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“LITERACY IN LANGUAGE LEARNING WITH TECHNOLOGY”

Re-using Features of English as a Foreign Language (EFL) Materials for Special Needs Students of the Same Age Group

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Abstract

This paper identifies a lack of age-appropriate literacy software for dyslexic teenagers in Irish classrooms and investigates the features of English as a Foreign Language (EFL) software that could be helpful to dyslexic students. There are often two distinct special learner groups within the same classroom: special needs students with reading difficulties in their native language and EFL students. While there are clear differences between these two groups, there is some overlap in their linguistic difficulties, e.g. spelling. There is a lack of age-appropriate software aimed at dyslexic teenagers; most software used is aimed at dyslexic children. However, a lot of materials are available for teenage EFL students. The paper discusses a survey of teenage dyslexic students and teachers/tutors of dyslexic teenagers, which identified student needs and desired features/exercises for curriculum-focused Computer-Assisted Language Learning (CALL) software for dyslexic students that the author is developing. Results show overlap of features and exercises present in existing EFL software.

Introduction

The aim of the research is to investigate whether features of EFL software used by teenage EFL learners can be re-used by dyslexic teenagers. This paper first introduces the Irish School system, which provides the context for this research. The paper then discusses the method used to investigate which features teachers and students want to see in software for dyslexic teenagers who have difficulties with their first language, and whether these features are present in EFL software aimed at teenage students learning a second language. The paper investigates special education and EFL education policy and practice in Irish schools. Needs analysis of both special learner groups, survey questionnaires of students and teachers and software evaluation were carried out. The results of the research are then presented.

The Irish School System

The school system in Ireland is divided into primary school and secondary school. Primary school lasts from approximately age four to age twelve, at which time the student moves on to secondary school until they are seventeen or eighteen. There are 2998 primary schools and 761 secondary schools in Ireland (Dept. of Education, 2006). Within the school population, approximately 10 percent of students have dyslexia or have other difficulties with reading and writing (Dept. of Education, 2006). Due to increased immigration, there are a growing number of students who do not have English as their first language in Irish classrooms (Dempsey, 2004).

Methodology

The research investigates whether features of EFL software can be re-used with special needs students of the same age group. A literature review of each area associated with this research was carried out, including special education and EFL government policy, education policy and dyslexia. Dyslexia

training with the Dyslexia Association of Ireland (DAI) was undertaken. In order to conduct the research, the researcher carried out a needs analysis of both EFL students and dyslexic students during teaching experience as a learning support and EFL teacher in a secondary school.

Survey questionnaires were carried out with special needs teachers (21 participants), dyslexia tutors (15 participants) and dyslexic teenagers (32 participants) during the research on the design of curriculum-focused CALL software for dyslexic teenagers. CALL software is language-learning software (e.g., web-based, CD-Rom, interactive) that has lessons and exercises designed and developed for the particular needs of a target group. CALL is a means of aiding the work done in the classroom by the teacher and can also be a means of independently learning a language. CALL is most often aimed at second language acquisition but it can be applied to the educational needs of students having difficulty with their first language.

The aim of the questionnaires was to investigate:

1. What (if any) software/ICT tools students and teachers used for schoolwork?
2. What type of software/tool teachers and students would like?
3. Which features would be most beneficial and useful in this software/tool?

The survey results are discussed in the sections on addressing the needs of dyslexic students using ICT features and what is already available for teenage dyslexic students in Irish schools. Evaluation of special education and EFL software was carried out. Special education software and tools were analysed to see what tasks they allow students and teachers to perform, whether they are age-appropriate, if they have the key features mentioned in the survey results, and if they are available to schools. Dyslexic learner needs, age-appropriateness and the key features highlighted in the survey questionnaires were used as the criteria to evaluate the EFL software.

Results

The results obtained from the literature review, teaching experience, dyslexia training and survey results are split into sections on a background to dyslexia, special education and EFL education in Ireland, the needs of dyslexic students (and the types of ICT features that can be useful as per the survey questionnaires), the differences and similarities of the two special learner groups, and what software/tools are available to each group.

Dyslexia

The word dyslexia is derived from the Greek "dys" (meaning poor or inadequate) and "lexis" (words or language). The word dyslexia therefore means 'difficulty with words'. The condition is described as an inability to read at the expected level of proficiency in an otherwise bright and developmentally normal child. Dyslexia manifests itself as a difficulty in reading, in writing and spelling and expressing thoughts on paper. It can affect memory and concentration, and sometimes maths, music, foreign languages and self-organisation.

“Although visual deficits and auditory-perceptual deficits seem operative in a minority, the preponderance of empirical evidence suggests significant linguistic deficits, including impaired phonological awareness, short- and, possibly, long term verbal memory deficits that are probably secondary to basic phonological impairment, naming and word-finding deficits, mis-articulations, difficulty repeating non-words or multi-syllabic utterances, and slow vocabulary growth.”

(Snowling, 1991).

“Precursors of dyslexia observed clinically in some preschoolers include mild speech delay, articulation difficulties, problems learning letter or colour names, word-finding problems, mis-sequencing syllables, and problems remembering verbal sequences like addresses, phone numbers, and complex directions.”

(Pennington, 1991)

Special Education in the Irish Primary School Classroom

When a teacher/parent notices that a child is having problems with the teaching methods for reading, a meeting is usually set up between the teacher and parents to discuss an assessment of these reading difficulties. Parents can either pay for a private assessment with an educational psychologist or face the possibility of a current two-year wait for the (Irish) National Educational Psychology Service (NEPS, 2006). Dyslexia is diagnosed if the assessment shows a much lower performance IQ than general IQ.

Children in most Irish schools are taught in English, but the Irish language is a compulsory subject throughout primary and secondary school. A child is likely to be eligible for an exemption from Irish language lessons if they have an average IQ (92 or higher), but their reading skills fall into the lowest 10th percentile of all students. If the student's assessment results in an exemption from Irish they may be taken out of class for learning support during that time.

Depending on the severity of the dyslexia, some children may be eligible to attend special reading tuition at reading schools. Special reading schools are full-time primary schools, provided by the Irish Department of Education and Science free of charge. The regular school curriculum is followed, with the exception of Irish. The current Pupil-Teacher ratio is 11:1 in these classes, though it is to be reduced to 9:1 shortly (DAI, 2005). Children usually attend for one to two years only and then return to their regular primary school. A number of primary schools now have 'reading units' where the focus is on phonics, where one or more classes are devoted to students with specific reading difficulties. Where these are not available, students with reading difficulties are taken out of classes by resource or learning support teachers.

Special Education in the Irish Secondary School Classroom

This school-based support is not guaranteed to continue on when the student reaches secondary school. The secondary school student may have had phonics training in the early years of primary school, learning support in reading units, or extra tuition for their learning needs outside of school hours e.g. with the DAI, but there is less support available to teenagers. A government circular to primary schools outlined the criteria for the allocation of resource hours based on how many special needs students are in the school (Circular SP.ED. 08/02, 2002), but no such guidelines exist for secondary school. When the student moves from primary to secondary school, parents have to pay or wait for a new assessment if they want their child exempted from Irish in secondary school to receive learning support classes during this time. Private assessment costs 350 euro. Many parents cannot afford private assessment and so must wait for the NEPS. Meanwhile, the student will be in mainstream classes without any learning support. Once the student has been assessed and dyslexia has been identified, the student will be taken out of class (normally during Irish, but it can be during exam subjects as well) for learning support. It is often the case that students are not assessed again due to the long wait and/or expense, and are therefore not receiving the support they are entitled to.

Dyslexic students need a secure organised learning environment, which primary school for the most part provides: one teacher all day, same peers, daily recurrence of the same subjects in the same order, learning support at the same time every day. In secondary school, the student moves from class to class all day, experiences differing teaching styles of approximately nine teachers, has a much larger student group to interact with and may be taken out of classes for reading support. Dyslexic students can miss out on important elements of a subject curriculum they need for exams. There may be a stigma attached to attending reading support classes and the student can lose self-confidence and motivation.

English as a Foreign Language (EFL) in the Irish Classroom

Ireland is traditionally a country to which students from all over Europe have come to learn English over the summer at EFL schools. The majority of these schools are privately run and provide students with a full package of tuition, homestay accommodation and extra-curricular activities. The majority

of schools offer preparation programmes for the major English language examinations. An estimated two hundred thousand students came to Ireland in 2003 to learn English (Hanafin, 2004).

Due to the growing European Union (EU) and globalisation, Ireland has seen significant immigration. The number of foreign nationals living in the State is estimated to be 350,000, accounting for 8-9 percent of the population of 4.13 million currently living in Ireland (CSO, 2005). This has put the onus on the Irish government to provide EFL classes to students who do not have English as their first language. Over eleven thousand pupils or 3.3 percent of the total number of pupils registered on the post-primary pupil database of the Department of Education and Science are recorded as being foreign (non-EU) students (Dempsey, 2004).

Perhaps due to the tradition of EFL schools in Ireland, a large amount of EFL material and software is available to mainstream schools including Issues in English (Edtech, 2006) and LessonKit English (Birchfield Interactive, 2006). As there is such a huge demand for these products, prices have come down and a whole range of products are available that deal with different aspects of learning English.

EFL students in mainstream schools are taken out of class, like dyslexic students, during Irish lessons and sometimes during other classes, into a group learning support environment. In fact, it can happen that both special learner groups are taken into a group together when the subject matter is the same.

Addressing the Needs of Dyslexic Students with ICT Features

Results from the survey questionnaires carried out within this research show that 18/21 learning support teachers want software that can present a text in small digestible chunks to help students with Short Term Memory (STM) and sequencing difficulties. Information Communication Technology (ICT) tools and Computer-Assisted Language Learning's (CALL) multi-modal capabilities can take some of the burden off the dyslexic student's STM, which can be over-taxed. Due to STM and the resulting sequencing difficulties, students can lose their way in a text because they are not retaining important facts and therefore do not fully understand the text. STM and defective phonological and visual access problems can make retaining grapheme-phoneme links difficult for a dyslexic student. Results showed that students (31/32) and teachers (21/21) were in favour of the use of pictures, audio and videos, particularly text-to-speech systems that allow students to hear each word/sentence. CALL technology can strengthen the symbol-sound-meaning link with constant audio-visual revision.

Both the teachers and tutors responded that a program for dyslexic students should allow students to manipulate the text and any other materials like a word processor, to alleviate the problems caused by defective fine motor skills. CALL can address the problem of Attention Deficit Disorder (ADD). Many tasks that other students take for granted are difficult for dyslexic students due to the energy required to do it. Evidence from brain imaging suggests that children with dyslexia do not activate the left hemisphere (language centre) in the brain as much when reading as non-dyslexic readers, and that there is less engagement of the areas of the brain, which match letters with sounds (Serafini et al. 2000). However, they use five times of the overall brain area as non-dyslexic readers while performing a simple language task (Richards et al., 1999).

While 'normal' readers recognise the shape of a printed word as they read a text, dyslexic readers 'think in pictures'. Dyslexic readers break the word up into its graphemes (what the sounds looks like on paper) and corresponding phonemes (what the grapheme sounds like) and link the word's meaning to three-dimensional pictures rather than the shape of the printed word (McConville, 1998). Due to phonological problems, it is easier to picture the physical object referred to by the written word rather than the shape of the written word. As a result, reading takes a huge amount of concentration and students can lose interest and become frustrated. 19/21 of teachers, 15/15 of tutors and 32/32 of students wanted to see language games and quizzes in software to keep students interested and motivated. CALL programs can use colour, graphics, sound and kinaesthetic features to utilise multi-sensory paths to organisation and retrieval (Wahl, 1996) rather than being restricted to the textual and linear format of textbooks. 11/15 dyslexia tutors said a manual text-summarisation option was very important but only 4/15 thought this should be done automatically by the system. 14/15 said reading

software should involve authentic texts. 7/15 wanted to see memory games in a system and 15/15 wanted clear and dyslexia-friendly screen design.

Dyslexic teenagers in particular may have some negative experience with reading and the mainly textual format of school curricula from their years in school so far. While using the computer, students may not associate possible negative experiences of reading or writing in the classroom with the computer. The experience of a new and unconventional learning tool can motivate students at previously failed tasks (NCET, 1994). CALL can provide a fresh start for the student for reading and writing.

The Differences and Similarities of the Two Groups

Both EFL and dyslexic special learner groups have very different language learning backgrounds. Firstly, the special needs dyslexic students are having difficulty with their first language while the EFL students may or may not have had any notable difficulties with their first language; their difficulty is with second language acquisition. The main difficulties dyslexic students face while reading a text are sequencing difficulties due to phonological deficits. EFL students can have difficulties reading because they encounter unknown words or they lack background knowledge. Advanced cohesion (e.g. John bought a red pencil and Mary a blue one), can also cause problems for EFL students.

However, the two groups have similar difficulties with spelling, in particular, silent letters (e.g. hymn, gnome), unfamiliar words, illegibility of written text, and poorly written texts. Both groups need help with pronunciation to a certain degree; EFL students need to hear how a new word sounds and dyslexic students need to have constant grapheme-phoneme revision. Unknown words cause problems for both groups. EFL students may not have come across that spelling pattern before and dyslexic students have a tendency to miss-read non-words (e.g. torid) and unknown words (e.g. cord) as a word similar to it that they already know (e.g. ford). This happens because they do not link the new words' graphemes to the correct phonemes quickly enough and they get the grapheme-phoneme pairing confused. Illegibility causes problems for both groups, as they will not recognise a word as quickly as other readers. Poorly written texts cause problems for both groups because they do not have a clear layout and sequence.

Both groups benefit from text-to-speech systems that can pronounce every word or sentence. Presentation of the material in a clear layout and in a multi-modal fashion is imperative to both groups. As dyslexic students tend to think in pictures, it is very helpful for them to have pictures and videos (where appropriate) associated to the materials.

What is Already Available for Teenage Dyslexic Students?

There has not been much dedicated research and development in curriculum-focused design or development for teenage dyslexic students. 'Kar2ouche Romeo and Juliet' (Kar2ouche, 2006) is a program that presents text and audio from Shakespeare's play with the complete character set and a variety of backgrounds, props and sound effects. This play is an option on the Junior Certificate English curriculum in Ireland (completed at age fifteen/sixteen).

Teaching experience and teacher and student surveys carried out within this research identified three main categories of tool-technology used by dyslexic students in Irish schools: general-purpose ICT tools (e.g. word processors) available in school, speech processing tools (e.g. text-to speech) and a small number of tools that have been developed with dyslexic students and/or special needs students in mind (e.g. phonics programs, predictive text), which are usually expensive.

In some Irish secondary schools, probably as a result of a lack of funding, CALL materials for special needs primary school children are being used as a stopgap for young teenagers with learning difficulties in secondary schools because the language content is appropriate. However, the drawback to these materials is that they are not age-appropriate for a teenager.

Tools that allow students to access the text are most often used in secondary schools. Dragon Dictate (Edtech, 2005) allows students to dictate a text but it takes a long time to train the system to a student's voice so it is not very practical. Kurzweil (Edtech, 2005) allows a student to scan a text into the computer. However, both tools are very expensive and most schools do not have them. These programs can be borrowed from the national education centres for a few weeks.

What is Already Available for Teenage EFL Students?

There are many useful, inexpensive and most importantly age-appropriate programs available for use by teenagers learning English as a foreign language including Issues in English (Edtech, 2006) and LessonKit English (Birchfield Interactive, 2006). There are a large number of websites for learning English on the Internet e.g. World ESL Society, English Online, Isabelperez.com. Table 1 below shows a sample of EFL programs and web sites aimed at teenagers and points out those features that would also be appropriate for use by dyslexic teenage students.

Web sites (free)	Audio-Visual	Summarises/Organisation	Authentic text	Language games	Unknown words	Spelling	Reading& Writing exercises	Clear Layout
www.isabelperez.com	Yes	No	Yes	Yes	Yes	No	Yes	Yes
http://learn-english-today.com	Yes	No	Yes	Yes	Yes	No	Yes	Yes
Software (Discovery, 2006)								
Issues in English	Yes	Yes	Yes	No	No	Yes	Yes	Yes
LessonKit English	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Secrets – a detective mystery	Yes	Yes	Yes	Yes	No	No	Yes?	Yes

Table 1. Features of EFL programs that are useful for dyslexic students

Re-using EFL Materials for Dyslexic Students

Results from the survey questionnaires point to the needs of dyslexic students and the key features both students and teachers would like to see in a comprehension program designed for teenage dyslexic students. While EFL students and dyslexic students have different backgrounds and causes for their difficulties, there still exists an overlap between the tasks and skills both groups must master. EFL software that is available to schools has many of the features that learning support teachers would like to see in software for teenage dyslexic students; it is age-appropriate, it has linguistically simple content, it has multi-modal features such as audio, video and text-summarisation and it is a new and interesting way to work on language skills.

It is not assumed that teenage dyslexic students could use every section or feature of these resources. Learning support teachers (who may teach both special learner groups) could evaluate software that the school has already or is considering purchasing with dyslexic teenagers in mind.

Conclusion

This paper identifies a lack of age-appropriate literacy software for dyslexic teenagers in Irish classrooms and investigates the features of EFL software aimed at teenagers learning a second language that could be helpful to teenage dyslexic students. Survey questionnaires pointed out key features that are present in EFL software that would also be useful for dyslexic teenagers. This paper does not suggest that any of these systems should be used as a stop-gap for dyslexic students. Ideally, there would be more dedicated age-appropriate, curriculum-focused software for dyslexic teenagers. The research here shows that EFL programs have certain features and sections that dyslexic students of the same age group would also find useful.

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All links verified on the 15th of February 2006.