7 Using, adapting, and sharing learning resources to widen participation in language learning: a case study of Italian open educational resources for dyslexic students

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Abstract

The learning difficulty known as dyslexia affects up to ten per cent of the adult population. In current teaching practice in Higher Education Institutions (HEIs), however, there is still little awareness of how dyslexia-friendly language course materials can be created. Language learning materials, although often delivered in novel digital formats, show little evidence that new dyslexia-friendly approaches have been considered. It is suggested that this lacuna presents a challenge to language departments in HEIs and requires the provision of dedicated teacher training. This case study offers an insight from the perspective of the practitioner on how to use, re-use, and adapt existing language learning materials in ways that are designed to improve the learning experience for dyslexic learners and benefit non-dyslexic learners at the same time. The author illustrates how a set of existing Italian language Open Educational Resources (OERs) were modified and/or created by adopting a Multisensory Structured Language (MSL) approach which combines visual, auditory, kinaesthetic, and tactile pathways and utilises the structuring/re-patterning of the way information is presented and colour coding of the visual field, in order to help improve learner attention, retention, and processing of information.

Keywords: OERs, widening participation, dyslexia, multisensory language approach.

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1. Introduction

Addressing learners' differing needs and styles is a key aspect of any teaching practice aimed at successfully promoting an inclusive learning environment, which fosters and widens learner participation. This is particularly relevant in a distance/online learning environment where learners need to be able to study autonomously and independently.

The Open University (OU) has been offering courses in modern languages for over 20 years.

The languages currently on offer for OU undergraduate students (Chinese, French, German, Italian, and Spanish) are delivered using blended learning, which comprises a mix of both instructor-led sessions (face-to-face and online) and self-study. The OU's core learning material, which is created in-house, constitutes an essential aspect of the learning experience which is carefully designed to help learners develop their language skills, while also fostering the development of their autonomy and metacognitive skills.

Almost two percent of the OU language learners have declared themselves to be dyslexic; the actual percentage however might be higher, given that some learners have never been screened[2].

In 2013, the OU's School of Languages and Applied Linguistics (formerly 'Department of Languages') ran the Dyslexia Modern Language Learning (DMLL) scholarship initiative, which aimed to create a repository of knowledge on the topic of dyslexia and language teaching and learning – see Motzo and Quattrocchi (2015) for an account of the DMLL project. As an output of the project, a number of OERs for teaching and guidelines for teachers were produced and made available in Languages Open Resources Online (LORO), the OU's online open source language repository (http://loro.open.ac.uk/).

2. Data provided by the OU information office and referred to academic years 2014-15 (2015-16 and 2016-17).

The present case study, following up from the DMLL scholarship project, reports on the author's attempt to provide some practical examples on how to create and repurpose language OERs that would cater for language learners with dyslexia or other learning difficulties.

2. Literature review

As mentioned in Gallardo, Heiser, Arias-McLaughlin, and Fayram (2013, p. 4), dyslexia is a processing difference which primarily affects reading, writing, and spelling, but can also impact on cognitive processes such as memory, processing speed, time management, coordination, and automaticity. There may be visual and/or phonological difficulties and there are usually some discrepancies in educational performances (Kormos, 2012; Reid, 2009).

Although there is not yet a conclusive and definitive etiology of dyslexia, the general consensus is that it is caused by a phonological processing deficit, resulting from neurological factors (Gabrieli, 2009). All agree that it comprises a wide spectrum of learning differences. In the clinical context, where it is studied in the light of the common discrepancy between high IQ and low performance, dyslexia is defined as a disorder, deficiency, disability, or abnormality. Following Kormos (2012), however, I have chosen to refer to it as a 'learning difference'. In other words, learners with dyslexia seem to have common traits in their preferred learning style and their skills-set, which include holistic and lateral thinking, spatial and visual thinking, problem-solving ability, and creativity.

Some pivotal studies (Fawcett & Nicolson, 2008) have indicated that in dyslexics information is processed differently due to the fact that in the dyslexic brain the right hemisphere, responsible for creativity and synthetic skills, seems to be more dominant than the left hemisphere, responsible for language acquisition and more analytical skills. It is crucial therefore for teachers and dyslexic learners not only to be aware of the characteristic features of dyslexia, but also to enhance those skills which are connected to the right hemisphere of the brain and which, if properly harnessed, can foster a positive learning experience. This is

particularly relevant in the context of language learning and teaching, where on the one hand dyslexic learners may encounter difficulties in literacy skills, while on the other hand there is a tendency to structure linguistic activities in ways that are heavily reliant on cognitive functions (sequencing, structuring, abstraction, memorisation, and so on). Such functions are supported by the left hemisphere and little adjustment is made to address the needs and styles of dyslexic learners.

In the UK, around seven million people are affected by dyslexia (British Dyslexia Association, 2007; Dyslexia Action, 2009). This is ten percent of the whole population. It is also estimated that around four percent of the current Higher Education (HE) population is dyslexic[3]. However, taking into account that not all learners affected by dyslexia have been assessed or have disclosed their learning difficulty, the total number of HE learners with dyslexia might be higher than statistics would indicate.

Research also suggests that adopting an MSL approach, whereby a simultaneous combination of learning tools and stimuli is used through two or more of the four core sensory channels (hearing; saying; feeling; seeing) to enhance memory and learning of written language, has a considerable positive impact on language learners with dyslexia (Ganschow, Sparks, & Schneider, 1995).

Dyslexic learners often experience problems with visual processing or poor auditory memory or both, and therefore benefit from multisensory learning where connections between two or more sensory pathways are designed into the learning experience (Birsh, 2005; Fletcher, Lyon, Fuchs, & Barnes, 2007; Schupack & Wilson, 1997). Recently, there have been various publications aimed at promoting good teaching practice in developing or adapting dyslexia-friendly materials (Gallardo et al., 2013; Sánchez Gordón & Luján Mora, 2015).

Furthermore, in 2015, the first dyslexia and language teaching Massive Open Online Course (MOOC) from Lancaster University was launched on the FutureLearn platform.

3. https://www2.le.ac.uk/offices/accessability/staff/supporting-students-with-dyslexia/dyslexia_guidelines/dyslexia_he

3. The project

This case study reports on the DMLL project, described in the introduction, aimed at adapting and repurposing existing language OERs in order to support learners with dyslexia.

The resources described here were created by a team of two academics (the author and OU Associate Lecturer Sandra Silipo) using PowerPoint and Jing (https://www.techsmith.com/jing-tool.html) and were also saved as whiteboard files (.wbd) in order to also be used interactively and collaboratively in virtual classrooms via the Blackboard Collaborate teleconference software. PowerPoint is useful as slides can encompass objects in various formats (text, graphics, sound, videos) and allow a high degree of versatility; they can either be printed or used online. Jing is a screencast software which allows images or video to be captured and uploaded on the web.

In the next paragraph, four digital resources created for the OU will be discussed. All are compatible with both Mac and Windows and can be used with tablets or other digital devices.

Once created, all the OERs were reviewed by a Dyslexia & Disability Support expert who commented:

> "[The] sets I felt were clear in their intention. The only comment I would have is that a visual image often aids memory and that the use of colour should be distinct enough to be obvious when placed on the visual sketch pad" (Mary Smith, Head of School, Dyslexia & Support, City of Westminster College).

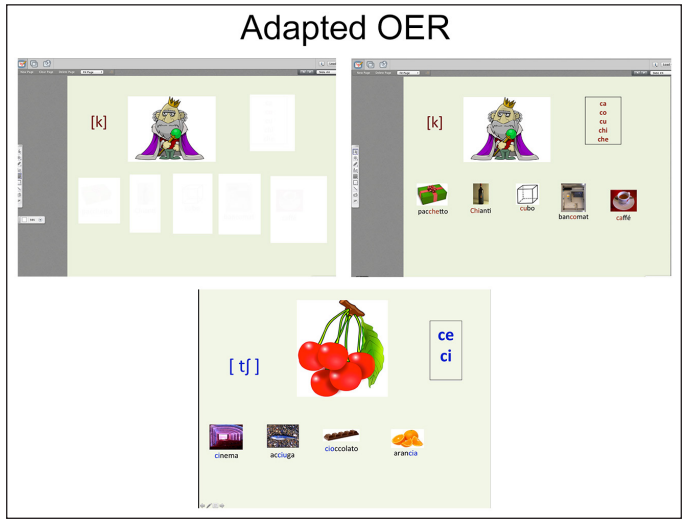
3.1. OER 1: auditory discrimination using visual and oral stimuli

Learners with dyslexia can encounter difficulties in phonological processing, meaning they find it challenging to discriminate sounds or pronounce polysyllabic words (the auditory magnocellular hypothesis, Stein & Talcott, 1999). Their poor

phonological awareness may affect speech perception and speech production, resulting in a low level of accuracy and verbal processing speed. Research indicates that problems with sound discrimination might be related to weaker phonological short-term memory (Baddeley, 1996) which appears to affect retention of new words, sustained attention, and concentration (Snowling, 2008), all of which are likely to impact on language learning. However, recent studies (Kormos, 2012) have indicated that a step-by-step programme which relies on explicit teaching, repetition, guided and structured learning, and which uses a kinaesthetic approach as part of active learning might benefit dyslexic learners.

The resources shown in Figure 1 were adapted and repurposed from an existing German resource designed to introduce four sounds in German [ei], [ie], [eu] and [au] using colour coding in order to help the learner by segmenting spoken words into phonemes and converting these phonemes into letters or combinations of letters to help them (graphemes). It made use of images in order to anchor the sound to a visual aid and help students store the sounds in their visual sketchpad (Motzo & Quattrocchi, 2015).

Figure 1. Auditory discrimination activity using visual and oral stimuli



In Italian, the letter ‘c’ can represent various sounds depending on the letters it is combined with. ‘C’ can be sounded as either a guttural hard ‘c’ [K] as in English ‘king’, or a soft ‘c’ [tʃ] as in English ‘cherry’. The two sounds may present further challenges when presented in written form (e.g. ‘in English ‘ch’ is pronounced [tʃ]’), hence explicit teaching, mnemonic and visual aids, as well as ample scope for repetition are likely to help the process of sound recognition and eventually automatisation. The English equivalent spelling ‘ch’ was included with [tʃ] so that students have the visual and auditory correspondence of the English to the Italian spelling.

The resources were created in off-white as field studies indicate that dyslexic learners find it more difficult to read black on white backgrounds (visual magnocellular hypothesis, Martin & Lovegrove, 1987, also in Kormos, 2012).

The sound ‘K’ in Italian was introduced by anchoring it with a visual (image of a king) as well as the explicit information (word ‘king’) and making use of colour coding (red) to identify the relevant phoneme-grapheme mapping. In order to avoid overloading the page, the flashcards can be uncovered one by one so that learners can practise the sound [K] in its various combinations (co/ca/cu/chi/che) as shown in the next slide. When this sound was mastered, students could move to the sound [tʃ] following the same procedure. Extended activity included discriminating between the two sounds by listening and repeating them while looking at consistently used colour-coded labelled flashcards depicting words containing those sounds.

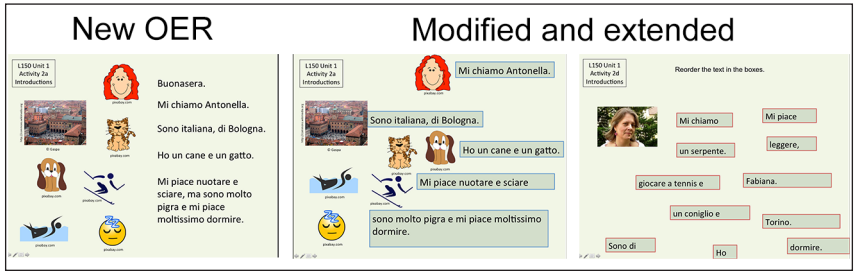
3.2. OER 2: understanding parts of speech through active learning and restructuring

Reading skills are developed on different hierarchical levels: word recognition through orthographic, phonological, semantic, and morpho-syntactic processing. It is by working across all these levels that readers achieve sentence comprehension and understanding of overall content. Vellutino (1979) pointed out that it is the phoneme to grapheme mapping that causes the most serious challenges for dyslexic learners when they read (phonological deficit hypothesis, Nicolson,

Fawcett, & Dean, 2001). The lack of accurate mapping slows down reading and causes inaccurate word-recognition. Dyslexic learners with inadequate syllabic awareness will struggle in moving from the alphabetic to the orthographic stage, thereby compromising the reading process and understanding. It is hypothesised that they will benefit from exposure to overlearning using the MSL approach as well as explicit teaching and use of colour coding in order to move successfully to the next step of reading. One way to help the process of automatisation is to elicit visual memory (anchoring sounds and words to images) and episodic memory (contextual knowledge).

The OER illustrated below (Figure 2) was designed to help students reading a short simple text using visual aids, where kinesthesis and active learning help to elicit episodic memory in the process of automatisation. An effective MSL approach here would include reading the chunks aloud while moving them around in order to reorganise/re-sequence the text. This was found to be a particularly useful means of helping learners memorise communicative phrases and expressions.

Figure 2. An example of a modified and extended OER

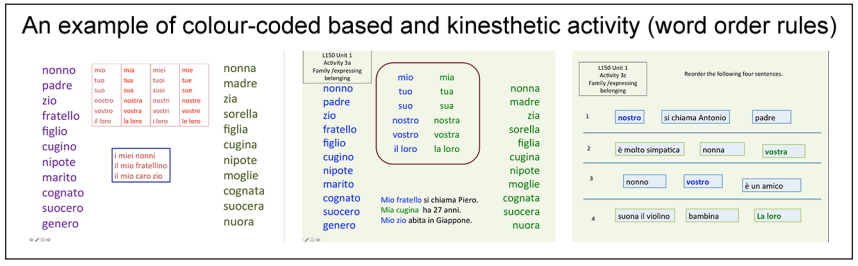


3.3. OER 3: examples of colour coded-based and kinaesthetic activities (word order rules)

Colour as an aid should be used with a specific intention and the learner should be aware of its significance. In this example of OERs for teaching possessive

adjectives in Italian (Figure 3), some existing dyslexia-friendly OERs were modified to use colour coding consistently. As for all the OERs created, the background colour of the slides was changed and also the table was simplified to show only the singular forms of the possessive adjective. We cross-referenced the activity with the course materials (top left corner) and mapped nouns and adjectives applying the same colour coding (blue for masculine and green for feminine nouns and corresponding adjectives). The last slide shows an example of the extended interactive activity in which learners work on restricting word order by manipulation, moving from controlled to free practice.

Figure 3. An example of a colour-coded based and kinaesthetic activity (word order rules)

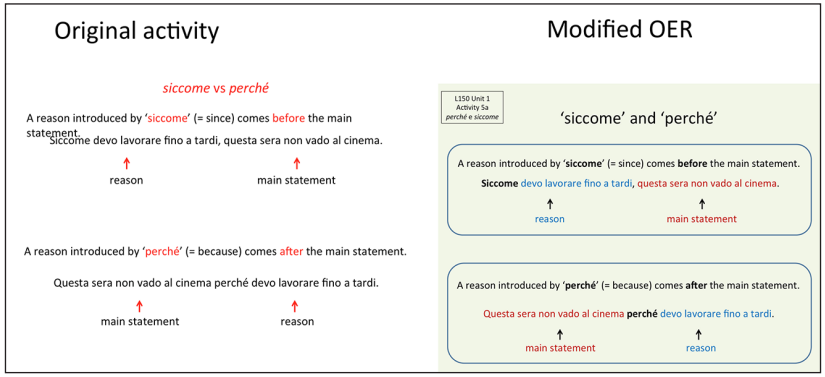


3.4. OER 4: understanding parts of speech

As in the previous example, the OER below (Figure 4) shows how multi-sensory techniques can also be applied in the teaching of grammatical structures. The colour coding of words or phrases that have different grammatical functions helps students understand grammatical concepts without using linguistic terminology (Kormos, 2012).

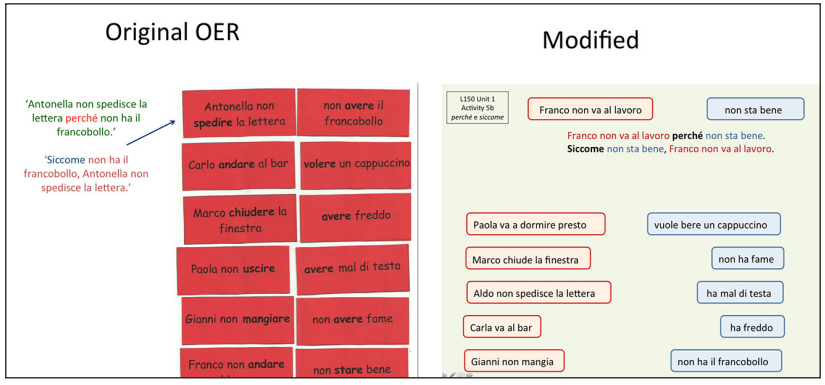
The visual shows how the original OER has been modified in order to use coding by font colours (red and blue) and style (bold) efficiently to provide learners with explicit teaching through a format of clear instructions supported by visual aids.

Figure 4. Adapted resource for part of speech



This final figure (Figure 5) shows how consistency and colour coding can be used to help learners perform more complex activities such as understanding parts of speech and restructuring. Here in the modified OERs, we simplified the task by adjusting the colour coding systematically (colour coding, off-white pastel colour background), teaching through modelling (example; cross-reference) and by changing the verb from infinitive to their correct finite form, given that the function of the activity was to work on causal sentences using connectors, rather than that of finding the correct verb form.

Figure 5. An example of the use of colour coding



4. Outcomes and limitations of the project

The set of OERs illustrates how language OERs were created, reused, and repurposed, using software such as Jing, PowerPoint, and Whiteboard, widely used in online learning and teaching, in order to address the needs and styles of dyslexic learners.

The examples described show how open educational resources can be adapted to enhance phonological awareness or facilitate reading skills hierarchy by imaginatively using the technological affordances of the selected software to promote an MSL approach.

The relevance and purposefulness of the resources were validated by informal feedback given by dyslexic learners, dyslexia support practitioners, and colleagues; any future development of the initiative, however, would require a comprehensive and systematic testing of the resources through formal feedback from dyslexic students.

5. Conclusion

This case study provides practical examples of how to create and repurpose open resources to widen participation in online language learning by addressing the needs and styles of learners with dyslexia. Based on recent studies, the author has defined dyslexia as a learning difference and has hypothesised that understanding the cognitive mechanisms of learning and subsequently adopting an MSL approach might support a positive learning experience for dyslexic learners.

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Dyslang: http://www.dyslang.eu/

Dyslexia in Higher Education, University of Leicester: http://www2.le.ac.uk/offices/accessability/staff/supporting-students-with-dyslexia/dyslexia_guidelines/dyslexia_he

OU DMLL Project The Guide to Good Practice: http://loro.open.ac.uk/3912/

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