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A Co-Design Exploration of Screen Design Transitions

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Young children's technology usage is on the rise and transitioning from on screen to off screen can often be difficult for both parents and children. The aim of this study is to explore whether older children can assist in the design of these transitions with younger users in mind. seventy-five children, aged 9 - 11, participated in a co-design session where they were required to transition designs for children aged 3 - 5 years. To explore different transitioning solutions, the children were split in three conditions (in device, in app, and external transitions). Our paper offers insights into the way children can design for others in relation to screen time ending, we critique different scaffolding methods that were used and offer advice for others doing similar work in this regard, and we suggest some design ideas for further exploration.

Co-Design, Transitions, Off-Screen, Children, Proxies

1. INTRODUCTION

Whilst most adults can recount their own childhood experience with technology, these experiences are vastly different to the children-technology interactions of today (Hourcade 2015). An American survey in 2020 (pre COVID-19) studied 1440 children from birth to eight and found that 46% of children aged 2 - 4 owned their own mobile device and had an average daily screen time of two hours and thirty minutes (Rideout 2020). A UK report by Ofcom in 2023 collected 1357 parents' data about their 3-4 year-old child/children. The study claimed that 20% of the children owned their own mobile/tablet. This suggests the problem is not confined to the USA. This survey reported that 30% of UK parents (40% of parents in the US study(Rideout 2020)), struggled to manage screen time.

Governments globally are facing pressure to act on young children's screen time access. Proposals to ban children's technology access and usage, or to limit it, are rising (Elysee.fr 2024) and governments and children's charities and health professionals are sharing information around the dangers of too much screen time (Hooker 2024).

Given that parents find managing screen time difficult, some industries have created solutions to help. Apps such as "YouTube Kids", which allows parents to be in control of what they deem appropriate content for their children (Kids 2024). Systems like Google Family Link, provide ways for parents to restrict content and set screen time limits (Google 2024). Other companies add flexible boundaries with auto-play options, however parents have described some of these featured as undermining their parenting and misaligned with their values (Hiniker et al. 2016). There is clearly a need for more research to explore systems, and especially software systems, that can help manage screen time.

We can explore this space by extrapolating from long understood ways of transition management with children. In schools, for instance, children expect to move from one activity to another without making a fuss; indeed they can spend upto 30% of their school day moving from activity to activity (Banerjee and Horn 2013). The survey that arrived at that figure, highlighted the need for targeted strategies and that implementing such strategies can create smooth transitions from one activity to another. These strategies include: visual aid boards, verbal cues, modeling and mirroring behaviours (doing the activity with the child and supporting them to transition).

When designing a product, it is important to consider the space around the child. Exploring how the children may use the product and the people who may be present (i.e. parents or teachers) may support this consideration. This is referred to

as the Ecology approach, which is compiled of three stages; technology, social practices and space (Hourcade 2015). This points to a candidate for co-design where children's ideas, as the experts in childhood, might be useful to consider solutions. Children have participated in the design of wellbeing apps, where screen time is one aspect to manage (Cormier et al. 2024; Champion et al. 2020). However, children designing for transitions has not been well reported.

With our focus on young children, who are only learning to express their likes and dislikes, there is enthusiasm to look to adults or older children for support. There has been previous work with children designing for others. One way is by considering "another persons situation" and imagining themselves in it (as proxy design) (Metatla et al. 2020a). Another way is by putting actions of a famous person in order to imagine how they might feel in a humorous way (Mazzone et al. 2008). While these methods have shown some success, more needs to be done to better understand the outcomes from such work and their relationship to the imagined or proxied group.

This work seeks to explore the design of software for screen transitions. This is from the perspective of a company wanting to make its product good for children. In this we are interested to explore how easy it is for children to imagine the reactions and actions of their younger peers. We are keen to explore the possibilities for co-design in this space and we are ultimately looking to offer some design solutions.

The related work section is followed by an account of a co-design study with seventy-three children in the UK. The paper offers insights into the way children can design for others in relation to screen time ending. We critique different scaffolding methods that were used and offer advice for others doing similar work in this regard. Finally, design ideas are suggested for further exploration.

2. RELATED WORK

2.1. Children and Co-design

The Child Computer Interaction (CCI) community has a long history of involving children in co-design, (Burkett 2012). Inspirations have derived from the works such as Druin (Druin 1999), Scaife (Scaife et al. 1997) and others (Walsh et al. 2010). A comprehensive systematic review by Lehnert et al. (2022), looked at 272 papers from Interactive design with children (IDC) and Conference on Human Factors in Computing Systems (CHI) from 2005-2020. The review found co-design to be the 4th most common method in CCI. However, some concerns around co-design have been debated such as age appropriate methodology, where younger children may struggle with more abstract methods Read et al. (2010). Alongside this, some ethical questions may arise in co-design such as are the children being heard or tokenised. Additionally, there are potential power dynamics at play. Are the adults still in control of the overall design (Fails et al. 2013)?

Halskov and Hansen (2015) reviewed literature on Participatory Design (PD) from the perspective of the participants describing their participation. The first description is implicit; which refers to the role of the participants being understated and taken for granted. Next, is the expression of "the users point of view", this is where children's thoughts can be expressed and reconciled. Lastly, space for mutual learning, where participants have the opportunity to transfer knowledge to the design team. Irrespective of the role of the participants, ensuring that the product meets "the users needs and preferences", is massively important (Bevan Jones et al. 2020).

2.2. Children Designing for Others

Metatla et al. (2020b) describe three cases of children designing for others. The first used a teddy bear style prop, "Mr Hippo", to help children understand the needs of children who might not have the local language and might be disabled; this prop was used to highlight such children's situation so the children in the study could design games for them. The second case study explored children with visual impairments' experience of play in mainstream school. Stuffed animals were again used as props to help the children and the third study used stuffed animals to represent different temperaments of children in the classroom. Children chose an animal and then designed play activities for that temperament. All three cases showed how children can empathize, and amend their designs for others to promote inclusion. A related study by Clark et al. (2024) noted that children were able to understand others' needs and create inclusive activities for them. In work by Mazzone et al. (2008) a group of children were tasked with designing software products for behaviour change; the software was intended for teens just like them but the sensitive nature of that as a design space lead to the research team shifting the 'user population' of the designs to famous couples like film stars, creating almost an artificial proxy design experience. It is hard to locate any papers that describe how older children design for younger children; so this is a focus of this work.

2.3. Scaffolding Co-design

The materials used in a co-design session have an impact on what is created by children (Read et al. 2010). Across the IDC community many papers have described different workbooks and different kits used in co-design studies; in Umulu and Korkut (2018) question driven cards are used, in Frauenberger et al. (2011)'s ECHOES project a comic strip was used in one of the activities; few papers have examined the effects of design products on design outcomes. One exception is Fitton and Read (2016)'s work on Primed Design where the different presentations of materials are compared. In this work it was shown that adding more focus to the materials resulted in better design outputs; for our work with children designing for screen time, we are interested to explore if too much scope inhibits design in a similar way. Providing participants with a narrower design concept may positively affect the design quality.

2.4. Screen-time Solutions

Within Human Computer Interaction (HCI) and (CCI) there has been some (albeit not a great deal), interest in the design of technologies for children that respect and support healthy screen time use. The Plan and Play work (Hiniker et al. 2017) and the CoCo projects (Hiniker et al. 2018) were early examples of designs intended to encourage healthy screen use making use of children pre-planning their time with apps and videos. In more recent times the use of AR to suggest offline activities at the end of digital play was tried out with 40 parent child dyads over a two week period and found to be more effective than either just suggesting offline activities (without AR) or by just having some AR (Shin and Gweon 2020). A physical object 'Romi' on a sliding track that is set at the start of digital play and in which the object moves away as time passes, was evaluated with parents and children as a prototype example of a peripheral device to help screen time ending (Yim et al. 2021). In Amidi et al. (2023) 'Watch with Joy' the intervention, being videos that all focused on outdoor and physical play, was shown to promote an easier movement off the screen than other content that did not include this nuanced idea. In a critique of engagement and disengagement with media, Alsheail et al. (2023) writes that software (in their case game) designers should "approach disengagement as part of play". We echo this call to find solutions from software developers that help children leave their products.

The research aims to: 1. Explore if children can design for transitions with younger users in mind. 2. Explore the effect of different scaffolding / design products on children's designs. 3. Distil ideas that can improve screen time ending experiences for young computer users.

3. METHOD

The research was conducted in a single UK primary school with 3 separate classes. Three researchers were present for all classes and analysis. The aim was to explore ideas from children within the context of designing for screen time ending for young children aged 3-5. In this exploration we were also looking to compare different scaffolding of this design space as well as to distil some workable solutions for the software industry.

3.1. Participants

Seventy three children, all with fluent English (this was confirmed by the teachers), participated in this research. The children were aged 9-11 and attended in three class groups: year 5 (Dev), year 6 (Gam) and a year 5/6 mixed (Sur). Each class had different scaffolding; the Dev group were looking at the problem in terms of what a device could do. The Gam group were asked to consider the problem from the software perspective of a game. The Sur group were looking at what could be done in the surroundings of the game play activity. Parental consent was obtained for all children and no personal or identifiable data was taken by researchers. Assent was explained and children were told they did not have to hand in their work.

3.2. Apparatus

As scaffolding was one of the aspect being looked at, we prepared in advance two priming/scaffolding booklets, the first was used in the Dev and Gam groups (Figure 1) and the second was used with the Sur group (Figure 2). Two of the classes had a work booklet, the front page consisted of simple demographic information, questions around who their designs were for and finally some questions around how their design would work. The Dev/Gam book looked like 4 blank tablet screens with timings till the end of play 10 minutes before, 5 minutes before, 2 minutes before and end of play indicated at the top and large blank space around the screen for annotation purposes.

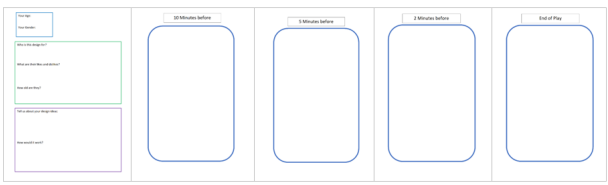

Figure 1: *Example of booklet used for the Dev and Gam groups*

The Sur group had a work sheet consisting of a single sheet of paper split into 8 boxes centred around the child on a tablet. The top boxes focused on what is happening in the surroundings of the child; Before (meaning before technology has to end), Almost (meaning close to the time when technology has to end i.e. 2 minutes before) and After the technology.

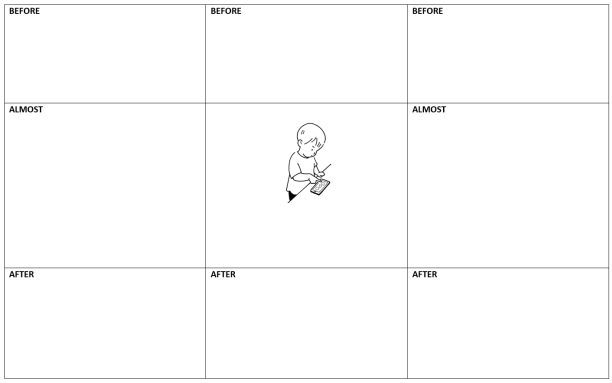

Figure 2: *Example of work sheet used for the Sur group*

A set of two child personas were also printed out (see Figure 3) to help children think about younger tech users. Black ballpoint pens and pencil were also taken but the children chose to use their own.

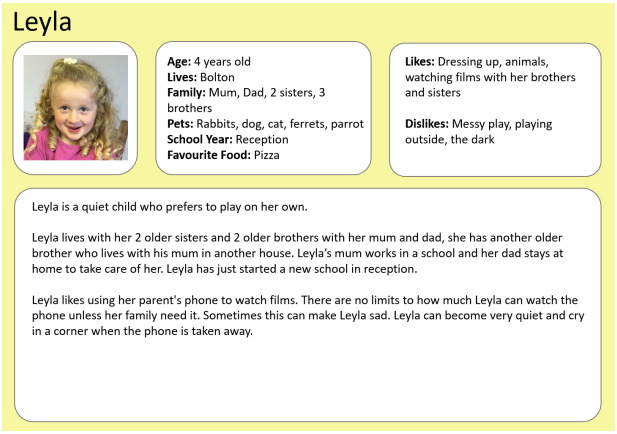

Figure 3: *Example Child Persona*

3.3. Procedure

All three classes were tasked to design an intervention for young children aged 2-5 years old. The session lasted 45 minutes per class. The researchers spent the first 15 minutes explaining who they are, why they are there, and what the children would be doing during the session. In this time one researcher also outlined a scenario, whilst the other researchers prepared the paperwork for that class. The first group, year 5, were focusing on the device (Dev). The second group, year 6, were designing an intervention in the game (Gam) and the third group, year 5/6, were focusing on the surroundings (Sur). The children then had 20 minutes to create their ideas. This includes; thinking of the child they want their idea to be for (the children were encouraged to think of children they already know in this age bracket i.e. siblings or cousins), creating the idea, and drawing or writing their ideas in the work booklets.

Dev Group - Researchers entered the classroom at set up by giving the children a work booklet each. The session began with a scenario of what happens when a young child has a tablet taken off them (i.e they get upset). The children started by thinking about a design that could stop children feeling sad when the technology ends and transition off the technology. The children then began their work booklets and researchers supported them to think of a child at the age of 2-5 years that they know. A few children struggled to think of a child in this age bracket, therefore researchers provided personas to them. The children put their ideas down on the blank screens, annotating their own work as they designed. The researchers support was to enable the best descriptions of the children's design ideas.

Gam Group - As with the other class, the researchers entered the classroom and handed out the work booklets (the same as Dev group). However, the children in this group were pitched a game idea for preschool/reception children centered around shapes. The children then created designs to help the younger children transition off that game.

Sur Group - Researchers entered the classroom and handed out the surrounding worksheet. A researcher then began explaining that the children needed to use their imagination and think about "if the house was magic what might it do?". After this the children began working on their sheets that were designed to consider the environment at home around the child, before, almost and after the time of technology usage.

After the design phase the children were debriefed on what their ideas would be used for. The researchers would use the children's ideas and perform a Rapid Analysis of design Ideas (RAId) Read et al. (2016). RAId is a procedure created to ethically, inclusively and effectively analyse a large number of designs through a series of lenses. The lenses focus on the overall outcome for what researchers consider a successful feature for transitioning preschool children off technology. These outcomes were; age appropriateness, would researchers consider the game appropriate for a 3-5 year old? Stop sadness, would the ideas stop preschool children's sadness if the game ended or make it worse/ have no effect. Make-ability of the

design, could a designer make this? Lastly, fun, was the product design actually something this age would enjoy. It was agreed by researchers to combine Fun and stopping sadness. This allowed researchers two lenses each, covering all lenses twice during one group. For example, R1 would have Fun/stop sadness and Make-ability, R2 would have Make-ability and Age appropriateness, R3 would have Age appropriateness and Fun/Stop sadness. The researchers swap lenses each set of data, Dev, Gam and Sur.

4. RESULTS

4.1. The Children's Designs

All the children were able to create designs, two children chose to keep their designs to take home (both children were from the year 5/6 mixed class) but the other 71 children were happy to hand their designs to researchers. The designs varied in sophistication.

A child in Dev group (See Figure 4) designed a mini game around rabbits and carrots. Firstly it demonstrates that this child had designed this mini game with a younger child in mind. However, once the game has ended the child also suggests an off screen activity for the user by asking "can you hop like a Rabbit in the garden?" This shows that not only is the child considering a way to get them off the technology but also what might happen once the technology has ended. This shows the participants understanding that the child may need redirecting after the tablet has ended to prevent sadness.

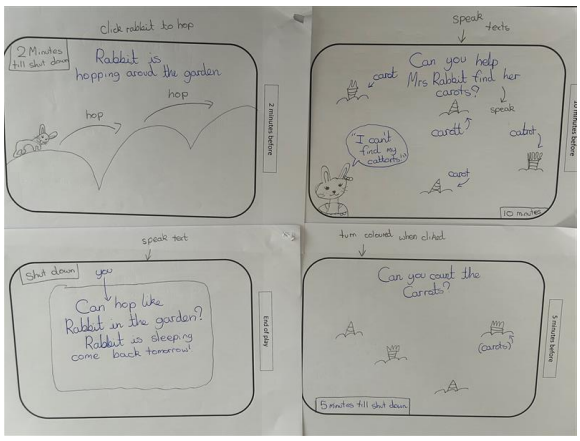

Figure 4: *D6-Dev Miss Rabbit.*

One example of children designing for others was by a child in Gam group (See Figure 5). The child designed this for their cousin; a 3 year old boy. They describe the game to have a timer and the user would get a trophy at the end. The user can only play the game once. It is a counting game where the user has to count how many flowers there are in different categories. Once the child touches the flowers they "go poof", making the game interactive and educational. There are different levels to the game and it contains a timer counting down until the technology ends, the flowers praise the user and say "cya soon" encouraging the child that they can use the technology at a later date.

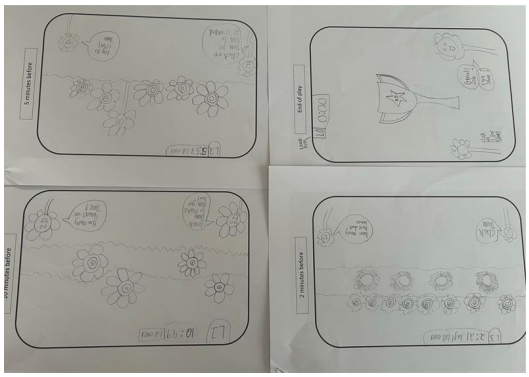

Figure 5: *F1-Gam Flower game*

A different child in the Sur group (See Figure 6) explored the environment around the child. The design involves a magical house, the house sounds a timer at 17 minutes, 8 minutes and 5 minutes before technology has to end. Once the time is almost up the Wi-Fi goes off and the child starts to begin the night time routine (i.e. go to the toilet). Finally, the technology has ended and the child goes to bed happy, the parents are happy and the house is happy. This design shows the child has considered factors around the technology for the transition from on technology to off screen.

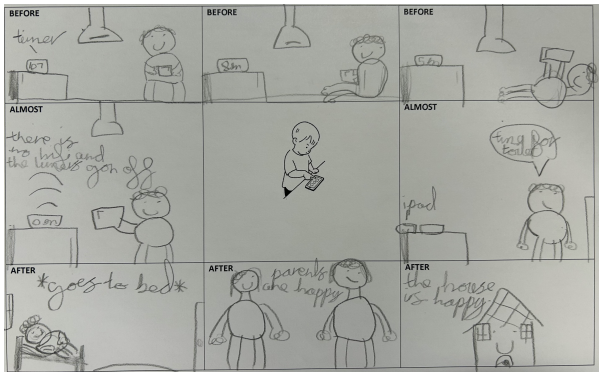

Figure 6: *Child 5-Sur Happy house.*

These designs are examples that show an awareness that the participants are designing for children who are much younger than themselves. The participants understand the users' levels of abilities, needs and interests. Some children were able to extend this to ideas off the screen.

4.2. Our Designs

At the culmination of the RAId activity, the three researchers each created a set of three designs (one for each condition). The designs were created based on the children's ideas, through inspirations from the designs. Examples are seen in figures 7, 8 and 9.

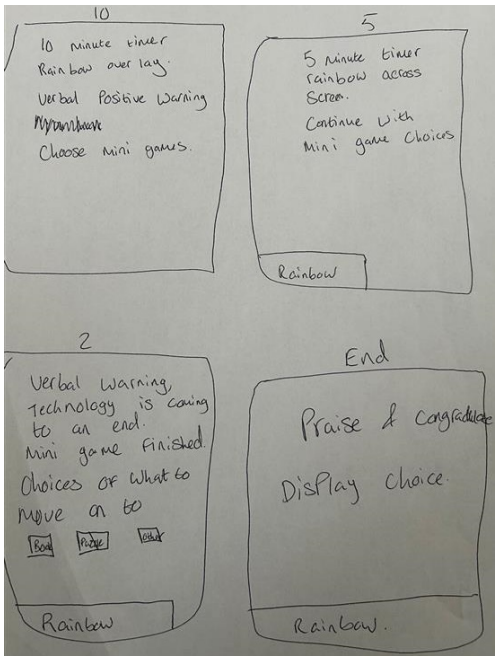

Figure 7: *Example Dev Researcher Design*

4.2.1. Device - Centric Designs

Whilst the Dev designs differed; there were some common themes. All three researchers applied timers and overlays to their designs. R1 used a rainbow timer (Figure 7) which moves along the bottom of the screen and gives positive verbal warnings as to the amount of time left before it is time to come off the device. R2 used a numerical timer flashing up at 10 minutes, 5 minutes and 2 minutes until the end of the game which is delivered by a character. R3 has the device paused while a visual indicator appears to show how much time is remaining. All three ideas provide at least one 'mini game', some have choices of mini games for the child to select. R2 has a set mini game that the child would play whilst R1 and R3 give the child a choice. R3 gives choices of more educational games, like maths, for the child to play that can result in extra time. This sort of initiative would allow the child to feel reassurance and reinforces that they are doing the right thing, knowing they will get extra time or another play of their choice of games at a later date. This is a short term interruption and not forced. R1 offers some mini game choices and then follows it with external choices for once the tech is almost ended (i.e. a book or a puzzle). The technology then displays the chosen choice and verbally praises the child. This design is a short or long term, enforced multiple choice solution. R2's design is similar to R1, the child is given a set mini game to play but the character starts to get sleepy and offers the child another activity to do off device while it takes a nap. Once the child has chosen an activity the character goes to sleep and the device turns off. The idea is longer term and compulsory but relatable.

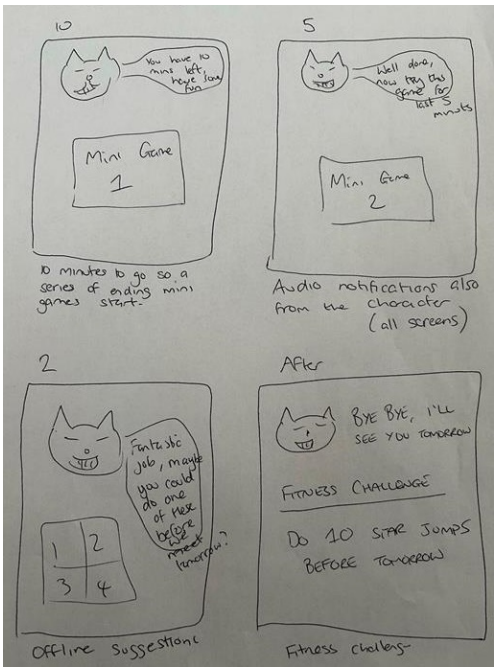

Figure 8: *Example Gam Researcher Design*

4.2.2. Game - Centric Designs

In the Gam designs, as with the other designs, all researchers used similar themes; timers, a set of interruptions and rewards. R1 had verbal reminders and R2 had a character remind the child of the amount of time left with written and verbal instructions (Figure 8). R3 had a timer bar overlay and a character reminding the child with written warnings. Similar to the Device design, R1 gave mini game options for the child to choose from. R2 gave them a series of mini games to play one after the other, followed by a 'fitness challenge' (i.e. "10 star jumps before tomorrow"). R3 had the character (a bunny) run away from the screen and that encouraged the children to go and find him else where (i.e. the garden or bed). This provides the child with a distraction or redirection away from the tablet, and encourages them to actively move away from the screen. Rewards were granted by R1 and R3 inciting a positive reason to end play "Well done for ending play! Reward granted!".

All six designs for both Dev and Gam had some form of warning; visual, verbal or interruption (or all three). All designs consisted of an event that eventually causes the child to leave the game. Five of the six

designs had a 'what to do next' idea or suggestion. Four of the designs (R3 from Dev designs, all three from Gam designs) reinforced a 'come back' at a later time/date. Finally only two designs from Gam designs offered a reward for ending play. However, each design was different and had its own way of conveying these options. The researchers took inspiration from all the children's designs and created six unique design choices that had similarities and differences to take into the next stage.

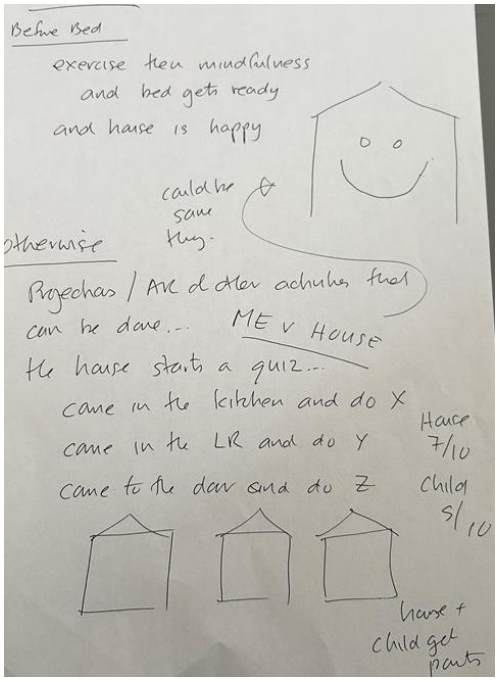

Figure 9: *Example Sur Researcher Design*

4.2.3. Surround - Centric Designs

The Sur designs focused on the environment around the child. All three researchers wrote their designs rather than in the constraints of tablet boxes, unlike the previous designs for Gam and Dev. Written bullet points were personal preference and not agreed before the design was created. Perhaps this was due to the previous boxes resembling tablet screens and this design was more imaginary. All three designs focused on bedtime routine as their inspirations for the designs. All the designs focus on the 'mood' of the house, R1 and R2 have the house turn down the lighting, play calming music before the tablet time has ended. R3 focuses on the child 'winding down' and getting ready for bed (Figure 9). Then afterwards R3 has "The house" make a 'quiz' to distract the child from the tablet use ending. The house would ask them to do certain things like "go into the kitchen and do X" this could be incorporated into the child's routine to get ready for bed/the next day (i.e. getting a drink of water or making "tomorrows packed lunch"). R1 and R2 have the parent come into the room and read stories, sing songs to end the tablet use. This brings parental mediation back into play. These designs don't really add tablet advances but it does add bedtime advantages especially in R1 and R2's designs. R3's designs does add some if they ask house for advantages (i.e. Alexa). The interesting thing noted by researchers is that all the child and adult designs created by the Sur group focused on the bedtime routine. This could be due to the fact that the house only usually has physical changes around bedtime. As adults we change the house by dimming lights, playing calming music or white noise. The context for the method is important, both children and adults assumed the context to be about bedtime unconsciously.

4.3. Analysis

During the RAId process a numeric score of 1-10 is attached to a design for each of the lenses used. High score implies a more worthwhile / useful design as it will have impressed the researcher. However, it will also be the case that different researchers will be more generous than others with this sort of scoring. Our first analysis of this data was to highlight the 'winning' designs on the different score sheets. The 'winning' designs were determined by all 3 researchers scoring the highest across all lenses. Four of the children's designs (C7, D6, E3 and G6) were ranked the highest out of the comparing group by all three researchers. We chose designs from this subset to discuss in the earlier sections of this paper.

Researcher Count	Dev	Gam	Sur
3	1	2	1
2	1	5	4
1	8	4	4
0	18	11	12

Table 1: *Number of designs chosen as highest score by the research team for each condition*

Table 1 represents all 71 children's designs; as outlined above, four were given a high score by all three researchers, two researchers agreed on 10 of the children's designs as being winners and a further 16 designs were given highest scores by one researcher (this could be any of the three researchers). The remaining 41 of the children's designs were not chosen by any researchers due to either not being finished or not meeting any of the four criteria. However, this could be due to the children not understanding the task or the task was not inclusive enough for all children. Future research would need to ensure all materials, scenarios and research outcomes are inclusive. This could be done by smaller group sizes and higher researcher to children ratio to support any children who may be struggling.

Researcher	DEV				GAM				SUR			
	A	B	C	AVG	D	E	F	AVG	G	H	I	AVG
R1	20	20	18	19.3	20	20	17	19	15	16	17	16
R2	19	19	18	18.7	17	15	18	16.7	14	12	11	12.3
R3	15	14	16	15	10	13	11	11.3	14	12	11	12.3

Table 2: *Researchers' high scores per group*

Table 2 shows the total of the averages of the highest scores for each group, separated by researcher. The A-I letters indicate the groups the children were split into based on their seating arrangements in the classroom. This allowed researchers to split the designs into groups of 10 children's work maximum at a time. R1 was perhaps the more generous in allocating high marks than R3, this could indicate some researcher bias and also seems to indicate that for the Sur group scores were lower than for the other two.

4.3.1. Effect of Scaffolding (conditions) on Children's Designs

The children's designs were different in sophistication especially in terms of quality of ideas, allowing researchers to view the different method strategies to determine the differences. The first notable differences between Dev and Gam arises at the design concepts. Dev group spent longer on average thinking about a game that they could use as a mini game rather than on how the intervention could 'stop sadness', this is evidenced in the amount of work that was not chosen by at least one researcher. Dev group had 18 designs that were not chosen whereas Gam only had 11, further evidenced by the eight that only one researcher chose in Dev but four in Gam. The second difference was seen in the researcher designs. The Gam group introduced rewards for the children, to incentivise the user to not only leave the game positively but reinforcing the behaviour with a reward when they return. Researchers picked up on this difference after the lens analysis was completed and unconsciously added it into their designs. The Gam children focused strongly on the users end of play experience compared to the Dev group who focused on designing games. Another difference lies with how the success was measured by researchers. In Dev and Gam it is measured by getting off the tablet but in Sur the house can change the environment so is mainly focused on bedtime. As previously discussed, children will be used to parental control of environment (e.g. black out blinds, calming sounds etc) at bedtime behaviourally (2025). However, it is unlikely the 'house' react to anything else, such as outside play or tea. Therefore this is noted as a limitation for the study. The different methods generated different design outcomes.

4.4. Discussion

All three methods allowed children to produce a design each. However, the children did find it difficult to design a concept for another age group, this was evident in table 1 where only 30 out 71 designs fit all 4 lenses. The Children found the context hard regardless of how it was portrayed to them. This is potentially due to their abilities to relate to the age range of younger children, especially those who did not know anyone in this age range. This could potentially be addressed in future work through other methods such as puppets (Metatla et al. 2020b).

An external benefit to the study was that children were immersed in conversations about screen time. This not only correlates to younger children but their own screen time as well. During the session, and in their drawings, the children in the Sur group related their personal screen time usage to their designs. This personal direction was more than the other groups. This was potentially due to having more space on paper and less time thinking of tablet designs. Allowing the children to consider the environment around a child, rather than the behaviour, likes, dislikes and needs of the user. Regardless of the workbook, it was evident to researchers in the way the children approached the task given and the designs provided, that all the children were enthusiastic to help younger children. The children who had siblings at the target user age, were particularly excited to create something aimed at their sibling.

The various methods allowed researchers to have a mixture of open and more directed designs from children. Personas were helpful to have for children that needed them as it gave them some scope. The scaffolding of the groups allowed the children to get started quickly but was a bit more constraining. The Sur group used their creative imaginations around bedtime end of play but didn't really have much context to ending tablet use as a whole. The Dev group came up with some fantastic mini game options but ran out of time to think of the after technology affects. Giving the Gam group a game to focus on, improved the time taken by the children on their designs. Therefore, allowing the Gam children more time to considered the whole picture, during technology and after it. This was agreed by

researchers to best of the three methods, based on time, efficiency and quality of results. Future research might use acetates to overlay designs on games.

4.5. Limitations

1. Method - How the methods were set up gained different results by design. However, researchers agreed that while the varied methods gave different insights, for the sake of the aims the designs methods without the games weren't as useful as the Gam groups.

2. Researcher Scoring - The other limitation was how different the score between R1 and R3 were (see Table 2). The mediation of R2's score reduced any effects of bias from the results. However, this could be addressed with lower scoring systems for example 1-5 instead of 1-10, or "another researchers involvement" in the RAId process.

5. CONCLUSION

The Children thoroughly enjoyed the design process, those with younger siblings especially. All the children were able to design for transitions with younger users in mind. Whilst the proxy design methods had challenges, almost half of the designs were of value to the "researchers designs". The designs by the Dev group created some insightful mini game concepts for researchers to take further. The Gam group created interesting off game suggestions to redirect and distract the users and reduce sadness. Overall, the children's designs allowed researchers to take design concepts and create initial product ideas for interventions to support children's transitions off technology.

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