

# Developing a participatory game creation e-course in the field of Intellectual Disability

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**Abstract**—ID Games is a project aiming to create games for people with Intellectual Disability (ID), through the development of a collaborative and participatory methodology. In this scope, it also intends to capacitate the main stakeholders in the field of ID field (people with ID, educators, carers, professionals, game designers, among others) in the implementation of such methodologies, through the development of an e-course. The present work in progress paper reflects on part of the process of developing this e-course, by systematizing the existing e-learning approaches in the field of ID, through a sample of 53 e-courses. This intends to situate the ID Games e-course in the existing training gaps in the field of gaming and ID and allows the reflection regarding next steps towards the democratization and inclusion in game creation processes.

**Keywords**—games, game creation, intellectual disability, e-learning, participatory design.

## I. INTRODUCTION

Intellectual Disability (ID) is defined as a disorder with onset during the developmental period that includes both intellectual and adaptive functioning deficits in conceptual, social and practical domains [1]. ID Games (Co-Create assistive games for people with ID to enhance their inclusion) is based on the belief that each person should be given the chance to be accepted, valued and have equal opportunities to develop their skills and personality. Considering this, ID-Games aims to:

- increase social inclusion of people with ID by fostering equity, live involvement and cooperation between them, their educators, their carers, university students, game designers and other people from local community;
- decrease stigma and victimization of people with ID and their carers;
- strengthen the professional profile of educators and professionals, through training workshops, mobilities and new training tools, so that they will be able to use and create serious games;
- create six innovative serious games (physical, digital, hybrid/both physical and digital) treating social and practical limitations of people with ID, as well as a methodology for creation of serious games, adapting them and implementing in the specific group.

In order to disseminate the type of methodology on which the project is based (further information can be found in <https://www.idgames.eu/>), an e-course will be developed, with the aim of democratizing participatory methodologies for game creation in the field of ID.

This work in progress paper aims to describe the steps already taken in the planning and development of the referred e-course, explaining the future directions, and the way it intends to adopt an evidence-based methodology and to situate itself in the existing gaps in the field of e-learning. The ID Games e-course is framed on three main beliefs:

- E-learning as a revolutionary tool to democratize knowledge by implementing crucial changes the manner it is created, codified, retrieved, managed and transmitted across the boundaries of different cultures [2], and by fostering the dissemination of innovative methodologies despite economic factors.
- The currently existing data that justify the effectiveness of using games to promote skills in different populations [3,4], supporting its positive influence on motivational factors [5], and cognitive elements [6].
- The relevance of participatory design processes for the empowerment of people with ID in the field of gaming [7], and self-determination as a path for social inclusion [8].

## II. BACKGROUND

The potential of games as intervention strategies, in the fields of learning [3], cognition [9, 10] and empowerment [11], has been increasingly supported by research.

Specifically, in the field of ID, games have been considered as a relevant alternative to the current therapy/training methods, though the recognized need for developing new and innovative games that can truly correspond to subjects' needs [12]. The effectiveness of such approaches has also been supported by empirical work, with recognized positive impacts in learning associated processes, across several game platforms, despite a notorious focus on computer games [13].

Currently, games for ID, as a specific field in game studies has been primarily focusing on three types of main aims: learning or skills promotion; the definition of methodologies for game design and game development; and the identification of patterns and behaviours in the use of video games by people with ID [14]. Although such aims tend to be seen as mutually exclusive [14], all of them are relevant for the development of e-learning approaches and for the capacitation of professionals in this area.

### III. METHOD

#### A. E-course development

As mentioned above, the ID Games e-course development is framed on three main concerns. First, the need to develop evidence-based materials and methodologies, that integrate the most recent knowledge in the field of ID and games. Second, the need to situate this course in the existing gaps in the field of e-learning for ID, and, third to effectively capacitate the main stakeholders in this field (people with ID, educators, carers, professionals, game designers, among others) in the implementation of participatory game creation methodologies.

Moreover, the e-course intends to answer to an issue in the field of sustainability of the existing projects in the field, and answer to the lack of training materials for ID [15]. In the European context, from 37 funded projects in the field of ID, it is possible to verify the nonexistence of active e-learning materials, with 24 having inactive domains, by 2016 [16].

To meet these objectives, the development of the e-course will be carried out considering the designed flow chart (Fig. 1). As a work in progress, this paper presents the results of the first phase of this process "Mapping the existing e-courses in the field of disability" and analyses the implications of such results for the next phases. These phases include iterative processes of evidence-based content curation, consisting on the selection of the most recent and sustained theoretical frameworks in the field, and the integration of such content in a fully developed e-course curriculum.

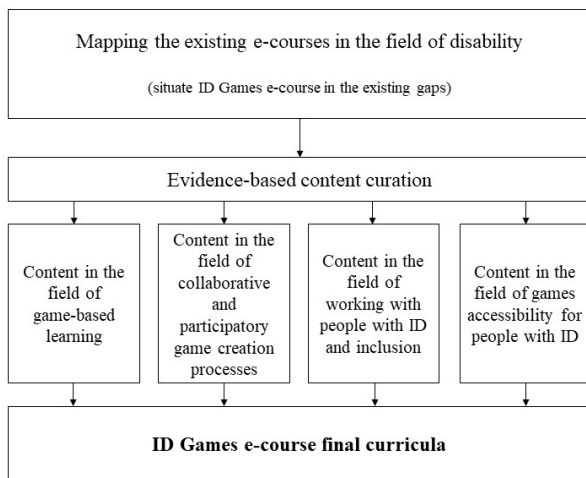


Fig. 1. ID Games e-course development flow chart

#### B. Mapping the existing e-courses in the field

A systematic online search, that included e-learning platforms and Massive Open Online Courses (MOOC) databases was performed, based on the following terms and Booleans combination:

$[(disability \text{ OR } intellectual \text{ disability}) \text{ AND } (e\text{-learning} \text{ OR } e\text{-course} \text{ OR } course)]$

The search procedures were performed in English, Portuguese, and French languages. The initially identified courses ( $N = 83$ ) were screened until reaching the final sample ( $N = 53$ ), through the application of exclusion criteria:

- Repeated courses were eliminated;
- Courses not clearly defining target groups, aim, or contents were excluded;
- Presential or blended learning approaches were excluded.

The clear definition of the course target group, curriculum, e-learning approach, and responsible institution constituted the inclusion criteria.

The final sample was composed by courses in English ( $N = 34$ ), Portuguese ( $N = 14$ ), and French ( $N = 5$ ). This sample was analysed through content analysis procedures.

Target audiences were categorized considering the available information in the websites and/or course syllabus. Parents and families were categorized within the label "informal carers" and non-specialized support workers were labelled as "formal carers". Any other professional working in the field of disability, such as doctors, psychologists, social workers, among any others were categorized within the label "professionals". All the courses non providing a higher education diploma, such as bachelor's degree, master's degree or postgraduation diploma, were considered "free courses" for the analysis. The distinction between the categorization disability (as a general condition) or ID aims at analysing the number of courses that specifically approach ID as their main subject. Other key terms for disabilities specification, such as neurodevelopmental disabilities, or learning disabilities were classified in the sample under the key term ID. Labels for the main subject area of each e-course were applied after the analysis of the course syllabus, and by considering only the main one, though the existence of interdisciplinary approaches and a conscience that knowledge is not mutually exclusive.

After the categorization procedures, the established categories were analysed using descriptive statistics, through the Statistical Package for the Social Sciences (SPSS), version 26.

### IV. RESULTS

Most of the course providers were Higher Education Institutions (HEI) ( $N = 24$ ; 45.3%), followed by Private Training Institutions ( $N = 19$ ; 35.8%); Non-Governmental Institutions (NGOs) ( $N = 6$ ; 11.3.), and Governmental Institutions ( $N = 4$ , 7.5%). Regarding the countries providing the e-courses in the sample, is possible to highlight Brazil as the main provider ( $N = 13$ ; 24.5%); followed by United Kingdom ( $N = 10$ ; 18.9%), followed by United States ( $N = 9$ ; 17.0%), Canada ( $N = 8$ ; 15.1%), Australia ( $N = 5$ ; 9.4%), South Africa ( $N = 3$ ; 5.7%), Portugal ( $N = 2$ ; 3.8%), France ( $N = 1$ ; 1.9%), and Singapore ( $N = 1$ ; 1.9%). There is also an e-course provided by a transnational consortium of institutions ( $N = 1$ ; 1.9%). It is relevant to highlight that, although some results are expressive, the search language can be a factor of possible biases in such data.

Regarding target audiences it is possible to highlight that only 5.7% ( $N = 3$ ) of the e-courses are aimed at people with disabilities. Professionals are the group with more e-courses (75.5%;  $N = 40$ ). Formal carers are the target audience of 17 e-courses (32.1%) and informal carers are the target audience of 12 e-courses (22.6%). Results show that most of the online courses in the field of disability are considered free courses ( $N = 48$ ; 90.6%), in other words, even if some of these courses provide certificates, they don't provide any type of higher

education diploma. There are also four postgraduate diplomas (7.5%) and one master's degree (1.9%).

Concerning the subject areas of the e-courses in the sample as an attempt to establish the parallelisms between disability and gaming, and as previously coded, it is possible to note that most courses aim to promote skills inherent to provide care for people with disabilities ( $N = 17$ ; 32.1%), followed by the ones aiming to promote skills that foster the inclusivity of the educational process for people with ID ( $N = 11$ ; 20.8%), courses in the field of psychological assessment and intervention ( $N = 7$ ; 13.2%), and the ones aimed at raise awareness and decrease stigma towards this population ( $N = 6$ ; 11.3%). E-courses aiming to improve skills of healthcare professionals and/or improve access of people with disabilities to healthcare are also expressive ( $N = 5$ ; 9.4%). It is also relevant to note that only one course in the sample aimed to promote skills in the field of design accessibility for people with disabilities ( $N = 1$ ; 1.9%). Detailed results can be found in Table I.

TABLE I. MAIN SUBJECT AREAS OF THE E-COURSES ( $N = 53$ )

Subject areas (as labeled)	$N$ (%)
Awareness raising	6 (11.3%)
Psychology	7 (13.2%)
Care provision	17 (32.1%)
Physical health	2 (3.8%)
Training/Education Inclusion	11 (20.8%)
Design Accessibility	1 (1.9%)
Healthcare	5 (9.4%)
Sexuality	2 (3.8%)
Professional/Workplace Inclusion	2 (3.8%)
Awareness raising	6 (11.3%)

Considering each courses' content and if it approaches disability in general, or specifically ID, it is possibly to highlight that most of the courses are about people with ID ( $N = 41$ ; 77.4%). These results must also be understood considering that the term ID was specifically inserted in the key search terms, which did not happen with other specific disabilities. To better suit ID Games e-course objectives and target audience, main subject areas were re-analysed after excluding courses about disabilities in general. Results are presented in Table II.

TABLE II. MAIN SUBJECT AREAS OF THE E-COURSES APPROACHING SPECIFICALLY ID ( $N = 41$ )

Subject areas (as labeled)	$N$ (%)
Awareness raising	6 (11.3%)
Psychology	7 (13.2%)
Care provision	17 (32.1%)
Physical health	2 (3.8%)
Training/Education Inclusion	11 (20.8%)
Design Accessibility	1 (1.9%)
Healthcare	5 (9.4%)

Results in Table II show that when considering specifically ID, the number of subject areas decreases, from nine to seven, with no courses approaching design and accessibility issues or professional inclusion. In the ID e-courses sample, the most referred subject area was care provision ( $N = 16$ ; 39.0%), followed by courses in the field of inclusive education ( $N = 9$ ; 22.0%), and Psychology ( $N = 7$ ; 17.1%).

## V. PRELIMINARY CONCLUSIONS

The present study aimed to document the development process of an e-course that intends to approach the connection between gaming and ID. Besides the capacitation of the main stakeholders in the field of ID (people with ID, educators, carers, professionals, game designers, among others) in game-based interventions, it intends to disseminate participatory game creation methodologies, that also foster the inclusion of people with ID. Accordingly, a strategy to enhance the e-course development process, including the adoption of different phase (Fig. 1) has been adopted. It intends not only to develop it in an evidence-based manner, but also to situate this e-course in the existing training gaps in the field of gaming and ID.

In the first phase, whose results are presented in this short paper, a study to map the existing e-courses in the field of disability and ID was conducted. The obtained results emphasize the nonexistence of e-courses approaching gaming, game-based learning or game creation in the field of ID, which highlights the ID Games e-course potential relevancy in the digital inclusion of people with ID, and in the promotion of games literacy in this field. Such results also emphasize that, in the field of e-learning, the connection between gaming and ID is still unclear and can be seen as a path to clearly define. This first approach intends to contribute to such path.

The lack of e-courses developed in Europe, mainly outside the UK opens the discussion regarding the cultural implications of working with people with ID and how are these not being approached by online training. Also, the stakeholders in the field of disability in general also need to be trained considering the legal framework of the existing social supports for these people, to better foster their inclusion and be agents of advocacy. This must be overcome, in the ID Games e-course by providing information about the different European countries and their social care and support services for persons with disabilities, such as the factsheets elaborated by the European Association of Service Providers For Persons with Disabilities (EASPPD) for 28 different countries [17].

The principal areas of online training in the field are centred in care provision, what highlights the need for e-courses aiming at innovative interventions and approaches that promote empowering aspects, such as media creation with or by people with ID. This emphasizes the need to promote skills in this population so they can become agents in such areas, as a strategy to foster their social, and particularly digital inclusion.

Other relevant finding is the lack for e-courses approaching the digital accessibility for people with disabilities in general, and particularly with severe cognitive impairments, such as ID. This highlights the need to empower professionals with training, guidelines and tools so they can be agents of change in the society and foster the digital inclusion and, particularly, the games accessibility for people with ID. This insight also based the inclusion of "Content in

the field of games accessibility for people with ID” in the ID Games e-course development process (Fig. 1).

#### A. Future Directions

Future directions for the present work in progress include the development of the previously defined phases in the e-course creation process. Considering the detected training needs in gaming and ID, this will include the systematic identification of the existing evidence in this field and, eventually, the research regarding the interests and needs of the e-course target audience.

The next steps in this process will also include the clear establishment of the parallelism between the inclusion of people with ID and participatory design approaches, as promoters of empowerment in the field of media creation, particularly game creation. Such process implies the reflection about including the individual with ID in the creation process and the possible outcomes in terms of games accessibility, as a path to rethink the relationship between access and digital inclusion. Notwithstanding, such reflections will also consider the complexity of working in the field of ID, the cognitive specificities of this population, and how can this be conjugated with game creation.

Consequently, in the future ID Games project, and other that intend to democratize game creation for people with ID in a collaborative, participatory, and inclusive manner must address the need to reduce the complexity of the existing models, methods, and technical tools in the field of game design and game development.

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