Investigating commercially available technology for language learners in higher education within the high functioning disability spectrum

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Abstract. This work presents the assistive use of a combination of technologies in language learning to individuals with high functioning disabilities within a higher education environment. The primary aim of this research is to introduce the initial findings of a pilot exploratory user test which aims to facilitate a better understanding of the suitability and user preference of technological tools in language learning; specifically of children with disabilities. In this article, we present a case study of ten young adults with different levels of needs and abilities, including dyspraxia, dyslexia, dysgraphia, attention deficit disorder, articulation, learning difficulties and psychological problems. The learners, engaged in different disciplines in higher education, were exposed to bespoke and off the shelf solutions as assistive technologies.

Keywords: language learning, learning difficulties, technology.

1. Introduction and motivation

This paper presents a case study of young adults with different levels of needs and abilities undertaking different disciplines in higher education. The students attend an English language course in which certain technologies such as educational softwares and devices are utilized in order to facilitate their learning and enhance their motivation. The instructor is faced with the challenge of designing an English for specific purposes course and at the same time tailor it with the individual needs of students (Bocanegra-Valle, 2010). The course effectiveness depends on the content attractiveness in combination with the feeling of achievement on the part of the students.

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The teaching and learning process becomes challenging when this involves students with learning difficulties (Lackaye, Margalit, Ziv, & Ziman, 2006). Strategic planning and curriculum adaptations are thus considered essential, and making necessary changes in the curriculum enhances the learning of students with special educational needs (Ainscow et al., 2006). Based on anticipated learning outcomes, educators need to make the correct decision-making in terms of the teaching material and tools implementation (Marek, 2014). Technology has proven to be an assistive tool due to the fact that it offers students with special educational needs the ability to engage in ways in which adapts to their individual needs and abilities (Edwards, Blackhurst & Koorland, 1995 mentioned in Fernandez-Lopez, Rodriguez-Fortiz, Rodriguez-Almendros, & Martinez-Segura, 2013, p. 22). Educating students with special needs can utilize technology to increase their focus on tasks to be performed (Fernandez-Lopez et al., 2013, p.78). Kukulska-Hulme and Traxler (2007) suggest that mobile technologies amplify all kinds of learning including "personalized, situated, authentic and informal learning" (cited in Jones et al., 2013, p. 22). That is to say, mobile technology learning has been successfully implemented in location based inquiries where learners were asked to explore their educational environment and take an active role in their own learning.

However, what needs to be taken into consideration for students with special needs is that educators should seek for technological devices or softwares which are simple and user-friendly (Marek, 2014). It has been found that 'text-based synchronous activities' may disadvantage those with disabilities due to their difficulties in reading, writing and spelling (Woodfine, Nunes, & Wright, 2008). In contrast, the findings highlight that the specific learners are more comfortable in composing a text due to the nature of an asynchronous environment than in not immediately having to respond, which enables them to both prepare better as well as feel less rushed to provide a response (Woodfine et al., 2008). Technology and the internet have also been applied in teaching Languages for Specific Purposes (LSP) in a way that they have generated tools which assist in providing students with a realistic experience in terms of their social perspective of things (Arno-Macia, 2012).

2. Methodology

The course lasted for one or two academic years (nine month period per year) with students in groups of two to four receiving two sessions a week, between one to two hours. The course began with one-to-one meetings with the students, after a liaison with the educational psychologist, where they were assessed by

being asked to write about themselves. This assessment includes an evaluation of their abilities such as handwriting, spelling, structure and language level. After completing the individual assessment, a discussion is initiated between the professor and the student which enables the professor to gather further information concerning the students' English language experience, diagnoses, level of support they have received as well as its effectiveness and difficulties they would like to report on. This material is then used to match the students' individual requirements with their learning expectations and also match appropriate technologies to each group. In order to engage the students and improve the learning process, a series of technologies are implemented in the classroom environment to involve the students in individual activities.

The assistive technology tools adopted by the instructor included Google Drive and Google Sites for uploading and sharing classroom material and assignments, PowerPoint and Prezi which served as presentation tools, Wordle, QR codes and Instagram for reading and vocabulary purposes, Glogster for producing written work, Kahoot software for revising the course material before the midterm and final exams and Pathbrite for creating an E-Portfolio at the end of the semester. It should be noted that the Bring Your Own Device (BYOD) system was followed in class through which learners accessed the lecture work and material via their laptops, iPads or smartphones. In order to gather data from our participants, a questionnaire was implemented with questions relevant to the course design. The questionnaire was handed out to the students at the completion of the semester. It comprised of fifteen questions including both open and close-ended questions. The questions revolved around three main themes: (1) the learnability of the technologies, (2) the usefulness of the technologies, and (3) the usability and user satisfaction of the technologies. Likewise, also examined was whether they feel their English had improved during the semester.

3. Findings and discussion

3.1. The learnability of the technologies

Most of the learners (seven out of ten) commented on both the Google Drive and Google Sites being user-friendly and practical since by the end of the course they became accustomed to their use. However, Wordle seemed to have had a negative impact on the students who expressed their difficulty in tracing the words and explained that the jumbled characters were really hard to recall. Likewise,

Glogster was deemed 'user unfriendly', thus learners found it extremely difficult to experiment with its format and tools. Nevertheless, there was an agreement among students (eight out of ten) in the ease the Pathbrite E-Portfolio provided them with.

3.2. The usefulness of the technologies

This theme revolves around the idea of utilizing technologies with effective learning tools. There was a consensus in the participants (nine out of ten) who stressed the significance of PowerPoint during the lecture due to the fact that it contains all the keywords and important details in combination to audiovisual material (pictures, videos, etc.). Based on the learners' comments, QR codes turned the whole learning experience into an enjoyable moment through which students became more motivated to learn. Surprisingly enough, Instagram was thought to be quite monotonous and six out of ten students stated their lack of interest in using lecture-related hashtags. Conversely, all learners showed a great preference towards Kahoot which they stressed had boosted their memory and therefore developed their learning. Generally, the results interpretation highlights that the use of mobile devices and computer software increased the participants' confidence; both their linguistic knowledge and technology skills have been developed.

3.3. The usability and user-satisfaction of the technologies

This category was created to refer to the pleasure the technologies offered the participants. The majority of the students (eight out of ten) found Google Drive and Google Sites extremely convenient even though at the beginning of the course only a few of them used a Google account. For this reason, they expressed their preference for using Google Drive for storing documents and files in general. Prezi undoubtedly outweighed PowerPoint since, according to eight out of ten students, "it is more attractive and memorable". Equally, QR codes were awarded as the most enjoyable and effective technology medium and all learners were engaged in the activity. Finally, a great number of students (seven out of ten) enjoyed creating the Pathbrite E-Portfolio due to the fact that they could gather all their assignments and course work in one folder.

4. Conclusions and future work

In this paper we presented a series of technologies to students with disabilities and encouraged their use throughout a language learning course. We report on initial findings which provide us with evidence of usage and user satisfaction of

the technology's use. We aim to build from these findings an initial framework of technologies that can be promoted for language learners with disabilities through longitudinal and larger scale structured testing.

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