# Videogames: Adaptations and accessibility.

## Type of Project

**Ongoing research project**

## Summary

This experience analizes different adaptations for videogames, and proposes some solutions that facilitate the use of videogames for people with difficulty in upper limb movement.
During 2016 Ceapat has developed and created some solutions based on 3d print designs.
The experience has been composed of 4 stages: in the first one different platforms and videogame console controls were analized; in the second one some adaptations were developed; in the third one the adaptations were assesed by users and in the last one the results have been disseminated.

## Low-tech, high-tech products, services and contexts for play

The experience has been composed of 4 stages:
1)Some videogames for PC, mobile devices and consoles were analized as well as different platforms and videogame console controllers.
2) Some adaptations for PlayStation 3 controller and for computer keyboard were developed and different sorts of joysticks based on 3d print designs were created.
Adaptations for PlayStation 3 controller makes possible to use it with switches, and with a joystick based on 3d print design for the arrow keys.
Adaptations for arrow keys, enter key and space bar of computer keyboards enables the use of switches or joystick. The result consisted on different sorts of joystick based on 3d print designs to put on numeric keypad and use the mouse pointer activating the ease of Windows Access Center.
3) These solutions were tested by users with cerebral palsy and difficulty in upper limb movement. APAM Madrid was the centre chosen to carry out the testing with users. This day care centre provides services and organizes activities for people with physical disabilities. The aim of the centre is promoting the autonomy of people and increasing the quality of life. Users can take profit of treatments such as physiotherapy, occupational therapy or speech therapy. In addition to this, some activities relate to the learning of habilities for the use of computers in order to enjoy the benefits of technology in our society. The centre is very interested in new accesible solutions for the use of computers for learning and leisure. A specific area of interest is playing videogames.
The results of this testing process were very positive.
4) Dissemination of the results.

## The context of use

Home, school, rehabilitation center and other environments

## Type of play in this play system

### Cognitive

Rule play (including videogames)

### Social

| |
|---|
| Solitary |
| Cooperative |

## Objectives related to play according to ICF-CY

### Play for the sake of play: Major life areas - d880 enagement in play

| |
|---|
| d8800 solitary play |
| d8803 shared cooperative play |

### Community social and civic life - d920 recreation and leisure time

| |
|---|
| d9200 play |

### Play-like activities: Therapeutic and educational objectives

| |
|---|
| b1 Mental functions |
| b2 Sensory functions and pain |
| b7 Neuromusculoskeletal and movement related functions |
| d1 Learning and applying knowledge (learning through symbolic play, learning through pretend play) |
| d2 General tasks and demands |
| d3 Communication |
| d4 Mobility |
| d7 Interpersonal interactions and relationships |

## Number of participants

| |
|---|
| >20 |

## Chronological Age

| |
|---|
| 12-18 years |

## Development Age

| |
|---|
| 12-18 years |

## LUDI Categories of disabilities

| |
|---|
| Moderate |
| Severe |

## Explanation on the use of low-tech, high-tech devices, services or contexts

### Explanation

| |
|---|
| No instruction, self-discovery of the participant/subject |
| Verbal instruction, language and communication fitting to chronological age |
| Modeling by therapist/researcher |
| Guided discovery: therapist/researcher coaches the participant so s/he discovers how to use the assistive technology |
| Modeling by peer |
| Visual instruction by peer |

## Involvement

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|---|
| Adult: therapist/educator/researcher |

## Role

| |
|---|
| Participatory observer |
| Providing instruction |
| After the instruction, providing supervision during play |

## Evaluation of objectives and outcome measures

### Description of outcome measure(s)

| |
|---|
| Observation by professional/researcher providing the play experience |
| Feedback from client/parents/professionals |
| (validated and reliable) outcome measures like tests, self-reports of client/system, questionnaires |

### Information about availability of outcome measure: publisher, website, contact person

The first step of the testing process was drawing up a questionaire to assess users´ experience on videogames and adaptations designed by Ceapat. The testing with users was carried out during the month of november. The results of this testing process were very positive. Users underlined the benefits of the adaptations assesed and emphasized that this adaptations enabled them to play.
In order to share these designs, they are already available in the site Thingiverse.
http://www.thingiverse.com/ceapt/designs

## Summary of achieved effects

- Adaptations for PlayStation 3 controller
- Adaptations for computer keyboard
- Different sorts of joystick based on 3d print designs

The results of the testing process with users were very positive. Users underlined the benefits of the adaptations assesed and emphasized that this adaptations increased their opportunities to play.
Users proposed some aspects to improve the adaptations assessed.
Ceapat will take into account this regards for future developments and is ready for some tasks during 2017, such as developing adaptations to play games in mobile devices by bluetooth.

## References to the intervention or research project

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## Contact Person

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**Keywords**

Videogames accessibility, adaptations, 3d print design.