Clore Leadership-AHRC Online Research Library Paper

"It's beautiful and scary" - An exploration into UX in Arts and Culture events from the perspective of adults with Learning Disabilities and/or Autism.

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"It's beautiful and scary" - An exploration into UX in Arts and Culture events from the perspective of adults with Learning Disabilities and/or Autism.

1. Introduction

This research project is a timely contribution in adding to the growing body of work regarding inclusive UX for people with Cognitive and Learning Disabilities. "Cognitive and Learning Disabilities" is a terminology adopted by W3C in acknowledging the difference in "how people store, retrieve, or use information" (W3C website, 2016). The considerations cover a broad spectrum of experiences including for example dementia and mental health disabilities such as anxiety, depression and PTSD. In my research I have adopted the terminology "Learning Disability and/or Autism" (LD/A) instead of the W3C language which might be more familiar within the UX community, and LD/A is more commonly used in the learning disability arts sector. While being mindful of how other living conditions such as age and mental health contribute to disabling experiences, it is important to retain the visibility of the complexity of the interlocking attributes (such as mental health, age and learning disability). LD/A itself is already covering a wide variety of experiences and its boundary is fluid, collating wider experiences together in an umbrella term is vulnerable to homogenising unique intersectional experiences, leading to reification of identities. While this project has a sharp focus on experiences of people with LD/A, its findings have also shown intersection with wider issues addressed in UX design inclusive of Cognitive and Learning Disabilities defined under W3C's terms. The results from this research will readily inform inclusive UX designs and design for all, as well as retaining uniqueness and nuance more specifically on LD/A experiences.

This research has used creative consultation methods to explore the digital user experiences of people with LD/A in Arts and Culture events. The lead researcher Joyce Lee is an acclaimed theatre director and facilitator with 15 years of experience in disability arts in the UK. The scope of exploration covers the UX in Arts and Culture events from the first point of contact until the event has completed its course in the mind of the audience. This usually means from the discovery of the event until the point when the audience member stops interacting with it. The findings are expressed primarily through qualitative methods, supplied with quantitative data indicative of patterns and trends rather than demonstrating a precise value. The data was analysed from a grounded approach, themes such as incentives and barriers are then identified. A discussion was included towards the end to highlight insights to impact future UX designs, followed by a conclusion.

2. Context and rationale

Digital experiences have become integral in modern lived experiences. Data report from We Are Social suggests an ever growing prominence of digital usage in daily life. Cyberpsychologists also rejected “the notion of online versus real life and instead discuss our online and offline lives and selves” (Kaye et al 2022, quoted in Chadwick 2023, 1). In order to understand the holistic lived experience of a community an attention on UX and its impact is needed. People with Learning Disabilities and/or Autism (LD/A) are vulnerable to digital exclusion. This could be due to a myriad of reasons: lack of representation and involvement in the industry, inaccessibility of information available, disparity in digital literacy and access to education. 1.5 million UK adults, around 2.16% of population, are believed to have a learning disability according to data from Mencap and Office for National Statistics. According to design for all and universal design principles this section of the population should also be accounted for.

The Web Content Accessibility Guidelines (known as WCAG) developed by The World Wide Web Consortium (W3C) are an internationally recognised set of recommendations for improving web accessibility. The UK government has endorsed WCAG 2.2 and all public bodies and services must achieve WCAG 2.2 AA level as part of meeting government accessibility requirements (UK government 2024). UX of cognitive and learning disabilities users is a recognised gap and is in active development. Recognising this area as the gap, at W3C within the Accessibility Guideline Working Group, the Cognitive and Learning Disabilities task force was established and it actively contributed to the Accessibility Guideline WCAG. The latest version of WCAG 3.0, released on 12 Dec 2024, has been enhanced to address the needs for people with cognitive and learning disabilities, enhancing its successor WCAG 2.2.

In Arts and Culture, the covid 19 pandemic had demonstrated a rush to migrate contents and engagement online, marketing research has also shown that around 71% of audience journeys involved online ticketing (Spektrix data insight, 2023). As the trend to adopt digital innovation to engage audiences in the arts and culture sector proliferates, it is even more important to examine accessibility and UX to reduce digital divide in arts and cultural access. An accessibility scheme All In https://allin.online/ , supported by arts councils of all four nations, has been launched in late 2024 as an digital platform to bridge accessibility gaps citizens may come across when engaging with arts and culture events, venues or cultural organisations. The Arts Council England (ACE) stated that,

> “the ambition (of All In) is to create a digital membership scheme through which customers can provide details of their access needs just once, rather than repeating it at each location. Through the scheme’s website, customers will find clear, accurate information on accessible performances and venue facilities, allowing them to book and attend with confidence.” (taken from ACE website)

While we are yet to anticipate the adaptation of WCAG 3.0 by the UK government as a guideline, the All In scheme has just announced its pricing for membership and subscription is to be announced soon. Its development is on-going. It is ever more timely for this report to be written to add to the literature and impact systems.

The research questions I set out to unpack from the perspective of LD/A users sit under this umbrella: Can I Use it? This breaks down into: What do you use digital technology for? What do you love about it? What do you find difficult about it? What is your digital journey when you engage with Arts and Culture events? The questions covered a broad base survey of general IT usage and habits, then narrowed down to arts and cultural event specific examples.

My target audience for this research report include UX/UI designers, students and educators of UX/UI; Arts professionals including organisation leaders, creative technologists, workers in communication, audience development, marketing, PR and business development; Scholars, researchers and experts in the field such as the Cognitive and Learning Disabilities Accessibility Task Force at W3C; and LD/A communities.

Dissemination methods include: articles or blogs for awareness raising, with the possibility of being available both in English and Chinese, talks and discussions for industry creative technologists and artists, seminar and report sharing with academic communities, interdisciplinary between disability studies and HCI, illustrated research summary and accessible formats for learning disabled communities, conference paper submission and poster presentation.

3. Research method

Data from 93 participants were analysed in this research report, 89 of whom identified as having a Learning Disability and/or Autism (LD/A). Participants' bases of work and engagement include Bradford, Leeds, Newscale, London, Cardiff. As this is a research with a focus on UX of Arts and Culture (A&C) events, it is a choice to recruit LD/A participants who are highly likely to already have engagement with A&C events. People who identify for having LD/A are highly diverse, and again due to the focus of UX in A&C events in this research, a cross section of participants were recruited according to their arts engagement level, ranging from LD/A people who engage A&C as professionals, in training, or for general interest. The age range from eighteen to mid fifties, with the majority of participants in their 20s and 30s.

It is worth noting the support structure that sits underneath the research project that made an ethical process possible. The Learning Disabled participants were recruited through five arts organisations, each organisation is either a constituted company or registered charity, with governing structure and safeguarding policies. An extra 13 people, staff members with safeguarding and support duties, were involved in providing access support to the LD/A participants in this research. The support provided included introducing the project, supporting consent agreement, diary planning and booking of participants, safeguarding and support during the research activities.

This project collected stories and reflections from learning disabled users on their UX, it has added important voices of people with LD/A to the body of literature. The research project is also designed to engage participants in a creatively led and supported environment, nestled in their regular and existing programme of work with their affiliated organisations. This is designed to foster a sense of trust and community, which has helped dissipate any anxiety that could potentially be imposed by the disabled/non-disabled and academic/participant dynamic.

The researcher leading each session has a background in disability theatre and creative facilitation, hence a variety of activities were also deployed to invite response in order to supplement speech based activities, including Theater of the Oppressed techniques (Boal 1979) and clay modelling. Research participants were involved in research activities as below:

Workshops

- 9 workshops, each lasting between 50 to 120 minutes
- In person sessions
- 2 Wales, 7 North of England
- 6 groups are in training, 3 groups are professionals
- All identified with having a learning disability
- 81 people in total

Focus group interviews

- 2 focus groups
- In person sessions
- 1 north of England, 1 Wales
- Working in the arts professionally
- All identified with having a learning disability
- 6 people in total

1 to 1 interviews

- 6 interviews
- Mixture of in person and online interviews
- 3 North of England and 3 South of England where they are based.
- Experts users, involved in UX creation and support of LD/A users
- 2 out of the 6 interviewees identified with having a learning disability
- 6 people in total

Data is pseudonymous and was collected in a variety of forms, including: audio recordings of speeches and creative audio responses, handwritten notes from conversations or observations of behaviours and dynamic, photos and videos of creative responses in movement, shorts dramatic scenes and mixed media artworks. The researcher reviewed all the data and notes were taken. Themes and patterns were then identified. Thematically crucial quotes were reviewed again and transcribed. They are used in the report below.

4. Findings

4.1 What do participants use

The general question “what digital technology do you use” was asked, participants responded from what’s at the forefront of their minds and conversations flowed with group dynamics. Gentle prompts were given to move conversation on if needed, like “what about social media”. The findings were derived from a participants led grounded approach, and it was conversational as opposed to a survey with a set form. Although the data is not precise, it is useful to observe patterns and trends.

Data collected is separated into 4 categories according to how commonly used they are amongst the participants: high (scoring 45+), medium (scoring 20-44), low (scoring 5-19) and outliers (scoring 1-4). The distribution was shown as below:

Item	Score	hardware	software
Smart phone	85	x	
Whatsapp	81		x
Youtube	78		x
Facebook	63		x
Zoom	56		x
Gaming app or console	49	x	x
Tablet	44	x	
Laptop	39	x	
Video calls	31		x
Google search	30		x
Instagram	25		x
TikTok	22		x
Virtual Assistants	21		x
Desktop computers	13	x	
Pedometer or step counter apps	11	x	x
Snapchat	10		x
Slack	9		x
Digital Transactions	8	x	

Smart TV	7		x
Smart watch or wearable device	5	x	
Spotify	4		x
Kindle	3	x	x
Audible	2		x
Twitter/X	2		x
Bus App	3		x
Apple music	2		x
Life360	2		x
ChatGPT	2		x
Otter	1		x
Printer	1	x	
Digital Camera	1	x	
Supermarket self checkout	1	x	

Overwhelming majority of the participants accessed the internet with smart phones, and about half of the participants used a tablet or laptop.

The top three softwares are social media platforms and information hubs Whataspp, Youtube and Facebook. Zoom followed suit and its adaptation was triggered by the lock down in 2020. Gaming was another popular digital interaction, engaged with just over 50% of the participants.

4.2 Digital journey for Arts and Cultural events

This aims to map the digital experience of LD/A audience and identify interaction points from the first point of engagement of the event until the engagement is completed. Again, with a grounded approach, an open question is asked to the participants (“what digital stuff do you come across from the beginning until the end when you go see a show?”) Responds are logged and categorised into 4 stages of engagement: discovering about the event, buying or registering tickets, day of the show and at the show, after show.

4.2.1 Discovering about the event

This is the stage with the most frequent and varied digital interactions. Furthermore, it is observed that the interactions at this stage involved participants’ active action, exercising their agency to seek engagement; while other interactions are passive with participants assuming the role of the receivers of content. Table below indicated the kind of digital

interactions described and whether the participants took the role as active agents or passive receivers.

Interactions	Active agents	Passive receivers
Social media adverts		x
Social media posts		x
Video trailers	x	
Video suggestions from viewing or search history		x
Ticketing sites: search for specific event	x	
Ticketing sites: prompts “you may also like”	x	x
Whatsapp message in peer groups		x
Arts and Cultural companies’ website	x	
Venues’ website	x	
Email newsletter		x
Google search what’s on	x	
Fandom sites	x	
Discord: follow a channel with known interest	x	
Discord: events promoted in chosen interest		x

Content preferred included basic information of the event; access information for example loud noises, strobe/flashing lighting, and content trigger warnings; access facilities or provision for example changing places, audio description, signed, relaxed performance, quiet area, meet the character/performers or touch tour; duration of event; clearly indicated expectations for audience placement eg seating, standing, moving around or combinations of all; introducing the characters or performers; behind the scenes and creative process; creative team interviews; audience feedback or vox pops and so on. Participants expressed a desire to curate their own content: “You are in control. You can’t control TV or radio”.

It is interesting to note that even though varied and frequent as these digital interactions are, more traditional and analogue methods are still dominant and preferred by this participant group. Participants mentioned TV adverts, posters, billboards, brochures and leaflets picked up at box offices or through the letterbox, word of mouth from friends, family or colleagues. Word of mouth is the most dominant way of discovering events in this group, whether through digital or physical communication. The notion of having a “human touch” has been mentioned in different workshop groups. A combination of both physical and digital information, and with different formats including text, video with subtitles, audio, photos/visual, made available is the most welcomed.

4.2.2 Buying or registering for tickets

Digital experiences described in this section are:

a. Social media links to ticketing systems
b. Company website
c. Venue website
d. Eventbrite
e. Ticketmaster

This is the area with significantly low digital engagement reported, low engagement at this point corresponds to the low score for digital transactions identified in section 4.1 above. Majority of this activity was done on behalf of the participants by family or colleagues, or was carried out in person at the box office or telephone. These manifestations of transaction patterns for this group involved scenarios where the individual does not manage their own finances entirely, or manage partially. For those who manage their own finances, cash was regularly used and some prefer the cash option. The handling of physical currency is preferred as a method of budget management, as the depletion of money is physically and sensorially tangible in physical currency, where numeric symbols appearing on screens aren't. One participant had experienced loss of money due to an error in an online transaction. While on a donation page, the participant wanted to support a friend's fundraising campaign but ended up giving more than they had intended and they were unable to recover the funds. The participant could not remember which particular donation site nor understand what went wrong, but an example like this could understandably contribute to a reluctance or wariness of online transactions.

Barriers are reported that have prevented a smooth and pleasant UX at this engagement stage, or made it even considered possible. One participant described seeing the interface and although no particulars were identified they believed "I wouldn't know how to go about it!". Another participant commented how everything seemed to have migrated online, and "they assumed that we are all tech savvy". This has reflected a real lack of confidence in one's technical knowledge, the ticket booking interface was perceived as complicated. Relating to the use of cash discussed above, other participants who accessed the online ticketing system also stopped at payment as they prefer paying in cash. Again, "human touch", "I like to talk to someone", or "having some to ask questions" were raised.

The lack or inadequacy of access information available on the booking page was reported to be a barrier to a smooth UX. A group discussed the experience of a trip to a major cultural venue in a city for Akram Khan's rendition of Jungle Book. No trigger warning was mentioned on the event page or ticket booking page. They only realised that there were loud gun shots in the show when they arrived at the theatre. The participant commented, "I didn't like that at all. It didn't say on the website, it was a piece of paper stuck on the door when you go in, and another one stuck on the box office." Separate to this occasion participants also spoke of the inadequacy of access information, and would need the provision of a phone number leading to a real person at the other end of the line ready to engage in conversations.

The low engagement and bumpy user experience in this section was nestled in a complex myriad of barriers and concerns amongst this group of participants. The barriers and

concerns include online safety and security, clarity of communication and information, and UI barriers. We will return to this in section 4.4 for more detailed discussion regarding common barriers.

4.2.3 Show day and at the show

Digital experience described in this section of interaction included:

a. Using google map to find venue
b. Checking the weather
c. Setting alarm and reminder
d. Whatsapp message with friends to stay in touch during the journey
e. Retrieve email on phone for reference number for box office collection
f. Show e-ticket or QR code on phone
g. E-ticket on wallet app on phone
h. Taking photos and videos during the event (if permitted)

The majority (five out of eight) of these digital experiences reported are socially driven that facilitate social participation. These included connection and communication with friends, diary management, and navigation; while the rest are commercially driven activities which are related to ticketing. This stage's digital engagement focus on social participation is consistent with the popularity of communication tools (Whatsapp being the most popular software) found in 4.1. I would unpack this more in the next section regarding motivations and incentives.

Following on from the previous stage of engagement where the majority of the participants do not buy their own tickets or do so digitally, the audience digital journey has dropped off since the ticketing stage. There is heavy reliance on printed tickets and collection from the box office. However, participants reported to prefer having physical tickets on hand and do not view the low digital engagement at this stage as a problem. There were a variety of reasons. One participant mentioned keeping the physical ticket as memory. Other examples have shown a general distrust or the sense of uncertainty technology might bring, and physical tickets are considered to be more reliable. For instance participants spoke of unreliable data or wifi connection when accessing email in order to show the ticket, or the phone may run out of battery. Even though digital tickets were obtained, a few cases had mentioned printing out confirmation emails or QR codes. When digital tickets has become more and more prevalent for the general public, this has not been the case for LD/A audiences.

Denying access is found to be a source for stress and frustration, when digital tickets are perceived to be unreliable this group tried other means to ensure entry. A non-UX example highlighted this: two participants mentioned that they would bring along their Personal Independence Payment award letter (PIP) or other proof to show eligibility for their concession tickets, in order to avoid scrutiny or challenge at the door. Although this is not clear whether they have been challenged before. I shall return to this point in section 6 On holistic experience and UX.

4.2.4 After show

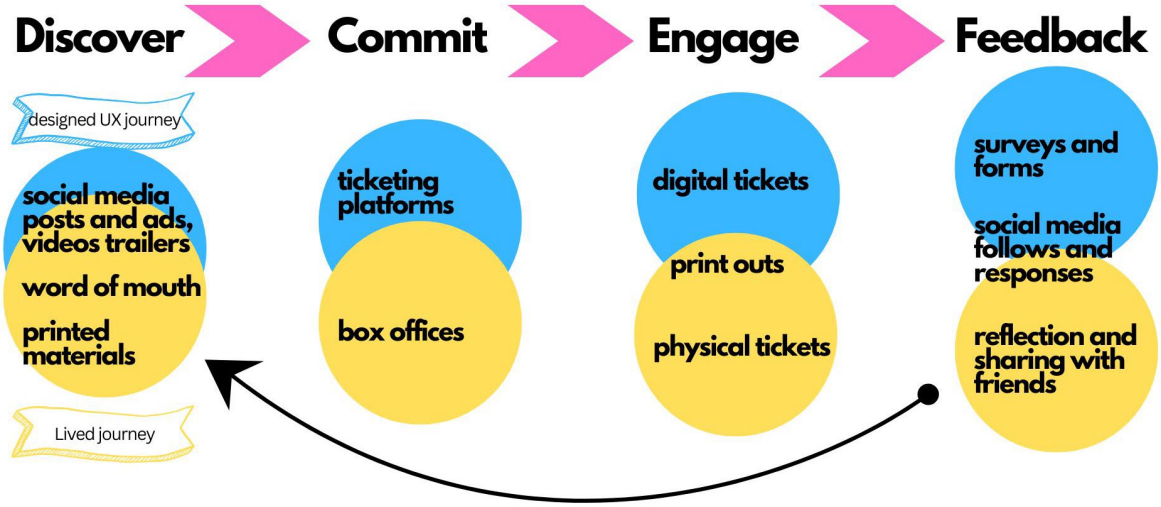
Digital experience described included:

a. Sharing experience with friendship groups on whatsapp
b. Find out more info about show on social media
c. Post on social media about show
d. Go on fandom sites and share experience
e. Write blog review
f. Keep a log of attendance on personal device
g. Show photos or video to friends on the phone

Different from the previous three stages of engagement, digital interactions reported by participants at this stage are all self initiated and self guided actions instead of ones that are explicitly invited by the arts and cultural organisations. I asked if anyone has filled in the feedback form or survey that are often sent out by producing companies or venues post show, no one did.

The array of experiences being described indicated that the cultural experience did not stop right after the show had finished. These digital activities are driven by self reflection (blog review, keeping log of attendance) and community building (sharing experience with friends) and are often not captured in official means, hence the feedback loop has again broken down at this phrase. While classic feedback mechanisms such as surveys had failed to capture this community as represented by the participants, the feedback loop happened regardless and took its own form. Participants spoke of discovering events through social media, recommendations and word of mouth. These means of discovering events correspond with the motivations of self reflection and community building identified in the last stage. These motivations could give insights for cultural producers in devising feedback mechanisms and UX that matched this audience journey more effectively.

The intended UX journey of A&C events is found to be out of sync with the real and lived audience journey of LD/A participants. It was the most positive and efficient at the early stages and progressively became less harmonious as the experience progressed, and finally rather incidental at the last stage. Each of the four stages of interaction above is featured with a central objective shared by A&C organisers/producers and audiences, and I name them discover, commit, engage, and feedback. The figure below illustrates the progression of the asynchronicity between the designed UX journey by producers (in blue) and the lived experience reported by participants who are audiences (in yellow). From the audience's perspective at the feedback stage, “social media follow and responses” and “reflection and sharing with friends” created an organic feedback loop, which was indicated by an arrow that circles back to the discover stage.



It is also noticed that most of the designed UX journey was underpinned by a strong financial driver, it has strong focuses on delivering marketing and promotion materials, usage of online ticketing platforms and digital tickets, and data collection from survey and evaluation forms. This has fallen short from the needs demonstrated by this group of participants, who seek human connection and communication, require clear information and have a general wariness of digital transactions.

4.3 Motivation and incentives

To drive successful UX, it is important to understand users' motivations and incentives so a journey could be designed to facilitate meeting the needs of users. Stories are shared through organic conversations during the workshops and focus group meetings. After a survey of "what do you use" as recorded in 4.1, I asked the participants "what do you use them for". Responds are analysed in thematic analysis approach, and derived into the following motivations and incentives:

Connectedness and communication

Participants were most motivated to use technology to stay connected with and reach out to other people. Whatsapp and Facebook are the most popular apps amongst the research participants. Overwhelming majority of participants use a form of instant messaging such as Whatsapp and Facebook messenger, apart from more traditional texts and telecommunication. Talking to family and friends is the most common incentive for such use. Apart from daily conversations with family and friends, a few cases used these instant messaging platforms to maintain family bonds with members living apart. One participant said "I use (Whatsapp) video call so I can see my family in Greece", and another said "(with whatsapp) I get to see my son". Participants appreciate the capability of these platforms to support a variety of functions including video calls, text and voice messages and these services are free of charge. A couple of participants linked their earring aid to their device through bluetooth to facilitate communication.

Connectedness is also related to the need for ensuring safety. Many mentioned keeping in touch with friends or colleagues when travelling to appointments in general, or to let people

know of any travel disruptions that may cause lateness. Two other participants use Life360 to share location with family so the family would know their whereabouts.

This drive for HCI interaction echoed this participant group's digital engagement with A&C experiences identified in section 4.2.

Accessing professional and education opportunities

Participants were introduced to zoom during the pandemic to access professional and education opportunities. All of the LD/A participants were recruited through arts organisations and have been accessing professional or educational opportunities with these organisations, the overwhelming majority of them have used zoom during the pandemic to stay connected with the organisations. One participant reflected, "it was covid that taught me about zoom, zoom was a lifesaver I count myself very lucky". Being able to access professional and educational opportunities are largely welcomed.

Even though online engagement are largely popular, there are a few cases where online engagement was either impossible because they have no access to the internet at home, or the fact that online engagement has amplified the lack of physical togetherness which has led to intense sadness so individuals refused to engage. An interviewee reflected the experience during lockdown, "(zoom) just reminded people more that we are not together, they just didn't want to zoom anymore". Physical and face to face engagement are preferred, this especially true in performing arts where visual, spatial and embodied cues are all taken into account in communication.

Most professional and educational opportunities are now moved back to physical settings, such as classes, workshops, rehearsals, and performances, with the exception of some work related activities which seemed to have migrated to online settings. LD/A arts professionals are caught up in this trend. For instance, attending meetings, being in or accessing interviews or auditions, attending or giving online conferences/symposiums or webinars. There are two cases of hosting "online ball" and "zoom disco", and two cases of creating hybrid performances for audiences that blend the online and offline. Individuals accessing these activities have reported increased frequency and confidence in digital engagement.

Research and learning

Participants were motivated to seek information online, either to satisfy curiosity, build knowledge, for self improvement, or for work purposes. There is a high level of engagement with youtube as an information hub, followed by google search and google images. Some considered it the first port of call for assistance, "If you don't know anything, go on Youtube!" Most participants found it easy to navigate the site, and the search bar was easy to use by typing in keywords, copying and pasting text from sources or using voice to text apps on their phones.

There is a wide variety of subject matters people searched for, for instance recipes, cooking videos, makeup tutorials, game play. Arts professionals amongst the participants are also motivated by fulfilling work commitments, for example choosing images to create moodboards, sound effects or music as references, researching historical facts, stories or

news reports for their upcoming creation, search for and downloading visual assets to use in live events as background image projection, self promotion and profile raising.

Entertainment

Entertainment is a large driver for digital interaction. Again subject areas varied widely: football results, wrestling matches, music videos, fashion, film clips, tv programmes, celebrity news. These contents were accessed through youtube, social media and target online search.

Gaming is another sub category under entertainment. People engage in single player or multiplayer online games on game consoles such as xbox, Playstation, Nintendo Wii and Nintendo Switch; one person uses laptop computer to access games through Steam. Majority of gamers play online app games. Games being played include: sports game like cricket or football manager; simulation games like Roblox, Minecraft, Grand Theft Auto, the Sims; casual games like my perfect hotel, Temple Run; Arcade and adventure games like Sonic the Hedgehog; puzzle games like chess or jigsaws; gambling game like online casino; and AR game like Pokemon Go.

Participants involved in online and app gaming were aware of the commercial activities and in-game purchase capabilities. Pop up adverts in free games, availability of unique items or unlocking the next level with “coins” are identified and in line with the reluctance to online transactions discussed in previous sections these are viewed as a nuisance. There were comments like, “I hate adverts”, “don’t make me buy stuff I don't need!” Two participants have received gift cards from friends and family to support in-game purchases, and they wouldn’t spend their own money. One person was involved in online gambling and is acutely aware of the danger of it, however they found it hard to stop. This is related to the Issue of safeguarding and will be discussed in more detail in section 5.

The social aspect of networked online gaming had been mentioned by a minority of these gamers, for example playing chess with family, or meeting cousins on Minecraft. During a focus group conversation, participants discussed how they had combined gaming, storytelling, adventure and entertainment to create a hybrid performance. In the performance, the story unfolded from two perspectives, one on an online platform Gather https://www.gather.town/ and the other one in person. Online and offline audiences were separated but would interact at designated points of the story. Participants, who performed the show either in person on online, were able to translate live performance skills into a hybrid model, and it was not difficult to learn as they are already “gamey minded”: “It took a while to get used to it, acting online with your avatar”; a participant commented the process was “mind-boggling” but all in the focus group expressed eagerness to further explore this avenue: “more shows like this please!”, “I want to see what other nifty things we can do with technology”.

Mental health and well-being

Some participants have found refuge in the digital world and computer interactions. Reflections from participants were poignant:

> “(I can) get away from the chaos and world out there, push that aside, (the content creator was) like a friend in a way.”

> “When it is too much I can get away from the world”
> “When I’m overwhelmed with too much I block it out with white noise”
> “Escapism”

This echoes the previous desire identified about control and self curation of content reception. These examples show being able to exercise agency is valued, and which has contributed to the maintenance of mental health.

Sensory and well-being apps are used including colouring. One participant demonstrated an app showing swirling patterns in psychedelic colours that responds to touch on screen, “I just love the mesmerising patterns.” Participants look for sensory stimulation, listen to white noise and/or music on youtube and phone storage.

A minority of participants used walking app, pedometers and other wearable devices that support their physical well being. “It gets me out of the house”, “(keep me) strong”.

Sense of community and freedom of self expression

Relating to the motivation of entertainment, participants also found comfort and joy in witnessing the colourful diversity of communities outside of their immediate circles. The freedom of expression was particularly felt when they are accessing contents that are unique to their interests, and perhaps pleasantly surprising to them.

> “I like it when it is positive when they are doing what they will.”
> “It is amazing to find out other people who like machines like me.”
> “You can just type something in free and watch whenever you like”

The sense of freedom is coupled with a sense of belonging to a community that permeated outside of the LD/A community and their immediate networks. This value felt by participants is compounded with all the motivation discussed in this section above, namely the desire to connect, to learn, to find entertainment, and to manage mental health. This digital interaction is valued as a window to expand their world view, exchange ideas and participate as a member of the online community.

> “... connecting with people, socialise with people I don't necessarily socialise with”
> “(see) a form of humour you can't do but you know that will appreciate”

While the majority of the participants are active agents and users, the number of participants creating content and publishing their self expression has drastically decreased. A minority of participants are engaged in creative writing on blogs, creating content for youtube and tiktok such as show reviews, dances, monologues performances and role plays. Of course the desire to publish content is not a given, for those who have expressed a desire, safeguarding concerns and confidence level are reported as the main barriers. This will be unpacked more in section 4.4 regarding barriers.

Advocacy and awareness raising

For people who have created content, a few have expressed a strong desire to advocate for the LD/A community. They said, “it’s Important I am promoting my community, and other

LD/A people to be seen as well"; "you don't see many people like me online". One person created videos on Tiktok teaching people Makaton sign language.

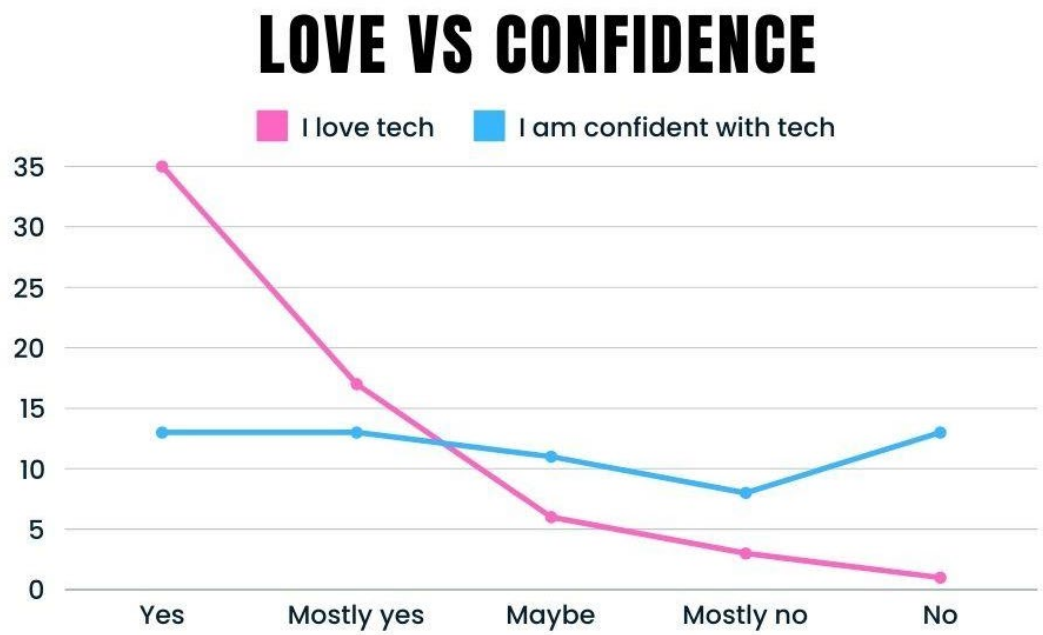
Shopping

Only a minority of the LD/A participants uses money digitally as discussed above. This is linked to safeguarding issue and UI barriers which will be discussed below in section 4.4.

However it is interesting to note a particular story. One participant described a supported shopping experience: he went to a specialist shop physically and was unable to find the desired item, then he searched online and realised the item was available in a different branch in another city. He showed the website to his friend and passed cash to his friend, and his friend purchased the item online on behalf of him. There is still a motivation to do shopping, however the human-computer interaction has not met the need of the individual, the need is satisfied with human-computer-human interaction.

4.4 Common barriers

Participants were asked in workshops to consider two statements: "I love technology" and "I am confident with using technology" and to what extent do they agree with each statement (from 100% yes to absolutely not). Again, instead of a precise quantitative survey, it is treated as an indicator to identify preferences and patterns. The room was labelled "yes" at one end, and "no" at the other. The distance between both ends of the room indicate a varying degree toward either yes or no, participants were asked to position themselves in the room to show to what degree they agree with a certain statement. The distribution is shown as below:



When there is a high level of agreement with "I love technology" and a clear fall in disagreement, confidence level is much lower and the degree of agreement is distributed

relatively evenly. The trend has shown that even though people love technology, the confidence level falls short in meeting this fondness of technology. In a workshop a group of participants portrayed the following situation with drama:

> One person played the role of a computer, the other person facing the computer, miming typing action and humming a tune. The person was interrupted by the computer from time to time in a sneering voice,
>
> “What are clicking, it's not there you donut!”
> “Haha you got it wrong you donut!”
> “You've booked the wrong date you donut!”
>
> Finally the person held their head and yelled, “I’m not a donut!”
> Then the person walked away from the computer.

The character showed frustration and anxiety, and this HCI is clearly unpleasant, finishing with the human walking away in defeat. With the abundance of positive motivations discussed above, there is a general desire to engage with technology amongst the participants, however their needs were often not met as shown in their A&C UX. Below I will discuss a few themes emerging regarding common barriers this group of participants has faced. Some of the barriers are not A&C specific, but they could be understood as contributors to their overall user experiences including the using habits observed in A&C events.

Safeguarding concerns

Safeguarding concerns are the main barriers for a comfortable and smooth UX in this community. This has come up in all the research workshops, interviews and focus groups meeting with the LD/A participants. There are different subcategories under safeguarding:

Security and privacy

There is a high level of alertness and wariness about receiving spams, junk, virus, messages from imposters and strangers. Participants felt worried and alarmed about being scammed, or having their account hacked. One participant recalled the experience of having her account hacked and spamming messages being sent from her account. She was alerted to it because one of the scamming messages reached her mum’s friend and her mum was informed of the situation. The participant reflected, “It made me sad and angry. I was scared the police were coming to get me… It wasn't me, but it was pretending to be me.”

This understandably contributes to a sense of distrust in online interactions, or what might be perceived to happen,especially over situations that involve personal information. Other participants has said,

> “I don't use anything that spy on you”
> “I watched a documentary… there is a chip, it is still recording when you have your phone off”
> “I just bought something and they show me more of the same thing. I don’t need to spend more money, I've already got it!”

"Give users more control, not the algorithm"
“I don’t want to be dictated.”
“Feels there’s a lot of unknown behind the scenes”

There is a shared dislike and annoyance of being spied on, hence losing control and agency. A minority of the participants take measures to resist such scrutiny and protect identity. Methods such as not using real name on social media profile; withholding personal information or giving fake information such as emails and phone number; using DuckDuckGo to avoid cookies being saved. One participant described how he created a few different accounts and profiles, and used each one to browse different content in order to “get a step ahead of the scammers”. In general the participants valued privacy and online security greatly, while not feeling protected sufficiently by corporations or institutions they deployed their own methods and resources to negotiate around online safety.

Cyber bullying

Experience of being the target of cyberbullying is found to be prevalent amongst the participants.

“(There are) trolls on Twitter. Whatsapp, bullied on that too.”
“I got autism, it can get really bad, like cyber bullying. It happened to me. It’s like a seesaw.”
“I learn the hard way, I learn to not trust anyone online.”
“My mum won’t let me use it now”
“I don't have an account, my mum said it’s dangerous”

Experience of cyberbullying and the threat of it is a part of the UX of this group of participants, which result in a cautionary and reticent experience, or being discouraged from engaging in digital interactions, either voluntarily or involuntarily. This is a double-binding and complex situation which needs careful consideration. As discussed in earlier parts, social media is popular among these group of participants, and with the motivations to foster existing connection with friends and family, use as a low cost way to venture outside of immediate social circles and participate in online communities, such high engagement and incentive also render these people widely exposed to potential cyberbullying. While social media such as whatsapp and facebook could be an efficient avenue to target LD/A engagement in A&C events, relevant safeguarding procedures should be considered as a duty of care.

Mental health and addiction

Another concrete measure to support the safeguarding of vulnerable groups is around mental health. Apart from cyber bullying which is evidently detrimental to mental health, addiction was mentioned a few times and people have struggled to limit use. This includes internet addiction and gambling.

"It's like a chainsaw, it's powerful and useful if you know what you're doing, but if not it can cause a lot of damage"
“Phone gets on your nerves, I got off it for a day, then I got back on it”
“I love it I am not proud”

> “Sometimes it is overwhelming, and I can't stop using it. It's a lot.”
> “I am on tiktok constantly, using the internet. I can't live without technology that is so sad.”
> “I gamble online… yeah it’s a problem”

To a certain extent the Ux design has been attractive and meeting the needs of users who responded well to reward mechanisms (eg. likes and follows), suggested contents, and gambling style loot boxes. However it is predatory and these users in the participant group do not appreciate this UX. One participant said, “I know this is your job, but at least make sure people can take breaks”

Theft and hate crime

There is one unique and notable case of theft and hate crime which has discouraged a participant from using their device. They were able to manage digital monetary transactions, they choose and manage apps on their phone independently. One day when they were waiting for the bus and were holding their phone while having the bus ticket app ready, a stranger came up to them as the bus was approaching and spoke to him in a language they didn't understand. They were distracted and under pressure while trying to get on the bus and communicate with the stranger. Suddenly the stranger grabbed their phone and ran off, leaving him in front of the bus stunned. Then the bus also drove off leaving them on the street, mugged. This horrible experience has led to the participant giving up using digital tickets for transport. This is not a particular UX, however it contextualised a lived experience of user like this participant, who is eventually prevented from accessing the digital tool and prevented from enjoying the convenience the tool brings.

Information and communication shortcomings

Communication barriers are another significant area that affected this group of LD/A users. People spoke of broken links on websites, outdated or wrong information, or links leading to a loop or nowhere. This contributes to a sense of unreliability and participants end up not trusting the information. When speaking of arts and cultural events, access information is often not available or incomplete, some have felt that their needs and existence are overlooked and hence excluded from participation.

Sometimes information is also imparted in a way that is hard to understand. One participant described how they bought a product which was too small because they didn’t understand the dimensions and the image shown has made it look bigger than it is. Another example was about seating plans when booking tickets. Language like “view partially blocked” raised questions of what kind of view it actually means. Some had mentioned that they would prefer to make the decision if the trade off between “partially blocked view” and cheaper ticket price is worth it. It is useful to understand what the view is actually like in order to communicate effectively to answer people's needs, as one participant reflected, “I am partially sighted, if the balcony is too far away I can't see”.

Another unique communication barrier is related to voice to text software. A participant with cerebral palsy was hoping to find a voice to text software to assist their need to take notes for work purposes, but the ones they had been trying, otter and zoom, were unable to

recognize their speech pattern and failed to meet their needs. They were yet to find an off the shelf and affordable option to fulfil this need.

UI barriers

Some barriers are concrete and specific to the user interface. Participants spoke of time limits in booking systems that induced stress; forgetting passwords and creating multiple accounts; problems when it “plays up”, for instance when the page froze, which has prompted them to refresh or press the back button, then it “kicked me out” or having information lost and needing to start all over again. A participant had tried online donation, but they made a mistake and at the end realised that they had paid too much and there was no way to get the money back. Structure and layout of some website sites have also confused some participants. Example given was Bradford Theatre website, where three different venues were sharing the same website, and participants were led to a show without realising it is on elsewhere.

Loops and the need of linking multiple accounts was viewed as complicated and confusing, hence a barrier and deterred many from trying. The example here is Microsoft teams. “Teams is not accessible, complicated, email links need to be connected with teams, then wait a few hours before getting to a meeting.” This is understandably not simply a UI problem but rather to do with premium access linked with accounts and paywalls. Premium access as a deterrent was also identified when comparing instagram and facebook. “I don't have an insta(gram) account, so I can only see a few seconds before I got blocked. But with facebook I can.”

Participants have expressed appreciation for the simplicity of a platform that can perform multiple functions. Examples are smart TV where one can get different channels, youtube and netflix unified and accessible in one interface; also the example of Alexia which linking it with their phone would allow their need for entertainment, learning and connection with others satisfied. The responsiveness was also reassuring, one participant said, “the light spins around (on Alexia), so I know it is listening”.

Hardware and software

Another important factor that influences their UX is access to hardware and software. Many mentioned price as a barrier. Sometimes participants find that they can’t afford new hardware and updates, and older equipment they’ve got has stopped getting updates, and has become obsolete and unusable.

Wifi connection is not always reliable and it caused a lot of stress, for example in zoom meetings, or when there is a need to access email or eticket at venues to get into the event. People also mentioned battery dying, causing stress when they are unable to access tickets, lost contact with friends, or couldn’t find their way around with maps.

5. Discussion

The findings have highlighted a few insights worth considering for UX designers in the future if they aim to create a smooth and comfortable inclusive UX for all.

Role of safeguarding and rebuilding trust

The discussion around security, privacy and cyberbullying above has highlighted a big role for safeguarding in the journey to creating inclusive UX. While measures outside the remit of technologies are crucial, for example robust safeguarding policy and legislations for data protection, everyone involved in creating UX should stay vigilant and work in solidarity in protecting the most vulnerable in our online community.

One solid avenue to demonstrate solidarity is to rebuild trust and accountability. Examples discussed regarding UI barriers highlighted a breakdown of communication and disconnection between this user group and UX producers. HCI experience like this fueled the mistrust that was already propagated by the concern for privacy and security. In the newly published WCAG 3.0 (Dec 2024) by W3C, the guidance has been extended to include UX of people with cognitive and learning disabilities, it is important to build on this existing body of work involving real humans with lived experience in user testing and consultation is the best way in bridging communication gaps.

UX design is a powerful tool to impact human behaviour. People were driven to interact with computers and the digital due to different needs and incentives, the positive impact of UX is when such digital interaction facilitates people to attain their needs and desires. Self curation and freedom are a massive driver for HCI (“You are in control. You can’t control TV or radio”), however this is also at odds with the idea that someone is trying to trick you (“Feels there’s a lot of unknown behind the scenes”). Being transparent and prioritising the wellbeing of users is recommended. Apart from making sure people can have breaks as requested by participants, there should also be a duty to prioritise security, privacy and well being, and balancing these user needs with commercial and financial goals.

Need for nuanced analysis and diversity of choices

The above findings have shown that there are contrasting desires, needs and requests: there is a need to stay safe while having the freedom to roam; there is the want of more autonomy and ability to self curate content, while others find the information available overwhelming and too detailed. It is important to acknowledge that there is no one size fits all solution, and there is no silver bullet that will end all exclusion.

LD/A is far from being a homogenous community, and people’s digital experience is widely diverse. There is a wide discrepancy of technological “savviness”, also there are complex and conflicting motivations that drive or hinder HCI. Various accessibility tools and features that removed barriers posted by impairments were used and welcomed. For example captioning and subtitles, screen readers, voice to text apps, linking hearing aid to device via bluetooth, ability to adjust playing speed and picture quality, speed of motions and background details in gaming, information available in plain language, easy read with pictures, audio and BSL formats, photos and infographics and so on.
Nuance could only be minded when you pay attention to the human users behind the computer. Participants expressed a strong desire to be understood and being taken into account. They expressed a desire and readiness to be involved, i shall quote their recommendations below:

> “Speak to the consumer, talk to the people who are going to buy your product, get to know someone.”
> “Think about how much time people have, how much extra work you think people will be willing to do to engage with your software, do you need so many different bars or tools, or can this be cut down.”
> “Make things more accessible, making sure that it is clear langue to understand, no jargon, make it fun, being challenging, do testers, reach out if they want to test out”

Responsiveness, interactiveness and human touch

Live response and interactiveness is appreciated and found to be reassuring, which in turn enhances a comfortable user experience.

During the investigation around digital experience of arts and cultural events, it is keenly felt by a majority of the participants that digital experience and tools should not replace humans. The “human touch” as discussed in previous sections is important to many participants’ experiences, and they would like to know that help is ready when you need it. By this participants often referred to a phone number with a person at the other end, whom they could have a spontaneous conversation with and ask questions. This human touch is currently unable to be substituted by digital interactions or ai.

Tolerance level for errors

A few interfaces were giving the impression of being insurmountably difficult, in A&C event the example is the ticketing platform. Apart from the multiple emails links and premium contents behind paywalls described in the experience with Microsoft Teams, it is unclear what has specifically been the barrier as it is immediately deterring someone from trying. For example online ticketing systems when participants threw their hands up in the air and said “I wouldn’t know how to go about it!”. Perhaps the crux of this problem is a low level of tolerance for error, contributing to the fear of getting it wrong. The “donut” scene described above has portrayed this. The participants expressed frustration at the situation and such experience had made them feel stupid. Repeated experience contributed to a mindset of learned helplessness, detering someone from trying again, even though the interface itself wasn’t insurmountably inaccessible or has updated with improved accessibility.

It is important to break this cycle of learned helplessness. One suggestion by participants has been allowing mistakes, double checking choices and having an undo button. In gaming, an “invincible” feature has been introduced, in which gamers could still enjoy gameplay without worrying too much about skill level. It is helpful for users to regain confidence in their own skills and ability to learn. Having self confidence in one’s ability to learn and a growth mindset instead of a helpless one is a crucial foundation to upskilling and democratisation.

Upskilling and democratisation

All participants who used zoom picked up the skills during the pandemic. A support worker recalled the experience of upskilling everyone, and the wide variety of set up and skill level people had. They managed to get everyone on zoom.

It wasn’t entirely clear how participants learn their IT skills as this question wasn't the focus of the research. Despite a few of the participants mentioning that they were taught IT at school, some of them “just did it” or were taught by friends and family. It is encouraging to hear the “just did it” answer as it indicates that those technologies (mostly phone apps) are intuitive to use. It is also very interesting to witness a peer learning example in action during one of the workshops:

> A new group member had never seen or used a smart whiteboard before. A regular member of the group walked up to the whiteboard, touched the picture of the pen at the bottom of the screen, then made a mark on the whiteboard using their fingers. They then proceeded to touch the picture of the rubber at the bottom of the screen, then use their fingers to wipe off the mark. They asked the new member to try the same. With some encouragement from the regular member, and after making one or two mistakes, the new member completed the task.

Peer teaching and learning, trial and error, and encouragement are all attributes to the successful learning experience described above. It is also important to meet people where they are at and make improvement from their skill base, without making assumptions. Everyone can travel a journey and be upskilled.

The use of language or what is considered jargon is also a point of interest. One support worker recalled teaching one participant's family member to set up zoom. They did not use email so they had to start from scratch and create one. The phrase “click the link” was illegible because the meaning of “link” in the computing world could present as a jargon to someone who does not use a computer at all. The consideration behind what constitutes “jargon” is also interesting when it comes to cross-sector learning. Another support worker after the research workshop reflected that they were pleasantly surprised. They were worried about how “UX research” would be relevant to LD/A people or how “UX” could be an accessible concept, after the workshop they were relieved to discover that it is “just regular folks talking about experiences”. Language is a code, at the end of the day it is human experiences and stories that matter.

This has also highlighted the value of cross-sector and interdisciplinary exchange and the learning is mutual. In an interview with an UX expert, they pointed out a potential problem with combining the concepts of UI and UX, or even in training at higher education institutions. This has blurred the different and overlapping goals of UI and UX, with an overemphasis on UI. For instance dynamic images are attractive for marketing purposes and popular amongst clients from a UI perspective, however they are incompatible with screen readers hence failing on the UX front. Even though WCAG 3.0 has provided UX designers with clear and practical guidance, it is crucial in understanding the context people are situated in and not treating inclusive UX as a tick box exercise. As urged by interviewees participants, user testing is highly recommended to ensure meaningful change.

6. Conclusion

This research has shown LD/A people, represented by the research participants, are active agents in HCI seeking to satisfy a variety of desires and needs. They are motivated by the

need for connection and communication, for professional engagements and personal entertainment; the possibility to obtain refuge from a limiting and harsh physical world; they are excited by the prospects of an expanding worldview and engagement with diverse communities. These motivations were echoed in their habit of usage in Arts and Cultural events. They seeked out and explored information online, enjoyed culture and entertainment digitally, and were keen to share experiences with peers, mainly as an audience member but also a keen minority as creators. It is found that while digital interaction was the heaviest in the beginning of the engagement, the designed UX journey and real lived experience diverted part further as the engagement progressed. The initial engagement with marketing related content did not translate smoothly to online transaction, and the post show digital feedback loop was engaged sparsely. The designed UX journey has seemed to be shaped by commercial incentives, which has lost its alignment with the incentives of this group of participants as the interaction progresses. Commercial activities in the Art and Cultural organisations were conventionally been driven by marketing or business development departments, which could often be quite separate from the creative teams. As shown in this research the live UX journey has reflected a desire for sharing stories and making connections, and these are often the drive and talents found in creative and artistic teams. Breaking silos and cross departmental collaborations could provide an avenue in designing a UX with closer alignment to LD/A audiences incentives.

Apart from a misalignment of designed UX and user incentives (emphasis on commercialisation over community connectivity and creativity) and the potential problem of silo working, various other general IT and UX barriers have presented themselves in this research which has bled into the UX of A&C. The major barrier identified was around safeguarding concerns. Cyberbullying was a prevalent problem amongst this group, and this could lead to mental health concerns; online security and privacy protection was another area which has generated a lot of distrust and worry; UI and communication issues contributed to confusion and frustration; some experience limited access to hardware and software. Some of these barriers are even more complex, because they are double binding problems entwining incentives and desires, for instance the desire for self curation and need for more guidance, having abundance of choices and precision to prevent overwhelmingness, freedom to roam and protection from harm. There is no one size fit all solution. Participants and interviewees has urged for sample user involvement and testing.

The holistic experience: UX and Aesthetics

With the proliferation of online activities knitted into our daily lives, our online presence and community has constituted a part of the civic society and it is as real as the physical geographies we live in. UX designers are architects of the virtual environment, and such architectural designs contribute to safety, ease and enjoyment just as buildings or roads would. The impact of UX reaches far beyond the functional, it contributes to a holistic lived experience. Viewing it under the light of aesthetics, the experiences conveyed by UX design encompasses the sight, sounds, tactile and the somatic senses of ease/unease, warmth/cold, welcomed/expelled. When a lot of the existing and better understood access features focus on the more distal senses like the sight and sound, access for cognitive and learning disabled disability highlighted a need to pay attention to the somatic and holistic experience: there is a need to feel safe so that one can be trusting, not made to feel stupid, and be included in the consideration. Beyond the functionality and usability, the success of

UX is underpinned by the empathy with diverse human conditions and circumstances. A holistic understanding of experiences in both the physical and digital world gives designers the contextual knowledge needed in building a rich, engaging and empathetic digital world, preversing the “human touch” that this group of participants has valued most of all.

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