

Design Crit - 17.april

- Project outline
 - ***Connect: An Open Platform to Bridge Research and Citizens with Neurodevelopmental Disabilities***
 - General overview: Everyone with a Web browser should be allowed the possibility to research their own questions, discuss them, collect data, formulate and test hypotheses. As a concrete instantiation of this idea, we will develop an open health platform that would allow persons affected by cognitive, learning and neurodevelopmental disabilities – including patients, families, caregivers, educators, scientists – to better understand their own condition and try to find collectively the best strategies to help themselves and those they care for. We will search to better understand the technological and design issues of collective citizen research by building a platform to help create a citizen-research community around the issues of cognitive, learning and neurodevelopmental disabilities. This platform should (1) Provide a protocol to connect individual stakeholders: patients, families, educators, caregivers, software developers, researchers; (2) Ensure the conservation of the data, its accessibility, security, and transparency of how the system functions (3) Facilitate the access to the platform: help participants understand data collection, visualization, analysis and hypothesis testing; provide code samples; providing guidance on the issues of cognitive, learning and neurodevelopmental disabilities.
 - Specific to the DesignCrit: To begin, we are focusing on creating applications that will be used by French people with neurodevelopmental disabilities, their families, and educators/caregivers. The first that we need help designing is an Augmentative and Alternative Communication (AAC) application for people who do not verbally communicate. Generally, this consists of symbols which the user can activate to construct sentences for communication.
 - Issues we would like advice/strategies on:
 - Overall form
 - Are there design options for conveying the buttons/categorization that we're not considering?
 - General accessibility for each user
 - Size of buttons

- Even without visual impairment, does the size of the buttons make a difference on the accessibility of the iPad? There's also physical constraints to consider- if the buttons are taking over large portions of the screen, there is less space to navigate to other buttons.
 - Text
 - Text associated with images allows users to begin read or help users match images and text but can also cause confusion/unnecessary clutter among more impacted users.
 - Navigating the app when the number of pictures expand
 - Color vs. Black&White. Some users may prefer one or the other
 - Blank background vs normal background. Some users may be distracted by the background, and busyness will affect success of user. Ideally, we'd like to help users identify items independently of the background
 - Picture type- real pictures vs cartoon drawings
- If we can't find specific answers to every aspect of the app, is there a way to determine these things and ameliorate as we go along?
 - Symbols vs pictures. Some symbols are widely used, and act as universal representations for a given item.
- Generalization
 - Ensuring that the learner generalizes one picture to the true idea of a thing. Ie- if a cup is already red in the app, the user should be able to still ask/understand that a cup is a cup, even if it's a mug, if it's red, etc. Also visually attending to the image- not just choosing it based on position. If it moves, the user should be able to identify it.
- Gamifying the teaching of the app:
 - A major aspect of this application is teaching the app progressively- starting very simple; guiding the user to request 1 thing and immediately receiving that thing. We will be following 7 teaching phases already outlined by Bondy and Frost as "(t)he effectiveness of applying behavioral procedures

to teaching children with autism to speak and to increase their use of language in their everyday environment is well documented” (J Autism Dev Disord (2007) 37:724–737). Our goal would be to teach the user how to use the application through these steps using gameification, potentially independent from parents. For example, in the first phase when the learner is guided to press a single button instead of reaching for the item, he/she could be guided to press a button for their favorite iPad video/application and upon pressing it, get 30 seconds of access to the video/app before being redirected to the button where they need to press again to obtain access.

- Descriptions of the 7 phases can be found in the accompanying document.
- A biggest challenge to individuals becoming successful is adherence to learning as it takes a lot of time to teach this method of communication; “providing the individual with a system of communication that is both clear and easy to use has been highlighted as an essential element of communication enablement” (J Autism Dev Disord (2007) 37:724–737). Can we use gameification to help adherence to learning or does this amplify the problem further?