

Visual Juggling

Reflective Recommendations for Observers working with Deaf Children in Design Research

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ABSTRACT

Traditional observation approaches fall down when the subjects of observation are young Deaf children involved in exploratory design activities, who want to interact with observers, and move rapidly and unpredictably between activities. This paper presents a reflective discussion of our experiences observing design research with young (3-5 years) Deaf children, and recommendations for researchers working with similar groups. Key lessons include: interactions between children and observers can be a source of design data; “passive” observers may not need to know sign language to capture detailed data; and having an appropriate ratio of observers to children is important but may be difficult to balance.

CCS CONCEPTS

• **Human-centered computing~User studies** • **Human-centered computing~Empirical studies in HCI** • **Human-centered computing~Participatory design** • **Social and professional topics~People with disabilities** • **Social and professional topics~Children**

KEYWORDS

Observation, Deaf, children, design research

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1 Introduction

The use of observation in data collection is a well-established practice in research [15], including design research, used to collect data on settings, appearances, acts, events, processes, interactions and artefacts [6]. When designing new technologies *for* and *with* children, observation is commonly used to understand children as users, testers and informants [4]. When children take more involved roles, observation may be used to collect extra information during design activities [2, 3, 8, 9].

This paper presents a reflective review of our experiences with observation in a case study involving participatory design (PD) with young Deaf children. In each session, one dedicated observer took notes while collocated with a design team, which included up to four Deaf children (3-5 years). A number of factors influenced the process of observation, such as the fact that the young Deaf children would interact with observers. This paper provides a reflective discussion of the factors, and a set of recommendations for researchers and observers working with similar groups.

1.1 Notes on Australian Deaf Culture

The Australian Deaf Community identifies as a minority culture within Australia, with their own language, Auslan (Australian Sign Language). According to their conventions, capitalised ‘Deaf’ is used to refer to people who are belong to the Deaf community, and are therefore culturally Deaf. Lowercase ‘deaf’ is used to refer to people who are physically deaf. Cultural and physical Deafness have impacts on involvement in design activities; some unique to culture or physicality, and some overlapping, as aspects of Deaf culture are informed by physical deafness [10].

2 Literature Review

2.1 Observers and Designing with Children

Observation in qualitative research ranges from a very traditional role, in which the observer remains detached from the situation they are observing [6]; through to participant observation, in which a researcher builds a relationship with the individuals or communities being studied, and participates in activities with

them [6]. In participatory design research with children, observations are a source of design and research data [2, 3, 8, 9] which helps researchers to understand children and their world. It is important to build trust with children [7, 12]; paired with long-term interactions, this can lead to even traditional observers forming affective relationships with children; more involved researchers may become part of the children's lives [1, 14]. In addition observation can influence behaviours of groups being studied [13]. This can lead to confusion on the part of the researcher; however careful observation processes should be maintained despite the potential impossibility of complete neutrality in observation.

2.2 Reflective Research

Reflective research is important in improving the ability of researchers to work with marginalised groups in an ethical and empowering way, by sharing learnings from unexpected and emergent situations [14]. Coad et al. [1] drew on their experiences with interviewing children in the home to compile guidelines for entering the home, conducting interviews, and exiting the home, noting that the last was seldom discussed, yet could pose serious questions for which unsuspecting researchers might be unprepared. Spiel et al. [14] more recently reflected on ethical decisions they had made during PD with marginalised children, sharing their reflections to prepare other researchers for complex and sensitive interactions with children and on-the-fly decision making which are not supported by existing ethical frameworks.

In the style of such research, this paper presents reflections on our experiences in observing design sessions with young Deaf participants, with an emphasis on providing recommendations to guide other researchers working with similar groups.

3 Case Study: Young Deaf Design

The case study involved 25 exploratory design sessions with four Deaf children (3-5 years) at an Education Queensland Early Childhood Development Program (ECDP). The children were identified as prospective participants by staff of the ECDP, and parental permission obtained. The case study was undertaken to develop *YoungDeafDesign*, a design approach for PD with young Deaf children [12], in which young Deaf children act somewhere between an informant and design partner role [4]. Design sessions were primarily modelled on Druin's *bags of stuff* technique, in which art supplies are provided for adults and children to create low-tech prototypes together [3]. In each session, a selection of expressive materials were provided to the design team, to prompt exploration of a theme or a problem, including: exploring expressions of emotions; creating characters for games; decorating masks; creating animals and objects from clay; child-led games and role play; and physical problem solving, such as figuring out how to blow up a balloon through a straw [12]. The sessions were deliberately free-form, with an emphasis on exploration of ideas, as attempts to enforce a structure in early sessions failed, and the children responded positively to free-form exploration [12]. Each session was attended by at least one Deaf

child, the first author as facilitator (a *participant as observer* role [6]), and one of two *observers* [6]. ECDP staff members and some children's parents attended sessions as sign language interpreters, supporters and design team members [11]. Composition of the team in each session was pragmatic: whoever arrived in time for the before-school session would attend. Parents joined at their own discretion.

3.1 Observers

Two observers were involved in collecting data during this case study. Observer 1 observed 4 sessions, and Observer 2 (and second author) observed 21 sessions. Neither observer was familiar with Auslan. It was intended that observers would capture both "design data," which could inform the design of a new technology, as part of the *YoungDeafDesign* design method; and data about the flow of sessions and activities, which was used to evaluate the efficacy of design principles and techniques trialed in *YoungDeafDesign*. Observers used minute-by-minute grids to record each child's activities within the design session, with a particular focus on items the children created, materials they used, and interactions with others. Observers were encouraged to note the activities of adults within the design room, where possible. Some occurrences outside the design room, such as the arrival of children or adults familiar to the design team members, could influence the sessions; observers were encouraged to note these activities as well. Immediately after each design session, facilitator and observer would meet for a reflective debrief: reading over the observer's notes, and recording any elaborative information either facilitator or observer could remember, including the meanings of signs which occurred during the sessions. A video camera was used in many sessions, although technical difficulties and one participant opting out of being filmed meant that only partial video records were captured. When available, video recordings were used to verify the timing of actions, and confirm the meaning of signing.

4 Observer Reflections

4.1 Children Interacting with Observers

The observers were present in the design room, as shown in Figure 1, as the ECDP did not have facilities for hidden observers. The children therefore could see them, and several wished to interact with them. Both observers felt they shouldn't interact with the children - being detached observers was important - but neither wanted to ignore them. There were instances of children watching an observer; showing off toys or design artefacts to an observer; and even hugging an observer. This could provide design information, as showing off toys or artefacts demonstrated pride and attachment; but from a research perspective, observers felt they needed to observe the session as a whole. Making a decision between responding to the child or ignoring the child and remaining focused on observing was left to the observers' personal judgement.

Observer 1 noted that the children were most interested in her during early design sessions, but found her less interesting than the expressive materials available to them. She tried to react positively when children attempted to interact with her, with a smile or a nod, but did not feel she could communicate with the children as she did not understand their signing. The children who interacted with her usually redirected their attention to someone who would respond.

Observer 2 made every effort to reach a compromise between being a detached observer of the session and responding to the children, as a choice to engage with the children had both positive and negative effects. As with Observer 1, interacting with children usually meant offering short, positive reactions. She noted this could invigorate their engagement with the session, by providing validation. She also felt this could humanise her and make the session feel less clinical. On the other hand, this interaction set a precedent that the observer could be interacted with, which led children to interact with the observer again, and often for longer periods. These interactions distracted the observer, so for some periods, no one was observing the flow of the session as a whole. When the observer resumed observing, details of new occurrences could be missed while the observer wrote remembered observations.

Despite potential drawbacks, Observer 2 felt it was important to provide positive feedback, such as a smile, when a child was observing her without active interaction to ensure that the child felt safe, and to maintain a natural and comfortable environment.

4.2 The Observation Environment

The design room was a small room attached to the children's normal classroom, normally used by to store excess resources, which limited potential locations for an observer to sit. Sessions were conducted before the first class of the day, and so participants were able to enter the room when they arrived for class. The door to the classroom was often left open to allow this. Not only did the size of the room place the observer 'in' the session (leading to child -observer interactions, described above), the flow of participants created a dynamic where children could move in and out of the room as they pleased. This meant the observer needed to keep note of children entering or leaving the room, and, where possible, reasons why, as the children's movements could drastically influence the session flow. Reasons for leaving included: excitement about other participants arriving, missing parents or wanting to show them work completed in the session, or disinterest in an activity. It became difficult to keep track of those changes, as the observer could not see outside the observation room, as shown in Figure 1. Both observers found the environment to be a challenge, with Observer 1 wishing she could have been hidden, or in a removed or elevated position to gain a better view of the room.

4.3 More Bodies, Less Attention

We found that young Deaf children preferred to work individually than to work with other children when it came to creating artefacts in the design sessions [5, 10, 12]. This meant that, in most

sessions, the facilitator would focus on or interact with one child at a time. With more children present, each engaging in separate activities, it meant the observers had more they needed to keep track of at any given time.

Observer 1 described this in terms of "groups of focus". If there were two groups of focus - children working together and/or with an adult - she was comfortable keeping track of each group's activities. However, when there were five or more people in the room, she found that too many groups of focus formed; it was difficult to take sufficiently detailed notes and she felt she missed information, especially if multiple children were active and/or communicative at once. When there were fewer adults than children in the room, children might repeatedly request adult attention, resulting in more activity for the observer to track.

With the facilitator focused on one child, Observer 2 felt she could focus on up to two other children to an acceptable degree of detail while keeping tabs on the facilitator/child interaction to support the post-session debrief. The two other children would sometimes play together, or one child would be more engaged in the session, requiring more observatory focus. Introducing a fourth child changed the dynamic of the room so that a compromise was needed - she could observe one or two children in detail; she could cycle through the activities of all four children (which was more difficult as the children engaged and disengaged from activities and adults rapidly) and make minor notes about other actions; or she could try to capture as much of everything as possible in much less detail. The presence of ECDP staff members helped calm the situation and encouraged children to engage with activities at the central table, thereby making them easier to observe. However the staff members weren't included in the post-session debrief, so notes taken still needed to be comprehensive. Where sessions included a staff member, Observer 2 could feasibly observe four children to a sufficient level of detail, but felt it was likely that aspects of the session would be missed.

4.4 Session Pacing and Dynamics

Both observers commented that the flow of activities within the design sessions made observation difficult. Observers tried to record children's actions and interactions with adults; movement in and out of the room; artefacts created; and signed, spoken and non-verbal communication - all of which could occur spontaneously, and sometimes required noting of extra context.

The participants were very young, and as a result, quick to move from one task to the next, but just as likely to remain very focused on a single task for an extended period of time. Observer 1 noted that activities tended to occur in bursts of interactions. Children would finish their activities at around the same time; or one child would begin showing off their creation, and the other children would either react or try to show off their own creations.

In addition to the free movement of the children, the freeform nature of the sessions and the children's youth contributed to dynamic sessions, without timed structure. Observation was purely reactive - it was only possible to observe what was happening as it happened, without any possibility of preempting what the children or facilitator would move to next. While this

elicited more organic responses from the participants, the constant and unpredictable ebb and flow from long, single focus activities, to rapid fire changes of attention, factored by the number of children in the room, made it difficult for Observer 2 to prioritise attention points, or establish an observatory and writing rhythm for comprehensive note taking.

4.5 Observers Unfamiliar with Auslan

Neither observer knew Auslan. To Observer 1, this was negative, as she felt uncomfortable interacting with the children, and felt unable to record discussions which occurred in Auslan, so she missed signed communications in her notetaking. Conversely, Observer 2 considered her lack of Auslan knowledge a benefit. She thought she would have been more likely to over-engage with the children if she were able to respond to their signing. Instead, she felt she was able to remain relatively passive during the session. While a more in-depth knowledge of Auslan may increase the observers' understanding of the session as a whole, Observer 2 felt it could influence the focus of her observation, as she might have prioritised Auslan communication at the expense of non-verbal interactions. The children rarely signed sentences, so non-verbal communication and vocalisation provided information about the children's engagement in sessions. She felt she had enough knowledge to identify when the children were signing. If the facilitator did not obviously acknowledge the sign, she would note the context and elements of the gesture, and attempt to replicate it in the post-session debrief. This enabled the capturing of some Auslan data, which was, where possible, verified by video footage. While Observer 2 considered some of the signing confusing during the sessions, her misunderstandings were clarified during debriefs.

4.6 Time-keeping

Notes were recorded in a minute-by-minute grid; therefore observers needed to watch all of the participants in a session and a clock to ensure notes were recorded at the correct time. Observer 1 encountered difficulties here, as she "juggled" a watch with a broken strap and a clipboard. Observer 2 experienced this difficulty initially, then used her mobile phone as her clock. While she recognised that the minute-by-minute recording was useful for data analysis, she felt watching the clock introduced an extra element of stress that sometimes reduced her focus on the session.

4.7 Video Recording

Both observers felt reassured when the camera was recording; however, Observer 2 didn't rely on recordings due to the technical difficulties experienced. Observer 1 felt reassured knowing that the film could be reviewed for Auslan translations. Both observers liked that the camera was placed away from them, allowing a different angle on activities, so that if the children had been poorly located for the observers to see the details of a particular event, the video could offer a different perspective.

5 Conclusion

The reflections presented here are based on our experiences within a single case study, involving young Deaf children. The recommendations we have made here are reflections of our experiences, rather than definitive rules for observing Deaf children, but they may provide guidance for researchers, designers and observers working with young Deaf children and similar groups.

5.1 Recommendations

5.1.1 Don't be afraid of allowing children and observers to interact. Contrary to the traditional wisdom on strict observation, the observers being detached from the situation is not necessarily ideal or even possible if the observer is physically present in the room. Interactions between children and observers may have helped to build trust, making the children feel more comfortable. They also provided design information by identifying objects the children were proud of. Both observers felt they were undertaking a balancing act, as their primary role of recording the activities of the sessions was hampered by interactions with children.

5.1.2 All observers may not need to know sign language. As noted in section 4.5, the observers had mixed opinions on whether knowing Auslan would have been an advantage. Observer 1 felt she missed out on communications and interactions. Observer 2 thought not knowing Auslan allowed her to focus on non-verbal communication and reduced the likelihood of interactions with the children. It may be desirable, in situations with multiple observers, to have some who are fluent in sign language and some who are not, as their respective focuses may enable more diverse data to be collected.

5.1.3 Consider the ratio of children to observers. Both observers found it difficult to track occurrences during sessions with more than three children, as the children's actions were unpredictable and unstructured within the free-form, exploratory sessions. We see three potential solutions to this: have multiple observers; limit the number of children attending each session; or use *reliable* video equipment to supplement (or replace) observers. Whether these are appropriate will vary according to the project.

5.2 Limitations and Future Research

The youth and Deafness of the children involved in the design sessions presents a particular context for our recommendations. Researchers working with older children or hearing children may encounter more traditional observation environments, as it may be easier to tell children to ignore observers. Neither observer knew Auslan; we can only speculate on how their experiences might compare with those of fluent observers. Future research could examine this, potentially with multiple observers with varied levels of Auslan experience.

Due to the physical space, we can only speculate on hidden observer or multiple observer situations. The latter could introduce new complexities, as observers might "double up" attention, be unable to clearly see children they are tracking, or miss the overall context of the session. It could also make children feel more "watched" and less comfortable. Future research could examine the feasibility of this in relation to design research.

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