

Using ICT Programs to Support Students with Dyslexia in Aquiring Literacy

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Abstract

Mastering reading and writing skills as the key priority for students who experience developmental disorders reading and writing or dyslexia. Learning language for dyslexic students is not easy, dyslexic students have difficulty processing language components, especially in reading and writing. Reading and writing begin at an early age, and continue into elementary school. Students learn to read and write by memorizing and repeating letters and words. However, the fact is that this method cannot always be taught for dyslexic students. Students with dyslexia are very different from students in general, they learn differently at very different levels. Some students need more support from the people around them. Dyslexic students are easily saturated if they are invited to learn to read and write. To overcome this problem it is necessary to use the Information and Communication Technology (ICT) program in learning, this program is based on digital, so that it can help dyslexic students in the field of literacy. The use of ICT programs is very supportive of literacy skills and can provide benefits to them, they can learn independently in education, work, and home environment. These programs allow dyslexic students to have the opportunity to access almost all texts. Using the program provide opportunities for dyleksia students to continue learning, and practice so that it is hoped that dyslexic students are able to succeed in writing and reading activities.

Keywords : ICT Programs, Dyslexia, Aquiring Literacy

Introduction

Dyslexia is a specific learning disorder of neurological origin, characterized by difficulties with correct reading fluency and with the decoding and spelling ability, resulting from a deficit in the phonological component of the language. The characteristics of reading both silent and oral in those individuals are marked by distortions, substitutions or omissions in

which slowness and errors in comprehension predominate. The use of technological tools opens up new possibilities for stimulating the development of reading and writing skills of the students. In recent years, the contribution of technology in the field of special educational needs has been recognized. There is growing interest in the inclusion of individuals with learning

difficulties especially dyslexia in the educational environment

Technology has been influential on human life and as key tool to help dyslexic students in the classroom. Many of the different learning experience like reading, writing, spelling, learning vocabulary, phonic skills become a smaller problem for dyslexic students when technology is used. This may be a result of appropriate speech supported software, selected hardware or tools, specific programs to support and improve memory skills, planning and organisation or Maths. Some dyslexic learners also have coordination, sequencing and organisational difficulties. This may affect their handwriting, cause learners to produce less work or take a lot longer than expected. Once they have mastered the technology efficiently, a portable device can often liberate them, allowing them to concentrate on content rather than process. Technology can increase students confidence and self esteem, also enabling students to see and hear written text on screen, repeat and review information. First practise skills that meet their needs in both pace and content, overcome barriers such as slow typing or writing speed and spelling, record and edit ideas easily using ordinary word processing, word banks, predictive and planning tools as well as digital recorders

and video cameras, plan work before starting to write and review output prior to completion and demonstrate their knowledge and ability. Many popular programs used in today's classrooms were written originally with dyslexic learners' needs in mind. They have specific students or teacher options, including the essential speech support. As with many strategies and resources designed to support dyslexia, these will benefit many students in today's inclusive classroom enabling independent working and access to the curriculum for all.

Students Language Learning And Acquisition

Even though they are related, students language skills developments is separate from their overall development. In fact, one of the indicators of cognitive development is language development. Family members, caregivers, and teachers of young learners are acutely aware of the importance of language development.

Krashen (2004) has examined language development and has differentiated the process of language acquisition from the process of language learning. Language acquisition is the natural process used to develop language a native language is often different from the the classroom

environment used to teach a second or foreign language. When a student is acquiring their native language at home, the focus is on the message being conveyed rather than the form or correctness of the language.

The term language learning is often used to describe the more formal approach to language instruction. Language learning usually refers to the language instruction that takes place in a classroom. Focus is usually on the form of the language rather than on the message being conveyed. For example, in a language-learning classroom, teacher might see children learning phonics rules-hopefully using a game format.

Teacher become familiar with the students, not only important to be aware of students' development, it is also necessary to know what they find interesting although interest as a component of motivation has not been a source of Second Language Acquisition, it is what comes to mind when teachers think of motivation. This is especially true of teacher actually aware that children who are interested and engaged in the specific lesson are less likely to be disruptive. Many experienced teachers are aware that some students who have been diagnosed with attention deficit disorders can attend to an activity for an extended

period of time if they find the activity or task to be interesting. By knowing that interest the students, teacher will be able to create engaging and motivating English lessons.

There are many ways to learn about students development and interest. Observing students both in and out of the classroom is a good way to start. The types of conversations that they have can also shed light into their cognitive development. As teacher watch students play games or engage in sports activities, try to observe their physical activities.

Looking at the ways that they interact with their peers both in and out of the classroom can be very informative. It is useful to observe whether they are part of the in group or whether they are shunned when members of teams are chosen or when they are asked to work with others in pairs or groups.

Developing Early Literacy

Reading and writing begins at birth, and continues steadily as children develop. Some people think that young children learn to read and write best of all by rote learning and repetitive drill of letters and words. However, this is not the way to learn to read and write, as rote learning works best as a way to teach memorisation of facts. It is not

effective for learning the strategies and complex problem solving required for reading and writing. Other people think that children learn to read and write best of all by being left alone and having masses of books available for them to pick up and learn from by themselves. This is also not the best way to learn, as most children require careful guidance from an adult. Still others think that all children learn in the same way, and move through identical stages at the same age, taking the same amount of time.

Fortunately, children are different, they learn differently at very different rates and some children require more support than others. Learning to read, write and gain word knowledge is a developmental process, and there are many ways to describe the phases of development. The phases in literacy development used here are: Beginning (0-3 years of age); Early-emergent (3-5 years of age); Emergent (P-Kindergarten); Early (K-Year 1); Transitional (Years 1-2); and Extending (Years 2-4) so that teachers can envisage the distance or the zone of proximal development between what children can do and more sophisticated understandings. The development within these phases is described in more detail in later chapters.

Teachers can use these phases as benchmarks of literacy development in English and to plan for future learning. The first step is to observe and identify where the child stands in terms of development. Many children develop word knowledge, reading and writing as parallel processes. For example, a child at 3 years of age may be reading by exploring the pictures in books, beginning to understand that signs and symbols in books represent a message, and attempting to write by scribbling.

A social constructivist view of learning draws on the theories of Dewey (1964) and Vygotsky (1978). Both theories view learning as social, collaborative and active. Dewey saw the classroom as replicating the community where children engage in authentic learning, playing out important social roles and learning social responsibility. Vygotsky focused on how children develop and the role of adults in leading the child's early development. Dewey (1964) saw the process of inquiry as the way by which they attain knowledge, whether it be the common knowledge that guides the ordinary affairs of our lives, or the sophisticated knowledge arising from scientific inquiry. Dewey is also known for highlighting the positive social value of education and the importance of educators, firstly listening closely to children, and then

giving them direction through activities. For Dewey the process of learning how to learn was central. Children need to explore how they learn and how knowledge develops by asking questions and then actively seeking answers. For teachers, this means encouraging children to think about their thinking strategies. This is like inviting children into learning club to better understand how knowledge is gained and how it is structured and organized.

Different Pathways To Literacy

Children develop differently, and that there is no one universal lock step linear path literacy development. However, the fact that there are possibilities of alternative pathways in literacy development can be unpredictable, as early starters don't necessarily continue to make high progress. The quality of teaching influences the child's progress in each year of school, and the literacy development. Children who start later than others can make rapid growth, but only if the teacher, the literacy program and families provide additional support (Hill et al. 2000).

The child's view of themselves as a learner certainly plays a role. The child's socio cultural identity kit, while changing and dynamic also influences learning. The fact is that being a girl or a boy in particular

communities does affect how the child views reading and writing. Even within classrooms, the social dynamics of relationships between children and between teacher and child can have a negative or positive affect on progress. Individual cognitive processing abilities are also important, as are tenacity, staying power and an individual's emotional disposition.

Special Need

Many learners in classrooms have special needs that require some sort of intervention. These need range from visual and hearing impairments to other specific problem which will impact learning. In recent years, more attention has been paid to the special educational needs of learners who are bilingual to learn additional language (Baca, L.M. & Cervantes, H.T. ,1998). Teachers of young learners are more likely to encounter special needs in the classroom for two reasons. First, the vast majority of children in the world unless they have severe disabilities, attend school. Unfortunately learners with learning disabilities may have drop out of school. Second, young learners with special needs may not yet have developed or been taught the strategies necessary to tackle academic subject. Therefore, the teacher may be the

first person they encounter who can help them learn these strategies.

While students with severe special needs will probably not be in the class without their own caregiver, teacher may have a students who is visually or hearing impaired. In addition teacher who have the students with dyslexia or an attention deficit disorder. As a teacher not a medical professional, she cannot and should not even attempt to make a diagnosis of either these conditions. However, teacher can find the appropriate strategies that can be used to help the learners with special needs.

Dyslexia

Dyslexia is a learning disability that impacts children learning their native language as well as learning EFL or ESL, (Hill,2006). The cause of Dyslexia is not known but there are known links to heredity and to early hearing loss. There is both mild and severe dyslexia. For example, a students with dylexia may confuse left and right. It should be noted that if a child left-handed, that in and of itself is not related to dylexia. Another example of dislexic behaviour may be a students who is able to read a word in one paragraph, but when the word appears in a susequent paragraph, the students is at acomplete loss. Reagrless of the degree of dyslexia, early diagnosis of the problem and

focused instruction are key. EFL teachers may find it inappropriate to provide learners with English-language literacy instruction until they mastered literacy skills.

There are contradictions and uncertainties in the research on dyslexia, there are also important convergences. First, some children, both boys and girls, have more difficulty than others in learning to read and write regardless of their levels of intelligence or creativity. When beginning literacy instruction is engaging and responsive to children's needs, however, the percentage of school having continuing difficulty is small (Vellutino et al., 1996). Second, the nature and causes of dyslexia, and even the utility of the concept, are still under investigation. Although genetics and neurology appear to play a role in reading difficulties, environment and instruction moderate that role. Evidence does not support what many take to be indicators or predictors of dyslexia, including clumsiness, fine motor problems, attention deficits, creativity, or handedness (Barth,2010). Third, dyslexia, or severe reading difficulties, do *not* result from visual problems producing letter and word reversals. Most children confuse similar-looking letters and words while learning to read. This is partly because some letters are similar in appearance and partly because

most objects children learn about are called by the same name no matter how they are oriented in space—a chair is a chair even when it is turned upside down. Letters and words are not like that—a *p* is a *p* in one orientation only. Children need to learn that orientation matters when it comes to print. Children sometimes confuse whole words (such as *was* and *saw*) because they look alike except for the order of the letters. In their early learning, children often do not use the sequence of letter-sounds in the word to help them settle to the word's identity.

Many researchers accept the idea that dyslexia reading difficulties results from difficulties in analyzing and manipulating sounds in words (Vellutino, Fletcher, Snowling, & Scanlon, 2004). These difficulties, however, do not of themselves allow us to distinguish readers with dyslexia from other readers encountering difficulties, or from younger readers with the same level of reading proficiency. Errors in reading and spelling made by children classified as dyslexic are not reliably different from those of younger children who are not classified as dyslexic. Rather, evidence suggests that readers with similar levels of competence make similar kinds of errors. This does not suggest a greater incidence of dyslexia, but

instead that some difficulties in learning to work with sounds are normal.

Students With Reading And Writing Difficulties

Contrary to the commonly held belief that learning to read is natural and easy, learning to read is a complex linguistic achievement. It is an acquired ability that requires effort and incremental skill development. Most children can learn to read if taught appropriately. In fact, scientists have estimated that 95 percent of all children can be taught to read at a level limited only by their reasoning and listening comprehension abilities. All spoken words are made up of individual sounds called phonemes. Although a word like *mat* is made of the three sounds /m/ /ă/ /t/, the human ear hears only one sound when the word "mat" is spoken. The brain, however, can isolate the phonemes and combine them with others to make thousands of words. For the most part, this process is unconscious and automatic, and human beings are unaware of it as they engage in normal conversation.

Students with dyslexia fail to attain the language skills of reading, writing and spelling commensurate with their intellectual abilities. They are also often having deficit in poor comprehension, reversal of words or letters while reading,

and difficulty in decoding syllables or single words. If a child learn to read, she or he must first become aware that spoken words are made of these individual sounds. After they gain this knowledge, they must be taught that letters or combinations of letters are the way in which we represent these sounds on paper. Most children grasp this concept easily, no matter what method is used to teach them. Although many children learn to read regardless of the method used, and a few learn to read with little or no formal instruction, students with dyslexia have difficulty learning the letter sound system unless they are taught in an organised, systematic, efficient way by a knowledgeable teacher using a well-designed instructional approach. Students with dyslexia need direct and explicit instruction to develop the knowledge and skills that underpin efficient word reading. These include an understanding of the alphabetic principle. The understanding that speech sounds are represented by letters of the alphabet and phonological awareness or the ability to segment words into their constituent phonemes.

a. The Characteristic of Dyslexic Students

Common characteristics student with reading disorder according to Daviddson (1994) includes:

- a. Difficulty identifying single words
- b. Problems understanding the sounds in words, sound order, or rhymes
- c. Problems with spelling
- d. Transposing letters in words
- e. Omitting or substituting in words
- f. Poor reading comprehension
- g. Slow reading speed (oral or silent)

Dylexia is most commonly characterized by difficulties in learning how to decode at the word level, to spell, and to read accurately and fluently. Dylexic individuals often have difficulty “breaking the code” of sound letter association, and they may also reverse or transpose letters when writing or confuse letters such as *b,d,p,q*. However, dyslexia is not a visual problem that involves reading letters or words backwards or upside down, nor are such reversal sad fining characteristic of dyslexic. Reid (2001) defines dyslexia as a combination of abilities and difficulties which affect the learning process in one or more of reading, spelling and writing. Accompanying weakness may be identified in areas of speed of processing, short term memory, sequencing, auditory and or visual perception, spoken language and motor skills. It is particularly related to

mastering and using written language, which may include alphabetic, numeric and musical notation.

USING TECHNOLOGY TO SUPPORT DYSLEXIC STUDENTS

Many popular programs used in today's classrooms were written originally with dyslexic learners needs in mind. As with many strategies and resources design to support dyslexia, these will benefit for many students in inclusive classroom enabling independent working. Teachers can identify dyslexic students and enable early intervention by using one or more of the assessment programs or tools. These are designed specifically to use in schools, and help support and confirm other assessments. A regular audit of the provision, access to and current use of technology in the classroom, is recommended as something to be done by all teachers supporting dyslexic learners. Regular use of technology in school may enable students to use it in exams, if they are eligible under access arrangements. These programs below show some of the key areas for such a focus when using technology and the benefits for dyslexic students. Such provision mapping when planning to meet diverse learning needs will ensure Dyslexic students can take full advantage of the power of technology to overcome barriers to learning, work

independently and demonstrate their true ability. Thomson (2007) explain there are two programs that can support students dyslexia in acquiring literacy:

1. Programs to Support Reading

There are popular programs to support reading in the form of electronic or interactive talking books. There are many available to choose from, both fiction and non fiction. Some support specific reading schemes others are standalone stories. Most have in built digital recordings but some can be used with Microsoft Speech. More recently there have been many texts of fiction and text books made available in electronic format to use with a variety of Text to Speech tools. Talking books allow dyslexic students to read text in a supported environment and at a pace that suits their needs. Talking books and texts will usually highlight the text as it is being spoken, in words or phrases. Many Text to Speech tools can bookmark texts and offer options to alter format (colour, font, size, linespacing and background). They usually allow users to click on any word or phrase to hear it spoken. Some will explain tricky or technical vocabulary. Many dedicated talking books to support reading schemes have additional, optional activities to support phonics, spelling, comprehension and grammar. Some include story writing

activities too. There are some smaller hand-held tools available to enable easy access to text but ensure any chosen will offer the required speech support. Kindle and similar electronic book products have many texts available with the facility. It is anticipated all electronic texts will have Text to Speech options in the future. Hand-held scanning pens can enable users to listen to more difficult individual words and phrases when help is required reading. Useful sources of interactive books include:

- Search for Interactive books, talking books and e-books. at <http://www.r-e-m.co.uk/>
- Talking Stories at <http://corp.sherston.com/>
- Clicker Books, Clicker Tales at <https://www.cricksoft.com/uk/content/clicker-tales>
- Rapid Reading, intended for schools and Rapid Plus at <http://www.pearsonschoolsandcolleges.co.uk/Primary/Literacy/AllLiteracyresources/RapidReading/RapidReading.aspx>
- Search for Learner's Library at <http://www.neptunect.co.uk/>

There are a few programs that are not stories and just focus on reading for meaning or specific reading skills. Some these programs will enable any text on

screen to be heard (Text to Speech). This may be a better solution for older dyslexic students, who wish to read a wider range of articles, for example from the World Wide Web or access texts that are from a scanner or word processor. These ICT tools can be loaded as an extra toolbar and many offer the facility to read text and pdf files. These types of programs use synthesised speech engines. Unlike the early robotic sounding voices most of the latest programs use excellent human sounding speech engines and many are available in regional accents.

For examples of useful text to speech tools see:

- <https://www.clarosoftware.com/>
- <https://www.texthelp.com/en-gb/UK/readwrite-family/>
- <https://yourdolphin.com/products/all?id=34>

Further useful sources of reading, spelling and phonic games and activities include:

- <https://www.dyslexic.com/>
- <http://www.r-e-m.co.uk/>
- <http://corp.sherston.com/>
- <http://www.smartkidssoftware.com/>

2. Programs to Support Writing

The programs and ICT tools to support writing are not like those used to support, teach and develop reading, phonics and spelling skills. These are not games and

activities but open ended software that supports dyslexic by scaffolding the production of written work.

a. Word-Processors

Word-processing programs have made a huge difference to many dyslexic students by supporting writing demand and the examination system. If the dyslexic students can type longer pieces of work or essays it removes the pressure of having to rewrite work many times over to get a neat piece of writing. Redrafting formal written pieces can be an agonising and time consuming task for dyslexic students who may not only struggle to identify technical errors in their own work but make additional errors while rewriting a corrected piece.

Word processing and editing features eliminate much of the stress of writing for dyslexic students by:

- a. Removing illegibility caused by poor handwriting and/or presentation of written work
- b. Eliminating many spelling errors (but not all – some words will be missed or unknown)
- c. Helping with the organisation and sequencing of ideas
- d. Enabling easy drafting and editing (moving written text around the page easily, using facilities such as drag, delete, copy , paste and cut)

e. Making proof reading easier by scrolling and highlighting text to be checked The font size, colour and style and line spacing can be changed easily so that those affected by visual difficulties may use a familiar and comfortable style. Features like underline, bold and italic can help with presentation, as can the addition of borders, clipart and tables to text. To begin with, many dyslexic students type very slowly and may find the movement of the text on the monitor difficult to follow. Using word-banks, grids or predictive lexicons can help them enter text more quickly but practice will soon develop greater keyboarding speed, especially once the editing and spelling advantages are discovered. Many dyslexic students never have the satisfaction of presenting a clear, well presented piece of writing, and the boost to their self esteem from using word processors can be enormous. Their work is easier for teachers to read too and this may result in positive comments, perhaps for the first time.

b. Features of Word-processors

1. Text Reading Features

Most computers now have a text reading facility and some word-processors now have this built-in. These may be adjustable and allow students to hear the words and or sentences as they are being

typed or read only at the end of a sentence. Most will read words or sections of text only when it is selected. Some programs use robotic sounding speech that can help students determine the accuracy of their text and reassure them that the content makes sense, though some students find the voices irritating or difficult to understand. Many text reading programs now offer a range of voices to choose from and these may remain available for other tasks such as reading toolbars and spellchecking menus. Browsealoud reads web pages aloud helps the dyslexic students to read online at <http://www.browealoud.com>.

2. Texthelp – Read and Write Gold

Read and Write Gold is a literacy support tool designed to assist users of all ages who require extra assistance when reading or composing text. It is designed to assist students to improve their reading and writing skills. Read and Write Gold provides study features to assist dyslexic students with research and composition. Teacher can browse at <http://www.texthelp.com/page.asp>

3. Write Out Loud

This has an onscreen word bank facility that offers lists of regularly used words or subject vocabulary. Students can

listen to the words in the list by pointing to them, then click on the word they need and it is entered into the text, saving typing time and spelling worries. Students or teachers can create subject-specific lists for the wordbanks. There are several other programs that help users to enter words and phrases quickly and save typing time. They can be used in together with any wordprocessors.

4. Spellcheckers in Word-processors

Spellcheckers in word processors can help identify misspellings or typing errors. However, many computer spellcheckers are not very helpful when suggesting a correction list. They usually suggest words that have the first two letters in the spelling error. If these letters are wrong it may not suggest the word needed - e.g. type 'sercle' and the suggestions may be serial or serve but not circle. Wordprocessing tools such as search and replace however will find repeated errors and correct them. The error (e.g. thay) and corrected version (they) need only be typed once and the other corrections will be done automatically. Microsoft Word has a facility to autocorrect common or personal spelling errors.

5. Additional on-screen wordbanks and grids

Additional on screen wordbanks and grids usually have their own speech facility enabling users to hear the words. They can offer multiple lists of words or phrases on screen, for use with any word processor. Users click on the word or phrase and it is typed automatically into the word processor. Pictures and recorded speech can be added to some wordbanks such as Clicker which is useful for younger users. Wordbar is useful for older users. These Wordbanks enable words and phrases to be entered quickly and accurately and help users with difficult or subject specific spellings. Users can create their own grids of words for personal or subject use. The cricker and ordbar programs have many useful ready-made files that can be downloaded free from their website. Cricker and wordbar program website at <http://www.cricksoft.com/>

6. Predictive programs

Predictive programs can be used to help cut down keystrokes, save typing time and aid spelling. After just one or two keystrokes, these programs try to guess which common or regularly used words the user is trying to type. It presents the suggestions in a window on the screen so the user can listen and then make the appropriate choice. E.g. Type the letter t and up to 8 or 9 common words are suggested

such as:- the, this, there, they, etc. Many of these programs have a speech facility enabling the word processor to talk too. Programs such a Penfriend XP (Penfriend Ltd), Co Writer (Don Johnson) and TEXThelp (from iANSYST) are good examples. Many predictive programs have additional facilities to make any on-screen, text speak not just in word-processors. This can be useful to use in other applications, email and internet.

7. Voice or Speech Recognition Software

Voice or speech recognition software enables users to speak the words they want to wordprocess. This may be a useful option especially for older students, students and adults. However, it may be not as easy as it sounds. It takes time and training. It is not very appropriate for use in the classroom, but can be valuable for producing extended pieces of work in a quiet environment or at home.

8. Portable Word Processors and Writing Aids

Many dyslexic students need access to a word processor much of the time, especially in the secondary curriculum. A PC or MAC laptop would be suitable for older students but a small portable word processor or laptop notebook may suit

younger dyslexic users. These may be remote keyboards that look a bit like small laptop computers with smaller screens. They can be used independently and have their own spellcheckers, but they are connected to desktop computers for more advanced editing features. There are a variety of these available and work from either batteries or mains adaptors. The best ones for dyslexic use often have full size keyboards so students can type in their text, check the spelling, transfer it to a desktop machine, save it, or print it directly. Some have additional facilities such as organisers, calculators or predictive programs.

Conclusion

ICT programs can be valuable tool to support students with special needs including those with dyslexia. ICT needs to be more widely implemented in schools, more varied programmes and appliances should be used. This utensil would be very advantageous for students with reading and writing difficulties. Many popular programs used in today's classrooms were written originally with dyslexic students' needs in mind. They have specific students teacher options, including the essential speech support. As with many strategies and resources designed to support dyslexia, these programs will benefit for many students in

today's inclusive classroom enabling independent working and access to the curriculum for all. Students with learning difficulties can benefit from the visual and auditory of ICT. It can be used to develop skills and reinforce learning in a meaningful and non-threatening manner. ICT can also be used as a personal support tool to empower students to achieve greater independence and allow for greater participation in a mainstream environment. Schools should develop these programs, so the students can take full advantage of the power of technology to overcome barriers to learning, work independently and demonstrate their true ability.

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