Winston Churchill Fellowship Report 2025

Empowering Aotearoa: Bridging the Gap with Inclusive AR & Digital Media Solutions

By Grace Brown - Winston Churchill Fellow 2025

🎯 Executive Summary:

This report captures the insights from a Winston Churchill Memorial Trust Fellowship exploring the intersection of New Zealand Sign Language (NZSL), immersive digital media (including AR/AI), and neurodiversity. In a nation committed to genuine inclusion, the decline of NZSL users and the fact that nearly one-fifth of New Zealanders identify as neurodivergent present not merely a social challenge, but an urgent **Digital Equity Imperative**. This imperative is anchored by the **New Zealand Sign Language Act 2006**, which guarantees NZSL status as an official language, and the principles of **Te Tiriti o Waitangi**, which compel the Crown to actively protect cultural and linguistic taonga and ensure equitable outcomes for all citizens, including **Tāngata Turi**. My inquiry focused on how we can leverage technology, grounded in cultural and linguistic authenticity, to dismantle communication barriers, enhance NZSL revitalisation, and reduce cognitive load for diverse communities. This work aims to establish a new foundation for inclusive design in Aotearoa, positioning our nation as a leader in the burgeoning Communication Economy—where accessibility and linguistic diversity drive innovation, equity, and national wellbeing.

🙏 Acknowledgements and Gratitude:

I wish to express my deepest gratitude to the Winston Churchill Memorial Trust for awarding me this Fellowship, which provided the unique and invaluable opportunity to undertake this research. This global engagement has been foundational to my understanding of inclusive digital innovation.

Research Participants & Collaborators:

This report is directly shaped by the generosity, expertise, and time of the organisations and individuals who participated in the fieldwork. I offer my sincere thanks to:

- **Professor Kearsy Cormier** (DCAL, UCL) and **Professor Ros Herman** (City St George's, University of London) for their critical academic insights into sign linguistics, assessment, and neurodiversity
- **Tori Raw** (NRCPD) for providing essential guidance on professional standards, regulation, and ethical governance

- **Kumar Jacobs** and the team at **Signly** for sharing their expertise in digital health, immersive technologies, and culturally authentic BSL software development
- **Sangeeta Sengupta** (DeafRoots Association) and the **Empowering Deaf Society** for their insights into community-led initiatives, policy barriers, and digital empowerment
- **Ulla Sivunen** for sharing her groundbreaking research on multiliteracies, identity, and linguistic agency among Deaf youth
- The organisers of the **RIX Institute Hackathon 2025** and the instructors of the **DCAL Online Short Course** for providing practical and foundational learning

Personal & Professional Support:

I am also immensely grateful for the support I received that made this journey possible:

- I also wish to thank **Emma Loubser** and **Rachel Walker** for their invaluable support in the application process
- My family and friends for their continuous encouragement and patience during my travels and intensive research period

Without these contributions, this comprehensive exploration of inclusive digital futures for Deaf and neurodivergent communities in Aotearoa would not have been possible.

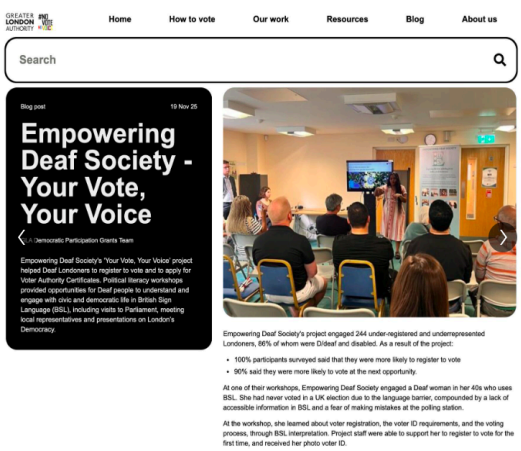
🤝 Fellowship Engagement and Research Log:

This section outlines the key organisations, individuals, short courses, and events engaged with both in person and remotely in London. These experiences provided valuable perspectives that informed the identification of common patterns and the development of innovative strategies to support Deaf, Hard of Hearing, and neurodivergent communities in Aotearoa.

1. **Principle: Deaf-Led Leadership and Cultural Safety:**

This principle mandates centering Deaf individuals in leadership and decision-making roles to ensure cultural authenticity, build trust, and maintain community relevance in product and service design.

- **Empowering Deaf Society (EDS), Ilford, London (Deaf-led Charity):**
    - **Focus:** Deaf-led leadership and the successful use of socially grounded, culturally safe events (like the Deaf Street Party) to foster community and build confidence
    - **Relevance to Aotearoa:** AR/digital tools must be designed to support and enhance high-trust, culturally safe interactions established through Deaf-led engagement, and never replace them



- **Signly, BSL Software Development Company:**
    - **Focus:** Advocating for Deaf leadership and ownership in digital media and critically assessing the ethical risks of AI-generated sign language without human, Deaf oversight
    - **Relevance to Aotearoa:** AR development must be guided by Deaf professionals in leadership and QA roles to ensure linguistic integrity and cultural authenticity, protecting digital identity

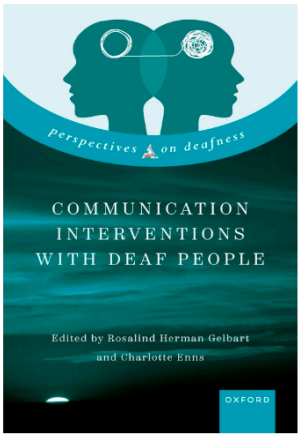
- **Ulla Sivunen, Deaf PhD Candidate, Heriot-Watt University/University of Jyväskylä:**
    - **Focus:** The importance of authentic representation in media and the need for Deaf users to have linguistic agency as creators, not just consumers, of digital content
    - **Relevance to Aotearoa:** Reinforces that effective digital inclusion requires Deaf-led

storytelling and co-design to reflect the real-world multiliteracies and identities of Deaf youth

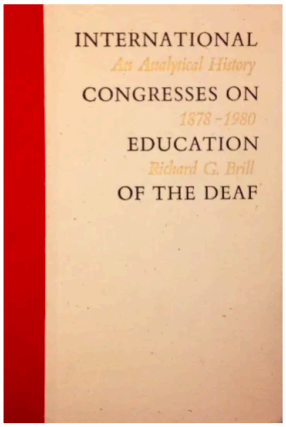
2. **Principle: Linguistic Precision and Inclusive Digital Design:**

This principle stresses the need for sign language tools to uphold linguistic integrity (including grammar, non-manual signals, and variation) and to be consciously designed for diverse communication needs, particularly neurodiversity.

- **Professor Kearsy Cormier, Director, DCAL, UCL (Sign Linguistics):**
    - **Focus:** Digital sign language tools must capture **full linguistic complexity** (e.g., facial expressions, spatial movement) and regional variation of sign languages to avoid linguistic oversimplification ("baby signs")
    - **Relevance to Aotearoa:** AR must reflect the visual grammar of NZSL and use diverse Deaf signers in video content to ensure authentic, linguistically accurate learning experiences



- **Professor Ros Herman, City St George's (Speech & Language Sciences):**
    - **Focus:** Existing diagnostic tools (like ADOS) are not culturally or linguistically adapted for Deaf/signing children, leaving neurodivergent Deaf children unsupported
    - **Relevance to Aotearoa:** Highlights the crucial need for culturally responsive, inclusive assessment and AR tools that account for the complex, intersecting identities of Deaf and neurodivergent children



- **Online Short Course, DCAL (Deaf Awareness):**
    - **Focus:** Clarified the distinction between full sign languages and supporting systems

(SSE/Makaton). Identified **concentration fatigue** from visual-only communication as a key accessibility challenge

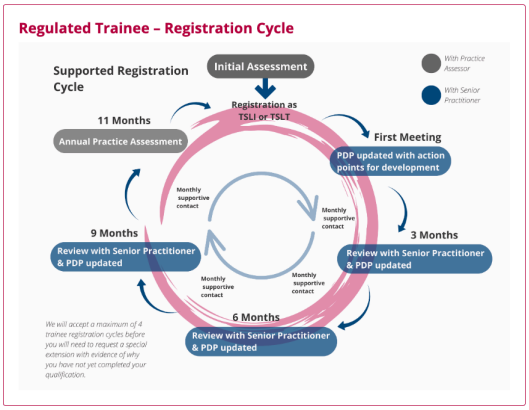
- **Relevance to Aotearoa:** Provides foundational knowledge for designing AR/digital media that balances visual input and avoids overload, while correctly applying cultural and linguistic terminology

3. **Principle: Ethical Governance and User-Centred Regulation:**

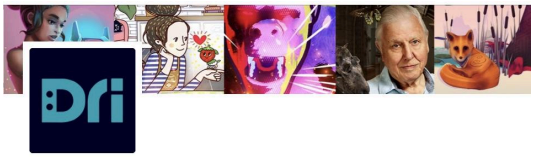
This principle highlights the necessity of establishing clear ethical and participatory frameworks, ensuring technology is accountable, complements human expertise, and is guided by user-centric standards.

- **RIX Institute Hackathon 2025, UEL RIX Institute (Collaborative Co-design Event):**
  - **Focus:** Exemplified that centring lived experience is key to genuine innovation. Stressed the need to address the ethical risks of AI and prevent cognitive overload in digital design
  - **Relevance to Aotearoa:** Provides the model for participatory co-design, offering practical strategies for multisensory engagement and responsible, ethical deployment of AR/AI

- **Tori Raw, Head of Professional Conduct, NRCPD (Regulator):**
  - **Focus:** Regulation must be participatory (involving Deaf and DeafBlind leaders) and ensure technology complements, not replaces, language professionals while meeting ethical standards
  - **Relevance to Aotearoa:** Offers guidance on building a regulatory model of shared responsibility for AR/AI ethics, ensuring professional standards evolve alongside lived experience and technology



- **Kumar Jacobs, Leadership in Digital Health & Immersive Technology:**
    - **Focus:** Advocated for the **"Less is More"** principle to manage sensory input and stressed that AR must be user-centered, ethical, and complement proven teaching or clinical methodologies
    - **Relevance to Aotearoa:** Provides the ethical framework for AR development, ensuring the tools prioritise safety, accessibility, and integration with existing educational/clinical practice



Dream Reality Interactive

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📊 Common Patterns from Insights:

Across the Sign Language, Deaf Culture & Community, Digital Media Innovation, and Neurodiversity categories, many recurring patterns emerge, highlighting key principles for research, practice, and technology development in Deaf and neurodivergent contexts.

1. Deaf Cultural & Linguistic Identity:

Deafness is increasingly understood through a social/cultural lens, recognising Deaf communities as distinct linguistic and cultural groups rather than framing deafness as a deficit. BSL and other sign languages are fully developed natural languages, not simplified versions of spoken languages. Deaf communities have unique values, histories, and practices, and Deaf-led governance ensures cultural authenticity.

- ***Evidence & Implications:*** NRCPD and Deaf-led charities emphasise Deaf leadership in events, interpreter development, and service delivery. Historical restrictions, such as the Milan Congress ban on sign language, illustrate the ongoing impact of denying linguistic and cultural identity (the Social Model)

2. Deaf-Led Leadership & Agency:

Projects and services are most effective when led by Deaf individuals, ensuring cultural and linguistic appropriateness. Hearing intermediaries (interpreters, designers, advisors) support but cannot replace Deaf expertise. Co-design approaches in technology, AI, and accessibility tools enhance engagement and trust.

- ***Evidence & Implications:*** Examples include EDS events, Signly AI projects, and NRCPD CPD programs. Tokenism and lack of empowerment undermine outcomes, highlighting the importance of fair compensation and genuine agency

3. **Diversity Within the Deaf Community:**

Deaf people are not monolithic: variations include regional dialects, neurodiversity, literacy levels, and multilingualism. Support in assessment, education, and employment must account for these heterogeneous needs.

- ***Evidence & Implications:*** BSL Receptive and Production Tests capture dialect differences; reading research shows vocabulary gaps for Deaf children; Deaf employees often navigate multiple spoken and sign languages. Tailored, context-sensitive approaches are essential

4. **Accessibility & Inclusion Gaps:**

Persistent barriers exist in education, employment, healthcare, and public services. Structural issues include limited funding, insufficient interpreter availability, poorly designed digital tools, and inequitable access to AI/technology. Attitudinal barriers, such as fear of "getting it wrong," often exceed technical limitations.

- ***Evidence & Implications:*** Employment challenges in East London, reliance on Access to Work schemes, and casual workplace exclusion underscore the need for proactive inclusion strategies

5. **Holistic & Multimodal Approaches:**

Effective interventions emphasise multimodal learning, early language environments, and integrated support systems. Recognition of cognitive load and concentration fatigue informs workplace and educational practices.

- ***Evidence & Implications:*** Herman & Kyle's research on early literacy and workplace communication guidance demonstrate the importance of tailored, multimodal strategies for sustained engagement and accessibility

6. **Technology, AI, and Digital Media:**

Digital and AI tools are tools, not replacements: they enhance but do not replace Deaf expertise. Video and visual fidelity are critical for sign languages due to grammar, facial expressions, and spatial use. Ethical considerations, consent, and representation are essential for culturally grounded, trustworthy technology.

- ***Evidence & Implications:*** Signly AI projects, BSL SignBank, and DeafRoots Heritage initiatives show that co-designed tools empower users and preserve cultural integrity. AR/VR can enrich experiences if designed inclusively

7. **Neurodiversity & Intersectionality:**

Deaf children and adults who are neurodivergent experience intersecting challenges that require tailored assessment and support. Digital tools, AI, and AR/VR must accommodate sensory sensitivities, cognitive load, and diverse learning styles. Inclusive design benefits all users and enhances engagement, usability, and equity.

- ***Evidence & Implications:*** Existing diagnostic tools are often inadequate for Deaf neurodivergent users (Professor Herman). This strongly reinforces the design imperative from digital health leaders (Kumar Jacobs) to use the **'less is more' principle** for audio, visuals, and motion, ensuring AR/VR tools manage sensory input and cognitive load for inclusive use

8. **Community, Trust, and Collaboration:**

Strong emphasis on mentorship, trust, and community-driven approaches enhances engagement and sustainability. Collaboration across disciplines and sectors ensures culturally grounded, evidence-based, and practical solutions.

    - ***Evidence & Implications:*** EDS events, DeafRoots volunteer projects, and NRCPD consultations highlight the value of inclusive co-design, feedback loops, and community representation

Key Takeaways:

- **Deaf and neurodivergent communities must lead** research, design, and service development to ensure authenticity and effectiveness
- Accessibility is **holistic**: it spans cultural, linguistic, technological, and cognitive dimensions
- Technology is a **support, not a substitute**: high-quality video, AI, and AR/VR tools must complement human expertise
- **Intersectional, inclusive** approaches enhance outcomes for both individuals and communities
- Collaboration, trust, and ethical practice are central to sustainable and meaningful engagement

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💡 Strategies and Recommendations:

1. Deaf-Led Co-Design & Cultural Authenticity:

- Engage fluent NZSL users, Deaf professionals, and community leaders at every stage: research, planning, design, testing, and evaluation
- Develop advisory panels or participatory workshops to ensure cultural and linguistic integrity, with a specific mandate to include **Tūri Māori** (Māori Deaf) leadership and uphold the dual linguistic identity of NZSL/te reo Māori concepts within digital tools
- Use video corpora and real-life signing examples to guide AR content creation, ensuring signs, facial expressions, and spatial grammar are accurately represented

2. **AR/Digital Media Integration:**

- Use AR to create immersive, interactive NZSL learning experiences, e.g., lifelike avatars or spatial storytelling for sign sequences
- Combine AR with digital video corpora, allowing learners to practice with realistic, culturally diverse signing scenarios
- Ensure tools **complement existing learning methods**, not replace them—AR as a supportive, evidence-based enhancement

3. **Neurodivergence-Informed Design:**

- Incorporate flexible learning paths: options for visual, text, and audio cues; **adjustable pacing**; and minimal sensory clutter
- Use AI to **personalise experiences**, remembering user preferences and adjusting difficulty or interface complexity dynamically
- Evaluate designs with neurodivergent learners to reduce **cognitive overload** and maximise engagement

4. **Ethical & Responsible Technology Use:**

- Implement **governance standards and ethics** for AI/AR, including community validation before deployment
- Focus on metrics beyond engagement—**self-esteem, confidence, comprehension**, accessibility outcomes
- Ensure tools are usable on a range of devices to avoid digital exclusion

5. **Global Learning & Knowledge Transfer:**

- Research international practices (e.g., BSL in the UK) and adapt successful AR/digital strategies to NZSL
- Include cross-cultural comparisons to inform inclusive, scalable solutions
- Establish a formal pathway to transfer BSL governance standards (e.g., **NRCPD's ethical models**) into the NZSL interpreter and technology co-design sectors

- Leverage online Deaf networks for content sharing, mentorship, and interactive feedback

6. **Multi-Layered Assessment & Feedback:**

- Include built-in assessment and feedback mechanisms that capture language accuracy, learner comprehension, and engagement levels
- Use both quantitative and qualitative metrics, including input from Deaf and neurodivergent users, to continually refine tools

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📖 Conclusion:

The true measure of a society lies in how it empowers its most linguistically and cognitively diverse citizens. This Fellowship, grounded in global practice and synthesised into eight core patterns, confirms that digital inclusion is inseparable from **cultural and linguistic integrity**. For Aotearoa, the challenge is not simply to adopt new technology, but to leverage tools like AR and AI through a **Deaf-led, neurodivergence-informed co-design process**.

In placing NZSL and neurodiversity first, we can actively dismantle communication barriers and realise the full potential of the emerging Communication Economy. The strategies outlined—from mandating ethical governance for AI to investing in a Deaf-led talent pipeline—provide a clear path toward a digital future where every New Zealander has equitable access to information, learning, and self-expression. The findings in this report now transition from insights into **actionable momentum**, ready for implementation across government, education, and technology sectors, establishing Aotearoa as a global benchmark for inclusive digital equity.

✅ Dissemination and Implementation Plan:

This plan outlines the structured approach for translating the findings and strategies of this Fellowship into measurable, sustainable action within Aotearoa over the next two years, maximising impact across policy, technology, and community sectors.

1. **Partnerships and Outreach**

Success hinges on securing strategic buy-in from decision-makers and key community leaders to ensure cultural authenticity and effective implementation.

- **Strategic Collaborations:** Forge partnerships with government agencies (Ministry of Education, Whaikaha - Ministry of Disabled People), **Tūri Māori stakeholders**, tech startups (Kara Technologies), NGOs (Deaf Aotearoa), and leading AR organisations to co-develop, pilot, and implement accessible AR and digital media tools
- **Targeted Media Engagement:** Secure high-profile media coverage in at least three major New Zealand media outlets (Stuff NZ, Capsule NZ, The SpinOff NZ) to raise public awareness, generate interest, and influence policy
- **Sector Briefings:** Deliver formal, action-focused presentations and policy documents to key ministries (Education, Whaikaha) and industry groups (Tech NZ) detailing the strategies for implementation

2. **Evaluation and Impact Measurement**

A rigorous evaluation framework will be employed to track effectiveness and provide the evidence base necessary for scaling the solutions.

- **Rigorous Evaluation:** Employ standardised NZSL fluency tests to measure language acquisition improvements. Conduct in-depth user surveys and interviews to assess tool usability, accessibility, and user satisfaction. Analyse detailed performance metrics (e.g., time on task, completion rates, error rates) to gauge tool effectiveness
- **Impact Assessment:** Track the number of individuals and organisations adopting the AR tools. Monitor changes in NZSL literacy rates and employment outcomes for Deaf and hard-of-hearing individuals

3. **Sustainability and Scale-up**

These steps ensure the project's long-term viability and maximise the benefit across the country, fulfilling the mission of the Fellowship.

- **Open-Source Platform:** Release core AR application and NZSL learning modules as **open-source** to foster community development, innovation, and adaptation

- **Curriculum Integration:** Collaborate with educational institutions to integrate AR and digital media into NZSL curriculum, ensuring long-term accessibility and language preservation
- **Policy Advocacy:** Advocate for policy changes that prioritise accessibility and digital inclusion, including funding for AR technology in education and workplaces

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📣 Media Recognition So Far:

Blogs / News Articles / Press Mentions:

- **Scoop News** — *Applications Now Open for the 2026 Churchill Fellowships,* Featured as a 2025 Churchill Fellow (22 July 2025)

- **University of East London News** — *Hackathon25 Sparks Healthy Ideas For a More Inclusive Future,* Featured as a key participant in a collaborative co-design event (23 June 2025)

- **RIX Inclusive Research (UK) Blog** — *RIX Hackathon25,* Featured in a video interview sharing my experience from the event (20 June 2025)

Podcast Features:

- **The CUSP Podcast** (Host: Tom Hitchcock) — *Episode 86: Looking Forward Is Something To Be Proud Of!,* In-depth interview discussing professional development and my Churchill Fellowship project (25 June 2025)

- **BBC Sounds – Access All** (Disability News & Mental Health) — *"Not the Welfare Bill"* episode, Featured guest discussing my purpose for attending Hackathon25 and its relevance to my Churchill Fellowship research (4 July 2025)