



BACKGROUND

UK higher education institutions have legal responsibilities to provide **accessible learning environments** (UNCRPD, 2006; Equality Act 2010), yet significant gaps remain in communication access for students.

AI-generated captions support a Universal Design for Learning approach, but current ASR technologies remain unreliable in classroom environments.

Research indicates that **d/Deaf and hard-of-hearing students** experience substantial challenges with captioning services, including issues of accuracy, delay, cognitive load, and social inclusion (Blanchard, 2015; Ellis, 2017; Jolly, 2024). ASR technologies can also benefit **non-native English-speaking students** in classroom environments (Locke, 2024).

Research also highlights **the critical role of lecturers** in caption implementation, yet little is known about how teaching staff engage with AI-generated captions (Southwell, 2022; Locke, 2024).

This project addresses that gap by **exploring the experiences and needs** of students and educators using captioning technologies and **designing a personalisable ASR tool prototype** for classroom use.

RESEARCH QUESTIONS

RQ1: What are the needs of d/DHH students, non-native English-speaking students, and teaching staff in accessing and engaging with lecture content in higher education classroom settings?

RQ2: How can the needs be met by utilising ASR personalisation strategies?

RQ3: To what extent can ASR personalisation strategies positively influence classroom engagement as compared to ready-made solutions and unassisted participation?

OBJECTIVES

Objective 1: Investigate the needs and experiences of these groups regarding the use of auto-generated live captions.

Objective 2: Design a prototype of a captioning tool in collaboration with the user groups.

Objective 3: Evaluate and modify the developed prototype of a captioning tool.

Objective 4: Develop a set of guidelines for personalising captions according to users' needs with the aim of supporting lecturers and students.

PARTICIPANTS

Group 1: d/Deaf and hard of hearing students aged 18 or older enrolled at UK universities.

Group 2: non-native English-speaking students aged 18 or older enrolled at UK universities.

Group 3: teaching staff employed at UK universities who have experience working with d/Deaf and hard of hearing students and non-native English-speaking students.

STUDY DESIGN

STAGE 1: SURVEY

Three separate surveys will be administered to three groups of participants, respectively.

The surveys aim to:

1. Explore the accessibility support currently available to users.
2. Gather user experience feedback on the use of AI-generated captions in classroom settings.
3. Investigate perceptions of the affordances and constraints of captioned material.

STAGE 2: CO-DESIGN SESSION

A co-design study will be conducted in collaboration with participants. They will discuss what **personalisation features** they would like to see in captioning tools for classroom use and will **sketch designs** of a desired tool.

The co-design study aims to:

1. Ideate the tool prototype development with participants.
2. Enable participants to actively shape captioning tool prototypes with personalisation features they need for classroom use.
3. Review and discuss the designed prototypes.

STAGE 3: FOCUS GROUP STUDY

A focus group study will be conducted in the form of a mock lecture. **Lecturer** will read a transcript of a lecture with AI-generated captions presented on the designed tool. **Students** will evaluate the captions and the performance of the tool.

The focus group study aims to:

1. Evaluate the performance of the designed captioning tool under conditions resembling a real lecture environment.
2. Gather users' perspectives on the effectiveness of the designed tool.
3. Identify further improvements to the captioning device.

POTENTIAL OUTCOMES

1. Deepen understanding of the experience of the three populations with AI-generated captions in classroom settings.
2. Design a personalisable ASR tool prototype for classroom use.
3. Develop a set of guidelines supporting users in personalising ASR tools for classroom use.

REFERENCES

