Design of a co-design toolkit for young adults with autism spectrum disorder to support their independence

Brian Schipper, BSc Industrial Design Engineering, University of Twente, The Netherlands

Autism Spectrum Disorder is a lifelong neurodevelopment disorder, which is often first diagnosed in early childhood. People with (ASD) often have a combination of social impairments, communication difficulties, and the need for rigid or repetitive behaviours (Wing & Gould, 1979). They now often rely on a support structure for their day-to-day activities consisting of, for example, healthcare professionals or parents. When they have to be more independent in an environment where this support structure can be less relied upon, they are faced with new problems. To combat this, the movement for empowerment and independence within healthcare has grown over the recent years. (Scheeren & Geurts, 2014).

To reach this independence new supporting products and services are being designed for people with disabilities. User-centred design (Matthing, Sandén, & Edvardsson, 2004) and co-design methods (Sanders & Stappers, 2006) can help to develop products and services that fit the target group. However, products and services that are developed for people with autism are often designed for the generalised group while this group is highly heterogeneous, making "one-size-fits-all" solutions for people with ASD ineffective (Frauenberger, et al., 2016). Instead of finding a single perfect solution, the project "Design Your Life" is developing a methodology to create an environment in which the caregiver and client can design together on personalised solutions for the client, using a design thinking approach to problem-solving (Lectoraat Levensloopbegeleiding bij Autisme, 2018).

This bachelor's thesis focussed on the design of a toolkit which guides the caregiver and client through this process as they do not have this design experience. This is a problem occurring with any type of end-users in the co-design process (Sanders et al. 2010). The toolkit is designed from the literature on designing with people with autism in a co-design method. The literature review aimed to create a foundational method for a co-design toolkit which guided the decision-making process of the final design. This toolkit has its method based on the Design Thinking approach (Stanford, 2021) which was altered to better fit the needs of the end users, as seen in *Figure 1 and 2*. The design of the final concept has been based on the approach defined in *Figure 2* in conjunction with the use of probes in a co-design environment during the case study.
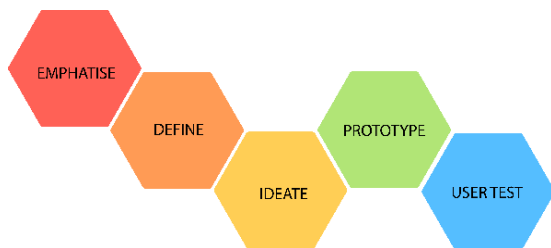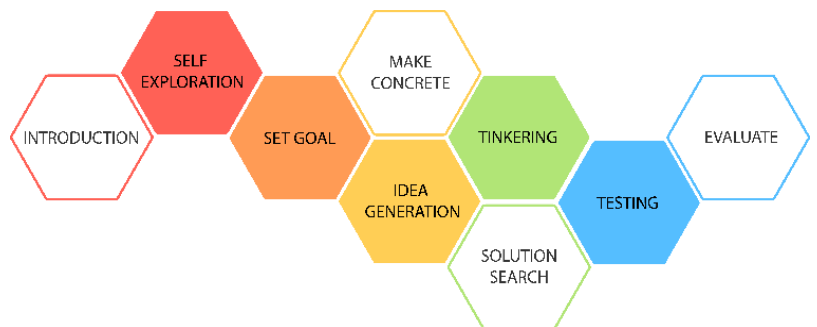

*Figure 1. Design Thinking approach*

Figure 2. Adjusted Design Thinking approach for the toolkit.

The resulting toolkit is a manual for both client and caregiver. It provides them with a checklist of steps to be taken in the design phase. This manual will be combined with a set of cards and a gameboard, as seen in *Figure 3*, showing a visual timeline for the process which helps the users to have an overview of the process (Benton et al., 2012). The cards spark creativity and provide the users with new prompts to follow when they stagnate in the design process, which is needed as young adults with ASD experience a high prompt dependency (Benton et al., 2012). The visual timeline provided with the board in combination with the creative freedom given results in a well-formed design process for the user (Rietzschel, 2018)
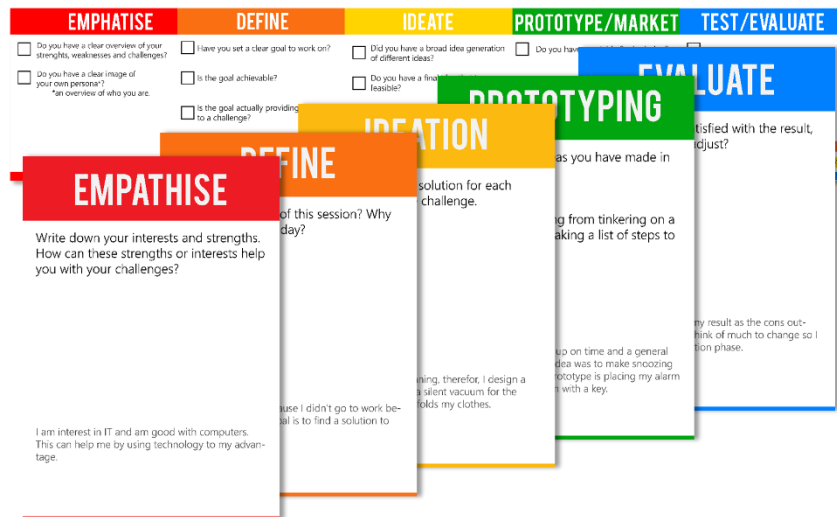
Figure 3. Final design of the toolkit

The toolkit has been tested and evaluated in a co-design case study setting with a young adult with autism and his caregiver. This case study gave an understanding of the effectiveness of the toolkit and create insights into the possible adaptations of the design. These results are based on a single case study. Therefore, they should be regarded as such, as the target group of young adults with ASD is very heterogenous (Frauenberger, et al., 2016).

During this research two main problems kept occurring during the design phases of the toolkit. The first is the problem with the prototyping/tinkering phase. This is a very new concept and needs more guidance which is often hard to implement with rigid prompts. The second is a continuation of the rigidity of some of the prompts, which deemed to be useful but must be further developed. This is recommended to do using the co-design approach with a designers, caregivers, and young adults with ASD which can make sure the prompts are well written and have a high ease of use.

In conclusion, the toolkit is designed to facilitate a design space for people with an autism spectrum disorder to improve their independence, as seen in *Figure 4*. The toolkit makes use of an adapted version of the Stanford design thinking process. The design space is facilitated using a visual timeline and prompts that guide the users through each phase of the design process. During design sessions, the users will autonomously define their challenges and try to find new solutions.
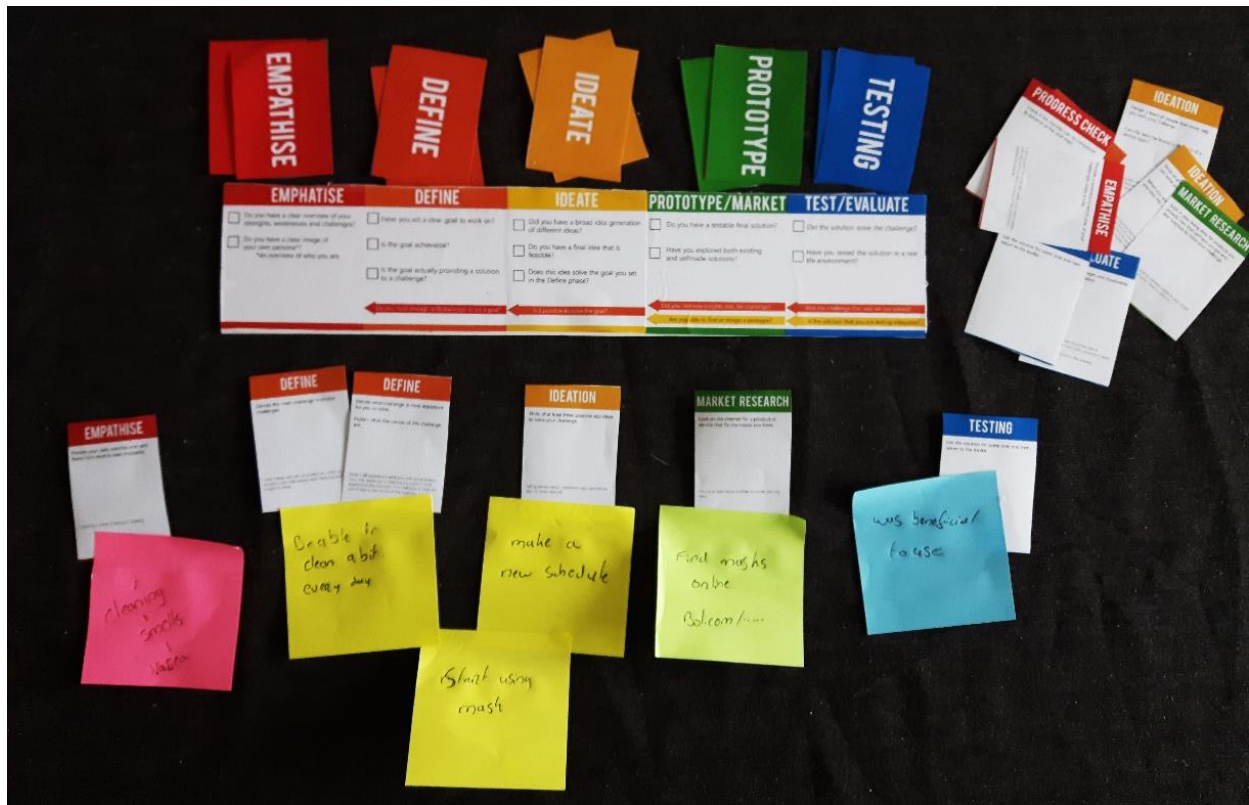
Figure 4. Testing the toolkit with the user

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