

## **Bridging the gap: A comprehensive study of technology in relation to enhancing independence and quality of life in people with disabilities.**

### Introduction

- a. Hello everyone, my name is Aaron Aubeck. I am an MSc Computer science student and today I'd like to present to you a research proposal that explores the intersection of technology and disability.
- b. The title of this research proposal is *Bridging the gap: A comprehensive study of technology in relation to enhancing independence and quality of life in people with disabilities*.
- c. For the continuation of this presentation, I will be calling assistive technology AT as this is what it is commonly referred to within the industry.

### Why is this Significant to Investigate?

- a. Technology has rapidly transformed almost every aspect of our lives; from the way we communicate to the way we work and play.
- b. However, despite the tremendous progress in the field of technology, many people with disabilities still face significant barriers to gain access to technology that could greatly improve their quality of life.
- c. Heleen Boot et al (2019) states that "AT enhances the ability of people with cognitive limitations to participate in and integrate into an inclusive society".
- d. This research proposal aims to explore how technology can be used to enhance the independence, social inclusion, and overall wellbeing of people with disabilities.
- e. We will also investigate the various forms of assistive technology that exists and how they are used to support people with disabilities.

## Research Problems

- a. This research aims to investigate the impact of AT on users with disabilities, particularly those in education or within the workplace, using systems such as DSA (disability support allowance) or Workplace adjustments.
- b. Another dilemma to be looked into throughout the investigation is aftercare with AT. Borg, et al (2011) refers to the problems associated with deploying AT to support people, but then the inability to use said software due to a lack of aftercare, such as software training or inadequate resources to run the applications. It is anticipated that through understanding these issues this research project can bridge that gap.

## Aims and objectives of this study.

- a. The aim of this proposed research is to determine the impact of AT by 1. Investigating current AT and its availability, such as cost and requirements. 2. Collect data ethically from users and 3. To use collected data to confirm whether AT impacts their work.
- b. As well as these 3 main goals, an overall objective would be to understand how AT can be developed or changed to better support users, this could be through an application.

## Recent Literature.

- a. Recent literature that aids in the research of AT's impact predominantly looks into Artificial Intelligence and supportive peripherals, such as keyboards, mice and headsets. However a few pieces of literature that could be useful to implement ideas from are:

- 1) Learning technology and disability: Overcoming barriers to inclusion:  
Evidence from a multicountry study (Hersh & Mouroutsou, 2019), Which investigates the gap between disability and education based on accessibility to access AT throughout different countries.
- 2) Another piece of literature that should be referred to is; ability, Technology, and Flourishing (Parens, 2019) which is a report that focuses on the use of AT as a tool to level the field in education and work, allowing users with disabilities to “flourish”.

#### Key Literature.

- a. To be able to begin research on AT it is imperative that key pieces of literature are noted and relied on for understanding the basis of AT design and implementation. Some found are:
  - 1) Assistive technology research: Evidence for a complex and growing field (Smith, 2021). This is a series of research papers looking into different applications created to support those with disabilities such as an iPad pain application and more.
  - 2) Assistive technology in developing countries: a review from the perspective of the Convention on the Rights of Persons with Disabilities (Borg, et al, 2011). which is a literature review predominantly investigating product reviews on assistive products, such as hearing aids and more.

#### Limitations within current literature.

- a. Although there is substantial literature and research within the disability sector there are a few areas which has been noted as being limited:

- 1) Heleen et al (2019) suggests a lack of understanding of disabilities and a lack of parents' knowledge can cause bias in data collected and technology of online questionnaires can be inaccessible for some.
- b. Three areas noticed as gaps within current literature are:
  - 1) It is noted that some current literature has investigated the costs associated with AT however none have investigated the availability of free or cheap AT compared to full price packages such as Dragon or Audio notetaker.
  - 2) lack of first-hand research and needs from users that is accessible.
  - 3) Research into covid-19 and the impact of AT on students' studies.

#### Research design and strategy.

- a. For the purpose of this research project, it has been decided that a correlation research design will be implemented.
- b. The main goal in this investigation is to confirm if AT has an impact on users work and to see if this can be used to benefit users.
- c. Current and important literature will be accessed and implemented into creating an in-depth interview and investigation into a small group of users.
- d. This will be compiled and analysed to find a key group of AT's to then suggest to the users.
- e. Kaplan and Maxwell (2005) suggest that open ended interviews should be regarded with a skilful and systematic approach, although difficult to work with they can give vital data when volunteers are questioned further.
- f. Further interviews will be held, and data compared to original data to determine if AT has impacted work.

### Timeline of investigation

- a. The timescales suggested in this proposal are not permanent and are likely to change based on further information.
- b. The initial timeline of this research investigation will be set to 20 weeks split into four sets of 5 weeks dubbed quarters.
- c. This is to allow time for each section without rushing findings.
- d. Investigation and planning the application will be given 3-4 weeks.
- e. Gathering the first lot of data will be given 2 weeks.
- f. Analysis of initial findings will have 2 weeks.
- g. Implementation of findings and usage impact will have 7 weeks as this will be editing the application and how it works.
- h. Gathering the second lot of data will be given 4 weeks.
- i. Analysis and evaluation of results will be allocated 2-3 weeks.

### Research risks.

- a. When collecting data, it is imperative that risks are documented and mitigated so breaches and issues do not arise throughout the investigation.
- b. One risk is a lack of information ultimately being compiled which causes the investigation to be delayed.
- c. This can be mitigated by implementing two data groups or pools. Should one group not respond there is a backup to fall upon.
- d. Another risk is cost and size of the data group. This can be mitigated by setting limitations to the size of group and the data that is collected from them.
- e. Physical risk is another scenario that could occur, this is due to the type of software that is being used throughout the research project.

- f. Written and verbal understanding should be put in place to confirm that participants know to communicate if this should occur, and that any discomfort associated with the research project should be raised. Use of AT should be stopped until risk is assessed.
- g. Analysis and evaluation will occur from this, and testing ceased for the participant depending on the issue faced.

#### Research ethics.

- a. The proposed research would require users to implement personal data, because of this there are a number of ethical risks that would need to be considered.
- b. Following UK GDPR and ISO standards (ISO/IEC, 2018) is imperative and would need to be implemented at every stage of the research project.
- c. Another risk that needs to be considered is whether the research being done follows the Equality act (2010). Due to the protected characteristics of participants adhering to the act is essential for the wellbeing of all participants. This is closely related to collecting data without bias and should be kept in mind when choosing data pools.

#### Artefacts and further objectives.

- a. Overall, from this proposed research multiple artefacts should be compiled.
- b. 1) an in-depth interview from participants of AT software used or in use.
- c. 2) Data collected from use of an AT recommending app created for this research purpose.
- d. 3) An Evaluation of the correlation between AT usage, and the quality of work through its implementation.

- e. This study will produce artefacts that could be used in further research.
- f. Implementing the use of the AT recommendation application could speed up referrals and DSA assessments. Although it cannot replace the role of a dsa assessor, it may be able to help ease peoples wait times by suggesting free or easily accessible AT.

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