I. E-LEARNING AND SMART LEARNING ENVIRONMENT FOR THE PREPARING OF NEW GENERATION SPECIALISTS

TRAINING IN DIGITAL LITERACY FOR LABOUR MARKET: E-LEARNING FOR YOUNG PEOPLE WITH DISABILITIES

Maria Potes Barbas, Pedro Matos
Higher School of Education of the Polytechnic Institute of Santarem
mariapbarbas@gmail.com, pedro.matos@ese.ipsantarem.pt

Abstract: *The present paper consists in demonstrating a good practice experience on how distance learning can be a beneficial learning aspect for young people with disabilities through the implementation of an innovative training course in digital literacy for the labour market. Therefore, it presents the structural thought behind the development of the training, the adopted e-learning model and how these elements provided an adapted and flexible pedagogical environment for the aforementioned target group.*

Keywords: E-learning for the disabled; Digital literacy; Innovative training course; Labour market; Digital platform

INTRODUCTION

The limitation of young students with disabilities is still an upcoming challenge towards nowadays society. In fact, according to Eurostat and the European Health and Social Integration Survey (EHSIS) latest statistics, there are around 70 million people with disabilities aged 15 and over across Europe (Eurostat, 2015). Only 11% of these completed the tertiary level of education or, in other words, attended higher education training. These numbers are alarming, the more that most of these young people are early leavers or dropouts within the Higher Education system. This statement is verified since the target group suffers from high disparity when compared with regular higher education students. This is mostly common to happen because the former group have barriers to accessing higher education courses. The factors that lead to this disparity are mainly personal ones, such as

low self-esteem, disadvantaged backgrounds and other discriminatory aspects that young people with disabilities suffer from. In addition, there are also other key factors such as the limitations that are brought by longstanding health problems, e.g. the Down syndrome, or Trisomy 21. Besides this initial analysis the World Report on Disability emphasises the importance of providing education and training that would allow a broader building training capacity and the introduction of adapted curricular content in order to reduce the disparity between regular students and those with disabilities (WHO, 2011). In addition to the several pinpointed barriers and analysis there is also another important issue that needs to be addressed, which is the digital literacy competences of young people with disabilities. Currently it is important to have, at least, basic knowledge in ICT (Information and Communication Technologies) skills to be integrated towards the digital society. Once again, for people with disabilities having a basic set of skills of digital competencies is an opportunity to become more independent, self-aware and even competitive towards regular individuals. For young people with disabilities the concept of "independence" is one of the most perceived aspects. Henceforth, the use of pedagogical and learning models such as e-learning these perceptions could become a daily reality generating new opportunities in their social, professional and digital contexts (Mikołajewska & Mikołajewski, 2011). Hereupon, it is important to understand that all these identified challenges are clusters under a specific frame. This frame corresponds to a set of several European priorities identified by the European Disability Strategy 2010-2020 which is a programme adopted by the European Union. This specific action is focused on eliminating barriers in the fields of accessibility, participation, equality, employment, education and training, social protection, health and external action. As for the field of education and training, it is intended to promote inclusive education and lifelong learning for young people with disabilities allowing them equal access to quality education (EC, 2010).

Therefore, to address and combine the identified European priorities and challenges this paper will present an innovative solution which consisted in a higher education training offer in digital literacy for the labour market. This training covers either the basic concepts of ICT and the integration of young students with disabilities towards the labour market with the use of distance learning. Thus, this section will make it possible to understand the choice of e-learning as pedagogical model and its benefits for the training of the young students with disabilities. In addition, it also includes an in-depth analysis of the methodological process and the different steps of development: background, idea, target group, resources, tests and final adjustments. Finally, it will discuss the potential of e-learning and the different impact levels with regard to different contexts: accessibility; flexibility; interoperability; cost efficiency and technology.

1. EXPERIMENTAL CONTEXT: OVERVIEW

1.1 The training Digital Literacy for Labour Market

Before any kind of analysis or explanation of what was developed and implemented in the context of digital literacy competencies, labour market inclusion and the connection with distance teaching resources it is important to mention in which context this experience was conducted. This training was originally established by a partnership between two Spanish institutions (Autonomous University of Madrid and Prodis Foundation) that since 2002 have been conducting a specific training programme for young people with disabilities (Gasset & Herrero, 2016). This programme is structured in two different formats: the *Avanzas* programme and the *Promentor* programme. The *Avanzas* programme is responsible for the initial integration of students with disabilities into higher education contexts providing the required support for the early access of these students. The other is *Promentor*, which follows the *Avanzas* and is responsible for the integration of young students with disabilities towards higher education (e.g. Universities). However, this context was only identified in Spain and in other remote countries such as Canada or Australia. Therefore, a team was assembled which comprised higher education's institutions, companies, governmental organizations and other entities that decided to implement this type of training offer for young people with disabilities in Portugal.

It is the responsibility of higher education institutions to institute inclusion policies and to eliminate exclusion actions, valuing activities based on respect for diversity, considering the role they play in throughout the history of society. At present, the access of young people with SEN to higher education is one of the greatest challenges to the inclusive education system in Portugal. In the transition from compulsory education to higher education, students with special needs lose all support structure put at the disposal of the Ministry of Education, for primary and secondary education. In teaching support for students with special needs is, with rare exceptions, too fragile.

According to the Final Report of the Working Group on Special Needs in Science, Technology and Higher Education (GT-NECTES) of November 2017, the framework of students with Intellectual and Developmental Difficulty (IDD) in higher education is one of the topics that has generated a great deal of discussion at present, resulting in the following recommendation: to carry out a study on the subject, in which the possibility of HEIs providing non-degree training to this group of students is measured. This recommendation ponders the experience of other countries, so this possibility should also be considered in Portugal.

That said, one of the aspects to be considered about this training is that it does not provide a higher degree diploma, despite being held at an Higher Education Institution (HEI), However, it allows for a professional certificate and integration in a paid internship. Nevertheless, in the structuring phase and given the political and pedagogical restrictions it was understood that the training in "Digital Literacy

for the Labour Market" would not directly benefit from academic progression. It was created for the purpose of empowering young people with disabilities with a set of personal, labour and digital skills that give them more opportunities in their daily life and in the different social contexts (job market, entrepreneurship, etc.). Thus, this training presents itself as a unique and innovative training offer in Portugal, including a diversified programme of learning content and the possibility of attending in E-learning format.

In line with this framework, it also addressed the need to increase the number of students in technologies, since according to the results of the National Survey on the support granted to students with special educational needs in higher education by area of study, it is pointed out that 24% of students with SEN are attending courses in Law, Social Sciences and Services, 17% in Technologies and 14% in Economics, Management and Accounting (Pires, Pinheiro & Oliveira, 2014). It should also be noted that this training was proposed and is included in several strategic axis such as the National Reading Plan 2017 Strategic Plan for Science, Technology and Education in the point of Education for Inclusion. This training is then a way of responding to the need to make higher education accessible to all.

1.2 Aims of the Training in Digital Literacy for Labour Market

The training is aimed at young people with intellectual and developmental difficulties with a degree of incapacity equal to or greater than 60%. It is an innovative and supportive program, the most important feature of which is that it is the first model of inclusive education in the context of higher education for the intellectually disabled. This makes it a reference and training model for other experiences, its main characteristic being the personal development, well-being and social and labour inclusion from the higher education environment.

Lastly, this training has the following fundamental objectives:

a) To apply autonomously the concepts, theories and principles acquired in solving problems and decisions, in new work environments, or in unfamiliar environments;

b) To acquire social-labour skills promote growth as full citizens;

c) To respond to requirements and perform tasks appropriately with the combination of cognitive skills and practices, knowledge, motivation, values, attitudes and emotions;

d) To facilitate the acquisition of skills in the use of digital literacy to effectively solve problems and perform tasks using different tools in the work context;

e) To facilitate the acquisition of flexibility, understood as an ability to adapt to change and as a prelude to the critical capacity to analyse the work itself;

f) To maintain enthusiasm for lifelong training;

g) To facilitate the acquisition of the necessary training in order to enable young people to compete for different offers (adapted for people with intellectual disabilities) and obtain employment in public administration agencies;

h) To increase disabled people's active participation in the university environment, putting into practice a value system that promotes coexistence through satisfactory interpersonal relationships.

2. METHODOLOGICAL CONTEXT: OVERVIEW

2.1 The E-learning methodological process

What has already been explained is the idea behind the training in digital literacy for labour market and which aspects this course covered in the social, pedagogical, professional and digital inclusion of young students with disabilities. Nevertheless, it is important to understand how the e-learning processes fit as one of the learning models for this training. The e-learning methodology in this training offer was introduced as an interactive method of education allowing the use of several digital media (video, image, sound, rich text, games, etc). The possibility of using e-learning technologies for the learning process is an opportunity to empower students with different levels of disability, since distance learning can be seen as an enriching and stimulating environment (Kelly, Phipps & Swift, 2004) for different types of learning processes. Therefore, a synergy was developed between the technology and pedagogy by combining these two elements into the concept of a Web-based Virtual Learning Environment (VLE) (Kelly, Phipps & Swift, 2004). In this case, a web platform was developed that permitted a wide range of activities which involved adapted learning modules, flexible guidelines, video tutorials, audio tutorials, step-by-step educational contents and digital applications. Therefore, in terms of definition this platform can be compared with a combination of a Moodle virtual space or a community of practice in online learning, such as the Coursera platform. However, this platform has its own components for an adapted and flexible training via e-learning.

Thus, this e-learning platform allowed the young students with disabilities a set of interactive, adapted and flexible possibilities since they could learn by having a computer or tablet and internet connection. Therefore, this digital solution enhanced other practices being these:

a) The possibility of home education for those who have reduced mobility or less opportunities to personally attend the higher education institution;

b) The possibility of enrolling in several learning units or educational modules, since this training is divided into two years – four semesters it has different contents which cover social, labour and technological competences;

c) The flexibility of having content adapted to the interests of the students;

d) Access to a wide range of multimedia learning resources like explanatory videos, tutorials, guidelines, audio exercises, digital games and other elements;

e) The usability, interoperability and accessibility of the platform and integrated e-modules being able to be personalized or individually taken by any student with disabilities.

Having identified the abovementioned practices it is important to mention that e-learning is a process, a way of learning, and not an individual event to occur (Kelly, Phipps & Swift, 2004). The described aspects in this paper are defined as an E-learning experience which is capable of providing a flexible learning to different types of disability. It is not only a web-based platform but an illustration of an innovative and adapted pedagogical context that allows a big range of young people with disabilities to learn at their own pace.

As it was previously mentioned, this training offer has several electronic learning modules or e-modules, including: (i) Communication and customer service; (ii) Development of values; (iii) English; (iv) Atelier accounting; (v) Literacy in Information Technology and Business Communication; (vi) Business organisation; (vii) Professional Profile Construction; (viii) Business Skills Development; (ix) Introduction to Learning Concepts; (x) Emotional Development; (xi) Motor Skills Development; (xii) Quality of life; (xiii) Information Management and Data Handling; (xiv) History, Culture and Art and (xv) Labour Relationships. This wide range of e-modules is justified since they cover several aspects of fundamental training for young people with disabilities, e.g. the social, communication, cultural, technological, professional and pedagogical contexts. The way it functions towards the e-learning web platforms is that each of these modules has an adapted guideline with a step-by-step content tutorial and supporting audio/video, this way reaching several types of learning disabilities. Besides these elements, there is also a set of pedagogical and methodological guidelines that support the development of the e-modules for each student to know what do to, how to do and to address possible doubts. In addition, there is also an online forum for specific questions or doubts that may appear. Concerning the multimedia resources, all the videos are narrated and have subtitles. Besides this, they also have a model explaining step-by-step what actions need to be followed in order to complete tasks. For example, in the e-module related to "(v) Literacy in Information Technology and Business Communication" there is a human figure explaining how to work with a computer, peripherals, browse the internet, conduct basic search, etc.

2.2 The chain of events of the methodological process

After this explanation it is possible to understand that the methodological approach behind the e-learning is mainly an adaptive, flexible and interactive. Specifically, one which allows the pedagogical enhancement of either the learners with

disabilities but also the trainers interact with them and who are responsible for administration and support on the e-learning platform. That said, the importance of having accessible e-Learning guidelines for each e-module or learning step is one of the most important features in distance learning. It is not only a chance to provide personalized and adapted content but also to make such guidelines available in place to quickly address any problem, decision or the inaccessibility of any other e-learning tools, which is an highly recommended practice (Fichten et al., 2009).

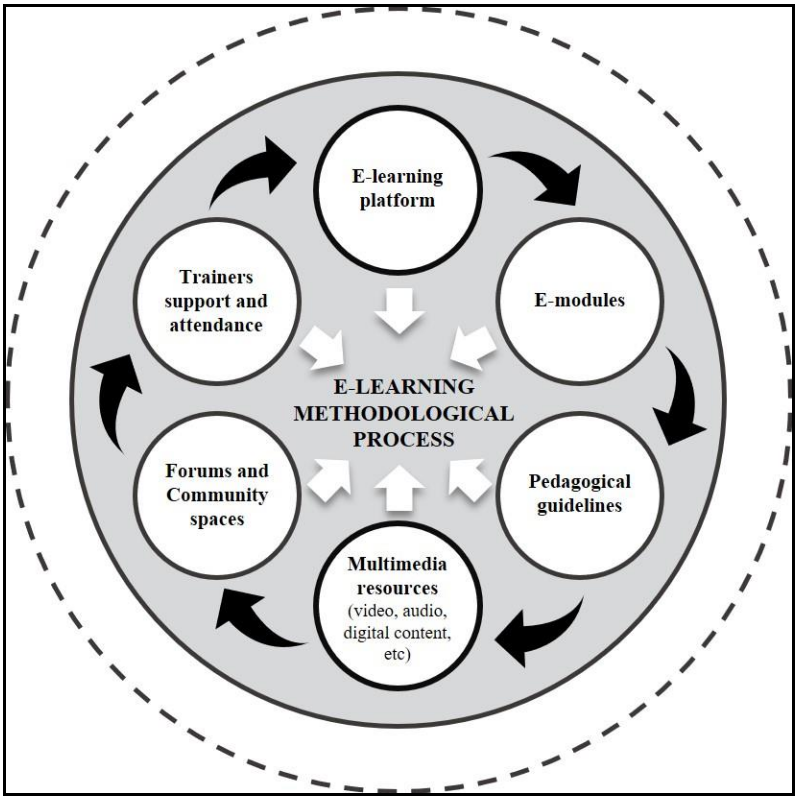

Figure 1. E-learning methodological chain of process

Source: Own work based on Mikołajewska & Mikołajewski, 2011

As it is possible to perceive in the figure 1 above, the methodological process followed a circular sequence which started by having an E-learning platform. The platform involved several e-modules that were supported by pedagogical guidelines. All the developed content found in the platform featured different multimedia resources, including video, audio, step-by-step tutorials, image and other digital media to address all the needs of students with disabilities. In addition, there are also forums and community spaces to promote discussion and interaction between trainees and trainers. Lastly, it is important to mention that the implementation of e-learning technologies allowed trainers to give continuous and

monitored support as well as personalized attendance to each one of the students with disabilities providing adapted solutions to the needs of each student.

Thus, thanks to the analysis of the scheme it is also possible to understand that the process is linked and dependable on each previous element, since e-learning formats like this one are either asynchronous or synchronous in terms of communication tools and a chain of events. Moreover, following an idea of ontology-based e-learning system architecture (Nganji, Brayshaw & Tompsett, 2011) it is important to mention that this methodological process presents information and presentation components, knowledge representation components and even information retrieval components as well as management components. Therefore, it allows broader personalization, adaptation and flexibility to benefit from the pedagogical aspects of the e-learning format induced in the training offer. It was realised specifically by presenting alternative formats for the learning materials, accommodating different learning styles and levels of acquiring knowledge and still provide a vast range of accessible learning resources (Nganji, Brayshaw & Tompsett, 2011).

3. OTHER RELEVANT ASPECTS

In this section there will be addressed some other aspects that were considered relevant. One of them it is about the use of digital games as learning aids within the e-learning platform. It was perceived that young students with disabilities had a more enjoyable experience when some of the activities included digital games, e.g. Making digital puzzles (matching images with sentences or words) or guessing which activity was presented (e.g. a profession, lifestyle, props or other aspects related to the labour market. These exercises were sometimes included in several e-modules and demonstrated a high level of approval within the students. Other important aspect was the use of tablets instead personal computers or laptops. It seemed that for some of the students who suffered from physical disabilities that the tablets were easier for them to use when interacting with the platform and the digital media, since it allowed touch and increased interaction. The use of tablets in e-learning scenarios could be even more useful since it presents an opportunity for a multipoint interaction in which objects can be “felt” with all fingers (Hollier, 2004). Therefore, presenting the idea that the student emerged in the interaction between the e-learning platform, digital media and content.

CONCLUSION

In conclusion the importance of distance learning promotes a set of solutions and resources for people with disabilities or with disadvantaged backgrounds to have the opportunity to acknowledge and develop personal, social, professional, pedagogical and technological skills. Moreover, the fact that E-learning serves as an alternative to face-to-face teaching breaking down some of the barriers that

many of these young people with disabilities suffer (discrimination, academic inequality, professional and social devaluation, etc.) and allows an even greater added value. In addition, it enables an educational format which is highly capable, credible, accessible, flexible and adapted to different target groups with disabilities. Another positive aspect that can be concluded is that these types of E-learning platforms integrate a diverse set of multimedia resources, integrating learning guides and tutorials that support each activity or task to be developed. It is also possible to conclude that this type of solution does not only benefit trainers and trainees, but also the community inherent in this type of process, i.e. parents, other educational institutions and even non-governmental organizations.

As for the constraints to this type of project they were mainly economic factors which initially were considered high, since the cost of maintaining an e-learning platform of this type can, sometimes, cause some financial damage to the institutions that promote this type of initiatives. Then, there are also other organisational problems since some of the students do not meet the social and technological conditions to join this type of training, requiring a strengthening in pedagogical efforts to support the proper implementation of this type of course.

As for improvements, we refer to the fact of expandability since this experience addressed a set of actions which are outlined as priorities by the European Commission to make education and training more inclusive. Although this good practice has been implemented at a national level and has had a certain type of impact on organizations, stakeholders, policy makers and other advisors, it is crucial that these initiatives become strategies to be adopted at an international level to generate a sustainable impact between institutions, trainers, trainees and other stakeholders. In fact, e-learning as a form of distance learning and integrating element of young people with disabilities has an enormous potential to become the training model of choice.

REFERENCES

Article in a journal:

Fichten, C. S., Ferraro, V., Asuncion, J. V., Chwojka, C., Barile, M., Nguyen, M. N., … & Wolforth, J. (2009). Disabilities and e-learning problems and solutions: An exploratory study. *Journal of Educational Technology & Society, 12(4), 241.*

Izuzquiza Gasset, D., & Rodríguez Herrero, P. (2016). Inclusion of people with intellectual disabilities in university. Results of the Promentor program (UAM-PRODIS, Spain). *Siglo Cero: Revista Española sobre Discapacidad Intelectual.*

Kelly, B., Phipps, L., & Swift, E. (2004). Developing a holistic approach for e-learning accessibility. *Canadian Journal of Learning and*

Technology/La revue canadienne de l'apprentissage et de la technologie, 30(3).

Mikołajewska, E., & Mikołajewski, D. (2011). E-learning in the education of people with disabilities. *Adv Clin Exp Med, 20(1), 103-109.*

Nganji, J. T., Brayshaw, M., & Tompsett, B. (2011). Ontology-based e-learning personalisation for disabled students in higher education. *Innovation in Teaching and Learning in Information and Computer Sciences, 10(1), 1-11.*

Article online:

Hollier, S. (2004). DIGITAL DISABILITY An Examination Into The Effectiveness Of Multi-Modael Interfaces for People With Disabilities. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.651.9773&rep=rep1&type=pdf (accessed 22 July 2018).

Report online:

World Health Organization. (2011). World report on disability. *WHO Library Cataloguing-in-Publication Data*. Retrieved from https://www.who.int/disabilities/world_report/2011/report.pdf (accessed 19 July 2018).

Blog/Web Page:

Commission, E. (2018). Persons with disabilities - Employment, Social Affairs & Inclusion - European Commission. Retrieved from http://ec.europa.eu/social/main.jsp?catId=1137 (accessed 17 July 2018).

Eurostat. (2015). Disability statistics - barriers to social integration, web page post, 8 January. Retrieved from http://ec.europa.eu/eurostat/statistics-explained/index.php?title=Disability_statistics_-_barriers_to_social_integration (accessed 23 July 2018)

Eurostat. (2014). Disability statistics - access to education and training, web page post, 8 January. Retrieved from http://ec.europa.eu/eurostat/statistics-explained/index.php?title=Disability_statistics_-_access_to_education_and_training (accessed 25 July 2018).

Conference proceedings:

Pires, L., Pinheiro, A., & Oliveira, V. (2014). National survey on support for students with special educational needs in higher education. *Seminar Inclusion in Higher Education - 10 years of the Working Group to Support Students with Disabilities in Higher Education*. Retrieved from http://www.gtaedes.pt/estudo-e-publicacoes/ (accessed 16 July 2018).