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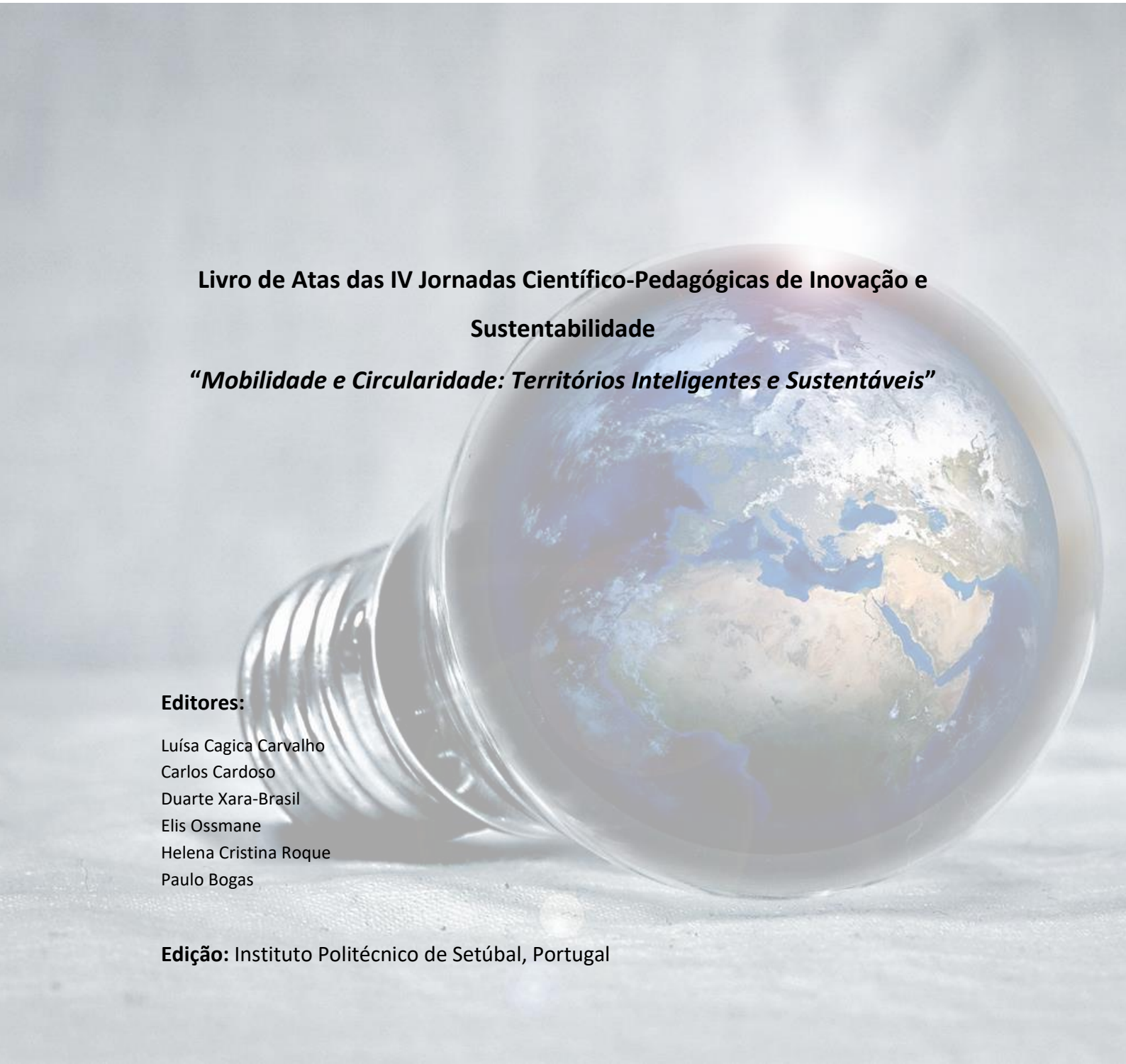

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"*Mobilidade e Circularidade: Territórios Inteligentes e Sustentáveis*"

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A Digital tool to Teach Circular Economy. An Outlook about Consumption Module in DiGiTOOL to CE

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Abstract

This research aims to discuss which topics must be considered to develop an innovative online module course focused on consumption in the perspective of Circular Economy. The course itself will help Higher Education Institutions to implement digital education solution into their curricula.

The Erasmus + DiGiTOOL_to_CE project - Inclusive Digital Education - a Tool to Understand Circular Economy includes European experts from Albania, Italy, Latvia, Lithuania, and Portugal that are cocreating different modules on the subject. This process includes content development, e-course implementation, test on students and revision of the e-course module.

The development of a comprehensive and coherent course, using a digital platform and including contributions from a diverse group of experts from different backgrounds and nationalities is a very complex task, especially with all the current travel and physical interactions restrictions related with COVID-19. It was thus necessary to use adequate platforms – as MIRO – and common templates for modules and storyboards, in apparel with a systematic interaction between all the members.

This experience shows the potential to use all existing know-how and technological infrastructure for the development of the competencies in different research areas and improve our interaction skills in this international and mostly remote environment.

Keywords: Circular Economy; Digital tool; Consumption; Inclusive; Education

Introduction

Climate change and environmental degradation are among the world's greatest challenges. By 2050 we will be consuming the equivalent of almost three planets and waste generation is expected to increase by 70% (EC, 2020). To overcome these challenges, the circular economy (CE) is an essential new concept and will revolutionarily change the existing business. It encompasses the overall activities within the scope of the reducing, reusing, and recycling materials processes, as well as the distribution and consumption of these materials (Carvalho et al, 2020).

Studies have examined the importance of CE practices to the United Nations (UN) Sustainable Development Goals (SDGs). The findings of Schroeder et al. (2019), for instance, have shown that among the 17 interrelated goals of the Agenda 2030, CE practices can mostly contribute for SDG 6 (Clean Water and Sanitation), SDG 7 (Affordable and Clean Energy), SDG 8 (Decent Work and Economic Growth), SDG 12 (Responsible Consumption and Production), and SDG 15 (Life on Land). Moreover, within the agreement of European Green Deal (EGD) striving to be the first climate-neutral continent by 2050 (EC, 2019), the CE Action Plan calls for immediate actions to accelerate circularity on whole European Union (EU), with the expected result of increasing EU GDP by an additional 0,5% by 2030 and creating around 700.000 new jobs (EC, 2020). Therefore, it is imperative to enhance the implementation of the CE principles as an opportunity to transition to a more environmentally, socially, and sustainable economy (Carvalho et al, 2020).

The Erasmus + DiGiTOOL_to_CE project - Inclusive Digital Education - a Tool to Understand Circular Economy (2020-1-LV01-KA226-HE-094519), is an ongoing project that focuses on the topics of CE and circular business models and will help Higher Education Institutions (HEI) to implement digital education solution into their curricula. The project will develop an innovative online course on CE / Green Business theme, and it will strive to improve digital pedagogical competences of educators, enabling them to deliver high quality interactive digital education. The main objectives for the dissemination and exploitation of the project results are: (i) increase the number of persons that are aware of DiGiTOOL_to_CE as an innovative business elective course at higher education level; (ii) increase the number of educators in HEI that are aware of how to plan and develop similar asymmetric online courses to what DiGiTOOL_to_CE looks like. Educators of HEI and its students are thus the direct target groups of the project.

The e-learning course "DiGiTOOL_to_CE" will consist of 5 modules: 1) Overall about circular economy; 2) Consumption; 3) Production; 4) Waste; 5) Circular business models, innovation, investment. European experts from the Baltic to the Mediterranean are cocreating the intellectual outputs, and the education institutions of the consortium responsible for each module are respectively: 1) FBK/Fondazione Bruno Kessler, Italy; 2) IPS/Instituto Politécnico de Setúbal, Portugal; 3) CIT/Canadian Institute of Technology, Albania; 4) BASBF/Banku Augstskola, Latvia; 5) Verslumo institutas, Lithuania. The development of the modules will consist of three main parts - content development, development of the e-course module,

test on students and revision of the e-course modules; currently, the partners of the consortium are focused on the revision of the development of the storyboard of the course (scenario).

The remainder of the paper is structured as follows: sections 2 and 3 describes the objectives and the methodology adopted for the study; section 4 accounts for its results; section 5 concludes the study.

Project goals

The operationalization of the proposed pedagogical project implies to define an accurate research strategy that support the link between stakeholders of this learning project, technologies used, and e-learning activities (Aparício et al., 2016).

Considering the 5 modules defined for this project, the present study is focused on contributing for the instructional strategy component of the e-learning framework and the technological tools to be used in respect to the consumption module. In this sense, the following research objective was formulated:

Research Objective

To define an overview of the e-learning activities and content for promoting and supporting the students to understand and learn on CE consumption topics.

This research objective will lie on a three-level approach as explained in the methodology section.

Methodology

To achieve the research objective, the project team will conduct a high-level search on the main e-learning projects publicly available on internet, giving a special focus on EU financed learning projects. A manual content analysis will be conducted for identifying the main public databases and free content.

Second, a literature review on the recent main topics on CE will be conducted in order to systematize the main issues to be addressed by the facilitators and included in the content of the course. In the scope of the project, it was defined as methodology to separate the modules in three advancement levels of study for supporting students understanding sequentially in: (i) Overall understanding; (ii) Change of the attitude; (iii) Change of patterns and habits / solutions & actions.

Main results and reflections

CE promotes the environmentally friendly and responsible production of products, reasonable and responsible consumption, and purchase of products that do not increase the waste produced. The quest for sustainability seems to be strengthening with every new generation: “the majority of Generation Z (54 percent) are willing to spend an additional 10 percent or more on sustainable products, versus 50 percent of Millennials, 34 percent of Generation X, 23 percent of Baby Boomers” (FORBES, 2020, p.4).

To raise awareness about consumption and its relation to the CE strategies and practices among young people, topics to be covered by this study module of the e-course "DiGiTOOL_to_CE" are summarized in Figure 1.

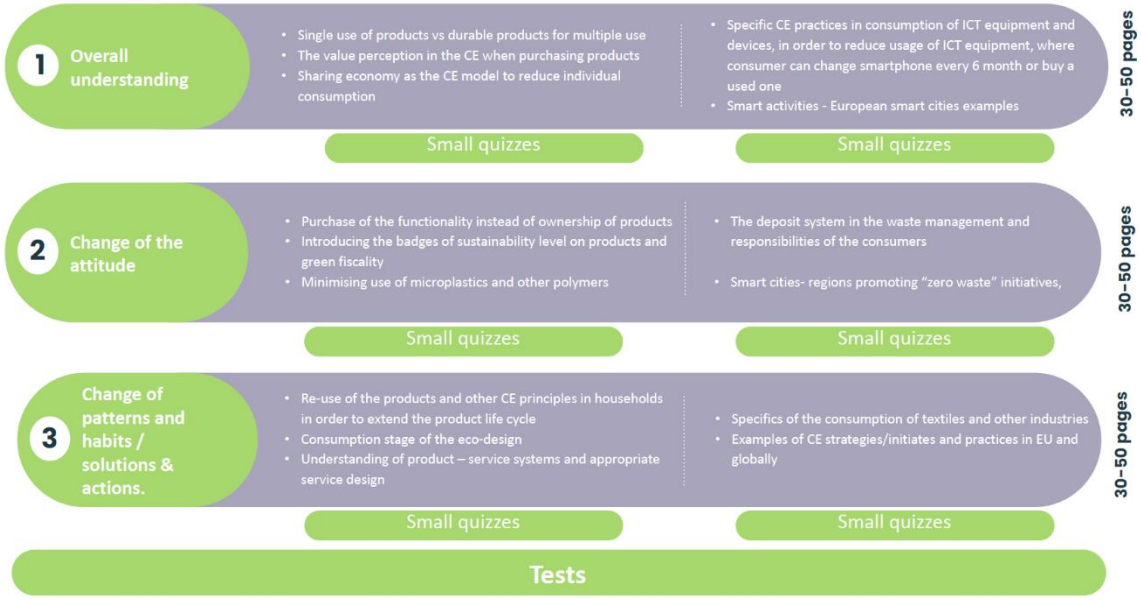

Figure 1. # Module 2 - CONSUMPTION and its relation to the CE strategies and practices (topics proposal)

The first level of the module (overall understanding) will start by considering different possibilities open for consumers within the scope of circular consumption and thus focused on keeping the products in use for longer instead of being used shortly and discarded. It will proceed by considering sharing economy as the CE model to reduce individual consumption, the value perception in the CE when purchasing products, and specific CE practices in consumption of ICT equipment and devices, to reduce usage of ICT equipment. Finally, a focus on a macro perspective of the smart cities, discussing European examples and best practices.

Regarding the second level of study that aims the change of the attitude, a module about consumption in the perspective of CE will support a change of perspective – from consumer to user, with an appropriate mix of theoretical background on product as a service, and two practical case studies (car leasing; bike sharing). The module will also highlight and detail aspects related with consumers buying decisions and adoption processes, giving a special focus on plastics and textiles.

Finally, the advanced level for "consumption and its relation to the CE strategies and practices" will deal with the CE's R principles for households, offering guidance on the most prominent 3Rs (reduce, reuse, recycle), as well as a critical assessment on sustainable re-options like reuse, repair, and recycle. Also in discussion will be the consumption stage of the eco-design. Additionally, with the purpose of rethinking consumption habits, the understanding of product-service systems (PSS) from a consumer perspective will highlight main drivers and obstacles for consumer adoption of PSS. Finally, the module will present examples of CE strategies/ initiates and practices in EU and globally.

Conclusion

The Erasmus + DiGiTOOL_to_CE project - Inclusive Digital Education - a Tool to Understand Circular Economy is an ongoing project that aims to develop an innovative online course focused on consumption,

production, and waste in the perspective of CE, as well as circular business models. It includes the development of the storyboard of the course (scenario), e-course technical implementation, and testing modules on students of participating HEI for subsequent revision of the e-course modules.

Leveraging competencies on CE management and increasing the citizens' sensitization on climate change and environmental degradation are among the world's greatest challenges. This course is an Erasmus + tool for higher education teachers and students in this direction. In parallel, the interaction activities and standards contribute to increase the pedagogical competences of the group members that will be important in their future activities and projects.

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