assessed, some students with dyslexia may find it hard to process what they are listening to, as phonological processing skills and phonological short-term memory may not work as fast as they do in individuals with no apparent dyslexia. Nevertheless, pupils with dyslexia that do not have great phonological and auditory processing difficulties are likely to encounter fewer problems in L2 production and understanding.

Back to questionnaire outcomes, when dyslexics are performing oral tests, teachers evaluate content (red bar) and communicative effectiveness (brown bar) much more than other parameters.

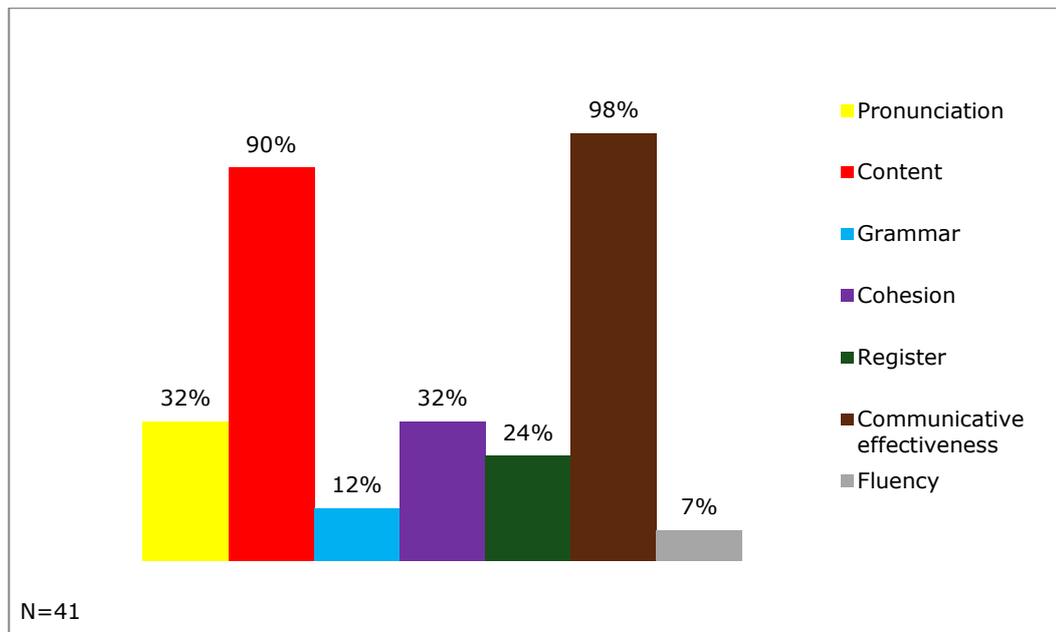


Chart 6.8.6 Oral assessment criteria

The charts below show the differences among teachers of different languages with regard to oral assessment criteria. By and large, almost all teachers take content (red bar) and communicative effectiveness (brown bar) into consideration. All Spanish teachers also evaluate pronunciation (yellow bar) and cohesion (purple bar).

Beginning with the first parameter, that is pronunciation, it is clear that one third of English and French teachers and one fourth of German teachers take pronunciation into account, whereas 100% of Spanish teacher use this parameter in oral test assessment.

Grammar is another feature that divides teachers: no one of French and German teachers evaluates grammar, whereas half of Spanish teachers uses to check grammar correctness in oral tests.

Cohesion is a parameter that is given a lot of attention by French and Spanish teachers, whereas English and German teachers are less keen on using this feature.

Also register shows different results: French teachers do not use it at all, while a great percentage of German and Spanish educators take it into consideration.

Finally, fluency is a parameter evaluated by 50% of Spanish teachers, whereas teachers of other languages do not use it much.

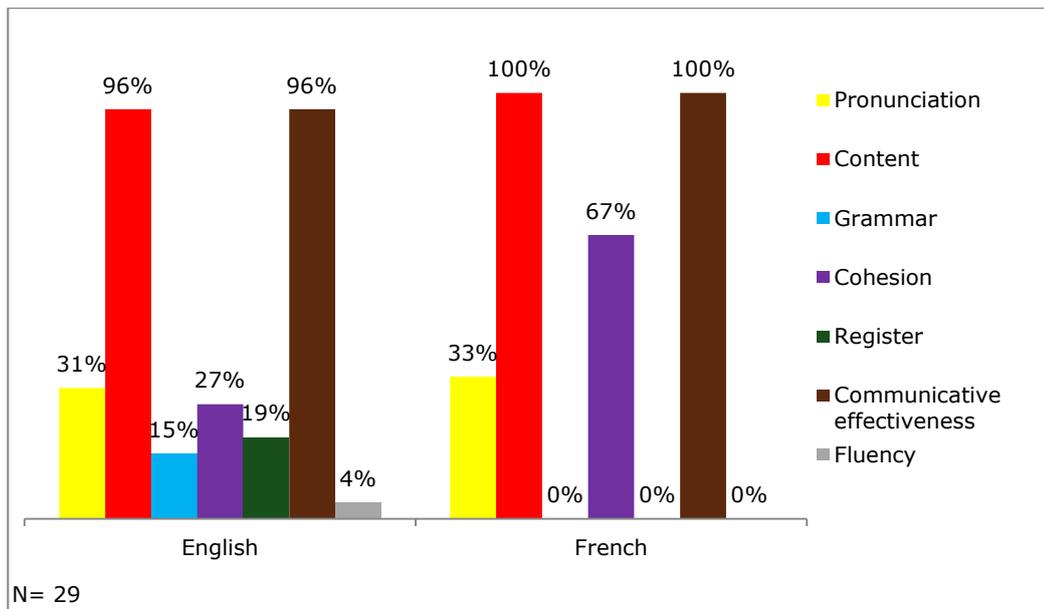


Chart 6.8.7 Oral assessment criteria: comparison between English and French

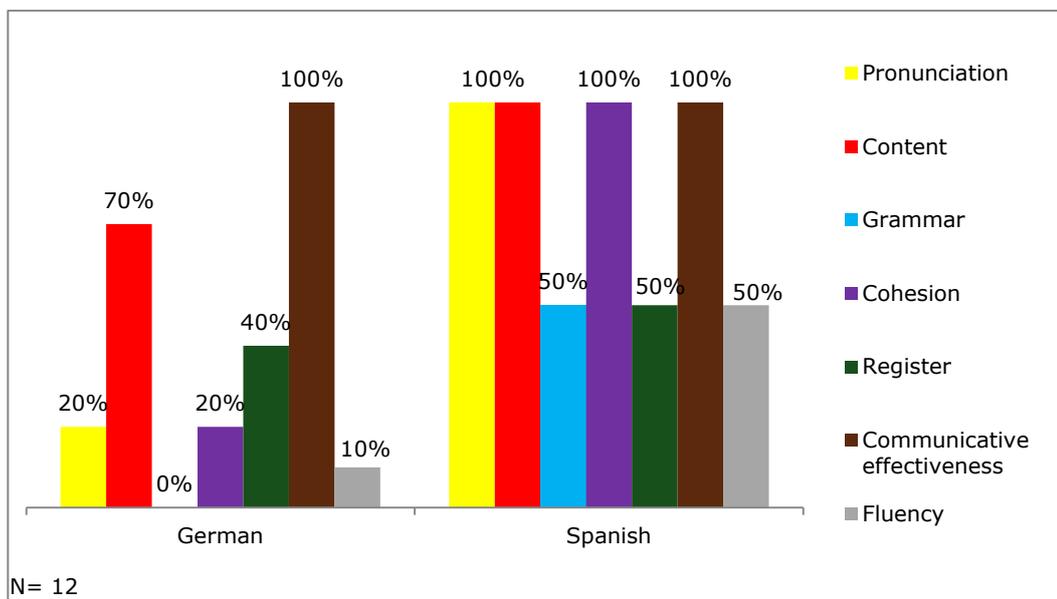


Chart 6.8.8 Oral assessment criteria: comparison between German and Spanish

The chart below shows whether attendance of training courses is a determining factor in teachers' oral test assessment practice.

Content and communicative effectiveness are taken into account by the great majority of respondents, both trained and not-trained.

As discussed in chapter 3.3.10, learners who suffer from dyslexia are likely to find it difficult to retrieve appropriate L2 words and structures quickly, remember word pronunciation, articulate words correctly, creating oral texts that are grammatically correct and coherent. These difficulties arise especially when oral tasks are spontaneous. Hence, fluency and grammar are parameters which have to be evaluated carefully as they can be under the influence of the reading disorder.

der. Teachers that have attended training courses (yellow bars) are less keen on taking grammar correctness and fluency into account than not-trained educators (blue bars).

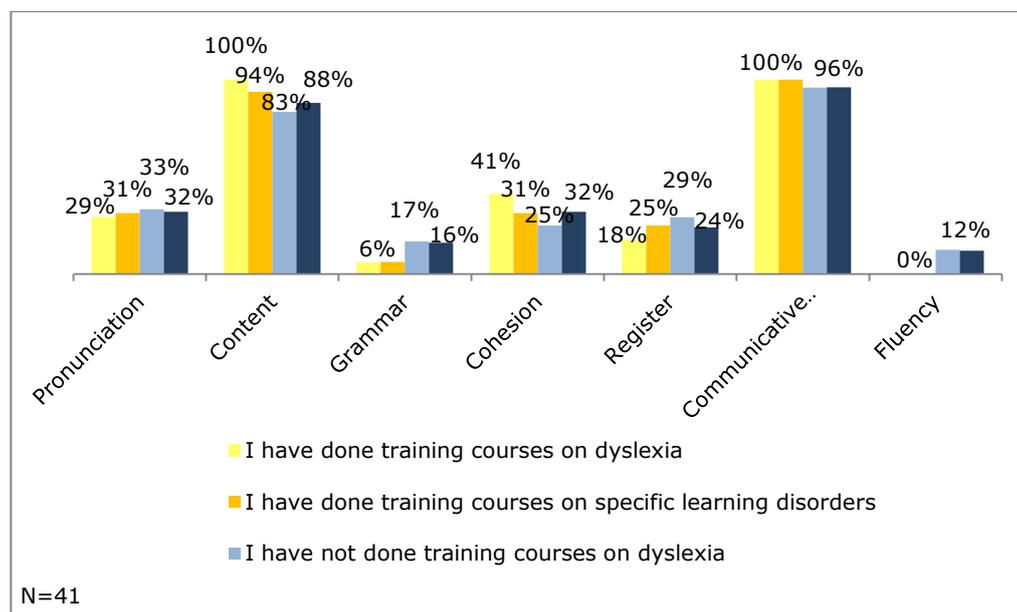


Chart 6.8.9 Oral assessment criteria: comparison between trained and not-trained teachers

Finally, the graphic below (Chart 6.8.10) reports comparisons among the three grades of school. As before, Chart 6.8.4, content and communicative effectiveness reached a resounding success independently from the grade of school. As previously, the only parameter that is assessed more in upper schools than in primary schools is cohesion (purple bars).

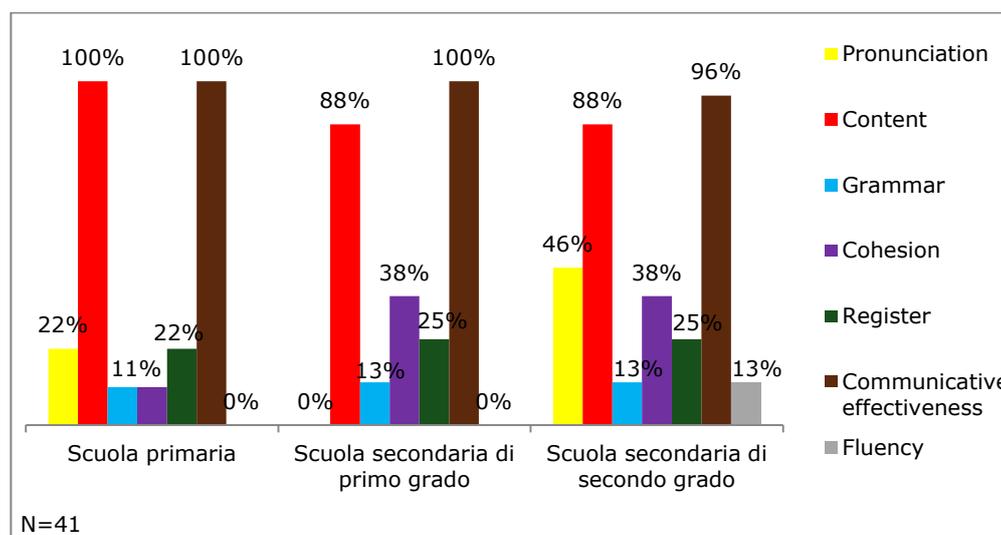


Chart 6.8.10 Oral assessment criteria: comparison among schools

6.9 Teachers' perceptions

This chapter deals with those questions that aim to know what teachers think about the relation between dyslexia and their own way of teaching.

As several of the following questions are not required when filling in the questionnaire, there are fewer responses than those of required questions.

6.9.1 General teachers' perceptions

The first question to be analyzed covers the main difficulties that teachers find when teaching dyslexic pupils.

The first chart shows that the majority of respondents agree (36%) or strongly agree (26%) with the statement "I think I do not have enough time to adapt my teaching", so that they perceive they have little time to change curricular features which dyslexic learners will benefit from (e.g. contents, form, class activities and tests). However, it is teachers' responsibility to do this "extra work".

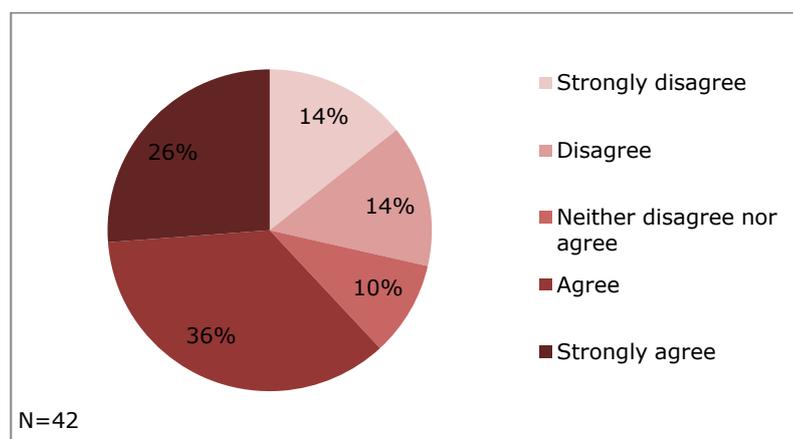


Chart 6.9.1 Teachers' perceptions on lack of sufficient time

As reported in Chart 6.9.2, there are no significant differences between trained and not-trained teachers with regard to the perception of not having enough time in order to make teaching changes. Perhaps, if the school made resources and materials available to FL instructors, this might represent a way for saving up time.

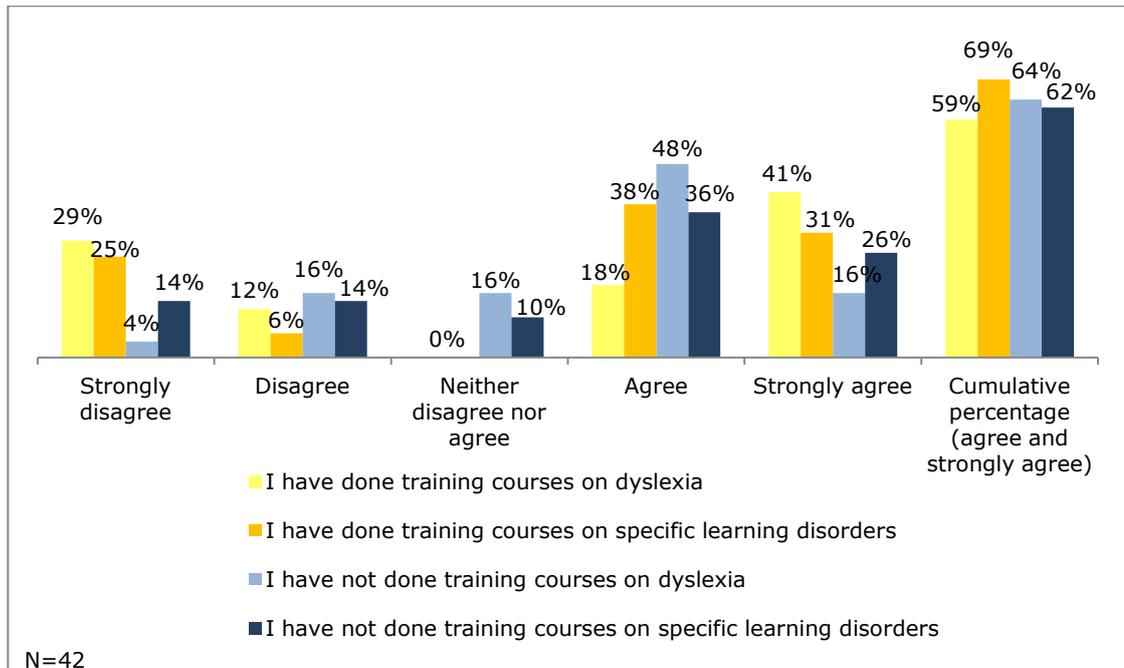


Chart 6.9.2 Lack of sufficient time: comparison between trained and not-trained teachers

Second question is aimed to know whether teachers have a lack of appropriate knowledge of reading disorders: less than a fifth (19%) of respondents claims their acquaintance is apt. The majority (“Agree”: 50%; “Strongly agree”: 21%) of respondents consider their knowledge on the topic as inappropriate.

Special attention should be given to this result, as it highlights the ignorance that is often associated with dyslexia. This lack of knowledge may result in dramatic effects, firstly an incorrect teachers’ behaviour towards pupils with dyslexia and misconceptions on origins, characteristics and difficulties that belong to the reading disorders.

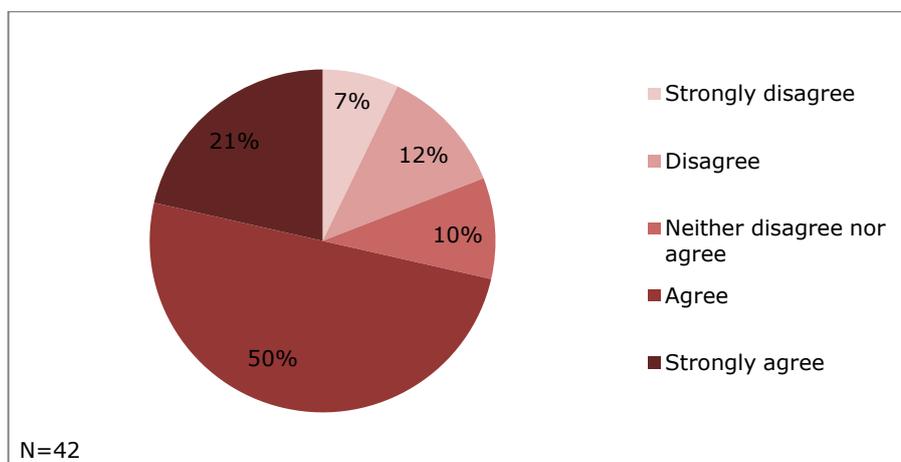


Chart 6.9.3 Teachers’ perceptions on lack of appropriate knowledge

Needless to say that the acquaintance of dyslexia framework is crucial, as it allows teachers to know what behaviours have to be adopted when a pupil with dyslexia is in the FL classroom. The more a teacher knows about causes and characteristics of dyslexia, the more he or she will do in order to make his or her teaching suitable for this type of learners. Furthermore, the more teachers are concerned about difficulties encountered by individuals with dyslexia when learning a foreign language, the more they are likely to focus on strengths rather than on weaknesses and to arrange a series of facilitations and accommodations that can assure success. Additionally, a wider knowledge of the problem allow FL educators to set achievable goals, as very often learners with dyslexia are asked to achieve objectives that are beyond their skills, and this is very discouraging (Kormos & Smith, 2012).

As expected, the vast majority of not-trained teachers agree they lack apt knowledge (agreement cumulative percentage). However, it is disheartening the fact that a consistent number of teachers who have attended training courses on dyslexia (41%) and on specific learning disorders (51%) claim their knowledge is inappropriate. Nonetheless, if one picks up the group of dyslexia-trained instructors (light yellow bar), it is evident that they exhibit a wider knowledge than the groups of teachers that have not attended courses on dyslexia (light blue bar), as the percentage of the former with regard to "Strongly disagree" (12%) and "Disagree" (24%) is higher than that of the latter (4% in both answers).

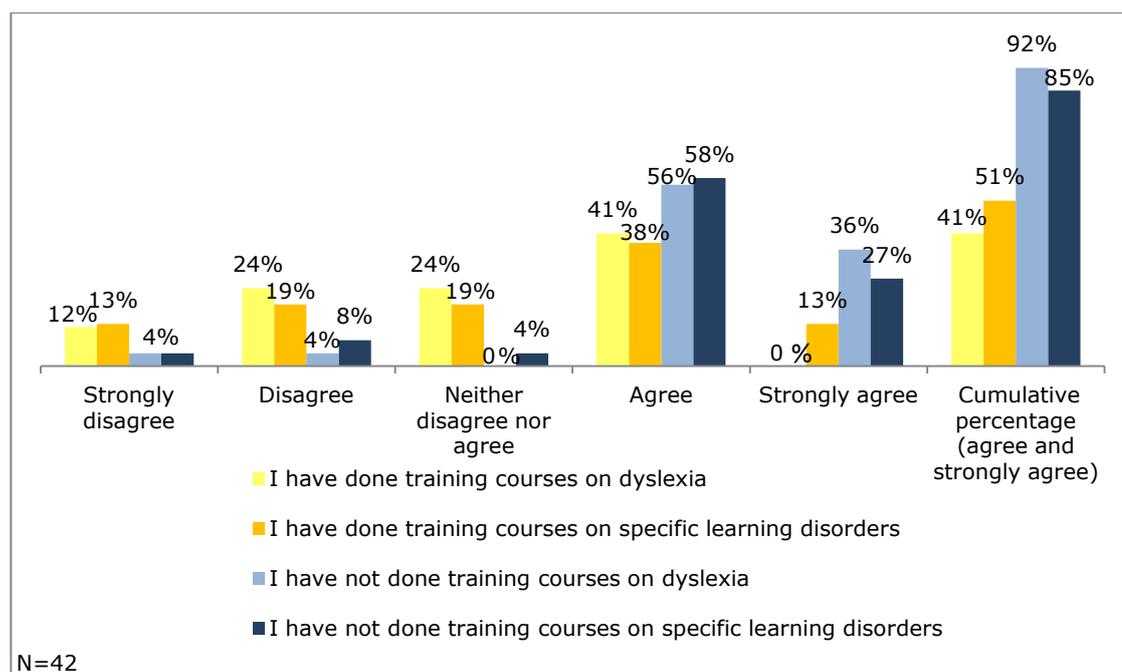


Chart 6.9.4 Lack of appropriate knowledge: comparison between trained and not-trained teachers

The third question to be analyzed deals with resources, such as learning materials and technological devices: are they perceived as sufficient and appropriate? 67% of respondents does not think so (“Agree”: 38%; “Strongly agree”: 29%). Thus, the majority of respondents complain about the lack of appropriate resources.

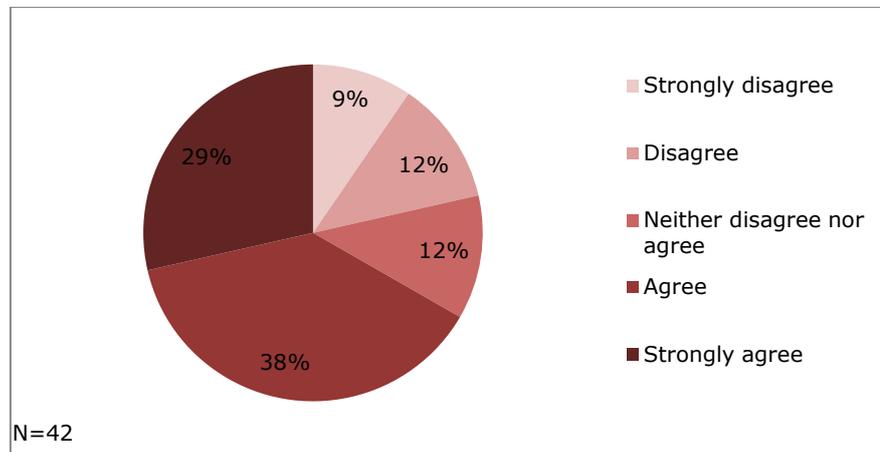


Chart 6.9.5 Teachers’ perceptions on lack of appropriate resources

According to cumulative percentage of agreement, substantial differences exist between teachers that have done training courses on dyslexia (41%) and those that have not (88%). The latter’s partial cumulative percentage shows that they think their resources are appropriate. Maybe this assumption is brought about by the fact that they might have an unclear idea about what is appropriate in the case of dyslexic learners. However, the difference between who has (dark yellow bar) and has not (dark blue bar) done training courses on specific learning disorders is very narrow with regard to partial cumulative percentage of “Agree” and “Strongly agree”.

The group that, more than others, consider to have appropriate resources is constituted by instructors who have done courses on dyslexia, as they have the highest percentage on “Strongly disagree” (18%) and “Disagree” (24%).

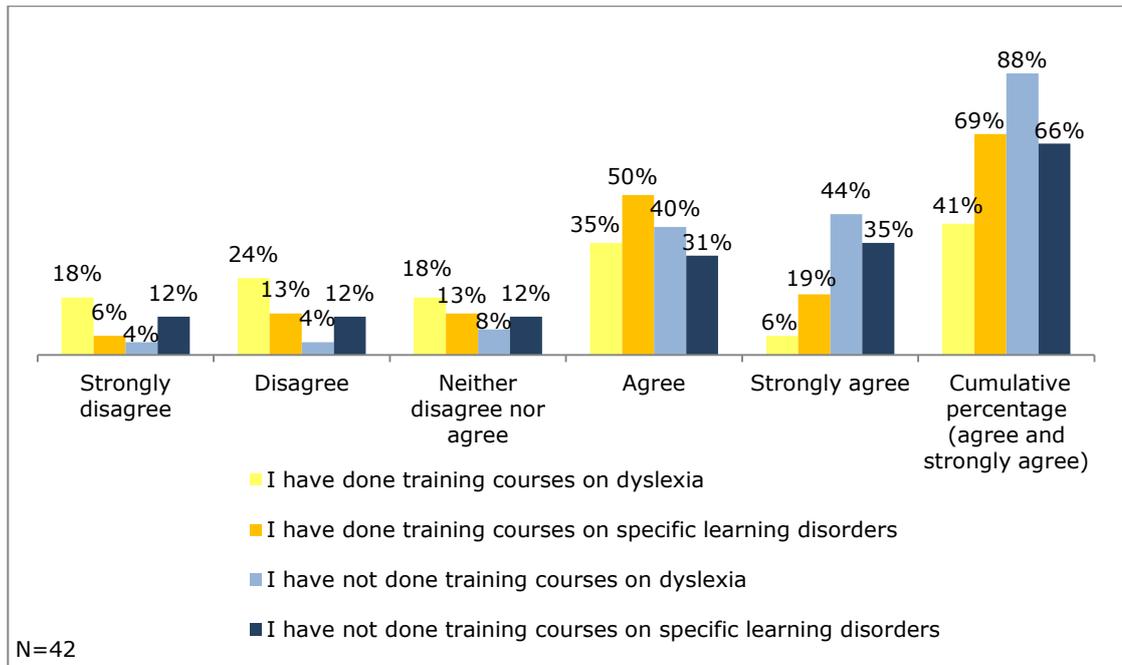


Chart 6.9.6 Lack of appropriate resources: comparison between trained and not-trained teachers

The fourth question reads as follows: "Do you think you do not receive sufficient help/collaboration?". The majority of respondents (33% and 29%) thinks the help or collaboration they receive does not meet the criteria of "sufficient". This as another aspect on which special consideration should be given, as it puts light on the fact that FL educators feel to be left alone, without support in FL instruction towards dyslexic pupils. As it is not as easy as teaching a foreign language to the ideal learner, as learners with dyslexia need special attention and different levels and kinds of supports, help and collaboration are essential features for teachers in order to create favourable conditions and a supportive classroom environment.

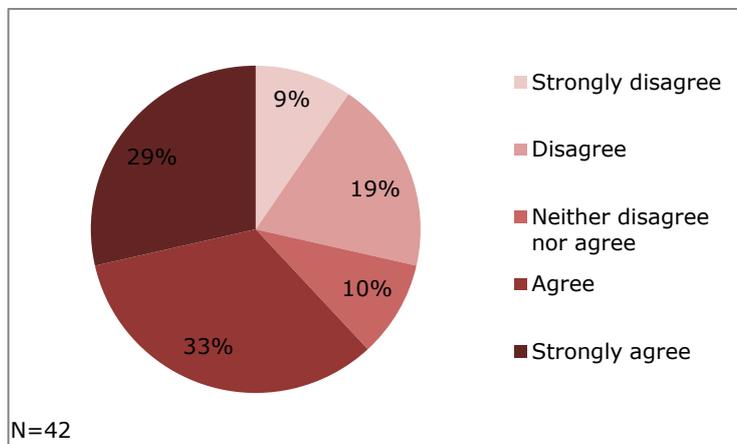


Chart 6.9.7 Lack of sufficient help/collaboration

Although very slightly, agreement percentage on this statement is greater in dyslexia-trained group (light yellow bar), and that means it is the group that complains most about the lack of sufficient help. Nevertheless, it also represents the group which exhibits the highest percentages of disagreement (12% and 29%), meaning they consider to receive enough collaboration.

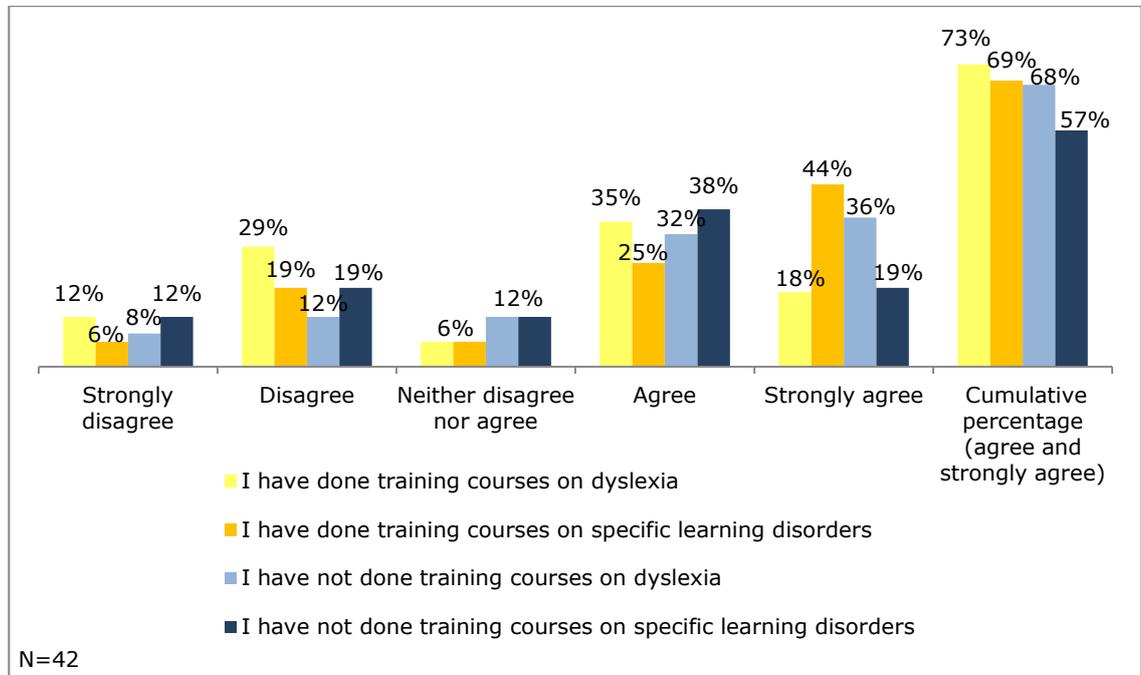


Chart 6.9.8 Lack of sufficient help/collaboration: comparison between trained and not-trained teachers

Teachers might feel they are not succeeding in teaching a foreign language to dyslexics, as pupils might keep struggling with some aspects of foreign language learning, or their progress follows a slower rhythm than that of their peers. Features such as those analyzed before (time, resources, knowledge, and collaboration) are often pivotal in creating a sense of success in FL educators.

So, the question under consideration is the following: "Do you feel a sense of failure?". Results showed in the chart below demonstrate that percentage of agreement and disagreement are almost the same: 22% and 19% (that is, 41%) claimed they do not feel a sense of failure, whereas 33% and 7% (i.e. 40%) agree with question's statement.

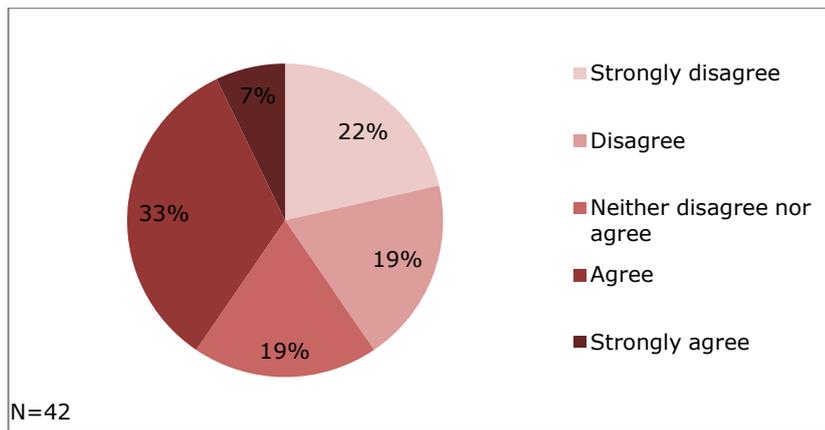


Chart 6.9.9 Teachers' perceptions on feeling a sense of failure

Data have then been crossed with training courses attendance (Chart 6.9.10). Results are controversial, as half of teachers who have attended courses on specific learning disorders (dark yellow) and half of educators that have not done courses on dyslexia (light blue) show similar percentages of agreement (cumulative percentage), which means they feel a sense of failure when they are teaching a foreign language to dyslexic learners.

Dyslexia-trained teachers (light yellow bars) are the ones whose sense of failure is lowest ("Strongly disagree": 29%; "Disagree": 24%).

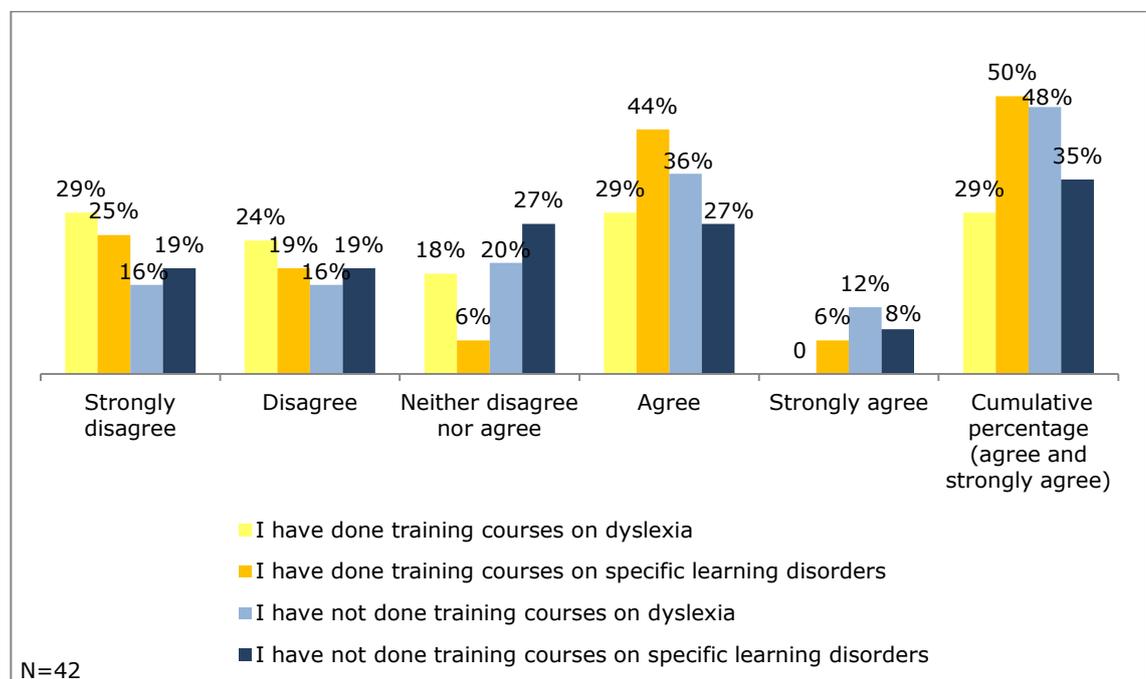


Chart 6.9.10 Sense of failure: comparison between trained and not-trained teachers

Scientific literature regarding dyslexia and specific learning disorders (e.g. Wolf, 2007; Stella, 2004) often points that many teachers, although they know their pupil is suffering from dyslexia, still think he or she is not doing their best.

Questionnaire respondents are not of the same opinion, as only 14% of them agree with this statement, whereas the majority of them think that the learner strives his or her best in order to success in FL learning.

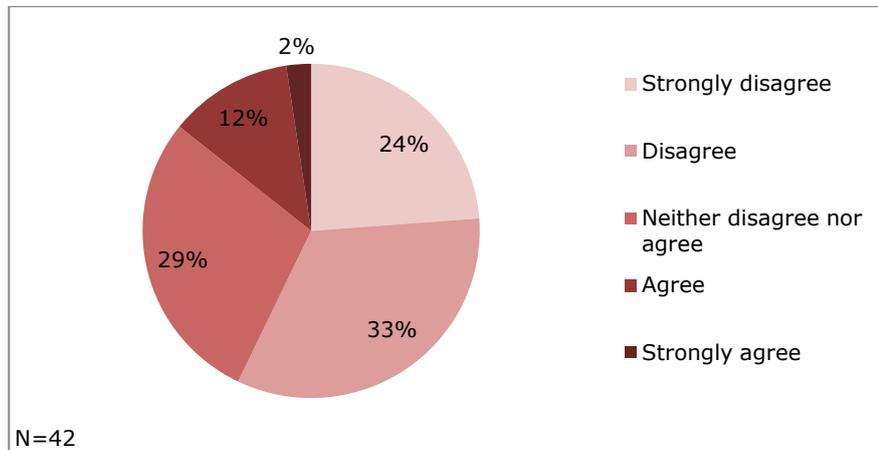


Chart 6.9.11 Teachers' perceptions on pupil's lack of commitment

Unsurprisingly, very small agreement percentages are exhibited by trained teachers, whereas a fifth of not-trained teachers (blue bars) agrees that dyslexic learners do not give their best when learning a foreign language.

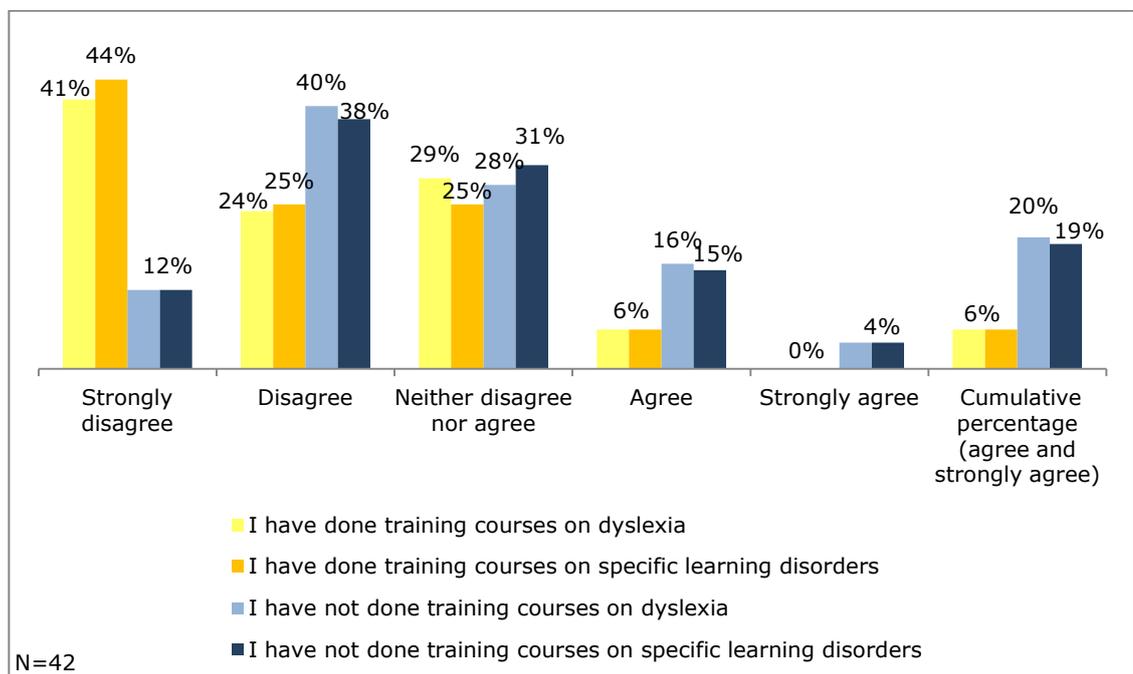


Chart 6.9.12 Pupil's lack of commitment: comparison between trained and not-trained teachers

6.9.2 Teachers' perceptions on difficulties

6.9.2.1 Teaching problems

The first question to be examined in this chapter covers the difficulties that FL educators encounter when teaching a dyslexic learner.

Before examining question results, it has to be pinpointed that some of the answers have been cleared as they were ambiguous: it was impossible to establish whether the answer reflects a problem encountered by the respondent, that is, the teacher, or by the dyslexic pupil. These responses refer to "Literacy skill teaching", which obtained a 10% of responses. Thus, this result would have been different if the above mentioned answers were more understandable (c.f. 4.2.6).

After data cleaning, result analysis comes out as portrayed in the chart below:

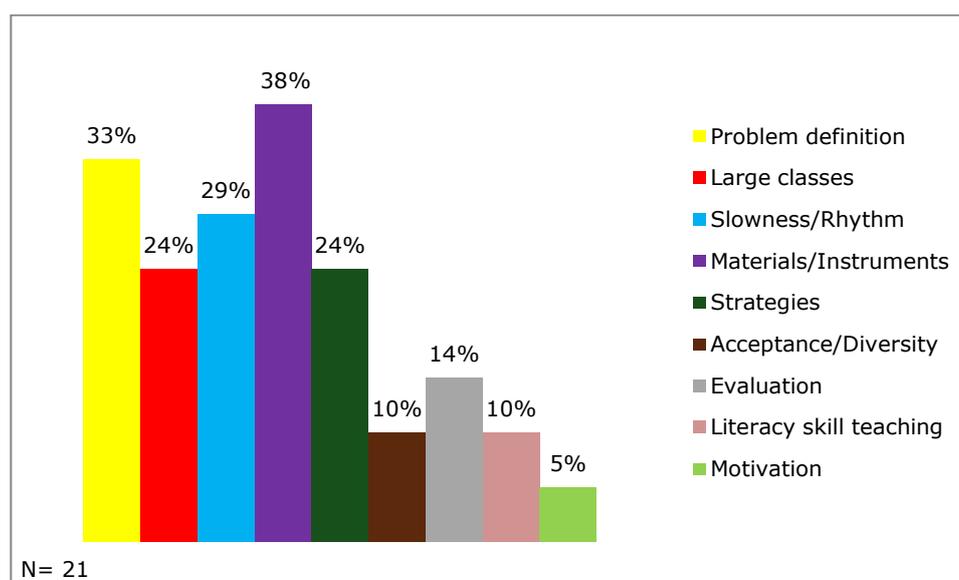


Chart 6.9.13 Difficulties and problems encountered by teachers

Most common difficulties are: learning material and instrument creation/usage (purple bar); problem definition, namely characteristic and special need analysis (yellow), and slow learning (light blue), which makes learners with dyslexia lag behind their peers in terms of acquisition rhythm and contents.

With regard to the first category, several teachers complain about the fact that they have to spend much time creating suitable materials on their own, and about the lack of apt materials.

As evident also in chapter 6.9.2.3, large classes (red bar) constitute a common source of problems. The presence of other pupils impedes the teacher to give attention to and take care of special educational need learners. Moreover, the concerns deal with the fact that the instructor has to stop in order to mind the dyslexic pupil, so that the rhythm of the class and of teaching slows down.

“Strategies” (dark green) obtained the same result (24%) of “Large classes”. Respondents claimed that they find it hard to find out, develop and put in practice teaching strategies that will turn out to be the most appropriate for the needs of the dyslexic learner.

6.9.2.2 Main difficulties encountered by dyslexic learners (teachers’ view)

The following question aims to know what teachers think about the main difficulties that dyslexic pupils find when learning a foreign language.

As evident in the chart below, the first three prominent positions are occupied by written production (69%), slow learning (52%) and spelling (48%). Thus, according to respondents, these are the main linguistic fields perceived as most hindered by dyslexia.

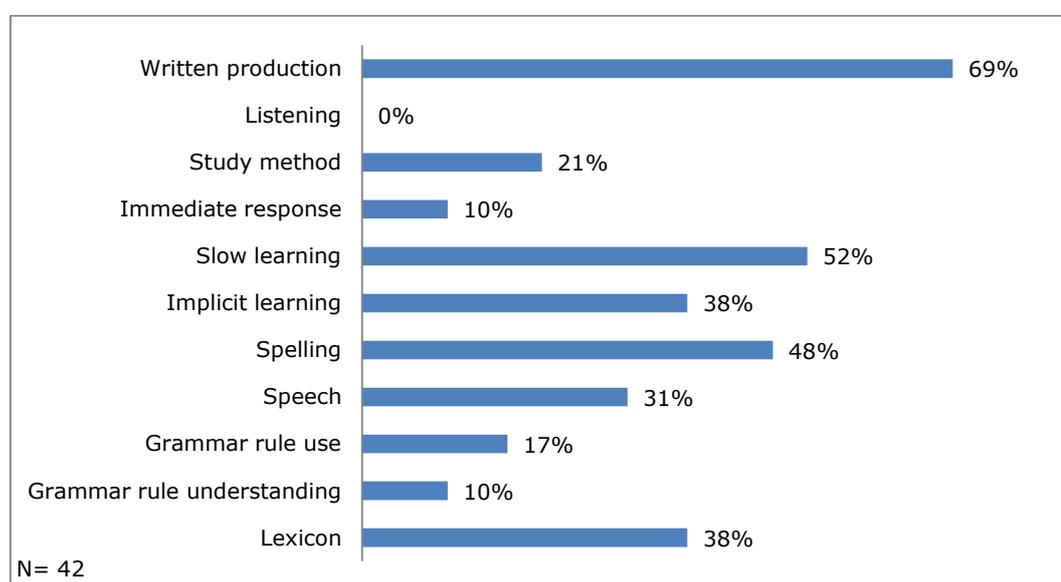


Chart 6.9.14 Main difficulties encountered by dyslexic learners (teachers’ view)

As evident in Chart 6.9.14, no one of respondents put listening as one of the core difficulties that pupils with dyslexia are likely to encounter. Nonetheless, teachers should not forget that these learners might demonstrate a below-standard performance in listening tasks due to phonological weakness (see also chapters 2.1, 3.1 and 3.3.10).

6.9.2.3 Difficulties of using linguistic accommodations

An important aspect of teachers' perceptions deals with the perceived difficulty of putting in practice linguistic accommodations that ease the FL learning process of individuals with dyslexia.

47% of respondents assume that using facilitation accommodations is easy (27%) or very easy (22%). Only 22% of teachers find it difficult (12%) or very difficult (10%) to implement accommodations when teaching a foreign language to dyslexics.

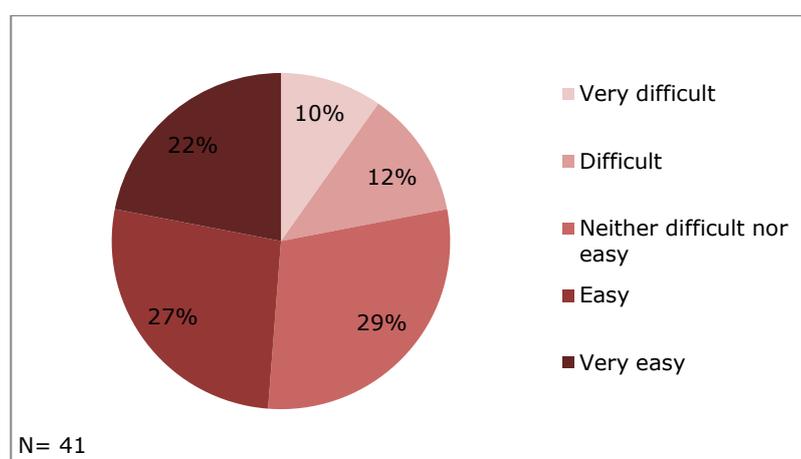


Chart 6.9.15 Difficulties of using linguistic accommodations

Examining the difficulties in great detail, it emerged that a large group of teachers (yellow bar) complains about the fact that a large class makes it harder to give appropriate attention and resources on pupils with dyslexia, and, moreover, this is aggravated by the fact that there can be more than one student with disability (see also chapter 6.9.2.1). The relationship 1:1 is perceived as the most suitable and beneficial situation in order to meet dyslexic learners' special needs.

Another thorny problem is represented by the creation of material that is as individualized as possible (red bar) (c.f. chapter 6.9.2.1).

The label "Other" (in light green) collects some answers in which respondents are concerned about time. Unfortunately, in these responses it is not clear what time actually means (e.g. time for material preparation, time in class or other).

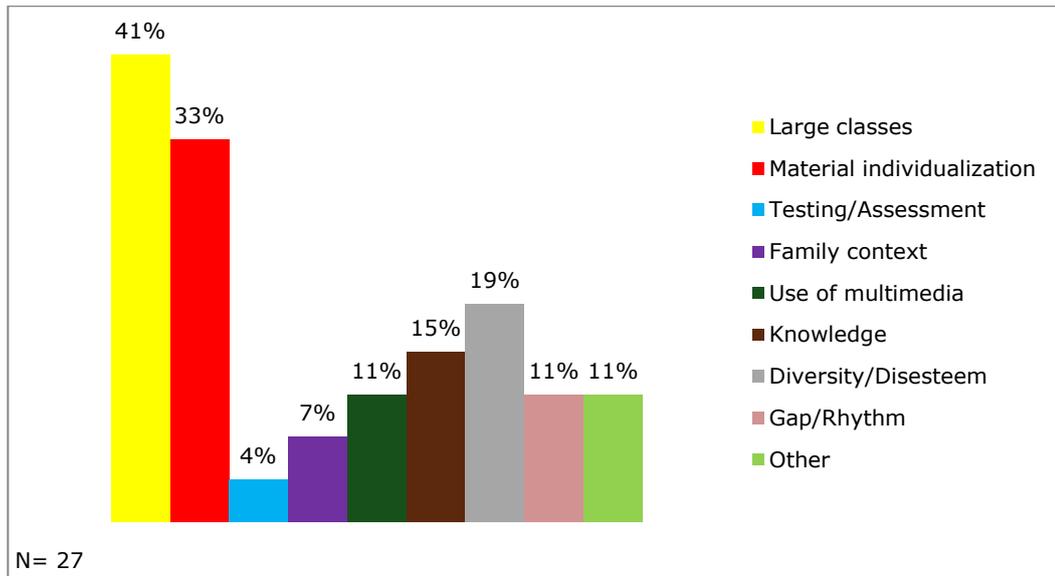


Chart 6.9.16 Difficulties of using linguistic accommodations listed by teachers

6.9.2.4 Assessment problems encountered by teachers

When asked whether they find any particular problems in the assessment phase, the number of positive (37%) and negative (41%) answers is almost the same:

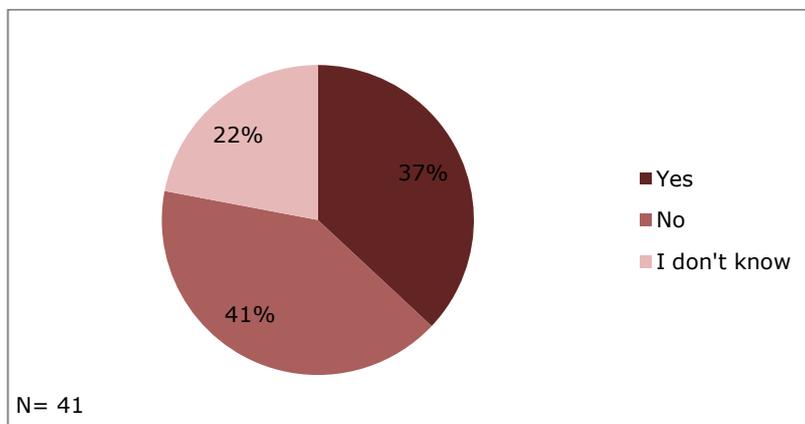


Chart 6.9.17 Assessment problems encountered by teachers

Related to evaluation are data of the perception of to what extent teachers find it difficult to evaluate dyslexic learners' competence. Apparently, half of respondents considers evaluation to be a complicated task (difficult: 29%; very difficult: 22%). No one of FL educators involved answered that assessing a dyslexic learner is very easy. This is not an unexpected result, since testing and assessment of special need pupils is a thorny problem, as some features (e.g. type of tests, objective differentiation, accommodations for impaired skills and modified

evaluation criteria) have to be taken into account when evaluating a dyslexic learner's foreign language performance.

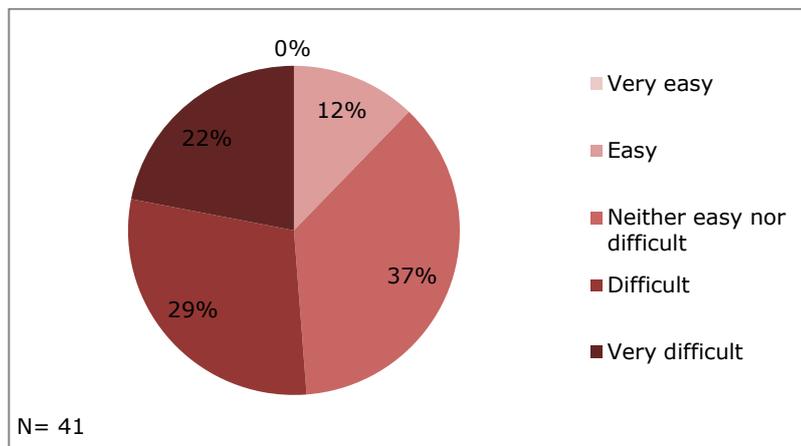


Chart 6.9.18 Teachers' perceptions on assessment difficulty

In the chart below detail information are given about the type of difficulties that FL instructors encounter when assessing dyslexic learners' performance in the L2.

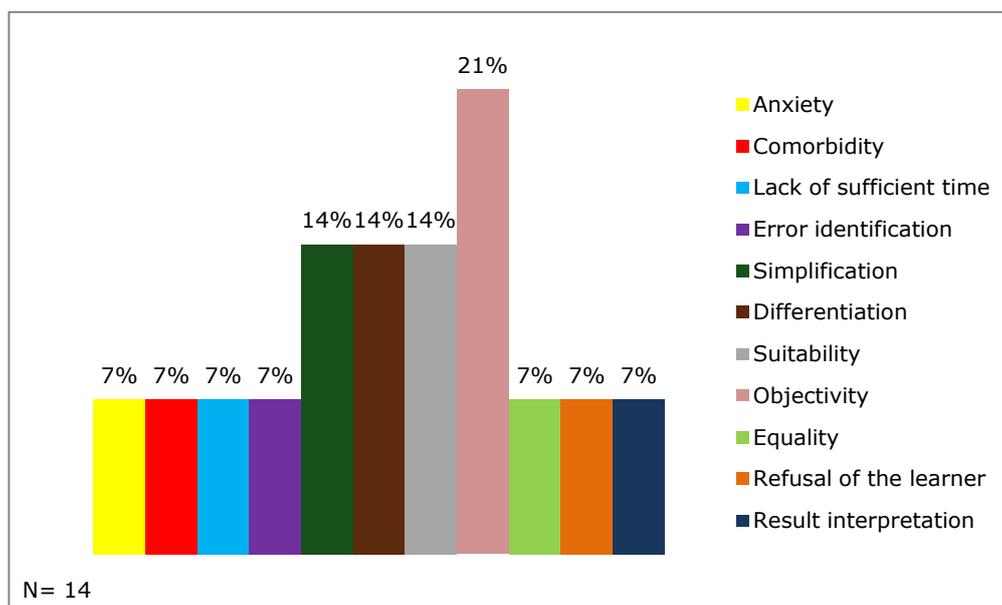


Chart 6.9.19 Assessment difficulties encountered by teachers

Aspects that was mentioned by one respondent only are (7%): performance anxiety, comorbidity (that is the presence of one or more disorder in addition to a primary one), lack of sufficient time, error interpretation (is the error caused by the reading disorder or by lack of study?), equality of tests, refusal of take tests that are different from those of peers and result interpretation.

Each item listed below received two responses (i.e. 14%): excessive simplification of tests, differentiation of assessment criteria and objectives, and, finally, suitability of the test and of impaired skill evaluation.

Finally, assessment objectivity is the most common problem (21%) according to respondents' view.

6.9.2.5 Evaluation accommodations

The issue covers in this chapter deals with the accommodation that respondents put in practice during the evaluation phase (see also 3.5), as portrayed in Chart 6.9.20.

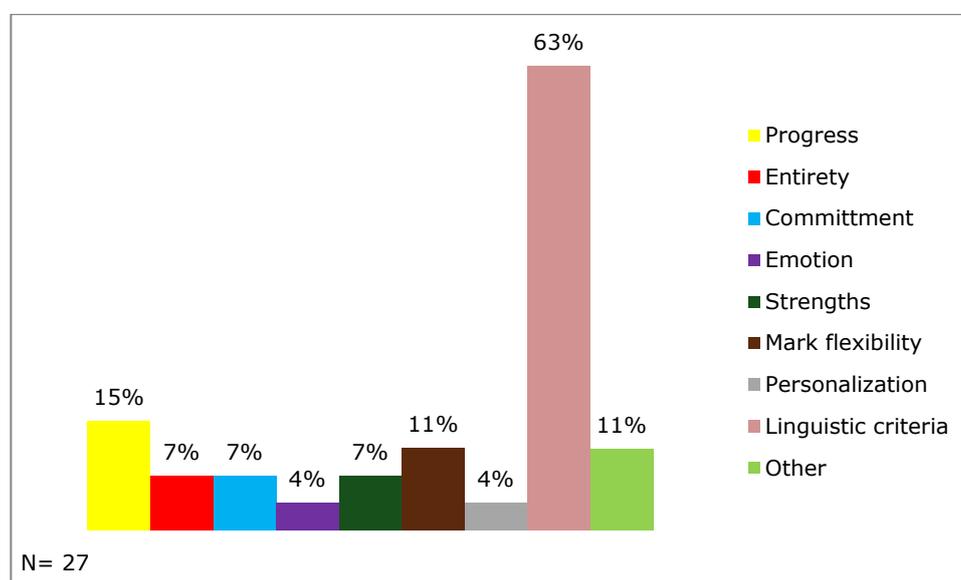


Chart 6.9.20 Evaluation accommodations

Before examining linguistic parameters (pink bar) painstakingly, a brief explanation of other data is given. Parameters that are taken into consideration are: progresses made by the learner (yellow); the entirety of the exam (red); the commitment and the interest demonstrated by the pupil (light blue); the emotional conditions (purple) and the strengths rather than the weaknesses (dark green). Additionally, one of respondents explained he or she carries out a personalization evaluation, based on learner's characteristics.

The label "Other" includes: the use of special assessment criteria; the implementation of oral tests in more than one session; and the creation of minimum objectives that are to be assessed.

The brown bar, mark flexibility, means that mark assignment is not very strict as it takes other parameters (e.g. progresses, commitment) into consideration. However, for two of the three respondents included in this category this means that they add one or two marks to that obtained by the learner. Doubtless, this is an unprofessional behaviour that should be avoided, as it is unfair both towards dyslexic pupils and their peers and, moreover, it damages the relationship between the teacher and the learner, which has to be built on honesty. The fact that some teachers add marks seems a way of evading a problem, but it has bad consequences that are counterproductive, above all the fact that the learner is authorized to think he or she is doing well. The evaluation feedback must be as honest as possible, and it is desirable it is constructive.

According to respondents, the most used accommodation deals with linguistic parameters: FL educators said that they do not take account of grammar correctness, spelling and orthographic mistakes, reading performance, pronunciation and fluency in oral tasks. On the contrary, they give more importance to communicative competence, vocabulary and speech production, content instead of form and comprehension rather than production.

These choices prove to be the most suitable with regard to impairments and weaknesses caused by the dyslexia disorder. Nonetheless, as specified by some respondents, each pupil with dyslexia is different, hence, before establishing the assessment criteria, educators should have a clear overview of dyslexic pupil's profile.

6.10 Overview of findings

This chapter verifies whether the parameters that have been assumed as influencing (namely, attendance of training courses, grade of school and school location) are determining features in accommodation implementation.

6.10.1 Attendance of training courses

In chapter 6.1 several accommodations on phoneme instruction (of both L1 and L2) have been covered. Here and in following chapters these strategies are separated from the other types of accommodations (analyzed from chapter 6.2 to 6.7 and which deal with multisensory techniques, metalinguistic practice, explicit instruction, motivation, consultation, test strategies), as the latter provide re-

sponses based on percentage scales. The accommodations that refer to phoneme instruction will be included in “Group 1”, whereas the others in “Group 2”.

With regard to phoneme instruction accommodations (Group 1), the attendance of training courses proved to be a determining feature in the implementation of accommodations that facilitate the understanding of phonemes, as portrayed in Chart 6.10.1. The mean calculation is based on partial cumulative percentage results.

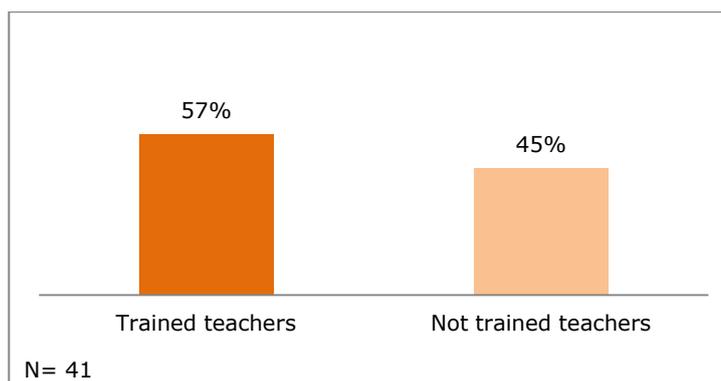


Chart 6.10.1 Group 1: mean (%) of trained and not-trained teachers

Standard deviation between teachers that have and not have attended training courses on dyslexia and/or on specific learning disorder is low (8% for trained teachers and 11% not-trained educators) regarding to phonology accommodations. Thus, respondents’ opinions do not diverge much.

A summary of the effectiveness of attendance of training courses with regard to the accommodations of Group 2 is given in Chart 6.10.2. Accommodations whose response number of 75% and 100% was very low are excluded (namely, motor and tactile activities, hand movement instruction, coloured papers, speech synthesizer, online dictionaries, text editing programs and spell-checkers).

Again, the standard deviation is low (11% for trained teachers and 8% for not-trained instructors).

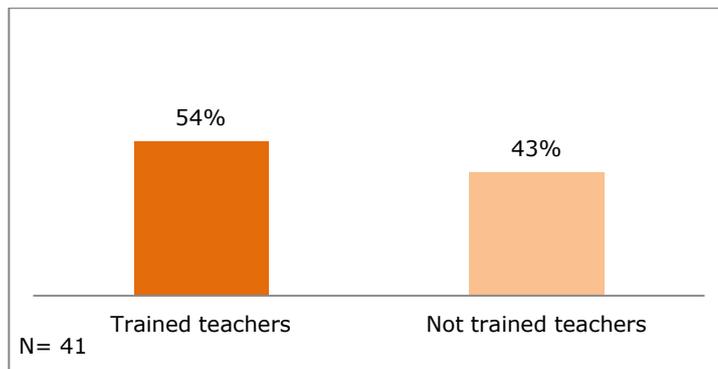


Chart 6.10.2 Group 2: Mean (%) of trained and not-trained teachers

As shown in the two graphics above, attendance of training courses proved to be an influencing criterion, although differences between trained and not-trained educators are not that great.

6.10.2 Grade of school

As far as accommodations on phonology instruction are involved, results caused by the grade of school are distributed as follows:

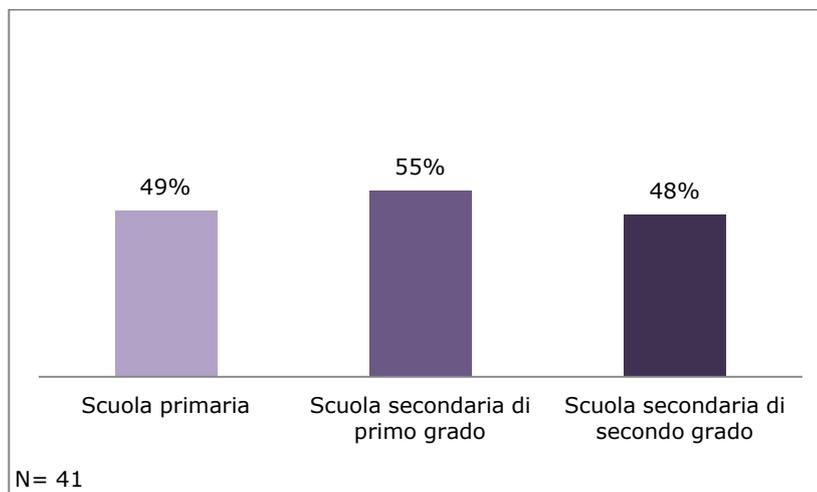


Chart 6.10.3 Group 1: comparison among schools (mean)

Data refer to the mean of partial cumulative percentage with regard to accommodations that deal with phonological instruction. Thus, as demonstrated by the chart above, differences determined by the grade of school are narrow.

Standard deviation in *scuola primaria* and *secondaria di primo grado* is quite high (19%), whereas in *scuola secondaria di secondo grado* is low (5%). Thus, teachers of the former schools have opinions which vary a lot from each other.

As before, with regard to accommodations of Group 2, there are no great differences brought about by the grade of school, as the three grades reached similar results, which refer to the mean obtained from partial cumulative percentage usage.

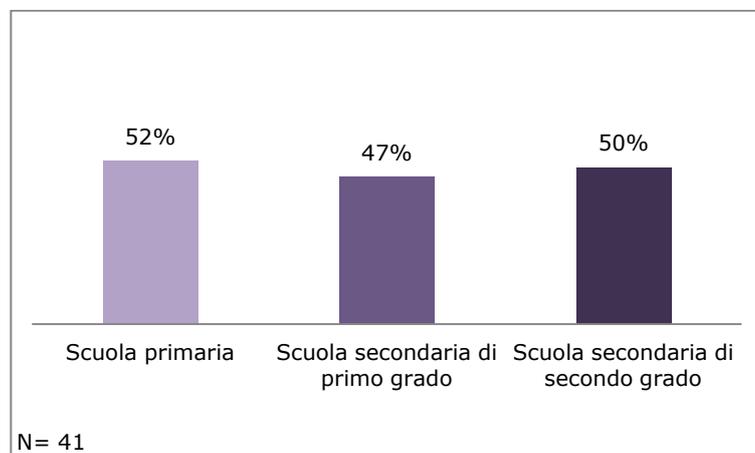


Chart 6.10.4 Group 2: Comparison among schools (mean)

Hence, the school in which FL teachers work does not determine the usage of an accommodation.

6.10.3 School location

With regard to accommodations that ease the acquisition on FL phonology (Group 1), schools located both in the city and in the province reached the same mean, that is 50%.

When accommodations of Group 2 are involved, the schools located in the city demonstrate to be very slightly more prone on implementing these accommodations. Thus, school location cannot be said to be an influencing factor:

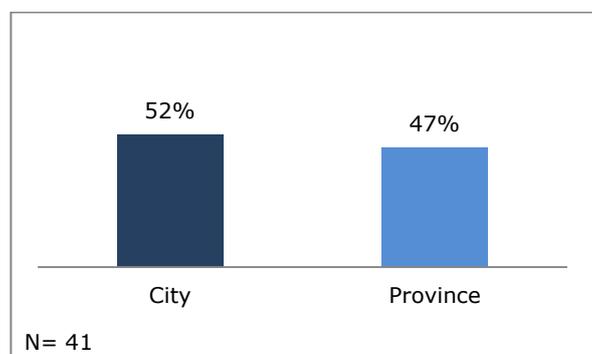


Chart 6.10.5 Group 2: comparison between city and province (mean)

7 Conclusions of the findings

This final chapter will draw overall conclusions concerning this survey and its major findings. Data on the most and the least used accommodations are reported.

7.1 Fulfilment of research aims

With regard to the first two research questions (see 4.1), – namely, i. if accommodations that may relieve the hurdles of foreign language acquisition in the case of dyslexic learners exist, and, ii. if testing and assessment accommodations that evaluate the actual dyslexic pupils' competence in the FL exist– they are examined in depth in chapter 3.

Accommodations that ease foreign language acquisition when it comes to dyslexic pupils cover several aspects of second language learning, e.g. learning materials (simplified texts, text layout, multimedia texts), activities and exercises (e.g. kinaesthetic-tactile activities), learning channels (multisensory channels), teaching methods (e.g. MSL approach), equipment (for instance, new technologies).

As far as testing and assessment are concerned, before and during the test there are several accommodations that can reduce anxiety and take strengths into consideration in order to evaluate the actual competence of the learner, without focusing on impaired skills. It follows that clear evaluation criteria, as well as test accommodations, are very important in teaching practice (see 3.5).

The third research question wonders if teachers involved in the study use teaching accommodations in order to ease dyslexic learners' acquisition of the L2. As demonstrated in chapter 6, the majority of FL instructors is used to exploiting the teaching strategies in question. However, some of them are used very seldom, although they are extremely simple to put in practice (e.g. texts printed on coloured papers) and require very little effort from the teacher. For instance, with regard to phonology instruction – which has to be explicit and well structured as it is a core feature in FL learning and one of the most affected skills in individuals with dyslexia – it emerged that, more or less, only half of respondents uses strategies that facilitate the acquisition of L2 phonological system. Nevertheless, despite the importance it has, only about one third of respondent teach native

tongue phonology. As already stressed, native language skills are good predictors of FL proficiency (cf. 2.3).

Generally speaking, the most used accommodation is the concession of additional time during tests (whose percentage of usage reaches 61% of “always”), followed by oral explanation of test instruction (“always”: 54%). Furthermore, 58% of respondents claimed they follow a precise progression order when teaching phonology to learners with dyslexia. In addition, 95% of respondents answered they never give surprise tests to dyslexic learners.

Positive is also the fact that only 5% of respondents never:

- i. introduce images when teaching a foreign language to dyslexic pupils;
- ii. provide several types of activities/exercises that aim to ease the acquisition of a concept;
- iii. teach memorization strategies;
- iv. repeat concept and review learning;
- v. explain how to carry out a written or oral task;
- vi. slow down teaching rhythm;
- vii. stimulate motivation;
- viii. take learning styles into consideration.

This means that 95% of respondents are used to putting the abovementioned accommodations in practice, at least seldom. It is encouraging that a very little part of the teachers involved in the study answered “never”.

On the other side, there are several negative results. For instance, the vast majority of respondents never use coloured papers (81% of teachers answered “never”), which is maybe one of the easiest accommodations to put in practice. Nor teachers allow the learner to use a speech synthesizer during tests (“never”: 78% of respondents). This also counts for the usage of online dictionaries (“never”: 73% of respondents), text editing programs and spellcheckers (respectively, 66% and 64% of “never”). Technologies do not seem to enjoy widespread appreciation and usage.

The last question, “Are there parameters that might have a bearing on the implementation of teaching accommodations?” has been discussed in chapter 6.10, and it emerged that the most influencing parameter is the attendance of training courses on dyslexia and/or on specific learning disorders.

With regard to the accommodations analyzed in chapter 6, trained teachers appeared to be the ones that implement accommodations on a very frequent basis rather than not-trained educators (with a difference of 11 and 12 percentage points – c.f. Chart 6.10.1 and Chart 6.10.2).

No difference exist between the group of instructors that attended training courses on specific learning disorders and on dyslexia, as they obtained the same mean (namely, 54%) of usage (based on partial cumulative percentage results).

7.2 Limitations and further research

This study has some limitations that should be addressed in future researches. First of all, as Internet interviews provide a low response rate, the method of data collection should be changed in order to have a greater number of responses so that outcomes will be more statistically relevant and therefore they will be statistically projectable to the population and ensure more accuracy.

Secondly, there is another aspect that belongs to the group of influencing parameters, i.e. the years of teaching experience, which might lead to a wider knowledge as to the adoption of effective teaching strategies.

Furthermore, a qualitative study that investigates the reasons that underlie the usage or the lack of usage of an accommodation will put light on why teachers prefer to exploit a strategy rather than another or what difficulties they encounter when putting accommodations into practice.

Another interesting aspect that should be covered ought to address dyslexic learners: their opinions on linguistic area difficulties and on accommodation problems will be of great help in dyslexia investigation in the foreign language classroom, in order to meet their needs and relieve them from the main hurdles.

Finally, further research may study the implementation of new technologies – not only the ones mentioned in this paper – in greater detail than in the present survey. There are several precious tools and software solutions that should enjoy more “fame”, as they help the learner during learning and studying phases according to learner’s preferences (e.g. if the user gets along with auditory processing, the program reads the text in place of the user).

Some recommendations need to be expressed: firstly, school principals should encourage their teachers to take part to training courses that provide a framework for understanding dyslexia. 71% of respondents consider their knowl-

edge of dyslexia as inappropriate (see chapter 6.9.1). An exhaustive understanding of causes, characteristics and problems that portray pupils with dyslexia makes teachers aware of effective accommodations that ought to be put in practice in the foreign language classroom in order to ease the acquisition of an additional language.

Secondly, teachers should have resources and materials at their disposal, as the vast majority of respondents complain about the lack of appropriate resources. Sharing information, opinions, devices and materials will relieve them from the stress of finding out and creating these resources on their own, which is of course a time consuming activity, as expressed by 62% of respondents (see Chart 6.9.1, chapter 6.9.1). This exchange of opinions would lead to create a supportive environment in which teachers can turn to their colleagues for help.

Benefits of teamwork and sharing information and resources can be enhanced if scholars, psychologists and neuropsychiatrists, who can remove doubts and clarify murky issues to teachers, are involved.

Appendix A: Annotated questionnaire

The questionnaire addresses foreign language teachers of any grades of school, who has or has not taught to dyslexic learners. The questionnaire is anonymous.

Several questions aim to know in which ways you look after dyslexic pupils. If you have no experience with dyslexic learners, please fill in the questionnaire thinking about what you would do if you taught a foreign language to pupils with dyslexia. Some items require your opinions: there is neither right nor incorrect answers. We only want to know your personal opinion.

10 minutes are required in order to fill in the questionnaire.
Thanks for your help!

The * indicates a mandatory question.

PART ONE: GENERAL QUESTIONS

Unless otherwise indicated, n= 41

1. What type of language do you teach?*	
<input type="radio"/> English	64%
<input type="radio"/> German	24%
<input type="radio"/> French	7%
<input type="radio"/> Spanish	5%
<input type="radio"/> Italian as a second language	0%
<input type="radio"/> Other: _____	0%
2. In which grade of school do you teach?*	
<input type="radio"/> Scuola primaria	22%
<input type="radio"/> Scuole secondaria di primo grado	21%
<input type="radio"/> Scuola secondaria di secondo grado	57%
<input type="radio"/> Other: _____	0%
3. Where is your school located?*	

City	33%
Province	67%
4. Have you ever taught to dyslexic learners?*	
<input type="radio"/> Yes, I have taught to dyslexic pupils	81%
<input type="radio"/> No, I have never taught to dyslexic pupils	14%
<input type="radio"/> I don't know, I don't remember	5%
5. Have you ever attended training courses on dyslexia and/or on specific learning disorder?*	
<input type="radio"/> Yes, I have attended training courses on dyslexia	40%
<input type="radio"/> No, I have not attended training courses on dyslexia	60%
<input type="radio"/> Yes, I have attended training courses on specific learning disorders	38%
<input type="radio"/> No, I have not attended training courses on specific learning disorders	62%

6. What are the main difficulties you encounter when teaching to dyslexic learners?

(More than one answer possible)

n=
21

Problem definition	33%
Large classes	24%
Slowness/Rhythm	29%
Materials/Instruments	38%
Strategies	24%
Acceptance/Diversity	10%
Evaluation	14%
Literacy skill teaching	10%
Motivation	5%

7. To what extent do you agree with the following statements? * "When I teach a foreign language to dyslexic learners..."

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
...I think I do not have enough time to adapt my teaching"	14%	14%	10%	36%	26%
...I think I do not have appropriate knowledge of the topic"	7%	12%	10%	50%	21%
...I think I do not have appropriate resources"	10%	12%	12%	38%	29%
...I think I do not receive sufficient help/collaboration"	10%	19%	10%	33%	29%
...I feel a sense of failure"	21%	19%	19%	33%	7%
...I think the pupil does not apply him/herself"	24%	33%	29%	12%	2%

8. What are the main difficulties you think a dyslexic learner may find in learning a foreign language? *

3 answers maximum

<input type="radio"/> Lexicon	38%
<input type="radio"/> Grammar rule understanding	10%
<input type="radio"/> Grammar rule usage	17%
<input type="radio"/> Speech production	31%
<input type="radio"/> Spelling	48%
<input type="radio"/> Discovering linguistic aspects without explicit instruction	38%
<input type="radio"/> Slow learning	52%
<input type="radio"/> Immediate response to oral questions	10%
<input type="radio"/> Discovering the appropriate study method	21%
<input type="radio"/> Oral comprehension	0%
<input type="radio"/> Written production	69%
<input type="radio"/> Other: _____	0%

9. From 1 to 10, where 10 is the maximum, what mark would you give to dyslexic learners' attitude with regard to foreign language learning? *

<input type="radio"/> 1	2%
<input type="radio"/> 2	2%
<input type="radio"/> 3	2%
<input type="radio"/> 4	10%
<input type="radio"/> 5	31%
<input type="radio"/> 6	26%
<input type="radio"/> 7	10%
<input type="radio"/> 8	10%
<input type="radio"/> 9	5%
<input type="radio"/> 10	2%

Mean= 4

Standard deviation= 4

PART TWO: TEACHING

Several questions aim to know in which ways you look after dyslexic pupils. If you have no experience with dyslexic learners, please fill in the questionnaire thinking about what you would do if you taught a foreign language to pupils with dyslexia.

Unless otherwise indicated, n= 41

10. How often do you use these types of language during classes? *

	0% (never)	25%	50% (fre- quently)	75%	100% (always)
Verbal language	0%	0%	12%	29%	59%
Visual language	2%	5%	44%	29%	20%
Motor language	15%	32%	32%	15%	7%
Gesture language	0%	17%	37%	22%	24%

11. Do you use the following accommodations when teaching foreign language phonology to dyslexic learners? *

	Yes	No	I don't know
Explicit instruction of FL phonemes	54%	27%	20%
Explicit instruction of grapheme/phonemes patterns	50%	33%	14%
Follow a precise phoneme progression order (easy/difficult; common/rare)	58%	27%	15%
Instruction of one phoneme per time	51%	34%	15%
Instruction of L1 phonemes	34%	42%	24%

12. How often do you use the following accommodations when teaching a foreign language to dyslexic learners? *

	0% (never)	25%	50% (fre- quently)	75%	100% (always)
Kinaesthetic (motor) activities	20%	32%	34%	10%	15%
Tactile activities	54%	32%	7%	5%	2%
Images	5%	17%	15%	32%	32%
Multimedia	10%	29%	24%	22%	15%
Explicit instruction of hand movements	58%	15%	22%	0%	15%
Explicit instruction of mouth movements	10%	17%	32%	15%	27%

13. When planning activities and exercises how often do you use the following accommodations towards dyslexic learners? *

	0% (never)	25%	50% (frequently)	75%	100% (always)
Providing several types of exercises for a single concept	5%	20%	39%	24%	12%
Teaching the most effective memorization strategies	5%	20%	27%	24%	24%
Teaching metalinguistic strategies	12%	27%	29%	12%	20%
Giving explicit explanation of exercise/activity aims	10%	0%	20%	27%	44%

14. When planning activities and exercises how often do you use the following accommodations towards dyslexic learners? *

	0% (never)	25%	50% (frequently)	75%	100% (always)
Repetition of concepts already learnt	5%	5%	20%	20%	51%
Learning review	5%	7%	24%	15%	49%
Explicit connections between new and old learning materials	12%	12%	20%	17%	39%
Explicit lesson structure	10%	12%	15%	19%	44%

15. In your explanations how often do you use the following accommodations towards dyslexic learners? *

	0% (never)	25%	50% (frequently)	75%	100% (always)
Explicit instruction of morphological rules	14%	21%	19%	19%	24%
Explicit instruction of syntactic rules	12%	24%	12%	26%	24%
Explicit instruction of semantic rules	19%	12%	21%	29%	17%
Explicit instruction of pragmatic rules	17%	14%	24%	24%	19%
Explicit instruction of how to do a written task	5%	7%	24%	24%	39%
Explicit instruction of how to do an oral task	5%	5%	15%	27%	49%
Explicit teaching of a study method	7%	15%	10%	29%	39%

16. In your lessons how often do you use the following accommodations towards dyslexic learners? *

	0% (never)	25%	50% (frequently)	75%	100% (always)
Slowing down teaching pace	5%	20%	41%	15%	20%
Reducing the speed of foreign language speech	7%	17%	24%	32%	20%
Stimulating motivation	5%	3%	17%	29%	46%
Adapting activities according to learning styles	5%	12%	24%	27%	32%
Giving preparatory activities in advance	22%	37%	22%	7%	12%

17. How often do you consult the dyslexic on the accommodation effectiveness? *

0% (never)	25%	50% (frequently)	75%	100% (always)
10%	17%	34%	29%	10%

18. To what extent do you think it is difficult to use linguistic facilitation accommodations towards dyslexic learners? *

0% (never)	25%	50% (frequently)	75%	100% (always)
10%	12%	29%	27%	22%

19. Could you explain what difficulties do you face when using linguistic facilitation accommodations towards dyslexic learners?

(More than one answer possible)

n= 27

Large classes	41%
Material individualization	33%
Testing/Assessment	4%
Family context	7%
Use of multimedia	11%
Knowledge	15%
Diversity/Disesteem	19%
Gap/Rhythm	11%
Other	11%

PART THREE: TESTING AND ASSESSMENT

Several questions aim to know in which ways you look after dyslexic pupils. If you have no experience with dyslexic learners, please fill in the questionnaire thinking about what you would do if you taught a foreign language to pupils with dyslexia.

Unless otherwise indicated, n= 41

20. Before the test takes place, how often do you use the following accommodations towards dyslexic learners? *

	0% (never)	25%	50% (frequently)	75%	100% (always)
Giving the test in a special session	63%	20%	7%	5%	5%
Giving the test in more than one session/day	54%	20%	20%	7%	0%
Giving a surprise test	95%	2%	2%	0%	0%
Providing specific preparation	17%	15%	2%	22%	44%
Testing one skill per time	17%	17%	29%	15%	22%
Doing mock tests	15%	22%	24%	17%	22%
Using coloured papers	81%	2%	10%	5%	2%
Using large prints	29%	15%	22%	10%	24%

21. During the test, how often do you use the following accommodations towards dyslexic learners? *

	0% (never)	25%	50% (frequently)	75%	100% (always)
Allowing the learner to answer orally	14%	10%	39%	15%	22%
Allowing the learner to dictate answers to another person	56%	12%	15%	2%	15%
Allowing the learner to answer via a computer	42%	7%	17%	17%	17%
Allow the learner to have the tasks learnt by another person (reader)	39%	10%	17%	10%	24%
Allow the learner to have the tasks learnt thanks to a speech synthesizer	78%	2%	5%	5%	10%
Giving the learner additional time	7%	10%	5%	17%	61%
Inserting new types of exercises	29%	0%	22%	17%	32%

22. With regard to test instructions, how often do you use the following accommodations towards dyslexic learners? *

	0% (never)	25%	50% (fre- quently)	75%	100% (always)
Using the L1 in test instruction	17%	15%	20%	20%	29%
Reducing the linguistic complexity of test instructions	10%	2%	22%	22%	44%
Highlighting key words in test instructions	15%	10%	24%	15%	37%
Reducing the length of test instructions	10%	7%	22%	20%	41%
Explaining test instructions orally	7%	2%	27%	10%	54%

23. During the test, how often do you use the following accommodations towards dyslexic learners? *

	0% (never)	25%	50% (fre- quently)	75%	100% (always)
Online dictionaries	73%	10%	7%	0%	10%
Paper dictionaries	49%	14%	12%	10%	15%
Text editing programs	66%	7%	10%	5%	12%
Spellcheckers	64%	5%	12%	7%	12%
Grammar or spelling tools (e.g. verb tables)	54%	15%	10%	7%	15%

24. Do you find any particular problems when assessing dyslexic learners? *

<input type="radio"/> Yes	37%
<input type="radio"/> No	41%
<input type="radio"/> I don't know	22%

25. If yes, which ones?

(More than one answer possible)

n= 14

Anxiety	7%
Comorbidity	7%
Lack of sufficient time	7%
Error identification	7%
Simplification	14%
Differentiation	14%
Suitability	14%
Objectivity	21%
Equality	7%
Refusal of the learner	7%
Result interpretation	7%

26. As far as you are concerned, to what extent is it difficult to assess dyslexic learners' performance in the L2? *

Very easy	Easy	Neither easy nor diffi- cult	Difficult	Very difficult
0%	12%	37%	29%	22%

27. What features of dyslexic learners' written tests do you assess? *

(More than one answer possible)

<input type="radio"/> Form	5%
<input type="radio"/> Content	93%
<input type="radio"/> Grammar correctness	22%
<input type="radio"/> Spelling	2%
<input type="radio"/> Cohesion	44%
<input type="radio"/> Register	24%
<input type="radio"/> Communicative effectiveness	93%
<input type="radio"/> Punctuation	2%
<input type="radio"/> Other:	0%

28. What features of dyslexic learners' oral tests do you assess? *

(More than one answer possible)

<input type="radio"/> Pronunciation	32%
<input type="radio"/> Content	90%
<input type="radio"/> Grammar correctness	12%
<input type="radio"/> Cohesion	32%
<input type="radio"/> Register	24%
<input type="radio"/> Communicative effectiveness	98%
<input type="radio"/> Fluency	7%
<input type="radio"/> Other:	0%

29. What assessment accommodations do you use when evaluating dyslexic learners' tests?

(More than one answer possible)

n= 27

Progress	15%
Entirety	7%
Commitment	7%
Emotion	4%
Strengths	7%
Mark flexibility	11%
Personalization	4%
Linguistic criteria	63%
Other	11%

30. Do you teach test taking strategies to dyslexic learners? *

<input type="radio"/> Yes	46%
<input type="radio"/> No	29%
<input type="radio"/> I don't know	25%

31. If yes, which ones?

(More than one answer possible)

n= 16

Study/Memorization	13%
Focus/Concentration	38%
Explanation/Repetition	31%
Preparation/Simulation	25%
Key words	25%
Time management	13%
Other	44%

What are the main difficulties you encounter when teaching to dyslexic learners?
Soprattutto nelle competenze di produzione scritta, a partire dallo spelling
capire quali sono le vere difficoltà e le vere capacità avere tempo da dedicare a loro all'interno di classi spesso numerose e rumorose
Sicuramente far apprendere come si scrivono le parole, tanto che si è stabilito a verificare solamente l'oralità e non la scrittura.
I pregiudizi che in generale l'opinione pubblica ha riguardo il disturbo. Le resistenze dei genitori nell'accettare l'utilizzo di strumenti dispensativi/compensativi. Tempo sempre insufficiente per preparare strumenti e materiali idonei (mappe, presentazioni multimediali, ...). Materiali "già pronti" molto costosi.
capire di che tipo di dislessia si tratta e trovare spazi tempo per metodi compensativi
Lentezza di apprendimento
La grafia a volte poco comprensibile, difficoltà nella lettura .
Sicuramente farli leggere e scrivere
notevole stanchezza dopo alcuni minuti di ascolto. difficoltà di lettura per la differenza grafema-fonema. difficoltà di corretta riproduzione del codice scritto.
Mantenere alta la loro motivazione e il non farli sentire "svantaggiati" o ""diversi" nei confronti dei loro compagni di classe.
la mancanza di materiale da utilizzare come strumento compensativo, per quel che riguarda la seconda lingua comunitaria
Tutte le attività legate alla scrittura
Mancanza di strumenti adatti
il passaggio dal parlato allo scritto regole grammaticali decodifica di lunghi testi
Il primo problema consiste nell'accertare che e se le eventuali difficoltà sono dovute a problemi di dislessia o meno. Qualora questo aspetto sia già chiaro le difficoltà riguardano l'individuazione delle strategie più indicate per il caso specifico e l'elaborazione e creazione del materiale didattico opportuno.
Le maggiori difficoltà riguardano l'utilizzo del computer in classe da parte dell'alunno dislessico, la registrazione delle lezioni, l'elaborazione di mappe concettuali sintetiche e la somministrazione di prove orali equipollenti.
decodificazione parole/ associazione suono/pronuncia e spelling
E' difficile far apprendere le cose nei tempi e nei modi in cui imparano i compagni. Inoltre se ho seguito un percorso individualizzato, non mi è poi stato possibile assegnare una verifica diversificata in sede di esame di terza media.
La necessità di ricercare strategie che aiutino lo studente nella memorizzazione dei vocaboli e nell'ortografia
capire i bisogni specifici di ogni singolo studente viste le diverse forme di dislessia

Riscontro difficoltà
a. nel trovare strategie di insegnamento adeguate alle necessità degli allievi non solo perchè il loro modo di approcciare la lingua e le sue strutture è diverso da quello di chi non ha questi disturbi ma anche perchè di norma sono inseriti in classi (numerose) nelle quali gli altri allievi seguono le lezioni con ritmi e metodi di apprendimento diversi dai loro;
b. nell'identificare un metodo di valutazione che, pur rispettando tutto ciò cui hanno diritto in termini di compensazione/dispensazione, sia davvero equo.
non ho fatto esperienza in tal senso, per cui non posso dire nulla
La difficoltà a memorizzare strutture e vocaboli non solo per iscritto ma anche oralmente. In genere si tratta di alunni in forte difficoltà con le lingue straniere anche quando si usano strumenti sussidiari (CD audio, computer ecc)
Il fatto che ognuno di loro presenti caratteristiche individuali, difficoltà non facilmente inseribili in una "categoria del disturbo"...cerco di individuare per ognuno di loro strategie il più possibile mirate e verifiche individualizzate
NELLA COMPRESIONE E PRODUZIONE SCRITTA
nessuno in particolare; redigo, con le collghe, un Piano di Studi Personalizzato in cui indico macro obiettivi, prevedendo misure dispensative e compensative. Privilegio nettamente le abilità' di ascolto e produzione orale.
UN ALUNNO DISLESSICO HA IN GENERE BISOGNO DI TEMPI PIU' LUNGHI, PER ESEMPIO SE SI FA UN TEST DI RICONOSCIMENTO NUMERI (ASCOLTO E TRASCRIZIONE IN CIFRE) I TEMPI DEL DOCENTE SONO SEMPRE MOLTO RISTRETTI (APPENA 2 ORE DI LEZIONE ALLA SETTIMANA DA DEDICARE AD ALUNNI CON VARIE TIPOLOGIE DI DIFFICOLTA' DI APPRENDIMENTO..DISLESSIA MA MOLTI DISTURBI NELL'ATTENZIONE) E ALL'ALUNNO DISLESSICO SI PUO' DEDICARE UN TEMPO PURTROPPO MARGINALE.
UN DISLESSICO DIMOSTRA RITMI DI APPRENDIMENTO "NON LINEARI"...E QUESTI NON COINCIDONO PURTROPPO CON QUELLI DELLA CLASSE PER CUI A VOLTE SI DEVE LAVORARE SU BINARI PARALLELI...DAL PUNTO DI VISTA PROFESSIONALE MOLTO FATICOSO.
UN DISLESSICO PUO' USARE I DIGILIBRI COME FACILITATORI....MA COME DOCENTE NON TROVO MAI UN GENITORE ALL'ALTEZZA PER GESTIRE IL SOFTWARE A CASA IN MODO ADEGUATO ED IL SUO AIUTO SPESSO E' ASSENTE
non venire affiancata da adeguata informazione e dovermi affidare al mio intuito
Lentezza di apprendimento
Normalmente gli studenti dislessici perdono facilmente la concentrazione, in quanto faticano ad utilizzare gli strumenti mentali di lettura e scrittura, credo che perciò si stanchino e faticino anche a seguire spiegazioni o attività orali.
Per questi studenti la correttezza fonetica e ortografica costituiscono sempre un problema.
La maggiorparte degli alunni dislessici riscontra difficoltà nella costruzione della frasi, a volte anche semplici e nell'applicare le regole grammaticali.
Nel secondo e soprattutto terzo anno faticano nella comprensione dei brani, alcuni anche nella memorizzazione di verbi o vocaboli.
difficoltà ortografiche, anche nel copiare dalla lavagna o dal libro, difficoltà di espressione sia nella lettura che nella ripetizione
preparare materiali appositi
Credo che la difficoltà maggiore potrebbe essere causata dalla decodificazioni di suoni e dall'ortografia della lingua inglese.
La difficoltà di far capire le istruzioni scritte dovendo intervenire personalmente e spesso la lentezza nell'apprendimento
riconoscere le esigenze di ogni alunno, preparare materiale adatto ad ognuno, trovare spazio da dedicare al singolo
memorizzazione di strutture, lettura di parole e produzione di semplici testi

Could you explain what difficulties do you face when using linguistic facilitation accommodations towards dyslexic learners?
Difficoltà logistiche nella gestione dei casi singoli nell'ambito della classe (classi numerose - tre ore settimanali a disposizione)
i materiali devono essere preparati individualmente secondo le difficoltà dell'alunno
Le difficoltà che si incontrano sono quelle di adattare le verifiche scritte alla valutazione orale dell'alunno dislessico. Nella scuola primaria generalmente si privilegiano le attività orali per tutti ,quindi il bambino dislessico segue generalmente la stessa programmazione della classe con obiettivi ridotti.
Spesso i genitori rifiutano un insegnamento "personalizzato"; sconfermano con i fatti gli accordi presi (p. es. ci si accorda per evitare la lettura a tutti i costi ed invece i genitori a casa di nascosto fanno fare al bambino con insistenza questo tipo di attività); il bambino, respirando quest'aria, si sente "diverso" e a sua volta manifesta disagio nell'utilizzare strategie compensative/dispensative; spesso non ci sono, soprattutto per la primaria, libri di

testo nel doppio formato (cartaceo e multimediale) cosicché bisogna spesso costruire da sé strumenti alternativi.
2 ore in 90 classi con studenti irrequieti
Avendo classi molto numerose è difficile seguire con opportuna attenzione gli studenti con difficoltà.
Poco interesse da parte dello studente
Non incontro particolari difficoltà
gli accorgimenti di facilitazione linguistica sono diversi a seconda delle abilità linguistiche che si usano e spesso sono da creare ad hoc con enorme investimento di tempo extra scuola da parte del docente.
Gli studenti dislessici sono molto diversi tra di loro e quello che funziona per uno studente non è detto che funzioni per un altro. Quando utilizzo degli strumenti compensativi cerco sempre di personalizzarli in base allo studente che li dovrà poi utilizzare.
preparare il materiale semplificato, illustrato e le tabelle di consultazione è un impegno e una responsabilità, ma ritengo sia importante sia per l'alunno che per il docente.
Sganciarmi dal resto della classe per dedicarmi all'alunno con dislessia
tempi ritmi
Spesso succede che il docente si trovi a gestire lo studente dislessico all'interno del gruppo classe, quindi nelle sue strategie didattiche e anche nella pianificazione temporale della didattica deve considerare e rispettare le diverse tipologie di stili d'apprendimento presenti nel gruppo classe.
Difficoltà nella gestione classe a fronte della maggiore attenzione da dedicare agli studenti con dsa
Difficoltà nel saper creare desiderio e curiosità e nell'utilizzo in classe di software specifico
La difficoltà sta nel dover gestire una classe molto numerosa e vivace e contemporaneamente dover adottare tutti questi accorgimenti verso una singola persona, senza supporti multimediali adeguati (tipo lim) e magari con altri casi di disabilità o iperattività tra gli studenti. E anche nella mancanza di tempo a casa dati gli onerosi compiti che ci spettano con classi molto numerose.
Nel rapporto 1:1 non trovo difficoltà. In classe suppongo sarebbe difficile rallentare il ritmo di lavoro.
avere troppo poco tempo da poter sfruttare per capire bene quali accorgimenti adottare per favorire l'apprendimento della lingua, classi troppo numerose....
Le principali difficoltà sono due: a. man mano aumentano gli argomenti e le strutture linguistiche da sottoporre allo studente, diventa più difficile escogitare accorgimenti di facilitazione adeguati; b. con il procedere del programma aumenta il divario fra le conoscenze degli studenti dislessici e quelle degli studenti che non hanno disturbi di apprendimento.
non posso dire nulla perché mi manca l'esperienza in tal senso e non riesco a fare supposizioni su un tema che non conosco
La difficoltà consiste nella personalizzazione degli apprendimenti e nel capire, anche attraverso i colloqui con gli specialisti e la famiglia, quali difficoltà maggiori manifesta il ragazzo al fine di sopperire con strumenti dispensativi e/o compensativi. C'è poi un aspetto che non definirei "difficoltà" ma legato alla sensibilità di un insegnante che in presenza di alunni dislessici mette in atto alcuni accorgimenti che agevolino l'alunno senza discriminarlo (ad esempio correzione dei compiti non solo orale ma scritta, uso di c-maps ecc)
NON AVERE TEMPO IN RAPPORTO 1:1 IN QUANTO LAVORO SEMPRE CON INTERVENTI FRONTALI SU UNA CLASSE INTERA E INOLTRE LA POCA CONOSCENZA SULL'ARGOMENTO E SULLE TECNICHE MIGLIORI E MAGGIORMENTE FRUIBILI DA POTER METTERE IN ATTO
in generale strettamente legate ad aspetti tecnici (scansione di documenti e modifiche, adattamenti, eventuale implementazione con immagini, cambio/riscrittura in stampato maiuscolo)
L'USO DI STRUMENTI MULTIMEDIALI (L'ALUNNO NON LI SA USARE NE' A SCUOLA NE' A CASA...) L'ALUNNO NON VIENE ABITUATO ALLA CREAZIONE DI MAPPE CONCETTUALI O MENTALI...(MOLTO SPESSO L'ALUNNO DISLESSICO PROVIENE DA UN CONTESTO FAMILIARE MOLTO COMPLESSO PER CUI NON VIENE NE' SEGUITO NE' AIUTATO IN QUESTO TIPO DI LAVORO DOMESTICO, RICORRONO SPESSO LA DISISTIMA E UNA INERZIA CHE GLI IMPEDISCONO DI CREARSI IN MODO PRODUTTIVO ED EFFICACE STRATEGIE DI STUDIO E DI APPRENDIMENTO CORRETTI)
La difficoltà maggiore è il tempo, sia quello di preparazione degli strumenti di facilitazione linguistica, che quello di esplicitazione dello scopo e delle consegne durante le lezioni. Spesso introduco strumenti di facilitazione che vanno non solo a beneficio dei dislessici, ma anche degli studenti più deboli, in questo caso vi è un maggiore equilibrio fra costi e benefici.
Rallentamento del ritmo della lezione e del programma previsto. Perdita di motivazione da parte degli altri discenti. Difficoltà di trovare strategie perché ogni apprendente possa usufruire dell'insegnamento a cui ha diritto.
Non capisco cosa si intende per facilitazione linguistica - è una semplificazione?

trovare i modi e i tempi per dedicarmi alla persona, nel contesto di una classe di circa 25 allievi tra i quali vari necessitano attenzioni specifiche

trovare la modalità adatta nel momento in cui si presenta un nuovo argomento

Do you find any particular problems when assessing dyslexic learners?

If yes, which ones?

Spesso l'ansia di prestazione del bambino non gli permette di dare quanto davvero ha, quindi preferisco le verifiche orali di comprensione e produzione (sono alla primaria!)

l'interferenza di eventuali altri tipi di difficoltà di apprendimento

Essi variano a seconda del tipo specifico di dislessia

difficile stabilire il limite fra prova equipollente e semplificata

Problemi relativi al fattore "tempo" per verificare lo sviluppo delle quattro abilità.

non so quali errori sono dovuti al problema oggettivo, e quali al mancato impegno o studio

Ho spesso l'impressione che sia talmente semplificato ciò che sono tenuta a somministrare che in realtà l'allievo, a differenza dei compagni, NON stia acquisendo una reale conoscenza della lingua inglese bensì di alcune micro-abilità (es. sa usare UN SOLO tempo verbale alla volta pur nelle sue quattro forme - affermativa, interrogativa, negativa, interrogativo.negativa - oppure sa scegliere fra DUE tempi verbali dati ecc.): tali limitatissime abilità non gli permetteranno certo alcuna autonomia linguistica nel momento in cui si dovesse trovare a sostenere una (seppur semplice) conversazione.

non ho mai avuto studenti dislessici nè conosco le problematiche che possono presentarsi in classe

Preparo una griglia a parte che tenga più conto delle voci sottoindicate. Più difficile è talvolta valutare la produzione orale, in cui però non considero come per gli altri la velocità di risposta

Obiettivi minimi o differenziati (dipende dei casi)

Da quando ho letto la normativa sulla dislessia adotto una certa flessibilità nella valutazione dell'ortografia e della pronuncia, ma mi rendo conto che anche altri aspetti della comunicazione possono risultare difficoltosi per questo tipo di studenti, non mi sento del tutto adeguata a valutare in quale misura.

Tutti gli studenti dislessici con cui ho lavorato hanno sempre rifiutato verifiche diverse o presentate comunque in modo diverso da quelle dei compagni. Le preparo graduate ma la valutazione è ovviamente diversa e spesso è difficile e imbarazzante giustificare questo alla classe.

In sede di correzione è a volte difficile capire la scrittura, le lettere non sono graficamente chiare, spesso incomprensibili, di conseguenza mi trovo in difficoltà nel momento della valutazione, che dovrebbe essere obiettiva

Saper comprendere esattamente il risultato raggiunto

in generale, mi risulta difficile valutare gli allievi, perchè so quanto sia parziale e impreciso il mio giudizio dato che posso avere una conoscenza delle persone molto superficiale.

mi chiedo sempre se le consegne assegnate erano adeguate alle sue capacità

What assessment accommodations do you use when evaluating dyslexic learners' tests?

Eventuali progressi fatti - Le competenze comunicative al di là della correttezza formale

lascio più tempo

Nessun accorgimento. Solo che l'ambiente sia silenzioso.

Tengo conto dello stato d'animo emotivo dell'alunno nel momento in cui ha fatto la verifica; cerco di non dare punteggi troppo definiti per ciascun item/gruppo di items ma cerco di valutare la globalità del prodotto

aggiungo uno o due voti in più

Utilizzo una serie di griglie speciali preparate ad hoc in collaborazione con altri docenti della stessa area.

Non bado molto allo spelling

Mi assicuro personalmente che abbiano compreso cosa debbono fare

tengo conto delle difficoltà individuali e personalizzo la valutazione in base ad un piano didattico personale tarato anche sul livello di compensazione raggiunto dall'alunno in base all'età e alla classe frequentata.

Verifiche orali programmate; i ragazzi sanno in anticipo su che cosa verranno interrogati e valutati (funzioni comunicative - vocaboli - grammatica etc). Tendo a fare interrogazioni "a rate". Se hanno piacere di leggere ad alta voce il dialogo li assecondo.

non valuto la lettura e la conoscenza delle strutture linguistiche,

non conto gli errori dello scritto ma valuto il contenuto, privilegio l'oralità

Tranquillità e tempi per elaborazione delle risposte

Proporrei esclusivamente prove orali

non ho mai valutato studenti dislessici

do maggior peso all'evoluzione, all'impegno e serietà e al contenuto/efficacia comunicativa (rispetto alla forma)
Dipende dall'alunno e dal suo profilo
Non valutare negativamente errori ortografici in caso di contenuto corretto/se l'intenzione comunicativa é presente
.....
cerco di utilizzare immagini del testo relative agli obiettivi che valuto, mappe concettuali ed infine valuto la capacità comunicativa in generale.
Non so
cerco di valutare solo gli aspetti nei quali so che sono in grado di affrontare la verifica
Meno valore all'ortografia.
cerco sempre dare maggiore peso alla parte orale, seguendo anche eventuali miglioramenti nella scrittura...anche se minimi, negli studenti motivati ci sono sempre!
Tenuto conto di quanto per legge sono tenuta a valutare, a. per lo scritto valorizzo il contenuto e sorvolo su spelling/forma, tengo conto dell'accuratezza grammaticale solo in esercizi ad essa mirati, valuto la capacità di comprensione e l'efficacia comunicativa; b. per l'orale valorizzo ancora una volta il contenuto che però deve essere espresso in modo almeno comprensibile, sorvolo sulla fluenza, valuto la capacità di comprensione e l'efficacia comunicativa.
non conosco il problema
La verifica viene individualizzata e semplificata; la valutazione viene fatta in decimi normalmente
MAGGIORE FLESSIBILITA' NELL'ASSEGNAZIONE DEL VOTO X IL QUALE SI PRENDONO IN CONSIDERAZIONE ANCHE L'IMPEGNO E L'INTERESSE DIMOSTRATI DURANTE LE LEZIONI
privilegio in assoluto i contenuti rispetto alla forma, la competenza comunicativa sufficientemente adeguata all'età; non incidono sulla valutazione gli aiuti verbali o i supporti di vario tipo utilizzati.
CERCO DI NON CALCARE SU CIO' CHE NON SA FARE O CHE GLI RISULTASSE COMPLICATO, BENSÌ SU CIO' CHE PUO' PRODURRE IN MODO EFFICACE E CORRETTO NELLA COMUNCAZIONE LINGUISTICA E SOSTENERLO CON INCORAGGIAMENTI
vedi sopra
obiettivi minimi
Flessibilità nella valutazione di ortografia e pronuncia.
Valuto solo alcuni esercizi, non valuto errori di spelling , ma solo quelli di contenuto , uso del lessico o strutture fondamentali.
Cerco di valutare i progressi in riferimento al livello di partenza dello studente.non al resto della classe.
Cerco di tenere in considerazione la prova nel suo insieme, non ogni singola parola
Non valuto ortografia e spelling per quanto riguarda le prove scritte.
Riformulazione dei quesiti, richiesta di chiarimenti, integrazioni e rettifiche
Cercare di valutare esattamente la capacità comunicativa raggiunta
cerco sempre di valorizzare le prove , difficilmente do insufficienze
non valuto errori di ortografia
non valuto lo spelling e poco l'accuratezza grammaticale

Do you teach test taking strategies to dyslexic learners? If yes, which ones?
come memorizzare come studiare i vocaboli su cosa concentrare l'attenzione
Sulle verifiche scritte, lavorare su un item alla volta, coprendo gli altri items con un cartoncino; ripetere l'ascolto quanto è necessario; chiedere ogni volta che qualcosa non gli è chiaro. Faccio poco uso di verifiche scritte; talvolta, per esigenze "emotive", somministro verifiche scritte che però considero poco, preferendo listening ed associazione di immagini o riordino di una sequenza di immagini. L'alunno che ho avuto aveva un disturbo specifico misto (lettura, scrittura, grafia, calcolo) quindi ho assolutamente privilegiato l'aspetto orale.
le stessi che insegno al resto degli studenti: soprattutto accorgimenti pragmatici
L' esercitazione che precede la verifica e la correzione individuale in tempi fuori dall'orario curricolare permette allo studente di affrontare con più serenità il test.
Dedico un'intera ora di lezione alla preparazione delle verifiche scritte; dico esattamente quali saranno le consegne e su che cosa dovranno prepararsi; faccio esempi sulla tipologia degli esercizi. Faccio evidenziare con colori diversi le parole chiave delle consegne; limito il numero di esercizi sui quali verranno valutati e cerco di tranquillizzarli sul tempo che avranno a disposizione. Se non riescono a finire un esercizio, non importa.

l'uso delle schede personalizzate
Eeguire la verifica con calma e con tutto il tempo necessario, affrontarne un pezzo alla volta e chiedere per qualsiasi dubbio, fare ciò che si è capaci e non perdere tempo su cose difficili. In caso di dubbio piuttosto di non scrivere nulla, scrivere come si pronuncia quella parola o frase.
Controllo sempre la comprensione delle consegne e leggo con loro
richiamare frasi-modello e schemi fatti insieme; focalizzare su parole chiave
Dipendono dal tipo di dislessia e dal tipo di verifica
allenarsi con formati analoghi
comunico con chiarezza gli obiettivi oggetto di valutazione
Tecniche di memorizzazione.
cerco di aiutare ponendo accanto a delle frasi segni matematici per ricordare loro se si tratta di una frase affermativa, negativa o interrogativa , gli dico di ricordare l'abbinamento soggetto sinolare o plurale magari usando colori diversi ecc... per i verbi irregolari creo tabelle da riempire mettendo già accanto i paradigmi....
A prestare attenzione alle funzioni nelle domande (le 5 w ad esempio) in modo da cogliere le parole chiave dell'informazione, a sottolineare nel testo le parti che rispondono a domande nei reading; per la grammatica insisto sulle funzioni in forma di mappe concettuali o dialoghi con disegni e colori personalizzati dall'alunno; per lo speaking spesso lavoriamo in cooperative learning o a coppie
DARE UNA GRANDE VALENZA ALLA PRODUZIONE ORALE E COMUNICATIVA
rifare piu' volte gli esercizi proposti in classe, in quanto la verifica sara' molto simile
ATTIVITA' DOMESTICHE CON FLASH CARDS O CON GIOCHI TIPO MEMORY CHE PERSONALMENTE FOTOCOPIO ED ASSEGNO....PURTROPPO HANNO UNA VITA BREVE..PERCHE' MAL CUSTODITI A CASA E NON USATI...SERVIREBBE UN TUTOR DOMESTICO E I GENITORI IN QUESTO NON SONO I PIU' ADATTI
Purtroppo non mi sento preparata per questo, quindi agisco con il buon senso del momento, cercando di mettere a suo agio il discente, attraverso spiegazioni dettagliate a voce, guidandolo da vicino perché possa riflettere sull'argomento richiesto
- usare uno schermo di cartoncino per isolare una riga dalle altre - sentirsi liberi di chiedermi spiegazioni durante la verifica

Appendix B: Reference tables

Have you ever taught to dyslexic pupils?

	Frequency	Percentage
Yes	34	81%
No	6	14%
I don't know/I don't remember	2	5%
Total	42	100%

What FL do you teach?

	Frequency	Percentage
English	27	64%
German	10	24%
French	3	7%
Spanish	2	5%
Total	42	100%

School location

	Frequency	Percentage
City	14	33%
Province	28	67%
Total	42	100%

In which grade of school do you teach?

	Frequency	Percentage
Scuola primaria	9	21%
Scuola secondaria di primo grado	9	21%
Scuola secondaria di secondo grado	24	57%
Total	42	100%

Have you ever done training courses on dyslexia?

	Frequency	Percentage
Yes	17	40%
No	25	60%
Total	42	100%

Have you ever done training courses on specific learning disorders?

	Frequency	Percentage
Yes	16	38%
No	26	62%
Total	42	100%

Attendance of training courses: comparison among schools

Have you ever done training courses on dyslexia?

		Yes	No	Total
In which type of school do you teach?	Scuola primaria	67%	33%	100%
	Scuola secondaria di primo grado	44%	56%	100%
	Scuola secondaria di secondo grado	30%	71%	100%

Attendance of training courses: comparison among schools

Have you ever done training courses on dyslexia?

		Yes	No	Total
In which type of school do you teach?	Scuola primaria	67%	33%	100%
	Scuola secondaria di primo grado	44%	56%	100%
	Scuola secondaria di secondo grado	30%	71%	100%

Attendance of training courses: comparison between city and province

Have you ever done training courses on dyslexia?

		Yes	No	Total
School location	City	36%	64%	100%
	Province	43%	57%	100%

Have you ever done training courses on specific learning disorders?

		Yes	No	Total
School location	City	36%	64%	100%
	Province	39%	61%	100%

Explicit phoneme instruction general use

Do you teach phonemes explicitly?

	Frequency	Percentage
Yes	22	54%
No	11	27%
I don't know	8	20%
Total	41	100%

FL phoneme instruction: comparison between trained and not-trained teachers

Do you teach phonemes explicitly?

	Yes	No	I don't know
I have done training courses on dyslexia	59%	35%	6%
I have done training courses on specific learning disorders	56%	25%	19%
I have not done training courses on dyslexia	50%	21%	29%
I have not done training courses on specific learning disorders	52%	28%	20%

Explicit instruction of grapheme/phoneme patterns general use

Do you teach grapheme/phoneme patterns explicitly?

	Frequency	Percentage
Yes	21	51%
No	14	34%
I don't know	6	15%
Total	41	100%

Explicit instruction of grapheme/phoneme patterns: comparison between trained and not-trained teachers

Do you teach phonemes explicitly?

	Yes	No	I don't know
I have done training courses on dyslexia	53%	41%	6%
I have done training courses on specific learning disorders	56%	31%	13%
I have not done training courses on dyslexia	50%	29%	21%
I have not done training courses on specific learning disorders	48%	36%	16%

Phoneme progression order: general use

Do you use a precise progression order in teaching phonemes?

	Frequency	Percentage
Yes	24	59%
No	11	27%
I don't know	6	15%
Total	41	100%

Phoneme progression order: comparison between trained and not-trained teachers

Do you use a precise progression order in teaching phonemes?

	Yes	No	I don't know
I have done training courses on dyslexia	71%	18%	12%
I have done training courses on specific learning disorders	75%	13%	13%
I have not done training courses on dyslexia	50%	33%	17%
I have not done training courses on specific learning disorders	48%	36%	16%

**Instruction of one phoneme per time:
general use**

Do you teach one phoneme per time?

	Frequency	Percentage
Yes	21	51%
No	14	34%
I don't know	6	15%
Total	41	100%

**Instruction of one phoneme per time: comparison
between trained and not-trained teachers**

Do you teach one phoneme per time?

	Yes	No	I don't know
I have done training courses on dyslexia	65%	29%	6%
I have done training courses on specific learning disorders	56%	38%	6%
I have not done training courses on dyslexia	42%	38%	21%
I have not done training courses on specific learning disorders	48%	32%	20%

**First language phoneme instruction:
general use**

Do you teach L1 phonemes?

	Frequency	Percentage
Yes	14	34%
No	17	42%
I don't know	10	24%
Total	41	100%

**First language phoneme instruction: comparison between
trained and not-trained teachers**

Do you teach L1 phonemes?

	Yes	No	I don't know
I have done training courses on dyslexia	35%	47%	18%
I have done training courses on specific learning disorders	44%	44%	13%
I have not done training courses on dyslexia	33%	38%	29%
I have not done training courses on specific learning disorders	28%	40%	32%

Phoneme instruction: comparison between English and French teachers

	Yes		No		I don't know	
	English	French	English	French	English	French
Do you teach phonemes explicitly?	54%	67%	31%	33%	15%	0%
Do you teach grapheme-to-phoneme patterns explicitly?	46%	67%	39%	33%	15%	0%
Do you use a precise progression order in teaching phonemes?	62%	67%	23%	33%	15%	0%
Do you teach one phoneme per time?	54%	100%	35%	0%	12%	0%
Do you teach L1 phonemes?	23%	67%	54%	33%	23%	0%

Phoneme instruction: comparison among schools

	Do you teach phonemes explicitly?			Do you teach grapheme/phoneme patterns explicitly?			Do you use a precise progression order in teaching phonemes?			Do you teach one phoneme per time?			Do you teach L1 phonemes?		
	Yes	No	I don't know	Yes	No	I don't know	Yes	No	I don't know	Yes	No	I don't know	Yes	No	I don't know
<i>Scuola primaria</i>	44%	44%	11%	44%	44%	11%	67%	11%	22%	67%	22%	11%	22%	33%	44%
<i>Scuola secondaria di primo grado</i>	63%	25%	13%	63%	25%	13%	75%	25%	0%	50%	38%	13%	25%	63%	13%
<i>Scuola secondaria di secondo grado</i>	54%	21%	25%	50%	33%	17%	50%	33%	17%	46%	38%	17%	42%	38%	21%

Phoneme instruction: comparison between city and province

	Do you teach phonemes explicitly?			Do you teach grapheme/phoneme patterns explicitly?			Do you use a precise progression order in teaching phonemes?			Do you teach one phoneme per time?			Do you teach L1 phonemes?		
	Yes	No	I don't know	Yes	No	I don't know	Yes	No	I don't know	Yes	No	I don't know	Yes	No	I don't know
City	50%	29%	21%	36%	43%	21%	64%	14%	21%	57%	21%	21%	43%	36%	21%
Province	56%	26%	19%	59%	30%	11%	56%	33%	11%	48%	41%	11%	30%	44%	26%

Motor activities: general use

How often do you use motor activities?

	Frequency	Percentage	Cumulative Percentage
0% (never)	8	20%	20%
25%	13	32%	51%
50% (frequently)	14	34%	85%
75%	4	10%	95%
100% (always)	2	5%	100%
Total	41	100%	

Tactile activities: general use

How often do you use tactile activities?

	Frequency	Percentage	Cumulative Percentage
0% (never)	22	54%	54%
25%	13	32%	85%
50% (frequently)	3	7%	93%
75%	2	5%	98%
100% (always)	1	2%	100%
Total	41	100%	

Images: general use

How often do you use images?

	Frequency	Percentage	Cumulative Percentage
0% (never)	2	5%	5%
25%	7	17%	22%
50% (frequently)	6	15%	37%
75%	13	32%	68%
100% (always)	13	32%	100%
Total	41	100%	

Images: comparison between trained and not-trained teachers

How often do you use images?

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
I have done training courses on dyslexia	0%	12%	18%	29%	41%	70%	100%
I have done training courses on specific learning disorders	0%	13%	13%	31%	44%	75%	100%
I have not done training courses on dyslexia	8%	21%	13%	33%	25%	58%	100%
I have not done training courses on specific learning disorders	8%	20%	16%	32%	24%	56%	100%

Images: comparison among schools

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
<i>Scuola primaria</i>	0%	0%	0%	33%	67%	100%	100%
<i>Scuola secondaria di primo grado</i>	0%	25%	38%	25%	13%	38%	100%
<i>Scuola secondaria di secondo grado</i>	8%	21%	13%	33%	25%	58%	100%

Images: comparison between city and province

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
City	7%	21%	7%	29%	36%	65	100%
Province	4%	15%	19%	33%	30%	63	100%

Multimedia: general use

How often do you use multimedia?

	Frequency	Percentage	Cumulative Percentage
0% (never)	4	10%	10%
25%	12	29%	39%
50% (frequently)	10	24%	63%
75%	9	22%	85%
100% (always)	6	15%	100%
Total	41	100%	

Multimedia: comparison between trained and not-trained teachers

How often do you use multimedia?

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
I have done training courses on dyslexia	6%	24%	18%	29%	24%	43%	100%
I have done training courses on specific learning disorders	6%	31%	25%	25%	13%	38%	100%
I have not done training courses on dyslexia	13%	33%	29%	17%	8%	25%	100%
I have not done training courses on specific learning disorders	12%	28%	24%	20%	16%	36%	100%

Multimedia: comparison among schools

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
<i>Scuola primaria</i>	11%	11%	33%	22%	22%	44%	100%
<i>Scuola secondaria di primo grado</i>	13%	25%	50%	13%	0%	13%	100%
<i>Scuola secondaria di secondo grado</i>	8%	38%	13%	25%	17%	42%	100%

Multimedia: comparison between city and province

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
City	7%	36%	21%	21%	14%	0,35	100%
Province	11%	26%	26%	22%	15%	0,37	100%

Explicit instruction of hand movements: general use

Explicit instruction of mouth movements: general use

How often do you show hand movements?

	Frequency	Percentage	Cumulative Percentage
0% (never)	24	59%	59%
25%	6	15%	73%
50% (frequently)	9	22%	95%
75%	0	0%	95%
100% (always)	2	5%	100%
Total	41	100%	

How often do you show mouth movements?

	Frequency	Percentage	Cumulative Percentage
0% (never)	4	10%	10%
25%	7	17%	27%
50% (frequently)	13	32%	59%
75%	6	15%	73%
100% (always)	11	27%	100%
Total	41	100%	

Explicit instruction of mouth movements: comparison between trained and not-trained teachers

How often do you show mouth movements?

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
I have done training courses on dyslexia	0%	18%	29%	18%	35%	53%	100%
I have done training courses on specific learning disorders	0%	6%	25%	19%	50%	69%	100%
I have not done training courses on dyslexia	17%	17%	33%	13%	21%	34%	100%
I have not done training courses on specific learning disorders	16%	24%	36%	12%	12%	24%	100%

Explicit instruction of mouth movements: comparison among schools

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentages (75 and 100%)	Total
<i>Scuola primaria</i>	0%	11%	33%	22%	33%	55%	100%
<i>Scuola secondaria di primo grado</i>	13%	0%	50%	13%	25%	38%	100%
<i>Scuola secondaria di secondo grado</i>	13%	25%	25%	13%	25%	38%	100%

Explicit instruction of mouth movements: comparison between city and province

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
City	14%	14%	21%	7%	43%	0,5	100%
Province	7%	19%	37%	19%	19%	0,38	100%

Memorization strategies: general use

How often do you teach memorization strategies?

	Frequency	Percentage	Cumulative Percentage
0% (never)	2	5%	5%
25%	8	20%	24%
50% (frequently)	11	27%	51%
75%	10	24%	76%
100% (always)	10	24%	100%
Total	41	100%	

Memorization strategies: comparison between trained and not-trained teachers

How often do you teach memorization strategies?

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75%, 100%)	Total
I have done training courses on dyslexia	0%	18%	35%	24%	24%	47%	100%
I have done training courses on specific learning disorders	8%	21%	21%	25%	25%	50%	100%
I have not done training courses on dyslexia	0%	6%	44%	19%	31%	50%	100%
I have not done training courses on specific learning disorders	8%	28%	16%	28%	20%	48%	100%

Memorization strategies: comparison among schools

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
<i>Scuola primaria</i>	0%	22%	22%	22%	33%	55%	100%
<i>Scuola secondaria di primo grado</i>	0%	25%	38%	25%	13%	38%	100%
<i>Scuola secondaria di secondo grado</i>	8%	17%	25%	25%	25%	50%	100%

Memorization strategies: comparison between city and province

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
City	7%	7%	29%	36%	21%	0,57	100%
Province	4%	26%	26%	19%	26%	0,45	100%

Metalinguistic strategies: general use

How often do you teach metalinguistic strategies?

	Frequency	Percentage	Cumulative Percentage
0% (never)	5	12%	12%
25%	11	27%	39%
50% (frequently)	12	29%	68%
75%	5	12%	81%
100% (always)	8	20%	100%
Total	41	100%	

Metalinguistic strategies: comparison between trained and not-trained teachers

How often do you teach metalinguistic strategies?

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
I have done training courses on dyslexia	6%	35%	41%	12%	6%	18%	100%
I have done training courses on specific learning disorders	0%	31%	38%	19%	13%	31%	100%
I have not done training courses on dyslexia	17%	21%	21%	13%	29%	42%	100%
I have not done training courses on specific learning disorders	20%	24%	24%	8%	24%	32%	100%

Metalinguistic strategies: comparison among schools

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
<i>Scuola primaria</i>	0%	56%	22%	22%	0%	22%	100%
<i>Scuola secondaria di primo grado</i>	13%	25%	50%	0%	13%	13%	100%
<i>Scuola secondaria di secondo grado</i>	17%	17%	25%	13%	29%	42%	100%

Metalinguistic strategies: comparison between city and province

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
City	14%	14%	21%	21%	29%	50%	100%
Province	11%	33%	33%	7%	15%	0,22	100%

Exercise aim explanation: general use

How often do you explain exercise aims?

	Frequency	Percentage	Cumulative Percentage
0% (never)	4	10%	10%
25%		0%	10%
50% (frequently)	8	20%	29%
75%	11	27%	56%
100% (always)	18	44%	100%
Total	41	100%	

Exercise aim explanation: comparison between trained and not-trained teachers

How often do you explain exercise aims?

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
I have done training courses on dyslexia	6%	0%	12%	35%	47%	82%	100%
I have done training courses on specific learning disorders	0%	0%	25%	38%	38%	75%	100%
I have not done training courses on dyslexia	13%	0%	25%	21%	42%	63%	100%
I have not done training courses on specific learning disorders	16%	0%	16%	20%	48%	68%	100%

Exercise aim explanation: comparison among schools

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
<i>Scuola primaria</i>	11%	0%	56%	22%	11%	33%	100%
<i>Scuola secondaria di primo grado</i>	13%	0%	0%	25%	63%	88%	100%
<i>Scuola secondaria di secondo grado</i>	8%	0%	13%	29%	50%	79%	100%

Exercise aim explanation: comparison between city and province

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
City	7%	0%	7%	21%	64%	0,88	100%
Province	11%	0%	26%	30%	33%	0,63	100%

Explicit connections: general use

How often do you make explicit connections?

	Frequency	Percentage	Cumulative Percentage
0% (never)	5	12%	12%
25%	5	12%	24%
50% (frequently)	8	20%	44%
75%	7	17%	61%
100% (always)	16	39%	100%
Total	41	100%	

Explicit connections: comparison between trained and not-trained teachers

How often do you make explicit connections?

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
I have done training courses on dyslexia	6%	12%	18%	24%	41%	65%	100%
I have done training courses on specific learning disorders	0%	6%	25%	25%	44%	69%	100%
I have not done training courses on dyslexia	17%	13%	21%	13%	38%	50%	100%
I have not done training courses on specific learning disorders	20%	16%	16%	12%	36%	48%	100%

Explicit connections: comparison among schools

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
<i>Scuola primaria</i>	11%	11%	33%	22%	22%	44%	100%
<i>Scuola secondaria di primo grado</i>	13%	13%	13%	13%	50%	63%	100%
<i>Scuola secondaria di secondo grado</i>	13%	13%	17%	17%	42%	59%	100%

Explicit connections: comparison between city and province

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
City	14%	14%	7%	7%	57%	0,64	100%
Province	11%	11%	26%	22%	30%	0,52	100%

Lesson structure: general use

How often do you make unit structure explicit?

	Frequency	Percentage	Cumulative Percentage
0% (never)	4	10%	98%
25%	5	12%	22%
50% (frequently)	6	15%	37%
75%	8	20%	56%
100% (always)	18	44%	100%
Total	41	100%	

Lesson structure : comparison between trained and not-trained teachers

How often do you make unit structure explicit?

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
I have done training courses on dyslexia	6%	18%	12%	18%	47%	65%	100%
I have done training courses on specific learning disorders	0%	19%	19%	19%	44%	63%	100%
I have not done training courses on dyslexia	13%	8%	17%	21%	42%	63%	100%
I have not done training courses on specific learning disorders	16%	8%	12%	20%	44%	64%	100%

Lesson structure: comparison among schools

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
<i>Scuola primaria</i>	11%	33%	33%	11%	11%	22%	100%
<i>Scuola secondaria di primo grado</i>	13%	13%	13%	13%	50%	63%	100%
<i>Scuola secondaria di secondo grado</i>	8%	4%	8%	25%	54%	79%	100%

Lesson structure: comparison between city and province

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
City	7%	0%	14%	14%	64%	0,78	100%
Province	11%	19%	15%	22%	33%	0,55	100%

Study method: general use

How often do you explicitly teach a study method?

	Frequency	Percentage	Cumulative Percentage
0% (never)	3	7%	7%
25%	6	15%	22%
50% (frequently)	4	10%	32%
75%	12	29%	61%
100% (always)	16	39%	100%
Total	41	100%	

Study method: comparison between trained and not-trained teachers

How often do you explicitly teach a study method?

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
I have done training courses on dyslexia	0%	12%	6%	29%	53%	82%	100%
I have done training courses on specific learning disorders	0%	13%	6%	19%	63%	81%	100%
I have not done training courses on dyslexia	13%	17%	13%	29%	29%	58%	100%
I have not done training courses on specific learning disorders	12%	16%	12%	36%	24%	60%	100%

Study method: comparison among schools

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
<i>Scuola primaria</i>	11%	11%	33%	22%	22%	44%	100%
<i>Scuola secondaria di primo grado</i>	13%	13%	13%	13%	50%	63%	100%
<i>Scuola secondaria di secondo grado</i>	13%	13%	17%	17%	42%	59%	100%

Study method: comparison between city and province

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
City	7%	14%	7%	21%	50%	0,71	100%
Province	7%	15%	11%	33%	33%	0,66	100%

Rules: general use

How often do you teach these types of rules explicitly?

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75%	Total
Morphological rules	14%	21%	19%	19%	24%	43%	100%
Syntactic rules	12%	24%	12%	26%	24%	50%	100%
Semantic rules	19%	12%	21%	29%	17%	45%	100%
Pragmatic rules	17%	14%	24%	24%	19%	43%	100%

Morphological rules: comparison between trained and not-trained teachers

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
I have done training courses on dyslexia	12%	24%	24%	35%	6%	41%	100%
I have done training courses on specific learning disorders	13%	25%	25%	13%	25%	38%	100%
I have not done training courses on dyslexia	17%	21%	17%	8%	38%	46%	100%
I have not done training courses on specific learning disorders	16%	20%	16%	24%	24%	48%	100%

Morphological rules: comparison among schools

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
<i>Scuola primaria</i>	22%	44%	22%	11%	0%	11%	100%
<i>Scuola secondaria di primo grado</i>	25%	25%	0%	25%	25%	50%	100%
<i>Scuola secondaria di secondo grado</i>	8%	13%	25%	21%	33%	54%	100%

Morphological rules: comparison between city and province

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
City	14%	0%	29%	21%	36%	0,57	100%
Province	15%	33%	15%	19%	19%	0,38	100%

Syntactic rules: comparison between trained and not-trained teachers

How often do you teach syntactic rules explicitly?

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
I have done training courses on dyslexia	6%	35%	6%	35%	18%	53%	100%
I have done training courses on specific learning disorders	6%	31%	13%	31%	19%	50%	100%
I have not done training courses on dyslexia	17%	17%	17%	21%	29%	50%	100%
I have not done training courses on specific learning disorders	16%	20%	12%	24%	28%	52%	100%

Syntactic rules: comparison among schools

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
<i>Scuola primaria</i>	22%	56%	0%	22%	0%	22%	100%
<i>Scuola secondaria di primo grado</i>	13%	38%	0%	0%	50%	50%	100%
<i>Scuola secondaria di secondo grado</i>	8%	8%	21%	38%	25%	63%	100%

Syntactic rules: comparison between city and province

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
City	7%	7%	21%	36%	29%	0,65	100%
Province	15%	33%	7%	22%	22%	0,44	100%

Semantic rules: comparison between trained and not-trained teachers

How often do you teach semantic rules explicitly?

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
I have done training courses on dyslexia	18%	12%	29%	41%	0%	41%	100%
I have done training courses on specific learning disorders	19%	6%	38%	25%	13%	38%	100%
I have not done training courses on dyslexia	21%	13%	17%	21%	29%	50%	100%
I have not done training courses on specific learning disorders	20%	16%	12%	32%	20%	52%	100%

Semantic rules: comparison among schools

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
<i>Scuola primaria</i>	44%	11%	33%	11%	0%	11%	100%
<i>Scuola secondaria di primo grado</i>	25%	13%	13%	50%	0%	50%	100%
<i>Scuola secondaria di secondo grado</i>	8%	13%	21%	29%	29%	58%	100%

Semantic rules: comparison between city and province

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
City	14%	7%	21%	29%	29%	0,58	100%
Province	22%	15%	22%	30%	11%	0,41	100%

Pragmatic rules: comparison between trained and not-trained teachers

How often do you teach pragmatic rules explicitly?

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
I have done training courses on dyslexia	18%	6%	29%	29%	18%	47%	100%
I have done training courses on specific learning disorders	19%	6%	31%	25%	19%	44%	100%
I have not done training courses on dyslexia	17%	21%	21%	21%	21%	42%	100%
I have not done training courses on specific learning disorders	16%	20%	20%	24%	20%	44%	100%

Pragmatic rules: comparison among schools

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
<i>Scuola primaria</i>	33%	11%	44%	11%	0%	11%	100%
<i>Scuola secondaria di primo grado</i>	25%	25%	0%	38%	13%	51%	100%
<i>Scuola secondaria di secondo grado</i>	8%	13%	25%	25%	29%	54%	100%

Pragmatic rules: comparison between city and province

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
City	14%	0%	29%	29%	29%	0,58	100%
Province	19%	22%	22%	22%	15%	0,37	100%

Motivation stimulation: general use

How often do you encourage motivation?

	Frequency	Percentage	Cumulative Percentage
0% (never)	2	5%	5%
25%	1	2%	7%
50% (frequently)	7	17%	24%
75%	12	29%	54%
100% (always)	19	46%	100%
Total	41	100%	

Motivation stimulation: comparison between trained and not-trained teachers

How often do you encourage motivation?

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
I have done training courses on dyslexia	0%	0%	12%	24%	65%	88%	100%
I have done training courses on specific learning disorders	0%	0%	25%	25%	50%	75%	100%
I have not done training courses on dyslexia	8%	4%	21%	33%	33%	67%	100%
I have not done training courses on specific learning disorders	8%	4%	12%	32%	44%	76%	100%

Motivation stimulation: comparison among schools

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
<i>Scuola primaria</i>	0%	0%	11%	22%	67%	89%	100%
<i>Scuola secondaria di primo grado</i>	0%	0%	13%	38%	50%	88%	100%
<i>Scuola secondaria di secondo grado</i>	8%	4%	21%	29%	38%	67%	100%

Motivation stimulation: comparison between city and province

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
City	7%	7%	21%	14%	50%	0,64	100%
Province	4%	0%	15%	37%	44%	0,81	100%

Consultation: general use

How often do you consult with dyslexic pupils?

	Frequency	Percentage	Cumulative Percentage
0% (never)	4	10%	10%
25%	7	17%	27%
50% (frequently)	14	34%	61%
75%	12	29%	90%
100% (always)	4	10%	100%
Total	41	100%	

Consultation: comparison between trained and not-trained teachers

How often do you consult with dyslexic pupils?

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
I have done training courses on dyslexia	0%	18%	35%	35%	12%	47%	100%
I have done training courses on specific learning disorders	0%	19%	38%	25%	19%	44%	100%
I have not done training courses on dyslexia	17%	17%	33%	25%	8%	33%	100%
I have not done training courses on specific learning disorders	16%	16%	32%	32%	4%	36%	100%

Consultation: comparison among schools

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
<i>Scuola primaria</i>	0%	0%	56%	33%	11%	44%	100%
<i>Scuola secondaria di primo grado</i>	25%	13%	13%	38%	13%	50%	100%
<i>Scuola secondaria di secondo grado</i>	8%	25%	33%	25%	8%	33%	100%

Consultation: comparison between city and province

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
City	7%	14%	29%	29%	21%	0,5	100%
Province	11%	19%	37%	30%	4%	0,34	100%

Test strategy teaching: comparison between trained and not-trained teachers

Test strategies

Do you teach test taking strategies?

Test strategy teaching: general use

Do you teach test taking strategies?

	Frequency	Percentage
Yes	19	46%
No	12	29%
I don't know	10	24%
Total	41	100%

	Yes	No	I don't know	Total
I have done training courses on dyslexia	53%	29%	18%	100%
I have done training courses on specific learning disorders	69%	13%	19%	100%
I have not done training courses on dyslexia	42%	29%	29%	100%
I have not done training courses on specific learning disorders	32%	40%	28%	100%

Test strategy teaching: comparison among schools

	Yes	No	I don't know	Total
<i>Scuola primaria</i>	33%	22%	44%	100%
<i>Scuola secondaria di primo grado</i>	63%	38%	0%	100%
<i>Scuola secondaria di secondo grado</i>	46%	29%	25%	100%

Test strategy teaching: comparison between city and province

	Yes	No	I don't know	Total
City	50%	21%	29%	100%
Province	44%	33%	22%	100%

Coloured papers: general use

How often do you use colored papers?

	Frequency	Percentage	Cumulative Percentage
0% (never)	33	80%	81%
25%	1	2%	83%
50% (frequently)	4	10%	93%
75%	2	5%	98%
100% (always)	1	2%	100%
Total	41	100%	

Types of test strategies

	Responses	Percentage of Cases
Study/Memorization	2	13%
Focus/Concentration	6	38%
Explanation/Repetition	5	31%
Preparation/Simulation	4	25%
Key words	4	25%
Time management	2	13%
Other	7	44%
Total	30	

Large prints: general use

How often do you use large prints?

	Frequency	Percentage	Cumulative Percentage
0% (never)	12	29%	29%
25%	6	15%	44%
50% (frequently)	9	22%	66%
75%	4	10%	76%
100% (always)	10	24%	100%
Total	41	100%	

Large prints: comparison between trained and not-trained teachers

How often do you use large prints?

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
I have done training courses on dyslexia	18%	12%	18%	18%	35%	53%	100%
I have done training courses on specific learning disorders	19%	0%	38%	13%	31%	44%	100%
I have not done training courses on dyslexia	38%	17%	25%	4%	17%	21%	100%
I have not done training courses on specific learning disorders	36%	24%	12%	8%	20%	28%	100%

Large prints: comparison among schools

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
<i>Scuola primaria</i>	0%	0%	44%	11%	44%	56%	100%
<i>Scuola secondaria di primo grado</i>	50%	25%	13%	0%	13%	13%	100%
<i>Scuola secondaria di secondo grado</i>	33%	17%	17%	13%	21%	33%	100%

Large prints: comparison between city and province

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
City	29%	14%	14%	7%	36%	0,43	100%
Province	30%	15%	26%	11%	19%	0,3	100%

Reader: general use

How often do you allow that a reader reads questions?

	Frequency	Percentage	Cumulative Percentage
0% (never)	16	39%	39%
25%	4	10%	49%
50% (frequently)	7	17%	66%
75%	4	10%	76%
100% (always)	10	24%	100%
Total	41	100%	

Reader: comparison between trained and not-trained teachers

How often do you allow that a reader reads questions?

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
I have done training courses on dyslexia	29%	0%	6%	18%	47%	65%	100%
I have done training courses on specific learning disorders	25%	6%	19%	13%	38%	51%	100%
I have not done training courses on dyslexia	46%	17%	25%	4%	8%	12%	100%
I have not done training courses on specific learning disorders	48%	12%	16%	8%	16%	24%	100%

Reader: comparison among schools

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
<i>Scuola primaria</i>	0%	11%	11%	11%	67%	78%	100%
<i>Scuola secondaria di primo grado</i>	63%	0%	13%	13%	13%	26%	100%
<i>Scuola secondaria di secondo grado</i>	46%	13%	21%	8%	13%	21%	100%

Reader: comparison between city and province

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
City	36%	14%	29%	7%	14%	0,21	100%
Province	41%	7%	11%	11%	30%	0,41	100%

Speech synthesizer: general use

Extra time: general use

How often do you allow speech synthesizer?

	Frequency	Percentage	Cumulative Percentage
0% (never)	32	78%	78%
25%	1	2%	81%
50% (frequently)	2	5%	85%
75%	2	5%	90%
100% (always)	4	10%	100%
Total	41	100%	

How often do you give more time?

	Frequency	Percentage	Cumulative Percentage
0% (never)	3	7%	7%
25%	4	10%	17%
50% (frequently)	2	5%	22%
75%	7	17%	39%
100% (always)	25	61%	100%
Total	41	100%	

Extra time: comparison between trained and not-trained teachers

How often do you give extra time?

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
I have done training courses on dyslexia	0%	6%	6%	6%	82%	88%	100%
I have done training courses on specific learning disorders	0%	19%	0%	6%	75%	81%	100%
I have not done training courses on dyslexia	13%	13%	4%	25%	46%	71%	100%
I have not done training courses on specific learning disorders	12%	4%	8%	24%	52%	76%	100%

Extra time: comparison among schools

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
<i>Scuola primaria</i>	0%	11%	0%	11%	78%	89%	100%
<i>Scuola secondaria di primo grado</i>	0%	0%	13%	0%	88%	88%	100%
<i>Scuola secondaria di secondo grado</i>	13%	13%	4%	25%	46%	71%	100%

Extra time: comparison between city and province

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
City	14%	7%	0%	14%	64%	0,78	100%
Province	4%	11%	7%	19%	59%	0,78	100%

Oral test instructions: general use

How often do you use oral test instruction?

	Frequency	Percentage	Cumulative Percentage
0% (never)	3	7%	7%
25%	1	2%	10%
50% (frequently)	11	27%	37%
75%	4	10%	46%
100% (always)	22	54%	100%
Total	41	100%	

Oral test instructions: comparison between trained and not-trained teachers

How often do you use oral test instructions?

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
I have done training courses on dyslexia	0%	6%	12%	6%	77%	82%	100%
I have done training courses on specific learning disorders	0%	0%	19%	13%	69%	81%	100%
I have not done training courses on dyslexia	13%	0%	38%	13%	38%	50%	100%
I have not done training courses on specific learning disorders	12%	4%	32%	8%	44%	52%	100%

Oral test instructions: comparison among schools

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
<i>Scuola primaria</i>	0%	0%	0%	11%	89%	100%	100%
<i>Scuola secondaria di primo grado</i>	0%	0%	25%	0%	75%	75%	100%
<i>Scuola secondaria di secondo grado</i>	13%	4%	38%	13%	33%	46%	100%

Oral test instructions: comparison between city and province

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
City	14%	0%	29%	7%	50%	0,57	100%
Province	4%	4%	26%	11%	56%	0,67	100%

Online dictionaries: general use

Paper dictionaries: general use

How often do you allow online dictionaries?

How often do you allow paper dictionaries?

	Frequency	Percentage	Cumulative Percentage
0% (never)	30	73%	73%
25%	4	10%	83%
50% (frequently)	3	7%	90%
75%	0	0%	0%
100% (always)	4	10%	100%
Total	41	100%	

	Frequency	Percentage	Cumulative Percentage
0% (never)	20	49%	49%
25%	6	15%	63%
50% (frequently)	5	12%	76%
75%	4	10%	85%
100% (always)	6	15%	100%
Total	41	100%	

Paper dictionaries: comparison between trained and not-trained teachers

How often do you allow paper dictionaries?

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
I have done training courses on dyslexia	35%	24%	6%	12%	24%	66%	100%
I have done training courses on specific learning disorders	38%	19%	13%	6%	25%	31%	100%
I have not done training courses on dyslexia	58%	8%	17%	8%	8%	16%	100%
I have not done training courses on specific learning disorders	56%	12%	12%	12%	8%	16%	100%

Paper dictionaries: comparison among schools

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
<i>Scuola primaria</i>	57%	11%	0%	11%	22%	33%	100%
<i>Scuola secondaria di primo grado</i>	38%	13%	38%	0%	13%	13%	100%
<i>Scuola secondaria di secondo grado</i>	50%	17%	8%	13%	13%	26%	100%

Paper dictionaries: comparison between city and province

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
City	43%	21%	7%	7%	21%	0,28	100%
Province	52%	11%	15%	11%	11%	0,22	100%

Text editing programs: general use

How often do you allow text editing programs?

	Frequency	Percentage	Cumulative Percentage
0% (never)	27	64%	66%
25%	3	7%	7%
50% (frequently)	4	10%	10%
75%	2	5%	5%
100% (always)	5	12%	12%
Total	41	98%	

Spell-checkers: general use

How often do you allow spell checkers?

	Frequency	Percentage	Cumulative Percentage
0% (never)	26	62%	62%
25%	2	5%	67%
50% (frequently)	5	12%	79%
75%	3	7%	86%
100% (always)	5	12%	98%
Total	41	98%	

Specific preparation: general use

How often do you do specific preparation?

	Frequency	Percentage	Cumulative Percentage
0% (never)	7	17%	17%
25%	6	14%	31%
50% (frequently)	1	2%	33%
75%	9	21%	55%
100% (always)	18	43%	98%
Total	41	98%	

Specific preparation: comparison between trained and not-trained teachers

How often do you do specific preparation?

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
I have done training courses on dyslexia	12%	6%	0%	12%	71%	83%	100%
I have done training courses on specific learning disorders	13%	0%	0%	31%	56%	87%	100%
I have not done training courses on dyslexia	21%	21%	4%	29%	25%	54%	100%
I have not done training courses on specific learning disorders	20%	24%	4%	16%	36%	52%	100%

Specific preparation: comparison among schools

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
<i>Scuola primaria</i>	11%	0%	0%	11%	78%	89%	100%
<i>Scuola secondaria di primo grado</i>	0%	25%	0%	0%	75%	75%	100%
<i>Scuola secondaria di secondo grado</i>	25%	17%	4%	33%	21%	54%	100%

Specific preparation: comparison between city and province

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
City	29%	21%	0%	21%	29%	0,5	100%
Province	11%	11%	4%	22%	52%	0,74	100%

Test simulation: general use

How often do you do test simulations?

	Frequency	Percentage	Cumulative Percentage
0% (never)	6	14%	14%
25%	9	21%	36%
50% (frequently)	10	24%	60%
75%	7	17%	76%
100% (always)	9	21%	98%
Total	41	98%	

Test simulation : comparison between trained and not-trained teachers

How often do you do test simulation?

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
I have done training courses on dyslexia	6%	18%	24%	6%	47%	53%	100%
I have done training courses on specific learning disorders	13%	31%	13%	0%	44%	44%	100%
I have not done training courses on dyslexia	21%	25%	25%	25%	4%	29%	100%
I have not done training courses on specific learning disorders	16%	16%	32%	28%	8%	36%	100%

Test simulation : comparison among schools

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
<i>Scuola primaria</i>	0%	0%	11%	22%	67%	89%	100%
<i>Scuola secondaria di primo grado</i>	0%	63%	25%	0%	13%	13%	100%
<i>Scuola secondaria di secondo grado</i>	25%	17%	29%	21%	8%	29%	100%

Test simulation : comparison between city and province

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
City	21%	7%	36%	21%	14%	0,35	100%
Province	11%	30%	19%	15%	26%	0,41	100%

Answers via computer: general use

How often do you allow pupils to answer via computer?

	Frequency	Percentage	Cumulative Percentage
0% (never)	17	41%	41%
25%	3	7%	49%
50% (frequently)	7	17%	66%
75%	7	17%	83%
100% (always)	7	17%	100%
Total	41	100%	

Answers via computer: comparison between trained and not-trained teachers

How often do you allow pupils to answer via computer?

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
I have done training courses on dyslexia	35%	6%	18%	18%	24%	42%	100%
I have done training courses on specific learning disorders	31%	6%	31%	19%	13%	32%	100%
I have not done training courses on dyslexia	46%	8%	17%	17%	13%	30%	100%
I have not done training courses on specific learning disorders	48%	8%	8%	16%	20%	36%	100%

Answers via computer: comparison among schools

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
<i>Scuola primaria</i>	33%	22%	11%	0%	33%	33%	100%
<i>Scuola secondaria di primo grado</i>	50%	13%	13%	13%	13%	26%	100%
<i>Scuola secondaria di secondo grado</i>	42%	0%	21%	25%	13%	38%	100%

Answers via computer: comparison between city and province

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
City	29%	0%	29%	21%	21%	42%	100%
Province	48%	11%	11%	15%	15%	30%	100%

Oral answers: general use

How often do you allow oral answers?

	Frequency	Percentage	Cumulative Percentage
0% (never)	6	15%	15%
25%	4	10%	24%
50% (frequently)	16	39%	63%
75%	6	15%	78%
100% (always)	9	22%	100%
Total	41	100%	

Oral answers: comparison between trained and not-trained teachers

How often do you allow oral answers?

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
I have done training courses on dyslexia	0%	6%	12%	6%	77%	82%	100%
I have done training courses on specific learning disorders	0%	0%	19%	13%	69%	81%	100%
I have not done training courses on dyslexia	13%	0%	38%	13%	38%	50%	100%
I have not done training courses on specific learning disorders	12%	4%	32%	8%	44%	52%	100%

Oral answers comparison among schools

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
<i>Scuola primaria</i>	0%	0%	22%	0%	78%	78%	100%
<i>Scuola secondaria di primo grado</i>	25%	25%	25%	25%	0%	25%	100%
<i>Scuola secondaria di secondo grado</i>	17%	8%	50%	17%	8%	25%	100%

Oral answers: comparison between city and province

	0% (never)	25%	50% (frequently)	75%	100% (always)	Partial cumulative Percentage (75% and 100%)	Total
City	14%	14%	43%	14%	14%	0,28	100%
Province	15%	7%	37%	15%	26%	0,41	100%

Written assessment criteria

What features do you assess?

	Responses	Percentage of Cases
Form	2	5%
Content	38	93%
Grammar	9	22%
Spelling	1	2%
Cohesion	18	44%
Register	10	24%
Communicative effectiveness	38	93%
Punctuation	1	2%
Total	117	

Written assessment criteria: comparison among languages

		Form	Content	Grammar	Spelling	Cohesion	Register	Communicative effectiveness	Punctuation	Total
English	Count	1	25	6	1	11	4	23	0	26
	%	4%	96%	23%	4%	42%	15%	89%	0%	100%
German	Count	1	9	2	0	3	5	10	1	10
	%	10%	90%	20%	0%	30%	50%	100%	10%	100%
French	Count	0	2	0	0	2	0	3	0	3
	%	0%	67%	0%	0%	67%	0%	100%	0%	100%
Spanish	Count	0	2	1	0	2	1	2	0	2
	%	0%	100%	50%	0%	100%	50%	100%	0%	100%

Written assessment criteria: comparison between trained and not-trained teachers

	Form	Content	Grammar	Spelling	Cohesion	Register	Communicative effectiveness	Punctuation
I have done training courses on dyslexia	6%	88%	6%	0%	47%	12%	100%	0%
I have done training courses on specific learning disorders	6%	94%	0%	0%	50%	31%	94%	0%
I have not done training courses on dyslexia	4%	96%	33%	4%	42%	33%	88%	4%
I have not done training courses on specific learning disorders	4%	92%	36%	4%	40%	20%	92%	4%

Written assessment criteria: courses on dyslexia

		Form	Content	Grammar	Spelling	Cohesion	Register	Communicative effectiveness	Punctuation	Total
I have done training courses on dyslexia	Count	1	15	1	0	8	2	17	0	17
	%	6%	88%	6%	0%	47%	12%	100%	0%	100%
I have not done training courses on dyslexia	Count	1	23	8	1	10	8	21	1	24
	%	4%	96%	33%	4%	42%	33%	88%	4%	100%

Written assessment criteria: courses on specific learning disorders

		Form	Content	Grammar	Spelling	Cohesion	Register	Communicative effectiveness	Punctuation	Total
I have done training courses on specific learning disorders	Count	1	15	0	0	8	5	15	0	16
	%	6%	94%	0%	0%	50%	31%	94%	0%	100%
I have not done training courses on specific learning disorders	Count	1	23	9	1	10	5	23	1	25
	%	4%	92%	36%	4%	40%	20%	92%	4%	100%

Written assessment criteria: comparison among schools

		Form	Content	Grammar	Spelling	Cohesion	Register	Communicative effectiveness	Punctuation	Total
<i>Scuola primaria</i>	Count	1	8	0	0	2	2	8	0	9
	%	11%	89%	0%	0%	22%	22%	89%	0%	100%
<i>Scuola secondaria di primo grado</i>	Count	0	7	1	0	3	0	8	0	8
	%	0%	88%	13%	0%	38%	0%	100%	0%	100%
<i>Scuola secondaria di secondo grado</i>	Count	1	23	8	1	13	8	22	1	24
	%	4%	96%	33%	4%	54%	33%	92%	4%	100%

Oral assessment criteria

	Responses	Percentage of Cases
Pronunciation	13	32%
Content	37	90%
Grammar	5	12%
Cohesion	13	32%
Register	10	24%
Communicative effectiveness	40	98%
Fluency	3	7%
Total	121	

Oral assessment criteria: comparison among languages

		Pronunciation	Content	Grammar	Cohesion	Register	Communicative effectiveness	Fluency	Total
English	Count	8	25	4	7	5	25	1	26
	%	31%	96%	15%	27%	19%	96%	4%	100%
German	Count	2	7	0	2	4	10	1	10
	%	20%	70%	0%	20%	40%	100%	10%	100%
French	Count	1	3	0	2	0	3	0	3
	%	33%	100%	0%	67%	0%	100%	0%	100%
Spanish	Count	2	2	1	2	1	2	1	2
	%	100%	100%	50%	100%	50%	100%	50%	100%

Oral assessment criteria: comparison between trained and not-trained teachers

	Pronunciation	Content	Grammar	Cohesion	Register	Communicative effectiveness	Fluency
I have done training courses on dyslexia	29%	100%	6%	41%	18%	100%	0%
I have done training courses on specific learning disorders	31%	94%	6%	31%	25%	100%	0%
I have not done training courses on dyslexia	33%	83%	17%	25%	29%	96%	13%
I have not done training courses on on specific learning disorders	32%	88%	16%	32%	24%	96%	12%

Oral assessment criteria: courses on dyslexia

		Pronunciation	Content	Grammar	Cohesion	Register	Communicative effectiveness	Fluency	Total
I have done training courses on dyslexia	Count	5	17	1	7	3	17	0	17
	%	29%	100%	6%	41%	18%	100%	0%	100%
I have not done training courses on dyslexia	Count	8	20	4	6	7	23	3	24
	%	33%	83%	17%	25%	29%	96%	13%	100%

Oral assessment criteria: courses on specific learning disorders

		Pronunciation	Content	Grammar	Cohesion	Register	Communicative effectiveness	Fluency	Total
I have done training courses on specific learning disorders	Count	5	15	1	5	4	16	0	16
	%	31%	94%	6%	31%	25%	100%	0%	100%
I have not done training courses on specific learning disorders	Count	8	22	4	8	6	24	3	25
	%	32%	88%	16%	32%	24%	96%	12%	100%

Oral assessment criteria: comparison among schools

		Pronunciation	Content	Grammar	Cohesion	Register	Communicative effectiveness	Fluency	Total
<i>Scuola primaria</i>	Count	2	9	1	1	2	9	0	9
	%	22%	100%	11%	11%	22%	100%	0%	100%
<i>Scuola secondaria di primo grado</i>	Count	0	7	1	3	2	8	0	8
	%	0%	88%	13%	38%	25%	100%	0%	100%
<i>Scuola secondaria di secondo grado</i>	Count	11	21	3	9	6	23	3	24
	%	46%	88%	13%	38%	25%	96%	13%	100%

Teachers' perceptions on lack of sufficient time

	Frequency	Percentage	Cumulative Percentage
Strongly disagree	6	14%	14%
Disagree	6	14%	29%
Neither disagree nor agree	4	10%	38%
Agree	15	36%	74%
Strongly agree	11	26%	100%
Total	42	100%	

Lack of sufficient time: comparison between trained and not-trained teachers

	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree	Cumulative Percentage (agree and strongly agree)
I have done training courses on dyslexia	29%	12%	0%	18%	41%	59%
I have done training courses on specific learning disorders	25%	6%	0%	38%	31%	69%
I have not done training courses on dyslexia	4%	16%	16%	48%	16%	64%
I have not done training courses on specific learning disorders	14%	14%	10%	36%	26%	62%

Teachers' perceptions on lack of appropriate knowledge

Agreement on appropriate knowledge

	Frequency	Percentage	Cumulative Percentage
Strongly disagree	3	7%	7%
Disagree	5	12%	19%
Neither disagree nor agree	4	10%	29%
Agree	21	50%	79%
Strongly agree	9	21%	100%
Total	42	100%	

Lack of appropriate knowledge: comparison between trained and not-trained teachers

	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree	Cumulative Percentage (agree and strongly agree)
I have done training courses on dyslexia	12%	24%	24%	41%	0%	41%
I have done training courses on specific learning disorders	13%	19%	19%	38%	13%	51%
I have not done training courses on dyslexia	4%	4%	0%	56%	36%	92%
I have not done training courses on specific learning disorders	4%	8%	4%	58%	27%	85%

Teachers' perceptions on lack of appropriate resources

	Frequency	Percentage	Cumulative Percentage
Strongly disagree	4	10%	10%
Disagree	5	12%	21%
Neither disagree nor agree	5	12%	33%
Agree	16	38%	71%
Strongly agree	12	29%	100%
Total	42	100%	

Lack of appropriate resources: comparison between trained and not-trained teachers

	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree	Cumulative Percentage (agree and strongly agree)
I have done training courses on dyslexia	18%	24%	18%	35%	6%	41%
I have done training courses on specific learning disorders	6%	13%	13%	50%	19%	69%
I have not done training courses on dyslexia	4%	4%	8%	40%	44%	88%
I have not done training courses on specific learning disorders	12%	12%	12%	31%	35%	66%

Lack of sufficient help/collaboration

	Frequency	Percentage	Cumulative Percentage
Strongly disagree	4	10%	10%
Disagree	8	19%	29%
Neither disagree nor agree	4	10%	38%
Agree	14	33%	71%
Strongly agree	12	29%	100%
Total	42	100%	

Lack of sufficient help/collaboration: comparison between trained and not-trained teachers

	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree	Cumulative Percentage (agree and strongly agree)
I have done training courses on dyslexia	12%	29%	6%	35%	18%	73%
I have done training courses on specific learning disorders	6%	19%	6%	25%	44%	69%
I have not done training courses on dyslexia	8%	12%	12%	32%	36%	68%
I have not done training courses on specific learning disorders	12%	19%	12%	38%	19%	57%

Teachers' perceptions on feeling a sense of failure

	Frequency	Percentage	Cumulative Percentage
Strongly disagree	9	21%	21%
Disagree	8	19%	40%
Neither disagree nor agree	8	19%	60%
Agree	14	33%	93%
Strongly agree	3	7%	100%
Total	42	100%	

Sense of failure: comparison between trained and not-trained teachers

	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree	Cumulative Percentage (agree and strongly agree)
I have done training courses on dyslexia	29%	24%	18%	29%	29%	29%
I have done training courses on specific learning disorders	25%	19%	6%	44%	6%	50%
I have not done training courses on dyslexia	16%	16%	20%	36%	12%	48%
I have not done training courses on specific learning disorders	19%	19%	27%	27%	8%	35%

Teachers' perceptions on pupil's commitment

	Frequency	Percentage	Cumulative Percentage
Strongly disagree	10	24%	24%
Disagree	14	33%	57%
Neither disagree nor agree	12	29%	86%
Agree	5	12%	98%
Strongly agree	1	2%	100%
Total	42	100%	

Pupil's lack of commitment: comparison between trained and not-trained teachers

	Strongly disagree	Disagree	Neither disagree nor agree	Agree	Strongly agree	Cumulative Percentage (agree and strongly agree)
I have done training courses on dyslexia	41%	24%	29%	6%	0%	6%
I have done training courses on specific learning disorders	44%	25%	25%	6%	0%	6%
I have not done training courses on dyslexia	12%	40%	28%	16%	4%	20%
I have not done training courses on specific learning disorders	12%	38%	31%	15%	4%	19%

Difficulties and problems encountered by teachers

	Responses	Percentage of Cases
Problem definition	7	33%
Large classes	5	24%
Slowness/Rhythm	6	29%
Materials/Instruments	8	38%
Strategies	5	24%
Acceptance/Diversity	2	10%
Evaluation	3	14%
Literacy skill teaching	2	10%
Motivation	1	5%
Total	39	

Main difficulties encountered by dyslexic learners (teachers' view)

	Responses	Percentage of Cases
Lexicon	16	38%
Grammar rule understanding	4	10%
Grammar rule use	7	17%
Speech	13	31%
Spelling	20	48%
Implicit learning	15	36%
Slow learning	22	52%
Immediate response	4	10%
Study method	9	21%
Listening	0	0%
Written production	29	69%
Total	139	

Difficulties of using linguistic accommodations

	Frequency	Percentage	Cumulative Percentage
Very difficult	4	10%	10%
Difficult	5	12%	22%
Neither difficult nor easy	12	29%	51%
Easy	11	27%	78%
Very easy	9	22%	100%
Total	41	100%	

Difficulties of using linguistic accommodations listed by teachers

	Responses	Percentage of Cases
Large classes	11	41%
Material individualization	9	33%
Testing/Assessment	1	4%
Family context	2	7%
Use of multimedia	3	11%
Knowledge	4	15%
Diversity/Disesteem	5	15%
Gap/Rhythm	3	11%
Other	3	11%
Total	37	

Assessment problems encountered by teachers

	Frequency	Percentage	Cumulative Percentage
Yes	15	37	37
No	17	41	78
I don't know	9	22	100
Total	41	100	

Teachers' perceptions on assessment difficulty

	Frequency	Percentage	Cumulative Percentage
Easy	5	12	12
Neither easy nor difficult	15	37	49
Difficult	12	29	78
Very difficult	9	22	100
Total	41	100	

Assessment difficulties encountered by teachers

	Responses	Percentage of Cases
Anxiety	1	7%
Comorbidity	1	7%
Lack of sufficient time	1	7%
Error identification	1	7%
Simplification	2	14%
Differentiation	2	14%
Suitability	2	14%
Objectivity	3	21%
Equality	1	7%
Refusal of the learner	1	7%
Result interpretation	1	7%
Total	16	

Evaluation accommodations

	Responses	Percentage of Cases
Progress	4	15%
Entirety	2	7%
Commitment	2	7%
Emotion	1	4%
Strengths	2	7%
Mark flexibility	3	11%
Personalization	1	4%
Linguistic criteria	17	63%
Other	3	11%
Total	36	

Appendix C: Codebook

Variable name	Description	Question number	Value
FL	Foreign language	1	1 = "English"
			2 = "German"
			3 = "French"
			4 = "Spanish"
			5 = "Italian as second language"
			6 = "Other"
School	Type of school	2	1 = "Scuola primaria"
			2 = "Scuola secondaria di primo grado"
			3 = "Scuola secondaria di secondo grado"
			4 = "Other"
Location	School location	3	1 = "City"
			2 = "Province"
Experience	Experience with dyslexic pupils	4	1 = "Yes"
			2 = "No"
			3 = "I don't know/I don't remember"
TrainingDYS	Courses on dyslexia	5	1 = "Yes"
			2 = "No"
TrainingSLD	Courses on specific learning disorders	6	1 = "Yes"
			2 = "No"
ProblemDefin	Main teaching difficulties	7	1 = "Yes"
ClassLarge			2 = "No"
			1 = "Yes"
SlownessRhythm			2 = "No"
			1 = "Yes"
MaterialInstrum			2 = "No"
			1 = "Yes"
Strategies			2 = "No"
			1 = "Yes"
AcceptanceDiversity			2 = "No"
	1 = "Yes"		
EvaluationAssess	2 = "No"		
	1 = "Yes"		
LiteracySkills	2 = "No"		
	1 = "Yes"		
Motivate	2 = "No"		
	1 = "Yes"		

Time	Agreement on time management for teaching adaptation	8	1 = "Strongly disagree"
			2 = "Disagree"
			3 = "Neither disagree nor agree"
			4 = "Agree"
			5 = "Strongly agree"
Knowledge	Agreement on appropriate knowledge		1 = "Strongly disagree"
			2 = "Disagree"
			3 = "Neither disagree nor agree"
		4 = "Agree"	
		5 = "Strongly agree"	
Resources	Agreement on appropriate resources	1 = "Strongly disagree"	
		2 = "Disagree"	
		3 = "Neither disagree nor agree"	
		4 = "Agree"	
		5 = "Strongly agree"	
Help	Agreement on sufficient help/collaboration	1 = "Strongly disagree"	
		2 = "Disagree"	
		3 = "Neither disagree nor agree"	
		4 = "Agree"	
		5 = "Strongly agree"	
Failure	Agreement on sense of failure	1 = "Strongly disagree"	
		2 = "Disagree"	
		3 = "Neither disagree nor agree"	
		4 = "Agree"	
		5 = "Strongly agree"	
LackofCommittment	Agreement on pupil's lack of commitment	1 = "Strongly disagree"	
		2 = "Disagree"	
		3 = "Neither disagree nor agree"	
		4 = "Agree"	
		5 = "Strongly agree"	
Lexicon	Main difficulties encountered by dyslexic learners	9	1 = "Yes"
UnderstandingGrammar			2 = "No"
UsingGrammar			1 = "Yes"
OralSpeech			2 = "No"
Spelling			1 = "Yes"
Implicit			2 = "No"
Slowness			1 = "Yes"
ImmediateResponse			2 = "No"

StudyMethod			1 = "Yes"
			2 = "No"
Listening			1 = "Yes"
			2 = "No"
Written			1 = "Yes"
			2 = "No"
Attitude	Attitude Mark	10	1 = "1"
			2 = "2"
			3 = "3"
			4 = "4"
			5 = "5"
			6 = "6"
			7 = "7"
			8 = "8"
			9 = "9"
			10 = "10"
VerbalLanguage	Type of language		1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
VisualLanguage	Type of language		1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
MotorLanguage	Type of language		1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
SignLanguage	Type of language		1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
ExplicitPhoneme	Explicit phoneme instruction	12	1 = "Yes"
			2 = "No"
			3 = "I don't know/I don't remember"
GraphemePhoneme	Explicit grapheme/phoneme instruction	12	1 = "Yes"
			2 = "No"
			3 = "I don't know/I don't remember"

ProgressionOrder	Progression order	12	1 = "Yes"
			2 = "No"
			3 = "I don't know/I don't remember"
OnePhonemePerTime	One phoneme per time		1 = "Yes"
			2 = "No"
			3 = "I don't know/I don't remember"
L1Phoneme	L1 phoneme instruction		1 = "Yes"
			2 = "No"
			3 = "I don't know/I don't remember"
MotorActivities	Motor activities	13	1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
TactileActivities	Tactile activities		1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
		5 = "100% (always)"	
Images	Images	1 = "0% (never)"	
		2 = "25%"	
		3 = "50% (frequently)"	
		4 = "75%"	
		5 = "100% (always)"	
Multimedia	Multimedia	1 = "0% (never)"	
		2 = "25%"	
		3 = "50% (frequently)"	
		4 = "75%"	
		5 = "100% (always)"	
ShowHand	Hand movements	1 = "0% (never)"	
		2 = "25%"	
		3 = "50% (frequently)"	
		4 = "75%"	
		5 = "100% (always)"	
ShowMouth	Mouth movements	1 = "0% (never)"	
		2 = "25%"	
		3 = "50% (frequently)"	
		4 = "75%"	
		5 = "100% (always)"	
DifferentExercises	Different exercises for an item	14	1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"

Memorization	Memorization strategies	14	1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
Metalinguistics	Metalinguistic strategies		1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
ExerciseAim	Exercise aims explanation		1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
Repetition	Concept repetition	1 = "0% (never)"	
		2 = "25%"	
		3 = "50% (frequently)"	
		4 = "75%"	
		5 = "100% (always)"	
Review	Learning review	1 = "0% (never)"	
		2 = "25%"	
		3 = "50% (frequently)"	
		4 = "75%"	
		5 = "100% (always)"	
Connections	Explicit connections	1 = "0% (never)"	
		2 = "25%"	
		3 = "50% (frequently)"	
		4 = "75%"	
		5 = "100% (always)"	
Structure	Lesson structure	1 = "0% (never)"	
		2 = "25%"	
		3 = "50% (frequently)"	
		4 = "75%"	
		5 = "100% (always)"	
Morphology	Explicit instruction of morphological rules	1 = "0% (never)"	
		2 = "25%"	
		3 = "50% (frequently)"	
		4 = "75%"	
		5 = "100% (always)"	

Syntax	Explicit instruction of syntactic rules	16	1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
Semantics	Explicit instruction of semantic rules		1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
Pragmatics	Explicit instruction of pragmatic rules	1 = "0% (never)"	
		2 = "25%"	
		3 = "50% (frequently)"	
		4 = "75%"	
		5 = "100% (always)"	
WrittenTasks	Explicit instruction of pragmatic rules on how to do a written task	1 = "0% (never)"	
		2 = "25%"	
		3 = "50% (frequently)"	
		4 = "75%"	
		5 = "100% (always)"	
OralTasks	Explicit instruction of pragmatic rules on how to do an oral task	1 = "0% (never)"	
		2 = "25%"	
		3 = "50% (frequently)"	
		4 = "75%"	
		5 = "100% (always)"	
ExplStudyMethod	Study method	1 = "0% (never)"	
		2 = "25%"	
		3 = "50% (frequently)"	
		4 = "75%"	
		5 = "100% (always)"	
Rhythm	Slow teaching rhythm	17	1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
Speech	Slow FL speech production		1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
Motivation	Encourage motivation	1 = "0% (never)"	
		2 = "25%"	
		3 = "50% (frequently)"	
		4 = "75%"	
		5 = "100% (always)"	
LearningStyle	Learning styles	1 = "0% (never)"	

			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
AnticipateActivites	Preparatory activities in advance	17	1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
Consultation	Regular consultation	18	1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
DiffcultAccommodations	Difficulty in using accom- modations	19	1 = "Very difficult"
			2 = "Difficult"
			3 = "Neither difficult nor easy"
			4 = "Easy"
			5 = "Very easy"
Large classes	Difficulties in using ac- commodations	20	1 = "Yes"
			2 = "No"
Material Individualization			1 = "Yes"
			2 = "No"
TestingAssessment			1 = "Yes"
			2 = "No"
Family context			1 = "Yes"
			2 = "No"
Multimedia			1 = "Yes"
			2 = "No"
Knowledge	1 = "Yes"		
	2 = "No"		
DiversityDisesteem	1 = "Yes"		
	2 = "No"		
GapRhythm	1 = "Yes"		
	2 = "No"		
Other	1 = "Yes"		
	2 = "No"		
SpecialSession	Test special session	21	1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"

SeveralDays	Test in more than one day	21	1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
Unexpected	Unexpected test	21	1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
SpecificPreparation	Specific preparation	21	1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
OneSkillPerTime	Test one skill per time	21	1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
Simulation	Mock test	21	1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
Colours	Colored papers	21	1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
Prints	Large prints	21	1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
OralAnswers	Oral answers	22	1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
Dictate	Answer dictation	22	1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
Computer	Answer via computer		1 = "0% (never)"

			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
Reader	Use of a reader	22	1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
SpeechSynthesizer	Use of a speech synthesizer		1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
MoreTime	Extra time		1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
NewExercises	New types of exercises		1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
L1Instructions	L1 in test instructions	23	1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
Complexity	Reduction of test instruction complexity		1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
Highlight	Test instruction keywords		1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
Length	Reduction of test instruction length		1 = "0% (never)"
			2 = "25%"
			3 = "50% (frequently)"
			4 = "75%"
			5 = "100% (always)"
OralInstructions	Oral test instruction		1 = "0% (never)"

			2 = "25%"	
			3 = "50% (frequently)"	
			4 = "75%"	
			5 = "100% (always)"	
OnlineDictionaries	Online dictionaries	24	1 = "0% (never)"	
			2 = "25%"	
			3 = "50% (frequently)"	
			4 = "75%"	
			5 = "100% (always)"	
PaperDictionaries	Paper dictionaries		1 = "0% (never)"	
			2 = "25%"	
			3 = "50% (frequently)"	
			4 = "75%"	
			5 = "100% (always)"	
TextEditing	Text editing programs		1 = "0% (never)"	
			2 = "25%"	
			3 = "50% (frequently)"	
			4 = "75%"	
			5 = "100% (always)"	
SpellChecker	Spell checkers		1 = "0% (never)"	
			2 = "25%"	
			3 = "50% (frequently)"	
			4 = "75%"	
			5 = "100% (always)"	
GrammarTools	Grammar or spelling tools	1 = "0% (never)"		
		2 = "25%"		
		3 = "50% (frequently)"		
		4 = "75%"		
		5 = "100% (always)"		
Assessment	Assessment problems	25	1 = "Yes"	
			2 = "No"	
			3 = "I don't know/I don't remember"	
Anxiet	Assessment difficulties	26	1 = "Yes"	
				2 = "No"
Comorbidity				1 = "Yes"
				2 = "No"
TimeLack				1 = "Yes"
				2 = "No"
ErrorIdenti				1 = "Yes"
				2 = "No"
Simplific		1 = "Yes"		
		2 = "No"		
Differenti		1 = "Yes"		
		2 = "No"		
Suitability		1 = "Yes"		
		2 = "No"		

Objectivity			1 = "Yes"
			2 = "No"
Equality			1 = "Yes"
			2 = "No"
LearnerRefusal			1 = "Yes"
			2 = "No"
ResulInterpret			1 = "Yes"
			2 = "No"
AssessmentDifficulties	Difficulty of assessing dyslexics' performance	27	1 = "Very easy"
			2 = "Easy"
			3 = "Neither difficult nor easy"
			4 = "Difficult"
			5 = "Very difficult"
Form	Written test assessment	28	1 = "Yes"
			2 = "No"
Content			1 = "Yes"
			2 = "No"
Grammar			1 = "Yes"
			2 = "No"
SpellingW			1 = "Yes"
			2 = "No"
Cohesion			1 = "Yes"
			2 = "No"
Register	1 = "Yes"		
	2 = "No"		
CommunicativeEffectiveness	1 = "Yes"		
	2 = "No"		
Punctuation	1 = "Yes"		
	2 = "No"		
Other	1 = "Yes"		
	2 = "No"		
Pronunciation	Oral test assessment	29	1 = "Yes"
			2 = "No"
ContentO			1 = "Yes"
			2 = "No"
GrammarO			1 = "Yes"
			2 = "No"
CohesionO			1 = "Yes"
			2 = "No"
RegisterO			1 = "Yes"
	2 = "No"		
CommunicativeEffectivenessO	1 = "Yes"		
	2 = "No"		
Fluency	1 = "Yes"		
	2 = "No"		
OtherO	1 = "Yes"		

			2 = "No"
Progress	Evaluation Accommoda- tions	30	1 = "Yes"
			2 = "No"
Entirety			1 = "Yes"
			2 = "No"
Committment			1 = "Yes"
			2 = "No"
Emotion			1 = "Yes"
			2 = "No"
Strengths			1 = "Yes"
			2 = "No"
Mark flexibility	1 = "Yes"		
	2 = "No"		
Personalization	1 = "Yes"		
	2 = "No"		
Linguistic criteria	1 = "Yes"		
	2 = "No"		
Other	1 = "Yes"		
	2 = "No"		
StrategyTeaching	Test strategies teaching	31	1 = "Yes"
			2 = "No"
			3 = "I don't kow"
StudyMemorization	Types of test strategies	32	1 = "Yes"
			2 = "No"
FocusConcentration			1 = "Yes"
			2 = "No"
ExplanationRepetition			1 = "Yes"
			2 = "No"
Preparation/Simulation			1 = "Yes"
			2 = "No"
HighlightKeywords	1 = "Yes"		
	2 = "No"		
TimeManagement	1 = "Yes"		
	2 = "No"		
Other	1 = "Yes"		
	2 = "No"		

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