**研究報告**

# The Effects of Dyslexia on Language Acquisition and Development

Kolawole Waziri OLAGBOYEGA, PhD.**

**Abstract**

This article focuses on the effects of dyslexia on language acquisition and development and considers strategies that can be used to promote inclusive learning in the EFL classrooms in Japan. It develops a working definition of dyslexia, and enumerates its characteristics to help the classroom teacher with identification. The article examines second language acquisition from a cognitive perspective. It draws on psychological research on implicit and explicit memory and learning, short-term and working memory, attention, and automaticity. The implications for second language acquisition are discussed, and relevant applied linguistic research is reviewed. At a more general level, the kinds of cognitive learning mechanisms that have been proposed for first language acquisition, and their relevance to second language acquisition, are also considered. Finally it approaches some core issues in applied linguistics from a cognitive perspective: the role of explicit instruction, variability, and the competence/performance distinction.

## 1. Introduction

This article focuses on the effects of dyslexia on language acquisition and development and considers strategies that can be used to promote inclusive learning in the English as a Foreign Language classroom (henceforth EFL) in Japan. The process of diagnosis of dyslexia is outside the scope of this study. However a consideration of the nature of the learning difficulty is crucial to the consideration of its effects as postulated below.

The majority of the research carried out in this field has been on the effect of dyslexia on first language acquisition and therefore theories relating to the effects on second language acquisition are largely derived from that primary research. However, a study of Arab speakers living in London by Al-Sulaimini in 1990[1] showed that adult, dyslexic EFL learners share many of the processing difficulties of young dyslexic L1 learners.

Many academics in the field of language theory distinguish between acquisition and learning, for example Stephen Krashen's [2] methods of teaching have been developed accordingly. Detailed consideration of this distinction is inappropriate here but it is probably true to say that the majority of EFL practitioners in Japan nowadays adopt an informed eclectic approach to teaching methods in order to fulfil the objectives set out by the Ministry of Education, Culture, Sports, Science and Technology (MEXT), and of course, these objectives apply equally to those learners with dyslexia.

Dyslexia is thought to affect between four and ten percent of the population [3],[4] and therefore it is highly likely that all EFL teachers will have such learners in their classes. In the UK, *Access to All* [5] cites the report *"Inclusive Learning"* [6], which states that learners with learning difficulties, such as dyslexia, do not necessarily require specialist additional support in order to gain access to the curriculum. Rather, the process of teaching

and learning needs to be broadened so that such learners can be included within it. This is the approach I take in this article.

## 2.    Towards a Definition of Dyslexia

There are numerous definitions of dyslexia, the majority of which are deficit definitions. It is most commonly described as a difficulty with processing written language. For example, an early definition by the World Federation of Neurology in 1968 stated it to be "a disorder in children who, despite conventional classroom experience, fail to attain the language skills of reading, writing and spelling commensurate with their intellectual abilities". More recent research has shown that it is a complex neurological condition, which is constitutional in origin and may affect oral language skills, motor function, organizational skills and numeracy, in addition to those in the above definition.

Consequently, the traditional view of dyslexia as just a problem has been challenged and it is being defined in terms of differences in cognition and learning rather than deficits. It is not related to intelligence but may be connected with laterality and hemispheric asymmetry of the brain. Many dyslexics tend to have above-average visuo-spatial abilities and to be creative and good at multi-dimensional thinking and problem-solving. These potential abilities are as important as the potential difficulties in considering the effects on language learning and teaching as learners use global logic and reasoning strategies and can apply these in developing strategies for dealing with those problems. Research is not conclusive but Mortimore's [7] reports on the studies of Read [8] and DfES [9] is very relevant to this discourse.

## 3.    Characteristics of Dyslexia

Paulesu and Frith [10] showed that the bridge in the language area of the left hemisphere of the brain does not work efficiently in dyslexics, which means they cannot automatically translate from an auditory code to visual or vice versa. This results in phonological language processing difficulties, which may be predominantly visual or auditory. Because of this, learning to read or spell will be slower and less efficient. In addition, almost all dyslexics have short-term memory difficulties, and problems with developing automaticity

due to the energy needed in the conscious control of mental, and sometimes-physical activities.

However, dyslexia is a continuum and no two EFL learners with dyslexia will show the same type or degree of the condition, and not the same level of difficulty in the same areas [11]. And, a general awareness of the dyslexia continuum of characteristics is essential to the teacher [11]. These characteristics may include a discrepancy between ability and standard of work produced, a discrepancy between intelligence and ability to learn, a problem with memory and word retrieval, a problem with speed of reading and processing meaning – often due to an inability to break down words morphologically – and difficulties with spelling even of easy words [12]. Characteristics of these spelling difficulties include:

- misrepresentation of the sound e.g. "pad" for "pat";
- wrong word boundaries, e.g. "firstones" for "first ones";
- wrong syllabification, e.g. "rember" for "remember";
- wrong doubling of letters, e.g. "eeg" for "egg";
- intrusive vowels, e.g. "tewenty" for "twenty";
- 'b', 'd' confusion, e.g. "bady" for "baby", and
- letter reversal/misordering e.g. "lentgh" for "length", "tow" for "two" among many others.

Although such spelling errors occur with many EFL learners, it is the discrepancy between skill areas, which enable a diagnosis of dyslexia to be made. The various effects on EFL students' skills would include slow reading and poor writing skills and occasionally problems with oral expression due to recall difficulties.

As well as developing an understanding of how to identify dyslexia, teachers should be aware of the possible causes of dyslexia and more importantly of what it is not. For example, it is not related to low IQ, or class or poor eyesight or hearing. Nor is it an emotional or mental handicap. Indeed, with further medical exploration of the brain, some experts argue that this language related and at times inherited learning difficulty is mainly a result of an inability in phonological sounding while reading, probably caused by malfunction of the cerebellum [13]. Students are unable to sound out the letters/morphemes represented and hence have no inner hearing of what they are reading

with a corresponding impact on spelling. Studies show that dyslexic students' average reading speed is 130 words per minute compared to the average of 300 wpm in the rest of the population due to the laborious struggle they encounter while working out and attempting to blend the sounds of individual words [14].

The final result of this difficulty results in the student's lack of progress overall as without the ability to read with ease, students despair when asked to read and write and hence give up on knowledge in general. This creates a vicious circle of frustration in which dyslexic students are trapped [14]. It is extremely sad to think that many talented, intelligent individuals are unable to achieve their full potential due to what science may prove in future years to be the result of phonological malfunction of the brain ("Dispatches" Documentary, Channel 4, [September 2005]). This inability to recognise words knows no language boundaries but may remain undetected for longer in EFL learners due to the fact that they are learning a second language.

Building pedagogical awareness of the existence of dyslexia and the effects it may cause is an important issue in EFL teaching. If teachers of any subject at any point of the student's learning are able to identify the signs of this learning difficulty at an early stage and refer the student accordingly, then strategies may be put into place to avoid students developing low self-esteem and eventually dropping out of further studies. To some students, the diagnosis of dyslexia is a relief as they have spent years feeling inadequate and condemning themselves as failures [13].

### 4.   Effects on Language Learning and Teaching - Strategies to Promote Inclusive Learning

As with all learners, each individual has his own learning style but dyslexic learners tend to be holistic rather than analytic and to rely on visuo-spatial channels. They may respond better to a holistic/multi-sensory approach to teaching [11] which for example, could focus on teaching chunks of language in context rather than analysing and compiling lists of grammar and lexical items and more kinaesthetic and visually orientated language learning tasks [14]. However, it is essential to ask the dyslexic learner how he learns, as adults have usually developed some awareness of what is effective

for them. The individual cannot change his learning style but can develop strategies, which compensate for weaknesses and reduce the amount of processing to be done. It is essential that the Individual Learning Plan reflects this. In general, teaching needs to be multisensory in order to utilise all available channels and to reinforce learning - so the use of visual materials and prompts will help.

Due to their holistic tendency, learners are not good at learning and applying rules; they are inductive – learning from the particular to the general. This makes it difficult to use the rules of L1 and apply them to L2. (The situation is further compounded for the Japanese dyslexic EFL learners whose L1 has no direct correlation with English language). It is important therefore to make learning activities context clear and not to use un-contextualised grammar exercises, for example. When teaching grammar, it is advisable to use learners' own words and to avoid worksheets. It is important to stress to learners that their existing knowledge of all kinds is valuable and useful as they can use it to predict the content of a text, which will reduce the processing load.

Many learners have a history of failure in education and have low self-esteem. It is essential to create the conditions for success. The learning environment should not be stressful but still needs to provide a degree of challenge. Learning should be divided into manageable chunks, with frequent opportunities for repetition.

When approaching a reading text, it is essential to have a pre-reading activity, which allows learners to predict the content and if the text is lengthy it may be helpful to provide a brief, generalised passage prior to reading the longer piece to provide a bridge. This could be given before the lesson so that the learner has more time to process the material.

The majority of dyslexic learners have difficulties with auditory processing - they find it difficult to identify, segment and manipulate sounds in words and therefore making a correspondence between letters and sounds (which is crucial to the development of reading and spelling skills) is difficult [15]. They depend on the visual appearance of words and cannot utilize phonic strategies. EFL learners may also have difficulty understanding spoken language, as they are slower at perceiving the sounds within a syllable and differences between

syllables. It is therefore important to speak with plenty of pauses and to regularly sum up key points. Classroom instructions should be kept simple and repeated if necessary. Gestures and body language also assist by adding visual clues.

It is important to try to develop phonic awareness, thereby strengthening a principal weakness. Repeated sounding out of words helps to develop listening skills and word level reading and spelling skills. Particular emphasis should be given to initial sounds. By seeing a word, saying it, hearing and then writing it, a multisensory approach is being employed. Indeed when reading texts, dyslexic students should be encouraged to 'chunk' the components of a clause or phrase semantically in order to help them decode meaning more easily.

For some students, tactile approaches may be successful. For example, using individual letters to make words, using plastic or sandpaper letters so that they can feel the shapes, or tracing the shapes of words in the air to utilize motor skills.

For those with visual processing difficulties, the visual perception of print may be unreliable. The shapes may appear blurred, letters may not hold still and there may be difficulties with sequence, order and direction, making it difficult to decode words, which will inevitably make comprehension of a text difficult. Strategies to assist may include using different colour paper, coloured overlays, and plain card to track words or using a card with a window containing one line of text only. Learners may find it helpful to use highlighters. They may rely on phonological sounding out and therefore misread irregular words, realising them to fit an existing phonic schema. This is particularly likely if the L1 is a language where symbols have a direct relationship with sound.

Reading and copying from a board will be stressful, so it is better to give dyslexic learners handouts if they prefer so that their processing attention is not diverted into copying. Extra time should be allowed for the completion of reading and writing tasks or tasks should be differentiated to enable all students to participate meaningfully and positively. Teachers should be aware of the concessions that may be available to their students in exam situations including one-to-one help in reading and scribing, and extra time allowances [11].

Meanwhile, scientists studying the brain have found that dyslexic adults who become capable readers use different neural pathways than non-dyslexics [16]. This research shows that there are two independent systems for reading: one that is typical for the majority of readers, and another that is more effective for the dyslexic thinker.

Learners with dyslexia usually have difficulty with the processing and storage of information within the short-term working memory and with the retrieval of information from the long-term memory. Mortimore [7] classifies short-term memory into four components: audio, visual, procedural and semantic. It is essential to avoid memory overload and the implications for the classroom are that new language should be divided into small chunks with frequent changes of activity, as it is easier to remember what is learned at the beginnings and endings of activities. Also frequent repetition and revision are necessary.

Again, learning to spell is usually difficult because of memory difficulties. In order to develop automaticity, it is vital therefore to limit the load to a few new words at a time. Using the "look, say-cover, picture and say-write, say-check" method may be helpful. Spelling mistakes in writing should be treated sensitively with the teacher focussing on the content of the text produced rather than the surface features but concurrently assisting with some aspects of spelling.

Handwriting may be difficult for some learners who have motor integration problems but it is usually preferable to encourage joined-up writing to encourage automaticity. The use of large sheets of paper and felt-tip pens may be useful.

Writing at text level may pose problems for many dyslexics as holistic learners frequently find the sequential process of planning difficult. Encouraging learners to use mind-mapping techniques such as spider-grams may be helpful particularly if they have strong visuo-spatial skills. Japanese students are generally known to like and use mind-mapping techniques. In addition just knowing what to write may be a problem. Exposure to a range of genre styles is important to build up their personal schema. Writing frames can be invaluable, for example that of Hulme and Snowling [17], by providing a scaffold. Error analysis marking will help learners develop analytical skills and

develop their own writing.

Thinking time should be made available before class discussions and opportunity created for the dyslexic student to excel in areas in which they feel confident without making them feel different to the other students. The teacher should make full use of tutorials and ILPs with the student to gain feedback on how they feel in the class and which techniques apply equally to teachers of other subjects and at further levels of study.

## 5. Conclusion

This article has necessarily involved a broad approach to the topic. Every learner with dyslexia will be as individual as any other learner with a unique pattern of strengths and weaknesses and the effects of his dyslexia on his language learning will also be unique. The strategies suggested above are of a general nature, which may or may not be applicable to any individual but they are indicative of good general classroom practices.

Specific diagnostic tests do exist to identify the nature of individual dyslexia including: reading aloud, dictation, free writing with handwriting analysis, reading nonsense words to check phonological sounding, sequencing content in a message, checking the delay between hearing and understanding, and recalling instruction. Experts deliver these tests after referral by subject teachers and assist in giving a profile of students needs to subject teachers. However, the initial recognition of identifying the learners' difficulties in language learning is the responsibility of the EFL teacher.

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