

# THE CCI UX PLAYBOOK

YOUR ESSENTIAL GUIDE ON HOW TO USE THE TOOLS

## WHAT IS CHICI?

The ChiCI Group is made up of a team of individuals who share a common belief that the usability of technology for children is worth special consideration. It is based in the School of Computing, Engineering and Physical Sciences within the Faculty of Science and Technology at the University of Central Lancashire, Preston, UK.

## WHAT DOES THE CHICI TEAM DO?

ChiCI's main purpose is to provide a lively and supportive environment for the pursuit of research into the design and evaluation of interactive products for children. Within this broad remit, a special emphasis is placed on usability and fun, the design of technologies for literacy and the design and evaluation of novel technologies.

This work includes postgraduate research, postdoctoral research and development projects. These activities rely on internal funding (from the School of Computing, Engineering and Physical Sciences and the Faculty of Science and Technology) as well as on external grants and tenders.



## INTRODUCTION

This book introduces methods that the ChiCI Group at UCLan have developed over the years to help researchers and practitioners to design and critique technologies for children. We provide detailed information about five methods we have used with children with the hope that these may be useful in a wide variety of settings. References are provided to the papers in which the methods have been used to provide additional resources to aid understanding and a visit to our website will provide additional resources. We hope those using these resources will enjoy working with children in Interaction Design contexts.



# THE FUN TOOLKIT



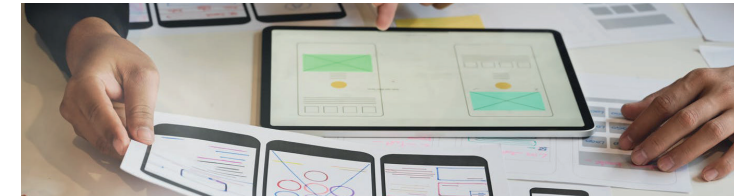
## WHAT IS THE FUN TOOLKIT?

The Fun Toolkit is a suite of tools that can be used by researchers and by industry to gather views from children

If you are showing children some technology, or involving children in a usability test, the Fun Toolkit can provide reliable and valid data that will show how children feel

The Fun Toolkit is Fast and Easy to use. It will take you less than 30 minutes to prepare the materials you will need and about the same amount of time to bring the data together for use in a report or paper

The Fun Toolkit can be used as a paper product or online – it's entirely up to you.



## WHAT ARE THE TOOLS?

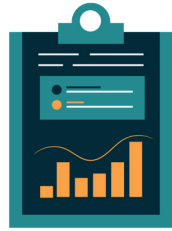
There are three tools in the Fun Toolkit. The most often used is the Smileyometer. This is a five-point Likert style scale which has a slight positive skew. Children tick a face from the scale according to how they feel.

The Again Again table is a simple table that asks children if they would like to do an activity again. It deflects the child from feeling they are judging a product and has been shown to be reliable. Children tick Yes / Maybe or No according to how much they have enjoyed the activity.

The third tool is the Fun Sorter. This is the most sophisticated of the three tools and it needs a little more thought than the other two. This is a ranking tool and is only useful where children are meeting more than one product, feature or version. It also allows different constructs to be used like 'Easy to learn to play' or 'Good at teaching me something'.

*Now let's look at the three tools and how they can be used*





# WHICH

## WHICH TOOLS SHOULD I USE?

There is generally a case to use two of the three tools – when looking at only one feature or product we recommend the Smileyometer before and after and the Again Again table at the end. This can easily be presented on a single page.

When comparing multiple products of features – using the Smileyometer before and after each of these is useful – but can present logistic problems. The Fun Sorter is a great tool to use but has to be presented at the end and the Again Again table can be used as a substitute for the Smileyometer to gather strong opinions.



# WHO

## WHO CAN I USE IT WITH?

The tools in the Fun Toolkit can be used with children as young as 4. The Fun Sorter is the most challenging of the three, and with young children this can need a little bit of help. We have seen that children can answer the Smileyometer and Again Again table without any need for training or practice.

The Fun Toolkit has also been used effectively with teenagers up to the age of 17 and 18; who do not appear to find the tools over simple or condescending and we get good completion rates.



# WHAT

## WHAT DO I DO WITH THE RESULTS?

Care should be taken with the results – we recommend the use of numeric mapping – so for example the Smileyometer can be mapped to 1 to 5, the Again Again table 1 – 3 and the Fun Sorter 1 to X where X depends on how many constructs are used.

Mapping to numbers enables the use of descriptive statistics. Care should be taken in using arithmetic means as the data is ordinal and cannot be necessarily treated as interval data. However – with a large group, providing data is relatively varied, arithmetic means have been used in the past and can be defended.

Graphical data can be used to show trends and opinions and graphs can be useful, as can the numeric data to show before and after scores with the Smileyometer.

LIKE THIS....



# THE SMILEYOMETER

## HOW TO USE THE SMILEYOMETER

We recommend you use this BEFORE and AFTER the children use your software or product. Before use the Smileyometer gives a score for expected fun – afterwards they are rating their experienced fun. Comparing these two scores allows you to see if children have had a good experience. Take care when using the Smileyometer this way that you hide the BEFORE score from the child before they complete their AFTER score.

We suggest printing the two on one page and using a fold.



A printed Smileyometer form with two sections. The top section is titled 'How good do you think it WILL be?' and the bottom section is titled 'How good do you think it WAS?'. Both sections feature a row of five yellow smiley faces with labels: 'Awful', 'Not very good', 'Good', 'Really good', and 'Brilliant'. A dashed line with the text 'fold here' separates the two sections. The form also includes fields for 'NAME', 'AGE', and 'DATE' at the top. A blue arrow points from the text 'We suggest printing the two on one page and using a fold.' to the form.

# THE AGAIN AGAIN TABLE



## HOW TO USE THE AGAIN AGAIN TABLE

This needs little explanation – IT IS ONE TABLE COMPLETED AT THE END OF A USABILITY SESSION WITH A LIST IN THE FIRST COLUMN OF THE VERSIONS AND PRODUCTS BEING CONSIDERED.

Note that if children are MAYBE SEEING THREE OR FOUR DIFFERENT THINGS, it is BEST practice to list these in different orders across the group of children so that the first THING seen OR RATED is not always the same for each child. This limits order effects and gives more validity to the results.

	YES	MAYBE	NO



# THE FUN SORTER

## HOW TO USE THE FUN SORTER

The Fun Sorter works when between two and five different items / versions of things are being compared. The children rank each product they see from the best to the worst by either writing the product names in a row of boxes from high to low, or by sticking previously made pictures of the products – which is better for younger children.

The Fun Sorter can be used with a range of constructs like 'most fun' or 'easiest to play'. When using it this way it is again important to do these in different orders – there have also been examples of children 'copying' across different rows when several constructs are listed on one page so where possible – present these on different pages or hide earlier rows with a fold.

Note that the younger that children are, the less able they are to be able to differentiate between constructs – so bear this in mind – as an example 'easy to learn' and 'easy to do' can cause confusion for young children.

	YES	MAYBE	NO
GAME A			
GAME B			
GAME C			



**CNCI**  
Child Numeracy Centre Initiative

NAME \_\_\_\_\_ AGE \_\_\_\_\_ DATE \_\_\_\_\_

**Think about the three games you have been playing....**  
Use the pictures of the three games that you are given and paste one in each square to show which was the most **FUN**

	BEST		WORST
THE MOST FUN GAME			

fold here

Use another set of pictures of the three games that you are given and paste one in each square to show which was the easiest to **LEARN & PLAY**

	BEST		WORST
EASIEST GAME TO LEARN & PLAY			

fold here

Use the third set of the pictures of the three games that you are given and paste one in each square to show which game **TAUGHT** you the most.

	BEST		WORST
THE GAME THAT TAUGHT ME THE MOST			

## THE FUN TOOLKIT REFERENCES

**READ, J.C.** (2008). *Validating the Fun Toolkit: an instrument for measuring children's opinions of technology*. *Cognition, Technology & Work*, 10(2), 119-128.

**READ, J.C.** (2012, October). *Evaluating artefacts with children: age and technology effects in the reporting of expected and experienced fun*. In *Proceedings of the 14th ACM international conference on Multimodal interaction* (pp. 241-248).



# THE ETHICS

## WORKING WITH CHILDREN IN EVALUATION AND DESIGN

When we work with children to evaluate or design new technologies and new products, we need to be very careful to ensure that they are treated with respect and care. In Universities, this is often dictated by an ethics or IRB panel who check such studies and expect the adults to follow procedures like sending parents information sheets, gathering consent, and taking great care of data. Companies have similar processes.

Our approach to working with children is to go beyond the protection of children and to use design and evaluation sessions to empower and inform them. To enable this, we have two toolkits that we work through before a session and a protocol for each session



# THE CHECK TOOLKITS



Our two toolkits – called **CHECK1 AND CHECK2** – are a set of questions and provocations that the adult works through before meeting the children.

## STEP ONE

### WHAT IS CHECK 1 & HOW TO USE IT?

Check1 is mainly about unearthing hidden assumptions and values. It is based around questioning why we are doing the session at all. We examine what the purpose is, why we think that needs to be fulfilled, why working with children adds value, and why it is that these particular children are being asked.

For each of these questions we ask the adult to answer honestly and also to think what their 'excuse' for each question might be. As an example – a researcher may say they are designing with children as they want the children's opinions – where the more honest answer might be that they want data for a research study. This 'conversation' of an adult with himself / herself will help build a clear justification for any session.

## STEP TWO

### WHAT IS CHECK 2 & HOW TO USE IT?

Check2 is used to practically prepare for the event by deciding what we will tell the children about why we are working with them, about who is funding our work, about what will happen long term to the findings we take away and about any publications or reports that will result from the session.



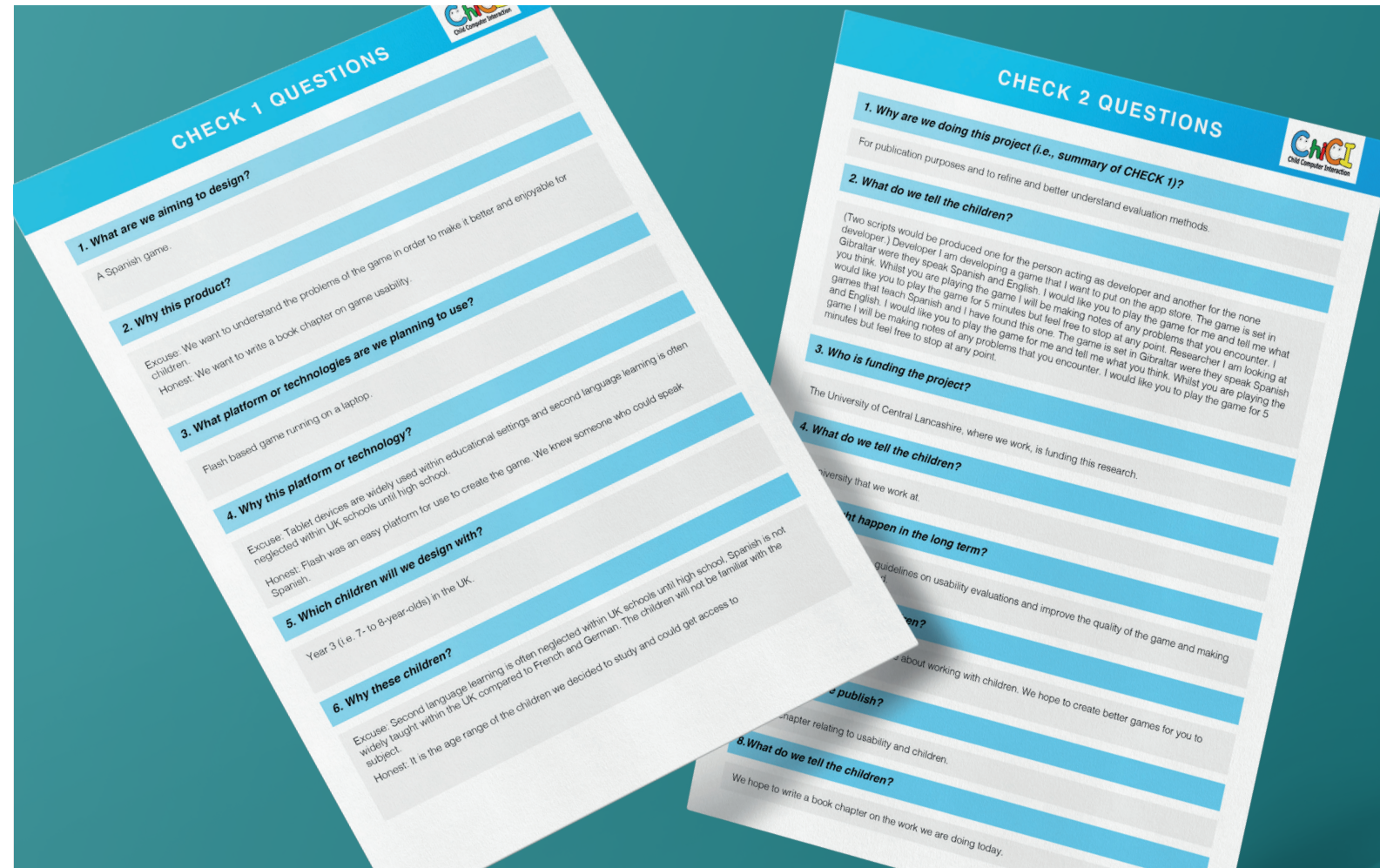
## HOW IT WORKS IN PRACTICE

Before choosing a group of children or planning a study – use Check1, or a similar tool to examine motivations and consider what might happen next with anything that is done.

When meeting the children, using Check2 as a prompt, explain the point of what you are doing and where everything is likely to end up. Ask the children what they think about all this – it can be good to ask them what they might think should happen if their contribution helps the company, or a developer, make money. We have these conversations with children

Collectively these practices allow children to be better able to assent to participate and contribute. We always explain that the children don't need to hand anything in, and we say this again at the end. We always aim to go back to children with results and with feedback. Where this is problematic, we encourage you to consider making a web page to show children what they have contributed.

Research studies that have looked at these practices show that with appropriate conversation and scaffolding even very young children can gain understanding about their involvement. We have also observed that adults deliver better planned and better motivated studies with children when they consider their own motivations and plans in this critical way.



EVEN YOUNG  
CHILDREN  
CAN GAIN AN  
UNDERSTANDING  
ABOUT THEIR  
INVOLVEMENT

## THE CHECK TOOLKIT

### REFERENCES

**READ, J.C., HORTON, M., SIM, G., GREGORY, P., FITTON, D., & CASSIDY, B.** (2013). *CHECK: a tool to inform and encourage ethical practice in participatory design with children. In CHI'13 Extended Abstracts on Human Factors in Computing Systems* (pp. 187-192).

**VAN MECHELEN, M., SIM, G., ZAMAN, B., GREGORY, P., SLEGGERS, K., & HORTON, M.** (2014, June). *Applying the CHECK tool to participatory design sessions with children. In Proceedings of the 2014 conference on Interaction design and children* (pp. 253-256).

# THE MEMOLINE

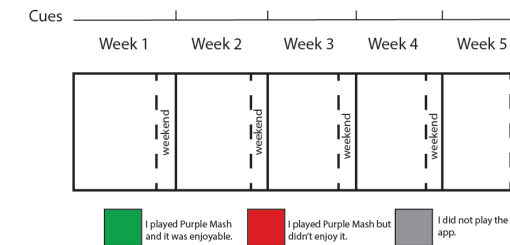
## WHAT IS THE MEMOLINE?

The Memoline is a retrospective tool that can be used to gather longitudinal user experience data with children. It is loosely based on the UX curve. Children completing the Memoline do so after they have used a piece of technology or a software product over a length of time. This can be several weeks or a few months, it's effectiveness over longer periods is still rather unknown.

## WHAT IS THE TOOL?

A MemoLine is a horizontal timeline that covers the period from the first use of the product to the date of MemoLine completion. It is normally produced on single sheet of paper in landscape format and the periods of use are divided appropriately into days weeks or months according to how long the study has been running.

*Now let's look at the tools and how they can be used*







## WHO

### WHO CAN I USE THIS TOOL WITH?

The recommendation is that you can use the method with children as young as 8 with appropriate assistance.

Research shows its effectiveness when used in a classroom with the facilitator showing the children how to complete it in a group and then having individual interviews. Alternatively it can be carried out in children's homes or in the office.

## EVALUATE

### HOW TO PERFORM THE EVALUATION

On meeting the MemoLine at the end of the study, the first activity with the child is for him / her to add life events to the timeline. These are cues to help them remember their experiences around certain events, for examples these might include birthdays, holidays, trips to the zoo etc. These are then used as anchors to help the child retrospectively evaluate their experience with the product.

When reflecting back on their experience, the MemoLine allows for multiple constructs to be evaluated including Fun, learning, ease of use etc. The aim is for a child to focus on one construct at a time and think back to how they experienced the product throughout the period. We have evaluated three constructs at a time but would not encourage any more.

The child would colour in sections of the timeline to represent their experience, using green for positive, red for negative and grey for periods of no use. The child colours in the timeline for each construct.



## INTERVIEW

### WHAT QUESTIONS TO ASK AND HOW?

Once the colouring in is completed, the child is interviewed by the evaluator who focusses on moments where the colours have changed from red to green or green to red. These discussions are recorded and later transcribed. The interview part is crucial for establishing the reasons for change and questions are typically about why this change occurred with probing questions to try and ascertain the reasons. Some children will struggle with this so do not try and force a response if the child is struggling they may simply not know.

## ANALYSIS

### HOW TO ANALYSE THE RESULTS?

It is the interview data that is of most use with this method. We do not recommend UX developers to present MemoLine data as 'results'. It is possible to code and graph the changes in experience over time but you gain greater insights from the interview data.

These could simply be grouped into themes relating to positive or negative experiences to understand why a child lost interest or enjoyed a feature of the product.



## THE MEMOLINE REFERENCES

**SIM,G., NOUWEN,M., VISSERS,J., HORTON,M., SLEGERS,K., & ZAMAN,B.** (2016). *Using the MemoLine to capture changes in user experience over time with children. International Journal of Child-Computer Interaction*, 8, 1-14.

**HORTON,M., SIM,G., ZAMAN,B., & SLEGERS,K.** (2019, June). *Evaluating Long Term User Experience with Children: Comparing the MemoLine with Interviews. In Proceedings of the 18th ACM International Conference on Interaction Design and Children (pp. 51-57).*

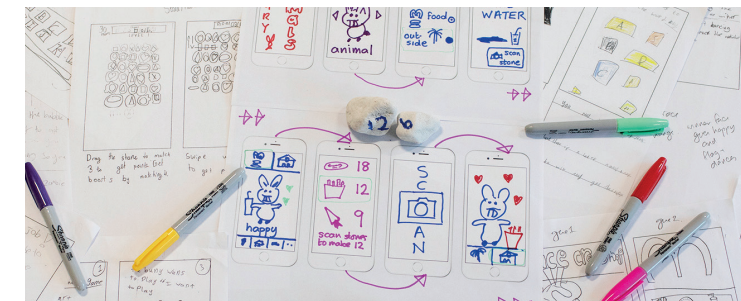
# RAID: RAPID ANALYSIS OF IDEAS

## DESIGNING WITH CHILDREN

Getting ideas from children can be helpful for designers. One way to do this is with a series of meetings with a small group of children, another is to go to a school class of children and work with 20 to 30 children (or more) at a time, typically in a one-off event.

This class-based design is the focus of the technique we refer to as Fast and Furious co-design. Fast and furious co-design is especially well suited for use with class sets of children where a school may want all the children in a group to work with an external team and where time is limited

There are two stages – the first is to set up an activity to gather the ideas from the children, the second is to fairly and effectively look at the ideas.



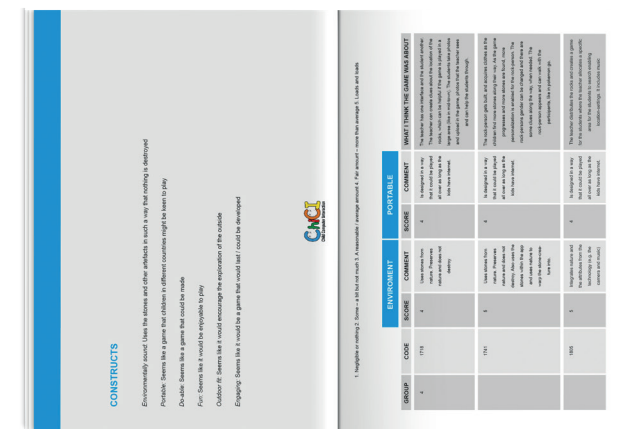
## HOW TO GATHER THE IDEAS

Decide what it is you want to find out and plan an activity around that. If it is ideas around a problem, set up the context and then give children paper and pencils and see what emerges; if you want to narrow the scope, maybe to a specified technology, or to a particular context, then it can be useful to provide wireframes or partially completed paper sheets for children to work on – you can see some examples on

WWW.CHICI.ORG

Be very careful how you introduce a design challenge. Be VERY aware that if you use examples, children may constrain their thoughts and ideas to what has been shown to them. One workaround for this is to use obstructed theatre which is a dialogue between two people that ‘sets up’ a design space without showing an example – you can read about this on the [www.chici.org](http://www.chici.org) website.

Now let's look at the tools and how they can be used







## WHO

### WHO IS BEST TO DESIGN WITH?

We have done class-based design with children across all ages. Younger children do have limited ability in expressing ideas and their drawings may need to be annotated by an adult before they can be easily interpreted. In this interpretation there is a risk that the child adds and changes his or her ideas so we would generally recommend design work to children aged about six and over.

Note also that we believe that when children give us designs and ideas, we have an obligation to look at them carefully. This is why we have developed a unique analysis method called RAId (Rapid Analysis of Ideas).



## WHAT

### WHAT IS RAID & WHAT DOES IT DO?

RAId is a method we have developed to help us get rapid value from a set of ideas from a group of children. We see it being useful for class-sets of data – we have used it with over 90 drawings in one session and as few as 20 in another.

In RAId we focus on themes that capture what we are looking for and use these to focus how to look at each of the children's drawings. The process takes around an hour for 25 drawings after which the team will have a good overview of all the children's drawings.

## PLANNING

### TIPS FOR PLANNING RAID SESSIONS

The design team have to be clear what the themes are that are of interest - e.g. Fun, Makeable, Competitive, Challenging etc. This should really be already decided before the design session and it may be that the children will have been told about some of the themes. We recommend that no more than six themes are proposed for each design session – you can have fewer.

RAId is generally carried out by a team of three or four who each look for all the themes and at all the drawings but not all in the same way. For example, person A may look at drawing 1 for fun and learning whereas person B may look at the same drawing for connectivity and learning.

Sets of scoring sheets are needed for each team member doing a RAId evaluation – these need to be built BEFORE the team do the evaluation and they depend on the number of themes, number of people, and number of designs – a protocol for making these can be downloaded from [www.chici.org](http://www.chici.org).

## DOING

### HOW TO CARRY OUT A RAID

On the day of the evaluation each evaluator will be given copies of all the designs organised into between 4 and 8 groups with each group having a scoring sheet. Referring to the themes mentioned on the scoring sheet, a short comment for each design is made and a score entered. With between 4 and 6 designs being typically looked at on one page – the evaluator then picks a winning design and then turns to the next scoring sheet where the next group of designs are similarly dealt with but this time against different themes. This keeps concentration and focus.

Once all the designs have been looked at by each team member – each individual designs their own solution having been informed by the children. This limited set of designs are then used by the team to discuss what to take from the set. In this way RAId allows a nice merge of expert and child informed designs.

## RAID: RAPID ANALYSIS OF IDEAS

### REFERENCES

**SIM, G., NOUWEN, M., VISSERS, J., HORTON, M., SLEGGERS, K., & ZAMAN, B. (2016).** *Using the MemoLine to capture changes in user experience over time with children. International Journal of Child-Computer Interaction, 8, 1-14.*

**READ, J.C., FITTON, D., SIM, G., & HORTON, M. (2016, October).** *How Ideas make it through to Designs: Process and Practice. In proceedings of the 9th Nordic conference on human-computer interaction (pp. 1-10).*

# DRAWING INTERVENTION

## WHAT IS DRAWING INTERVENTION?

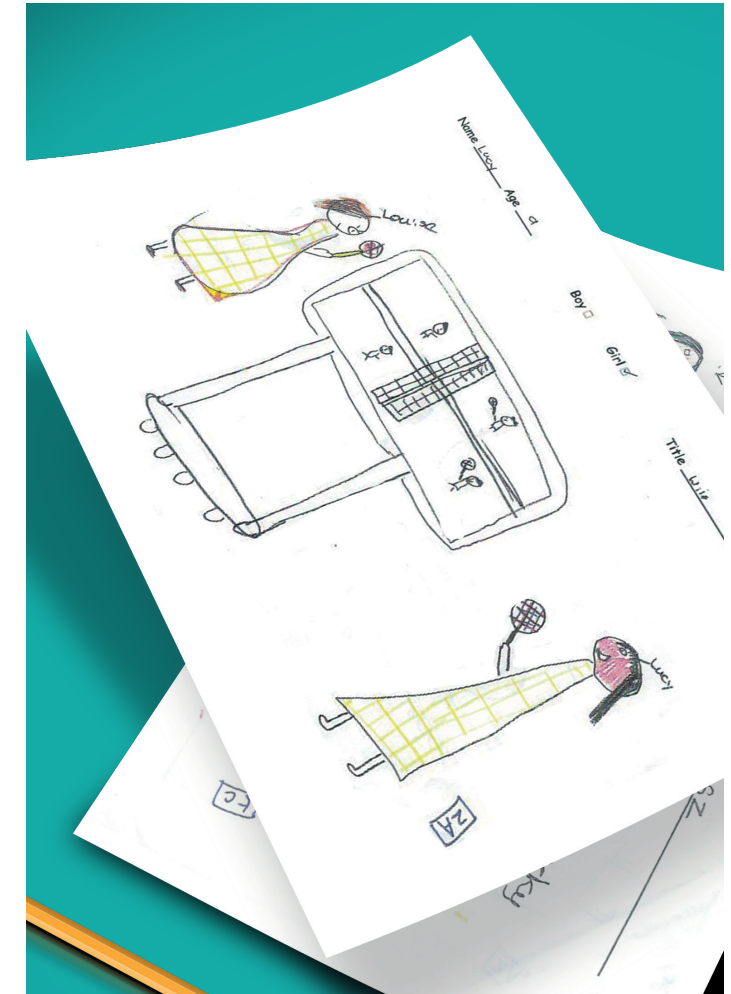
Drawing Intervention uses drawings by children to capture their experience of novel technology. It is used after children have played with a game or product. The children 'draw' their experience and this is then analysed by a group of experts who look for key themes in the drawings. It is intended to help designers and developers to see what was 'memorable' to the children.

Drawing Intervention can be used in any situation, but it is best suited to physical, tangible and augmented interactions where the child is a 'part' of the interaction and therefore might include himself/herself in the drawing.

## USING DRAWING INTERVENTIONS IN YOUR UX WORK

If children are playing alone or collaboratively with novel technologies Drawing Intervention is a good method to capture user experience. It is very easy for children as they are simply drawing their experience. To use the technique simply give the children paper and coloured pencils after they have played and ask them to draw their experience.

Drawing Intervention can be done with any age of child. With very young children we recommend that a teacher or adult talks with the children about their drawings and annotates them before they are collected in.





# CODE

## HOW WE CODE THE DRAWINGS

Drawings are coded for 'fun', goal fit' and 'technology'. Goal fit is the extent to which a product achieves its intended goal, e.g. do children collaborate if collaboration is the goal? In terms of technology, we are looking to see in the drawings if the children feel they have experienced the 'magic' of the technology – e.g. if it is tangible – have they incorporated movement to action in their drawings.

Children bring with them individual and collective previous experiences and knowledge. For this reason, in Drawing Intervention, each look at drawings starts with the team agreeing what the children's drawings represent. This is achieved by doing the analysis in two stages – the first stage sets the definitions; the second stage generates codes.

# INTERPRET

## HOW TO INTERPRET THE THEMES

Consider fun; in this case the team have to decide what represents fun in the drawings – this may be people smiling or singing or dancing –this will be heavily dependent on the type of product being evaluated and, on the experience, that the children are having. Collaborative tangible experiences will result in quite different drawings from those representing solitary mobile game play.

The team should look at as many drawings as they need to so they can agree what sorts of things represent each of the themes. These definitions should then be agreed.



# CREATE

## TIPS ON CREATING A UX REPORT

To report the findings from Drawing Intervention the team should code the drawings against the themes they have identified. Numeric scores can be used to represent 'not present', 'partially present', and 'present', for example. These can then be represented as charts and descriptive statistics to create a picture of how children experienced the product.

The report from Drawing Intervention can be tailored towards the needs of the product design team. Comparing scores for fun, goal fit and technology can show which parts of the experience might need more work – for example a product may need to be better designed to ensure children understand what the point of it was. At the same time, descriptive data on how, for example, children represent the technology in the game can be useful for instruction design and packaging.

## DRAWING INTERVENTION REFERENCES

**MAZZONE,E., XU,D., & READ,J.C.** (2007, September). *Design in evaluation: reflections on designing for children's technology. In Proceedings of the 21st British HCI Group Annual Conference on People and Computers: HCI... but not as we know it-Volume 2* (pp. 153-156). BCS Learning & Development Ltd..

**XU,D., MAZZONE,E., & MACFARLANE,S.** (2006, June). *In search for evaluation methods for children's tangible technology. In Proceedings of the 2006 conference on Interaction design and children* (pp. 171-172).

# WHAT IT'S ALL ABOUT

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This book comprises of a collection tools that can be used by researchers and by industry to gather views from children. The tools were created by university lecturers who have specialised research within the area. The aim is to highlight the importance of play in the design, use and study of new technology.

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