

## FREQUENTLY ASKED QUESTIONS

September 2013

*These answers were prepared by Dr Vincent Goetry, Course Director, after studying the feedback from users of the online courses in both English and French. They were reviewed by Professor Stein of the University of Oxford, UK, and member of Dyslexia International's Scientific Advisory Panel.*

Notes:

1. 'He/him' refers throughout also to 'she/her'.
2. References. We have not included a complete bibliography here but will be pleased to supply any reference if you write to us.

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**1. Can you explain why people with dyslexia have difficulties in orientating themselves in space but have superior abilities for representing objects in three dimensions?**

When the dyslexic learner needs to orientate himself in space he uses the cortical representation of his body which is typically less developed. All the spatial notions relative to the body (left-right, before-behind, etc) are very difficult to master for dyslexic learners.

On the other hand when the dyslexic learners need to represent external objects within space this representation is not involved. In these circumstances, dyslexic learners often show superior abilities compared to their non-dyslexic peers.

**2. What about dyslexia and the learning of a foreign language? Is it more difficult for them than for non-dyslexics?**

*The diversity of bilingual settings*

First, we should distinguish at least three different situations:

- submersion: the learner is schooled entirely in the target language amongst learners for which this language is their mother tongue. The teaching programme

is not adapted to the linguistic needs of the non-native learners, who need to learn the language of his instruction through the interaction with his teacher and peers, as well as through the lessons.

- immersion: the learner acquires a foreign language with other learners who are in the same situation, and the teaching programme is adapted to their educational and linguistic needs;
- the learning of a mandatory additional language at school.

We should also note the situation for many children, often newly arrived in a country, who speak their native language at home and have sometimes learnt to read and spell it, but whose school language is the foreign language.

### *The acquisition of the spoken and the written language*

It is very important to distinguish between oral language and written language.

At the level of the oral language the dyslexic learner will have to learn the series of other “labels”, the names of objects in the target language to be associated with the objects they already know in their first language.

In this, dyslexic learners do not generally have more difficulties than non-dyslexic learners. Dyslexic or not, some learners have more abilities in learning foreign languages than others.

However, if the target language has phonemes or phonemic contrasts which do not exist in the native language of the dyslexic learner, he will have more difficulties in learning these phonemes and contrasts given his overall difficulties in building abstract and generalized representations of phonemes.

A classic example is that of Japanese speakers learning English. English has two consonants which belong to the family of liquid consonants, namely /l/ and /r/. These two phonemes do not exist in Japanese where we find only one liquid consonant, whose pronunciation is intermediate between the English /l/ and /r/. Hence Japanese speakers learning English will show particular difficulties in distinguishing /l/ from /r/ and will keep on confounding those two phonemes and graphemes both orally and in writing.

Being confronted by the written foreign language will often be very problematic for dyslexic learners. To recap, one of the major characteristics of dyslexia is the difficulty in associating graphemes with their corresponding phonemes for reading, and vice versa for spelling.

When confronted with the written system of a foreign language the dyslexic learner will have to acquire a whole new set of grapheme-phoneme correspondences, amongst which many do not even exist in his native language (especially the vowels). Moreover, in many cases some of these correspondences conflict with those with which the learner has to cope in his native language.

Let's consider, for example, the phoneme /ow/, which appears in the word "cloud". Working now in French, the learner will discover that this same grapheme is pronounced /ou/, as in the word "trou" (meaning "hole"). What is more, in French the learner will discover that the phoneme /ow/ does not exist, and that in English the phoneme /ou/ is spelt with two vowels which never come together in French, namely "oo" (as in "good").

This example is far from unique. When exposed to the orthographic system of a foreign language the dyslexic learner will be required to master many new correspondences - which is exactly what is very difficult for him.

Therefore, the best advice is to avoid as much as possible contacts with the written system of the foreign language **first** whilst insisting on the learning of the oral language.

### **3. Are some languages easier to learn than others?**

At the oral level all the languages of the world are equally complex. Some languages have more phonemes than others but these differences are sufficiently negligible not to affect their acquisition.

Things are very different with written systems. Every language displays a written system which can be more or less complex.

Some languages have a written system called "transparent": words are written as they are pronounced and pronounced as they are spelt. In these languages the correspondences between graphemes and phonemes are bi-univocal: each grapheme always corresponds to the same phoneme and vice versa.

Amongst the languages displaying a transparent orthographic system, we find for example Italian and Spanish, and, to a lesser extent, German and Dutch.

In contrast, other languages have so-called "opaque" orthographic systems, such as English and, to a lesser extent, French. English is hybrid and embodies words and spellings originating from Celtic, Anglo-Saxon, and romantic languages origins, for example.

In these orthographic systems, the correspondences between graphemes and phonemes are complex and multiple: the same grapheme can be pronounced in different ways and the same phoneme can be written with several graphemes.

From a strictly theoretical point of view, dyslexic learners will show more ability to learn languages with transparent orthographic systems than languages with opaque systems. This is actually true for all the children, but even more so for dyslexic learners.

However, in real life, things need to be nuanced. It would be foolish to advise dyslexic children to learn Italian or Spanish rather than French because the orthographic systems of the former are more transparent than the latter.

A central element to take into consideration is obviously the motivation of the learner. If a dyslexic learner absolutely wants to learn French it is probably better to let him do so, whilst warning him of the written difficulties he will face and foreseeing the extra help which will allow him to master the orthographic system of that language.

#### **4. Is immersion advised against for dyslexic learners?**

There is no unequivocal answer to this question given the diversity of the contexts of immersion: in some programmes, the learners learn to read and spell in their second language first whilst in others they acquire literacy in their native language first, and so on.

Another important factor to be taken into account is whether one of the parents speaks the language of immersion or not.

Dyslexic or not, some learners display more ability to learn one or several foreign languages than others.

The dyslexic child who is faced with the immersion language is confronted by the double difficulty of having to learn the vocabulary of that language and its written system. This double task is more difficult for him than for a non-dyslexic learner.

However, in some circumstances immersion in a transparent language like Spanish could be beneficial for some dyslexics. Indeed Canadian researchers (Da Fontoura & Siegel, 1995) have compared the reading and spelling skills of **poor** Portuguese-English bilingual learners to those of English monolinguals. The bilinguals were schooled in English but also learnt to read and spell in Portuguese for 30 minutes every day. Contrary to what was expected, in some tasks the bilinguals showed *better* performance than the monolinguals (in pseudo-word reading and spelling). To explain these results the researchers suggested the following hypothesis: the writing system of Portuguese is far more transparent than the one of English. Therefore the fact of reading in Portuguese could have helped the dyslexic learners especially to develop and train the phonological decoding procedure of reading, which is paramount in setting up of all the mechanisms of word identification and comprehension of the written language. Those learners would then have transferred their phonological decoding abilities to English, which would have induced facility in tasks such as reading pseudowords.

Therefore it could be possible that immersion in Spanish or Italian, which display a more transparent orthographic system than English, facilitates the development and especially the automatization of the phonological recoding route to reading and therefore reading development in general.

One needs to nuance this statement because Portuguese and Spanish do not have the same level of transparency. Moreover, even if the orthographic system of Spanish could facilitate the development of the phonological decoding route in the English-speaking learner immersed in Spanish, this learner will encounter enormous difficulties when

subsequently faced by the English writing system, which is the most opaque alphabetical system.

In all cases the learner will have to master two orthographic systems throughout his curriculum, which is very difficult for dyslexic learners.

## **5. What is the relationship between dyslexia and other learning difficulties?**

In the past researchers tended to study the various learning difficulties in isolation.

There is now a growing consensus that various learning difficulties share common features, and that they usually do not manifest themselves in isolation.

In a famous scientific article published in 2003, the French neurologist Michel Habib wrote about the “constellation of DYS”, also called the “DYS-constellation”. Habib pointed out that all the DYS learning difficulties share two common elements:

- the frequency of their co-occurrence (that is, the difficulty in question is nearly always associated with one or several other difficulties)
- their independence of the global intellectual functioning of the learner; the learners have a perfectly normal or even superior intelligence.

Other studies have confirmed these assertions (Carroll, Maughan, Goodman & Meltzer, 2005; Monuteaux, Faraone, Herzig, Navsaria & Biederman, 2005; Willcutt, Pennington, Olson, Chabildas & Hulslander, 2005).

For example, about 40% of dyslexic learners also have dyscalculia.

The various DYS difficulties, of which some often coexist within the same learner, are the following:

- Dyslalia, which is a motor difficulty of articulation that makes it difficult to pronounce some phonemes. It encompasses pronunciation difficulties such as stammering, lisping and hissing
- Dysphasia, which is a structural and lasting disorder of oral language development
- Dysorthografia, which often, but not always goes with dyslexia and which concerns the acquisition of the rules for spelling and grammatical agreement
- Dyscalculia, which is a disorder of numerical and mathematical skills
- Dysgraphia, which is a disorder of fine motor skills affecting the graphical gesture and the optimum formation of letters.
- Dyspraxia, which is a disorder in carrying out actions, that is voluntary sequences of movements to interact with the environment (riding a bicycle, tying shoelaces, getting dressed, etc.)
- Attention deficit /hyperactivity disorder with or without hyperactivity (AD/HD)

## 6. At what age can dyslexia be detected?

The concept according to which dyslexia may be identified only by the age of 7 or even 8 is obsolete.

Let us remind ourselves first that dyslexia is a developmental disorder characterized by a different cerebral organization, which exists therefore “from birth”.

The fact that a risk of dyslexia may be detected early is now undeniable. Many researchers have shown that measurements taken even before children learn to read and write largely predict subsequent skills in reading and spelling.

Even as early as in 1994, Carsten Elbro and colleagues have shown that three tests administered in kindergarten are predictive: naming the letters of the alphabet; the rapid naming of familiar objects (RAN); and metaphonological skill, which is the ability to represent and manipulate the sounds of the language.

Another outstanding piece of research which clearly demonstrates that dyslexia may be identified early was led by Heikki Lyytinen and his colleagues. They interviewed no fewer than 410 future parents to determine whether they displayed a familial risk of dyslexia. The babies to be born were then classified into two groups, the risk group and the control group, each composed of about 100 children. As soon as they were born, the babies were presented with sets of tests regularly about every six months. After seven years, when they reached the age of learning to read in Finland, it was observed that some of them displayed great difficulties.

The researchers noticed that some measures taken in the first year of life allowed them to anticipate who would show difficulties with reading. This was the case for a test of auditory discrimination administered when the participants were still babies.

In Finnish, the difference between *ata* (short consonant) and *atta* (long consonant) defines a categorical border between words. However the detection of this difference was less perfect in the group at risk for dyslexia than in the control group. The former needed to be presented with longer consonants to be able to perceive a difference. Furthermore, the recording of evoked potentials (the electrical activity of the brain during the task) also showed a difference between groups in the left temporal region of the brain which is responsible for the processing of the oral language (and subsequently of the written language).

These studies conducted within the context of the research laboratory cannot simply be transposed to the classroom. However, researchers have shown that some elements or “risk factors” allowed them to predict a potential dyslexia. **Obviously we cannot talk about dyslexia yet at this stage, but about a risk for subsequent dyslexia.** Being attentive to these risk factors is essential because scientific studies show without ambiguity that the sooner a risk of dyslexia is detected and the sooner an intervention is made the better the prognosis both at the academic and professional level.

Here are the main risk factors to which you should be attentive before the child enters primary school:

- dyslexia within the **family** or difficulties with the written language: the parents or grand-parents have encountered themselves difficulties when learning to read and write. Please be aware that in many cases they will not have been diagnosed because learning disabilities were still largely unknown when they were schooled.
- **Ambidexterity** or slowness to establish manual preference: the learner uses one hand, then the other, to execute the same activity.
- **Persistent** confusions between left and right and for objects in the environment: these 'abstract' notions have no meaning for the initial learner.
- Inability to appreciate **rimes** in nursery rhymes or in songs: the learner is not aware that the ends of the sentences finish with rhyming words.
- Difficulties in following a **rhythm** or reproducing it: the learner claps his hands or marches out of time.
- Great difficulties in learning nursery rhymes, songs, or verses of poetry **by rote**: the learner memorizes the main ideas but is unable to repeat the precise words that make up the verses.
- Difficulties in naming familiar objects **rapidly**: this is not a problem of vocabulary; the learner knows perfectly well the names of the objects to designate but he has difficulty in retrieving them from his long-term memory.
- Difficulties in following multiple verbal instructions given one after another: faced with a series of tasks the learner seems totally lost and does not know what to do.
- Difficulties in **expressing** the sounds of words: the child "mixes up" the sounds to pronounce some words and will say for example "disonaur" for "dinosaur".
- A striking level of **disorganization**, frequent loss or lapse of memory for personal objects.
- Difficulties with orientation in **space** and **time**: the notion of time does not make sense to the learner, as well as concepts like "before", "after", "yesterday", "tomorrow", "next week", etc. Some learners also confound "morning" and "afternoon".

If the teacher has already carried out some pre-reading and pre-spelling activities:

- Inability to learn the **alphabet** and the sounds of the letters: the learner confounds the names and the sounds of the letters, and assigns wrong names or sounds to letters despite intensive exposure.
- Inability to **fuse** letters to read a word: the learner mixes up the sounds and pronounces them in a wrong order or omits some of them.
- Inability to **read** except for a few words learnt by rote memory: the child may have learnt some words like logos, pictures or drawings, and can recognize them thanks to his visual memory but he does not analyse these words into their constitutive letters. If one uses a font which changes the global shape of the word the learner can no longer identify the word.
- Difficulties with writing their **name**.
- Mirror writing.

A word of caution: The vast majority of children will sometimes write their name in mirror-writing spontaneously. Some children will be much slower than others to establish manual preference. This does not mean that they will be dyslexic. To gauge a risk of dyslexia one must observe a **combination** of risk factors which occur **frequently** despite teachers' corrections and training, and which will **persist** in time beyond the age at which such errors should normally disappear.

## 7. Can dyslexia be cured?

No. Dyslexia is a lifelong condition even if its manifestations will be most visible during the schooling period.

Dyslexia is neurobiological in nature, which means that the brain of dyslexic learners does not develop and function as the one of non-dyslexic learners. Nevertheless, with proper support, the dyslexic brain can activate hemispheric regions which will make reading and spelling more successful, thus gaining skills over time in these domains.

As illustrated in the film "*Dyslexia – How to weave a solid structure of support*", available from the "Film Library" of the e-Campus for Teachers and Trainers from Dyslexia International. Dyslexic adults have to put in place some strategies to compensate for their difficulties in the domains of concentration, short-term memory and orientation in space and time.

For example, the use of modern technology like an electronic agenda allows the adult to take notes at any time so that nothing is forgotten and to program alarms in order not to forget appointments and other engagements.

## 8. What should be done when dyslexia is detected during adolescence or later?

Whether dyslexia is detected earlier or later the learner can always be helped.

Some parts of the speech therapist's support programme are the same whatever the age of the learner, in particular the practice of tasks aiming at reinforcing phonological and especially phonemic representations.

Other parts of the support programme are more specific. Nowadays some **remedial teachers** specialize in the support of dyslexic adolescents. They help the learner to find, and then teach him coping strategies which will allow him to keep up with the tempo of the classroom.

This applies to the classroom itself: the biggest problem of the dyslexic adolescent is keeping up with the fast pace of the classroom.

Because he will have difficulties taking notes during class one must ensure that he is given complete notes either by asking for photocopies from a classmate or yourself as teacher.

Within this framework, it is also important to allow the learner to use a computer equipped with support and compensation software within the classroom.

When marking the dyslexic learner do it orally as often as possible and do not penalize him for spelling mistakes in written tests unless it is what you are specifically evaluating.

You will find other pieces of advice for adaptations in Section 3 of the course.

### **9. Are tools like Brain Gym or mental management useful for dyslexic learners?**

Although up to now there is no scientific evidence yet demonstrating the efficiency of these tools, the numerous testimonies in the media and on websites of dyslexia associations, and also from teachers who have already taken such a course suggest that these tools help not only dyslexic learners but all the children in the classroom.

### **10. What can teachers do for dyslexic learners in the English class?**

Whatever the age of the dyslexic learners, easy adaptations can be made. Here are some examples:

- When evaluating spelling isolated words, draw a circle round the correctly spelt words rather than crossing out the mistakes. This is more encouraging for the student.
- When organizing dictations, modify the task for dyslexic learners. For example, if you ask the students to prepare 20 words for the next day's dictation ask the dyslexic learner, when starting the dictation, not to write down the 20 words but to spell the words he thinks he has retained. Then divide the number of words correctly spelt not by 20 but by the number of words the learner has written. There obviously needs to be a quota of words to write down for the dictation (for example, ask the learner to spell at least 10 words out of the 20).
- Teach patterns of spelling: try to compose sentences with words which display the same phoneme.
- When correcting essays, mark only a subpart of the production of the dyslexic learner (for example, the 3 of the 10 first lines). You can also mark only one aspect of the production (spelling, agreement, punctuation).
- Allow the dyslexic learner to use a computer for written work where possible.
- Allow the dyslexic learner to plan his essay with a tool like a mind map before he starts to write
- Allow the dyslexic learner to use a dictionary in all circumstances, otherwise he will memorise incorrect spellings
- When you ask the dyslexic learner to write an essay, encourage him to proofread his work, ideally four times:
  - A first time, paying attention only to the content (did I write down all the ideas I wanted to express?)
  - A second time, paying attention only to spelling
  - A third time, paying attention to agreement
  - A last time, paying attention only to punctuation

## **11. What can be done for dyslexic learners in other subjects?**

Particularly in secondary school each teacher should be responsible for teaching the spelling of words that are specific to his subject.

The most important thing is not to penalize dyslexic learners for their spelling and writing mistakes. Keep in mind that you are evaluating knowledge and competence related to your subject and not the spelling skills of the learners. They are already sufficiently penalized in the English class not have to undergo additional penalties for the same reason in other classes.

## **12. How to improve the self-esteem of dyslexic learners in the classroom?**

All dyslexic learners suffer with their self-esteem. They compare themselves with their non-dyslexic peers and notice continuously that they have to make much more effort than their peers for lower results.

Scientific studies have shown that dyslexic learners often show stronger abilities compared to their non-dyslexic peers in some domains (see Section 1 of the course). However, these domains are rarely esteemed or assessed at school.

At all costs you must find out the areas in which the dyslexic learner shows ability and promote it publicly in front of the whole classroom.

You must also commend the dyslexic learner each time he gives a correct answer.

## **13. Are gestural methods of teaching beneficial for dyslexic learners?**

These methods are absolutely appropriate as they have a multisensory component. By joining the gesture to the learning of the language's phonemes you will provide more clues to the dyslexic learner, which will allow him to build more precise representations of phonemes.

## **14. How to decide whether a dyslexic learner should pursue schooling in a mainstream or specialized school?**

You should keep in mind that dyslexia is a continuum and not a discrete category. A learner may be slightly, moderately or severely dyslexic in different learning capacities.

It is the degree of severity of the dyslexia concentration of difficulties with memory, organization, reading, and spelling which is going to determine whether schooling can be pursued in a mainstream school or not.

According to Dr. Harry Chasty, 90 % of dyslexic learners can learn to read and write efficiently in mainstream classrooms if the teachers are trained to identify dyslexia and to deal with it.

The 10 % of dyslexic learners for whom specialized education will be required are those displaying the most severe forms of dyslexia.

### **15. What can be done in pre-school to help the learners who show a manifest risk of subsequently developing dyslexia?**

Contrary to a common belief, you can intervene before formal schooling to help your learners who show several risk factors for dyslexia (see question 5 for a list of those early risk factors).

Dyslexic learners display a core phonological deficit, which means that they have difficulties in representing and manipulating phonological units such as syllables, onset-rime units, and especially phonemes. But the abilities to represent and manipulate these units constitute an essential prerequisite for the successful development of literacy skills.

So, for those learners, but also to the benefit of other children in the classroom, it is paramount to carry out activities aiming at developing their metaphonological abilities - their abilities to develop, represent and manipulate phonological units, phonemes in particular.

Scientific studies have shown that a training of this type for 20 minutes a day, even for as short a period as three weeks, significantly improved phonological awareness in both the dyslexic learners and in their non-dyslexic peers. These activities have been proved to be beneficial for all the children in the classroom and so are useful preparation for reading and spelling.

The activities aiming at developing metaphonological abilities are presented in Section 2 of the course. In pre-school, you should only use tasks of *generation* and *detection*, the other tasks being too complex for learners of these ages.

You can introduce these tasks in a playful way, for example by introducing to the children a doll or teddy bear who “comes from another planet and wants to learn English”, as illustrated in the French film “*Dyslexia – How to weave a solid structure of support*”.

The second domain in which you can help the learners at risk to be better prepared to undertake the written language is with pre-reading and pre-spelling activities.

If you are already teaching the alphabet, do it in a multisensory way: ask the children to trace the letters in big, in the air, in sand, on the back of their classmate who has to guess the letter, etc. Teach them to “live” the letters by asking them to physically take their shapes with their bodies. Teach them to write the letters with their eyes closed, asking them to concentrate on the graphical gesture and on what they feel in their arm and hand when writing.

Whenever possible, use a wooden or plastic alphabet whose letters can be touched and manipulated. The tactile sense compensates for and reinforces the visual sense.

All of these multisensory activities and others are described in Section 3 of the course.

### **16. What is the best font for dyslexic learners?**

It is very important to distinguish reading from spelling.

Where reading is concerned, use the fonts they see in the reading materials you give to them.

For the sheets you distribute in the classroom it is best to use Arial or Comic Sans MS fonts.

For writing, the joint cursive script has been recognized as most suitable for dyslexic learners, especially if they display difficulties with motor control. The major advantage of this script is that it you do not have to lift the pen so often from the page, which makes it a fast and automatized writing system with a minimum of loss of time in trajectories and liaisons between letters. Moreover, this script allows them see the words as separate entities. It is beneficial for all the children of the classroom.

### **17. Do the indicators of dyslexia differ from one language to another?**

Whatever the language of reading and writing one will observe similar difficulties across languages, i.e. additions of letters and syllables, omissions, repetitions, inversions and substitutions.

Nevertheless, the structural characteristics of the language of instruction will induce specific difficulties which are not observed in languages with other characteristics. For example, the English-speaking dyslexic learners tend to mix up suffixing rules. Such errors are seen less in other languages like French.

### **18. What do think about the software offered to help dyslexic learners?**

A widespread conception is that the compensation software developed to help dyslexic learners may be harmful because they “do the work instead of the learner”.

The reality is a lot more complex. Compensation software is very efficient for teaching new strategies to dyslexic learners.

For example, many programs are equipped with simple tools that allow the learner to build mind maps. They are also equipped with tools which help editing. Some of them display predictive dictionaries which suggest words depending on the context of the sentence. Such a tool enriches the vocabulary of the dyslexic learner, who will learn and use words which he would not otherwise thought of.

Note that many programs can be downloaded for free from the Internet. You will find a non-exhaustive list of these in the e-Campus.

As early as in primary school, the use of compensation software must be encouraged. Such use can only be beneficial and prepares the dyslexic learners much better for secondary school, where compensation software is absolutely necessary to allow them to keep up with the tempo of the classroom.

### **19. Whom do I need to talk to when I suspect that a learner in my class is dyslexic?**

If you suspect that a learner might be dyslexic, it is important to warn the Special Education Needs (SEN) services wherever these are available, as well as the parents. Ideally, you should encourage the parents to consult dyslexia specialists. These specialists will be able to assess the child with standardized tests and draw up a diagnosis of the learner's difficulties and then determine whether he is dyslexic or not.

### **20. What is orthoptics and when is it recommended for dyslexic learners?**

The vocation of orthoptics is to detect, re-educate, rehabilitate and explore functionally visual impairments.

Researchers estimate that about 25 % of dyslexic learners display visual processing disorders. You should be particularly attentive when the learner complains about frequent headaches and when he has the feeling that the letters "are dancing" on the page, that the lines of a text "mix up with each other", and when he is "dazzled" by the contrast of the black font on a white page.

These visual processing difficulties would be related to the fact that some pathways between the eyes and the brain, especially the so-called "magnocellular" cells, would not be developed optimally. This would impede the ability to fixate words properly in order to extract the necessary information from words properly. The "magnocellular" theory of dyslexia is supported by the impressive amount of research published by Professor John Stein and his colleagues.

For children with visual processing difficulties, an orthoptic support is necessary and often very beneficial. The orthoptics will examine, among others, the ocular movement during reading and the sensitivity to the various wavelengths of the different colours.

The treatment of visual processing disorders consists in making the learner wear prism binoculars which will favour ocular fixations on words. Some learners will also wear coloured binoculars, which softens the contrast of the words written in black on the page which is often white.

## **21. Is a dyslexic learner also always dysorthographic?**

Often, but not always. Some dyslexic learners display a very good visual memory, which will allow them, despite their difficulties with reading, to memorize the correct spelling of words, even if less rapidly than their non-dyslexic peers.

The reverse situation is also possible. Some learners will show important orthographic difficulties whereas their reading abilities will be satisfactory. These are learners who are dysorthographic without being dyslexic.

This being said, in the majority of the cases dyslexic learners are also dysorthographic.

## **22. Why is the use of visualization and mind mapping so beneficial for dyslexic learners?**

Studies from brain imagery show that when reading dyslexic learners activate their left hemisphere to a lesser extent and their right hemisphere to a greater extent than non-dyslexic learners.

However, the right hemisphere is just where mental imaging and visualization in three dimensions takes place. Some say that dyslexic learners read in pictures rather than in words. For example, a dyslexic learner reading the sentence “the cow is lying in the meadow” will be able not to visualize a cow lying in a meadow whereas a non-dyslexic learner will be able to access this *semantic* information and to integrate it with the rest of the text without necessarily activating the *mental* images which correspond to the words they are reading.

The techniques of visualization and the use of mind maps make the right hemisphere work. Hence, by using these tools, you will stimulate the cerebral regions that are already spontaneously activated by the dyslexic learners.

Researchers have shown that the teaching of visualization significantly enhanced understanding and memorization skills for texts amongst both dyslexic and non-dyslexic learners.

## **23. Are there adaptations for dyslexic adults after secondary school?**

This depends on the country but more and more often in universities and higher education institutions there is a specialized service which tests to determine the needs of the dyslexic students and the adjustments to be made for evaluation.

In some countries like Belgium or the UK, students can use a computer with compensation tools both in class and during their exams. Most often, they have more time to complete their evaluation, and sometimes they receive extra support from tutors.

## **24. Are there more and more dyslexic learners in our classrooms?**

Although this is what we might think because we talk more and more about dyslexia, it is unlikely to be the case. Epidemiologic studies suggest that the proportion of dyslexic people in the population remains stable. Moreover, no factor would explain why we should see an increase of dyslexic learners in these last years.

Teachers and parents are more aware about dyslexia than in the past. Even 10 years ago the word “dyslexia” itself was not well known and we didn’t talk about this learning disability.

In the past when a learner couldn’t read or write he was sent to the farm or factory, or just didn’t stay in school.

With the advances in research and means of intervention for dyslexia children today can complete their schooling provided that they have appropriate support.

It is therefore the combination of scientific advance and the popularization of this knowledge which has made dyslexia more visible but probably not more frequent.

Another factor which could have influenced the manifestation of dyslexia is the teaching method used to teach reading and writing.

In the sixties new, so-called “global”, approaches were used to teach reading and spelling. According to these methods, the words were directly learnt as complete entities without being decomposed into their constitutive letters. The learner was supposed to discover by himself which letter corresponded with which sound in the words. However, this is precisely what dyslexic learners can not do.

We now know that these approaches are without any doubt harmful (some authors like Stanislas Dehaene go so far as to say “criminal”) for dyslexic learners.

Therefore, it is possible that many children who learnt to read and write following pure global methods have seen their dyslexia “explode” because of these methods.

## **25. Who should explain dyslexia to the dyslexic learner?**

As suggested in Section 3 of the course, you could discuss face-to-face with him to see whether he would want to talk about his learning disability in front of the classroom. If this is the case you can organize a debate around the topic starting from the testimony of the dyslexic learner. You can use a text like the “Animal story” from Georges Reavis, or any other story which exemplifies the richness of individual differences.

In all cases, it is paramount not to make the dyslexic learner feel guilty but instead refer to the neurobiological origin of his condition. The message you need to convey is that “it is not his fault”, and more, that everyone has their own “faults”. The important is to develop an atmosphere of mutual respect among the learners.