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EVALUATING CHILDREN'S INTERACTIVE PRODUCTS

Principles and Practices for Interaction Designers

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This book is for students, researchers, and practitioners who design or evaluate interactive products for children. It does not require background knowledge in computer science, human factors, psychology, or design, although concepts from these areas of knowledge are used in the book. This is a handbook rather than an introductory textbook or an academic treatment of this topic, and it aims to provide practical and sound advice for how best to evaluate interactive products. This advice is based on accumulated experience with such evaluations and on research results in the new and fast-growing subdiscipline of human–computer interaction (HCI) that focuses on products for children.

This book’s title could have been Evaluating Interactive Products for and with Children. Indeed, it was developed from a tutorial with that cumbersome, albeit accurate, title that we have given at several specialist conferences. It covers evaluation methodology for supporting interaction design for products, systems, software applications, toys, games, and specialized appliances intended to be used by children.

Most, but not all, of the time, the evaluation methods discussed in this book require the participation of children. This participation reflects a changing perspective in our field and in society in favor of an increasingly active and responsible role for children. Our focus on interaction design means that several aspects of products that might need to be evaluated are outside this book’s scope—for example, whether the product or system is safe to use or whether it functions according to its technical specifications.

The design of interactive technology has been studied for many years. Initially, this study concentrated on the ergonomics of use, but later included the cognitive and
even social aspects of interaction. Today, this field contains a substantial body of knowledge with regard to interaction design and the more narrowly scoped field of usability engineering (UE). Within these areas of practice, and the related research field of HCI, a host of methods are available for evaluating interactive products. Given the initial focus of these fields (interaction design and UE) on supporting work-related adult activities, much of the associated methodology works well when the intended users of the products are adults at their workplaces.

Paradoxically, if a central tenet of HCI is to base design on understanding users, the methods and techniques proposed in mainstream HCI are often defined, described, and practiced as if they were user independent. Our book stems from a growing conviction that we must break loose from this frame of mind. We argue that there is an increasing need to revisit methodologies developed for office workers or adult consumers, to adapt them, and to develop new ones that fit the diversity of contexts, products, people, and uses that interaction design is faced with today.

One area where routine HCI methods need serious revision, or are even considered inappropriate, is in the study of children and children’s products. Notions of usability, tasks, and performance must be revisited or put into the context of broader concerns for children, such as their development, their learning, and whether they have fun while using a product. Assumptions about how users will behave and what can be expected of them in the context of an evaluation often fall apart when working with children rather than adults. The need for new methods, adaptations of existing methods, and (eventually) a book arose out of the realization that people who evaluate products with children need specific, up-to-date advice on methodology that is not readily available.

How to Use This Book

You are probably reading this book because you need to evaluate a product with children. If this is the first time you have worked with them, or even the first time you have done an evaluation in any context, you will find here a gentle introduction to what is different when working with children that provides step-by-step guidance for setting up an evaluation study, running it, and interpreting its results.

If evaluating children’s products is already part of your job, this book gives you advice on how to perform evaluations more systematically, and it brings your practice and knowledge up to date with related research. The chapters offer you a wider range of methods and helps you weigh the pros and cons of each.
We hope that researchers will also find this book interesting. It provides an overview of a new and vibrant research field and exposes gaps in current methodologies that future research must address. We also hope it conveys our enthusiasm for this research area, where so much interesting work is taking place and so much still needs to be done.

Instructors can use this book to support a specialized course on its topic. It can also be used as supplementary reading for courses on interaction design or human–computer interaction. Compared to textbooks on these more general topics, you will find what we hope is a complete and self-contained handbook on how to proceed with setting up an evaluation with children.

If this is the first handbook you have read on the topic of evaluating products, we believe it can provide a solid foundation and a good introduction to how evaluations should be done. You will learn about the place of evaluation in the design process and be introduced to a wide variety of methods. Although this book focuses on children, it takes a broader view than many related sources on what methods are useful for evaluating products and how to combine or adapt them. This book provides a different and valuable perspective even if your interests are not primarily in working with children. It provides in-depth coverage of many of the issues skimmed over by other books—issues that are very important in actual evaluation practice—such as how to design a survey, how to do observations, and how to use diaries.

Whereas earlier texts placed a lot of emphasis on how to insert usability in a company and the practical procedures that should be followed, this book focuses more on the soundness of the methodology and on helping you to appreciate the quality of the data you collect and the conclusions you can draw from it. Our focus stems from working with children, but we believe that this perspective is one that needs to be emphasized more in evaluation methodology in general, and we hope our book is a relevant contribution in that direction.

This Book’s Organization

Evaluating Children’s Interactive Products: Principles and Practices for Interaction Designers is organized in four parts.

Part 1, Children and Technology, provides a brief introduction to working with children, children’s technology, and interaction design for those who are new to the field. It discusses how ethical issues should be dealt with when working with
children, and provides an overview of evaluation methodology, introducing concepts and terminology that are important to consider when shaping and defining an evaluation.

Part 2, Evaluating with and for Children, provides a step-by-step practical guide for an evaluation, including what you need to do before, during, and after an evaluation session. The chapters pay special attention to how the involvement of children affects a study.

Part 3, Methods of Evaluation, goes deeper into different methods, discussing how methods that were originally developed for evaluating adults’ products must be adapted. It introduces a number of new methods and techniques that can be used for evaluating products with children. This part also discusses how to record interaction, the intricacies of doing Wizard of Oz studies, and how to do inspections—that is, appraisals of interaction design without the involvement of children.

Part 4, Case Studies, presents three case studies that illustrate some challenging issues of working with children.

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Panos, Janet, Stuart, and Johanna
ABOUT THE AUTHORS

Panos Markopoulos initially studied electrical engineering and computer science at the National Technical University of Athens and then moved into the field of human–computer interaction at Queen Mary University of London, where his focus was on model-based design and the intersection between software engineering methods and human–computer interaction. In 1998, he moved to The Netherlands, where he worked briefly at Philips Research on television-based user interfaces. He is now an associate professor in the Department of Industrial Design at the Eindhoven University of Technology. Panos chaired the inaugural Interaction Design and Children (IDC) Conference in Eindhoven in 2002. His current research and teaching concerns ambient intelligence and interaction design for children, focusing on design methods and novel application concepts.

Janet Read has a first degree in mathematics from the University of Manchester, United Kingdom. After teaching mathematics for several years, she moved into human–computer interaction where she specifically studied the usability of handwriting recognition interfaces for children. Currently a senior lecturer at the University of Central Lancashire, she teaches general and advanced human–computer interaction, interaction design, and child–computer interaction, and she leads the lively Child–Computer Interaction (ChiCI) research group. Janet’s current research is concerned with text input technologies, children’s use of tangible technologies, and the investigation of methods for the design and evaluation of children’s technology.
ABOUT THE AUTHORS

Stuart MacFarlane graduated with a degree in mathematics from the University of London and began his career as a teacher. He moved on to a PhD in human–computer interface evaluation at Heriot-Watt University and became a senior lecturer in human–computer interaction at the University of Central Lancashire, where he was involved in a number of projects on the design and evaluation of interactive products for children. Stuart cofounded the ChiCI Group at the university in 2002. He was the chair of the IDC Conference in 2003 and, with the other three authors, developed tutorials about evaluation and children that were presented at a number of conferences in 2003 and 2004, which eventually led to this book. He now works at Edge Hill University.

Johanna Höysniemi's interests include design, technology, usability, and social media. After obtaining her MSc in software engineering at Tampere University in Helsinki, she continued studying in the Medialab at the University of Art and Design Helsinki. She then received a PhD in interactive technology at the University of Tampere. During her PhD research, she designed and evaluated physically interactive computer games for children. Johanna was cochair of the IDC conference in 2006. More than 200 children have taken part in various evaluation studies as part of her research. Since 2006, she has been working in industry as a senior interaction designer with several international technical companies. In the future, she plans to continue designing products with and for children.
To Annick, Josephine, Emiel, John, Helen, Janno, Elodie, Jonathan, Toshi, Aki, and Kenneth, who have supported us in this endeavor by their patience and their understanding.

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To lost moments, and lost nights that, whilst gone forever, can, having seen the fruit of their demise, be remembered without regret.

– Panos, Janet, Stuart, and Johanna