KidReporter: a user requirements gathering technique for designing with children

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Abstract

This paper describes a design method, novel to the domain of interaction design, for gathering user requirements from children called the KidReporter method. The KidReporter method was chosen and further refined based on assumptions about User-Centred Design. The method was considered to be suitable and appealing for children in terms of participating in design. Two school classes participated in making a newspaper about a zoo, to gather requirements for the design process of an interactive educational game. The educational game was developed to educate children about animals while walking through a zoo. The KidReporter method’s main strengths are that it combines many techniques for eliciting information from children, such as interviews, drawing and making pictures. In this paper we describe how the KidReporter method was applied, in what manner it was successful and what we would do differently next time.

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1. Introduction

In this paper we present a novel early design method to gather requirements from children between the age of 9 and 10 years towards the design of an educational game. The goal of the game is to teach children about animals, during a visit to the zoo. Designing in a user-centred design manner for children, requires methods suitable to gather information...
from and about children. Even though there are different opinions about what role children should play, ranging from very active (Druin, 1999a) to a less active role as informants (Scaife et al., 1997) most people agree that children can provide useful insights.

A number of methods exist to gather requirements from and about children to inform interaction design. These include more traditional methods, such as observations, interviews and questionnaires, either to be conducted with children themselves or with representatives and methods that have been specifically tailored to children, such as photo diaries (Oosterholt et al., 1996) and Cooperative Inquiry (Druin, 1999b).

For this project it was deemed important to gather information directly from children, to get a good picture of what interests them, and what kind of language and vocabulary they use. Furthermore, to increase the quality of the data gathered we were interested in a method based on activities that would be interesting for children, and that also combined different kinds of data sources.

For this particular project we selected a newspaper making method that has been described in the context of another domain, the design of after school care services. We have adapted the method for our purposes. In this paper we present the method itself, providing an overview of what considerations we had in selecting and tailoring a method appropriate for children’s input to the design process, and whether the method has met our expectations for gathering user requirements for interaction design. The description of the method should enable other practitioners to judge whether the method might be relevant for their design project, and if so, to provide a good starting point for adapting it for their purposes.

2. Requirements methods for children

This section described in more detail the underlying rationale for selecting the KidReporter method.

We selected a technique that would meet the following needs:

- It should be motivating and stimulating for children. They should get something out of it as well.
- It should be suitable for children’s reading and writing level. Children differ in how quickly they develop these skills, and have different preferences for expressing themselves verbally or through drawings.
- Combining diverse data sources should optimise the quality of the data. With adults, but possibly more so with children, it is important to check for consistency of answers, by gathering similar information from different sources. For example, using various methods such as interviews, observations and diary methods.
- Finally, the technique should result in useful information for the designer of the educational game.

A wide range of techniques has been applied for gathering requirements from children. These include interviews, observations, questionnaires, photo diaries, card sorting tasks and story writing (Oosterholt et al., 1996; Druin et al., 1999; Hanna et al., 1999;
Lieberman, 1999). After also exploring requirement techniques that have been used in other design domains, such as after-school care services, we finally selected a newspaper making method, that we call the KidReporter method (Rijnen and Schreuder, 2000) as the most promising and inspiring method to apply. One component of the Cooperative Inquiry approach, called CHIKids Newsroom, actually has similarities to the KidReporter method (Druin, 1999a). However, this part of the Cooperative Inquiry method was used to describe children’s general impressions and interests in relation to a wide range of technologies and was not used to gather user requirements specifically for one product. The content of the newspaper, created using the KidReporter method, is intended to infer user requirements for a specific product.

2.1. The KidReporter requirements method

The KidReporter method enables children to contribute their opinion to a design problem through a choice of activities that finally results in a newspaper with the children’s ideas about a topic. Rijnen and Schreuder (2000) describe the method in the context of getting input from children about after-school care services. Apart from a global description of the method (Rijnen and Schreuder, 2000) no description of the application or success was found in the literature. The description provides pointers for activities that children might participate in, the age group that it is intended for and the kind of outcome that might be expected. Based on this global description, we made adaptations to enable us to gather information from children about their interests in the zoo, through the following activities:

• Taking pictures and writing argumentations about why the picture was taken and what was interesting or appealing about the content of the picture.
• Interviewing, in which pairs of children developed a list of questions intended to elicit information about what interested them in a zoo, and providing them with the opportunity to tell their story.
• Article writing, in which a limited number of children would have the opportunity to provide a more detailed story about a topic they were interested in. The article would provide an opportunity for children interested in providing detailed information about one topic, as opposed to more global information about a number of topics.
• Filling in a questionnaire. The children had the least influence on the content of the questionnaire. This was a more controlled medium to elicit similar information from all children, as opposed to diverse information from separate groups of children.

The children received an introduction from the designer about the purpose of all the activities. She explained that they would be helping her to make a product, and that in return the children would receive the outcome of their activities in the form of a newspaper. The designer created two newspapers based on the input form the children.

3. Design problem

The aim of the project in which the KidReporter method was applied was to design an electronic educational interactive game (EEIG) for Artis, a zoo in the Netherlands.
The goal of the game is to educate children, between the age of 9 and 10, about animals in a pleasurable manner. The educational game will be implemented in a handheld PDA (i.e. a Palm personal digital assistant). The assumption is that learning through a game will motivate children to interact with the application as well as increasing their learning experience.

After an initial exploration of the design problem, in which an analysis of similar educational products, and interactive games was made, it was decided to design an educational game that could be used by children either independently, or together with other children, while walking around the zoo. The aim of the EEIG was to motivate children to observe the animals closely learning more about the animals than if they were to walk around by themselves.

Based on a literature study a global impression was developed about children’s interests and capabilities, and about gender differences. Discussions with people responsible for the educational services in the zoo provided insights into topics in which children are interested and different educational methods. Subsequently, The KidReporter method (an adjusted version of the newspaper method in Rijnen and Schreuder, 2000) was applied to check if the general information from the literature was also valid for this particular design project.

To get input for a list of requirements children were asked for information about the following topics:

- Animals and the zoo, to determine what content to provide.
- Interest in games, to determine what kind of game elements would be promising.
- Ways of navigation, to determine how to support the children when exploring the zoo.
- Vocabulary and the level of difficulty of questions and content, to determine how to present the questions and information on the hand-held device.

4. Method

How can a requirements method be assessed? Since the success of a design method is influenced by so many variables it is important to create a rich picture of how it was applied, what the expectations were and whether those expectations were met. The purpose of the study described in this paper is not to determine whether this method is better than another requirements method, but whether it has provided the information we were hoping it would. A case study approach was adopted to get a better understanding about whether the application of the KidReporter method was successful, or not. For this purpose our research questions were formulated in the form of expectations. Both positive and counter evidence predictions were made before the design method was applied (Yin, 1994). According to Yin (1994), a case study is a good approach for answering ‘how?’ and ‘why?’ type questions, but not for answering ‘how many?’ type questions. In this case the study explored how children can be involved in early design activities and to what extent the KidReporter method is successful, in gathering requirements from children. A case study approach is especially suitable to examine complex phenomenon, such as the multiple factors that influence whether a particular way of applying a design method might
lead to the expected results. For example, the success of a design method may depend on selecting the right participants, motivating them to participate, choosing appropriate activities for the participants and gathering information about design relevant issues.

The case study focused on the following two research questions:

1. Is the KidReporter method successful in involving children in requirements elicitation processes? Are the children motivated, are they distracted and to what extend do other children or adults influence them?
2. Did it provide the information that was expected? How does the output from the KidReporter method contribute to the design process? Is it useful and inspirational for the design process?

The KidReporter method was used to gather requirements for the educational game. The method combined four sub-methods: making photo’s and descriptions of the photo’s, holding interviews, writing articles and filling in questionnaires. The designer prepared the task descriptions for the various sub-methods in collaboration with some teachers of schools that were interested to participate in the study. The designer arranged some teachers and parents to be assistants to supervise the various tasks that the children would participate in. The KidReporter method was used separately with two classes, resulting in two newspapers about the zoo.

4.1. Subjects and materials

Two classes, with a total of 63 children (28 boys and 35 girls) in the age group of 9–10 years old participated in the study. Fig. 1 gives an overview of how many children participated in the various sub methods of the newspaper development.

For the KidReporter method two groups of children were each asked to help develop a newspaper about the Artis zoo in Amsterdam. They were asked to be reporters, and to help gather information that they thought would be interesting to other children. After a short introduction, the children could choose which of the three roles they preferred to take: photographer, reporter or article writer. All children were asked to fill in a questionnaire at the end of the session.

Thirty children walked around the zoo taking photos of animals they liked. These were divided into five groups of three girls and five groups of three boys. The children received an explanation of their roles and were asked to walk around and select four animals of interest. After having made their selection each group could come and pick up a throwaway camera to take their four pictures and for each picture provide a description of why they had selected it. Twenty-one children conducted interviews amongst each other. They received a list of 10 basic questions to be asked, and were asked to think of six more questions to ask each other. This resulted in a total of 16 questions. After having decided on the questions, they were given a tape recorder, to record the answers to the questions. Twelve children worked on the article writing activity. These children worked in three mixed groups of three children and one group of three boys, who could each select their own topic for the article from a range of topics, such as reproduction, territories, smells,
4.2. Data gathering and analysis

For the purpose of evaluating the success of the design method research questions were formulated concerning (1) general expectations about children participating in this design activity, (2) specific expectations related to the particular (sub) design methods that were applied, and (3) expectations about the design relevance of the information provided by the children. In accordance with case study methodology (e.g., Yin, 1994) for each of these questions predictions were made about what would be considered to be positive evidence and counter evidence. Subsequently, the design method was applied and the data was analysed to determine to what extent the positive and counter evidence was found.

4.2.1. General expectations about the children’s participation in the design activity

(a) Children feel more comfortable providing information about their interest in an environment with which they are familiar and which helps them form an opinion.
about the topic being discussed, such as a school, play garden or zoo (Acuff and Reiher, 1997; Druin, 1999a,b). Given that children were asked to provide information within a familiar environment (i.e. a zoo), it was expected that the children would be clear in their responses to the various activities and would also be prepared to elaborate. Possible counter evidence might be provided by children being distracted by the environment instead of being motivated, thus resulting in less good information.

(b) Children may have trouble providing answers if they can only rely on verbal skills (Druin, 1999a,b). Therefore it is useful to combine data gathering techniques that rely on different ways of expressing opinions (verbal and graphical means). Also, children will feel more comfortable expressing their opinion if they are interacting with somebody who uses similar language as they do. It was expected that children would be better able to provide input if they could choose another way of providing answers than just through a verbal medium. This can be examined by exploring what activities the children choose to participate in, and whether the information provided through the various formats was in some way complementary, e.g. whether the designer gains different insights from the different data sources. Possible counter evidence might be that the tasks are too difficult, or that the children do not understand the tasks related to the different media properly, and thus cannot provide good input.

(c) Children can easily be influenced by parents or other strong leaders, which might bias the data gathered (Acuff and Reiher, 1997). It was expected that children might be influenced by parents or other strong leaders, and thus that a method which allows them to work amongst each other would increase the chance that they would give their own opinion. Possible counter evidence might be that some of the children themselves are strong leaders, influencing other children’s opinion and thus influence the quality of the data.

4.2.2. Specific expectations about how children respond to the various design techniques

(a) Taking photos is an inherently interesting activity, which should motivate children. Doing it in groups of three should increase thinking about decisions. Also, writing explanations for selecting a particular spot should increase thinking about the decisions. It is expected that children provide good explanations about the photo’s they have taken. Counter evidence would be that the children could not write good explanations, either because they have not considered their decisions properly, or because they just took some pictures randomly.

(b) For the interviews, children were asked to interview each other. The expectation is that this will both increase the relevance, and the chance of asking understandable questions. To ensure the right scope for the interview, six questions were provided. Counterevidence for success of the questions provided would be that the children did not understand the questions, or that the children did not record the interviews properly and the information was lost. Counterevidence for the success of the questions they made themselves, would be that the children could not come up with questions, the questions were not relevant, or that the other child did not understand the question correctly.
Article writing allows some children to choose their topic of interest themselves and to provide more detailed information. Evidence for the success of the article writing activity would be that the children were able to choose a topic they are interested in and that they wrote an interesting story about it in their own words. Counterevidence for the success of the article writing activity would be that they children either could not choose a topic, and write an article about it, because the tasks was less structured and difficult, or that they selected an inappropriate topic, such as the ice-cream shop or the play garden.

The questionnaire is supposed to be a more controlled instrument for gathering the same information from all children. Positive evidence would be that the children fill in the questionnaire as intended and counterevidence would be that they either misunderstood some questions or did not answer them at all.

4.2.3. Expectations about the design relevance (i.e. in the form of requirements) of the information gathered through the KidReporter method

Photos. It was expected that the photos and their descriptions would provide information about gender differences, interest in animals, and language use. Counterevidence for success in determining interest in animals might be that the tasks are not understood and either too few photos’ are taken or photo’s are taken of less relevant aspects of the zoo, such as the play garden or food stalls. Counterevidence for being able to determine children’s language use is that the children are unable to provide a rationale for taking the photo. Other indicators of the success of taking photo’s are: the number of photo’s taken by the children, the usefulness of the information on the photo’s, the number of descriptions provided, and the quality of the descriptions provided by the children.

Interviews. The data gathered through the interviews was intended to provide insights into possible gender differences, preferences for animals and language use by children of this age group. Children might either be influenced by outsiders or forget to record some of the responses and thus would not provide sufficient data for determining their preference for animals. Children might be unable to phrase appropriate questions or provide answers for us to gather information about their use of language. Other indicators of the success of the interviews are: the number of questions that the children thought of themselves, the number of answers that were provided to all the questions, the quality and extent of the answers provided.

Articles. Based on the articles written by some groups of children the designer expected to determine the children’s preferences for certain topics, their language use and a view about their navigation approaches in exploring the zoo. Counterevidence for the success of this sub-method might be that they either choose inappropriate topics for the articles, such as the play garden, or that the tasks are too difficult for them. Furthermore, it might turn out to be difficult to determine the children’s navigation strategies based on their notes for the articles. Other indicators of the success of making the articles are: the number of articles that are written, the quality of the articles that are handed in.

Questionnaires. The questionnaire was supposed to provide information about gender differences, interests in (electronic) games and language use. Counterevidence for the success of the method might be that the children misinterpreted the questions, or do not
have filled in (parts of) the questionnaire. Other indicators of the success of the questionnaires are: the number of questionnaires that are handed in, the number of questions that have been filled in correctly.

The combination of sub methods incorporated in the KidReporter method was selected to increase the chance that at least one source, and preferably more sources could provide answers to the various design questions. Counterevidence to the design relevance of the information gathered would be that the information provided by the sub methods turned out not to be complementary or redundant.

5. Results

5.1. General expectations about the children’s participation in the design activity

As expected the children felt comfortable participating in the various activities in the inspiring location of a zoo, and provided more detailed information than when the designer asked the information from the children separately. The assistants, and in some cases the teacher, provided an important source of motivation by giving a good introduction to the activities. No counterevidence was found: the children were not distracted by the surroundings of the zoo and they were very punctual in finishing their activities. This could have been, because they were allowed to explore the zoo for a while before the design activities started.

The combined KidReporter method provided the children with various media, apart from a verbal medium, to express their opinion. Fig. 2 shows part of one of the final newspapers that was created. The results from the various sub methods made it easier to understand the information provided by the children. Unexpectedly, the fact that the children were asked their opinion in different ways helped them determine the purpose of the questions, and thus their decision-making process of what answer to give. For example, the fact that children were asked to look around the zoo and to take a picture of an animal that they were really interested in, helped them think about why they had actually chosen that animal. Furthermore, being allowed to make up their own questions for parts of the interviews allowed them to tell the story they wanted to tell. A drawback was the technology used for gathering the data, which sometimes distracted the children from the actual information gathering activities. This, however, was managed by the supervisors helping the children to keep on track.

The children were able to give their opinion with relatively little influence from authority figures, such as parents, teachers or opinionated classmates. They were well able to decide what photo’s to take, what questions to ask in the interviews, and to provide information about their activities. They only asked the adults for information in a limited number of cases. Furthermore, the children did not feel self-conscious about providing their opinion, nor were they afraid of what others might think. For example, when they were asked for ideas when the newspaper activities were explained to them, they did not hesitate to provide information such as: “I never win” or “I am not good at that”. Although supervisors might have biased the information provided by the children, the general impression was that the children mostly asked or received feedback from the supervisors.
Fig. 2. One page of one of the final newspapers, with examples of pictures, drawings, and interview outcomes.
about the procedures of the design activities and not about the content of the information to be provided.

5.2. Specific expectations children’s responses to the various design techniques

Most of the sub methods provided the amount and kind of data that was expected. Table 1 gives an overview of the data that was gathered with the various sub-methods.

Photos. The 17 pictures and 37 descriptions provided information about what animals the children are interested in, and what kind of language they used. Based on this information no gender differences in interests for animals and the zoo were found. Thus, the photo’s provided information as was expected. In some cases the children were so interested in taking pictures that they took less time to write the descriptions.

Interviews. The children were very capable of making their own sets of questions. This helped them to determine what story they wanted to tell. Sometimes the technology proved counter productive because the children were more eager to use the technology than to answer the questions. However, overall most questions were answered. Another interesting insight was the fact that the technology was not always robust. In some cases the recording had not worked properly, and by asking the children to do the same interview twice, we got a feeling for how consistent children were in their answers.

Articles. The article writing did not go completely as planned. Although the children were very motivated and handed in the articles at the end, too little time was planned for this activity. As a consequence, some groups took their assignment home, and it took the designer some effort to get the children to hand the article in at a later stage.

Questionnaires. The questionnaires were filled in by 50 of the 63 children. Since, it was the last activity of the day, they provided with extra motivated to fill it in by being promised a sweet when they handed in the questionnaire. Most questions were understood correctly, and provided useful information for the designer.

5.3. Expectations about the design relevance (i.e. in the form of requirements) of the information gathered through the KidReporter method

The designer conducted the user study to get more detailed information necessary to make design decisions relating to the animals that were where most interesting, the games (in-house games, outside activities, and electronic games) the children preferred, navigation skills, vocabulary, grammar, and possible gender differences in their preferences and skills.

The feedback from the children provided the designer with insights into what kind of animals, and what kinds of topics children of this age group are generally interested in. They are more interested in animals that are cute or have a strange appearance or ability (e.g. very fast, very big, very dangerous). They are interested in all sorts of topics related to animals, such as territories and reproduction, but do not seem to prefer anything in particular. From the questionnaire, the designer was able to determine what kind of game elements, such as competition, creativity, sports and social aspects, were appealing to boys and which to girls. The questionnaire also shows that games with
Table 1
An overview of the expected and actually gathered amounts of data for the various sub-methods of the KidReporter method

<table>
<thead>
<tr>
<th>Expected outcome</th>
<th>Actual outcome</th>
<th>Anecdotal information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Photo’s</td>
<td>Of the pictures that were taken, in only [!] 17 cases the animal could be determined</td>
<td>Some groups had too little time and provided fewer descriptions, others had enough time to provide some extra descriptions</td>
</tr>
<tr>
<td>10 groups × 4 pictures</td>
<td>40 pictures</td>
<td>Some groups had too little time and provided fewer descriptions, others had enough time to provide some extra descriptions</td>
</tr>
<tr>
<td></td>
<td>40 descriptions for the pictures</td>
<td>Anecdotal information</td>
</tr>
<tr>
<td></td>
<td>Descriptions were provided for 37 pictures</td>
<td>甚至 though some of the pictures did not work out well, the descriptions still provided useful information about children’s reasons for being interested in particular animals</td>
</tr>
<tr>
<td>Interviews</td>
<td>Three recordings failed. In 2 cases some of the answers were not recorded. In total about 30% of the answers were lost</td>
<td>Three why questions and two questions about locations in the zoo were often interpreted incorrectly</td>
</tr>
<tr>
<td>21 children × 10</td>
<td>210 pre-defined questions</td>
<td>Three why questions and two questions about locations in the zoo were often interpreted incorrectly</td>
</tr>
<tr>
<td>Questions</td>
<td>Three why questions and two questions about locations in the zoo were often interpreted incorrectly</td>
<td></td>
</tr>
<tr>
<td>Articles</td>
<td>All articles were returned</td>
<td>In some cases the teachers had corrected the articles, thus making them less suitable for determining the language and grammar skills of the children themselves. Furthermore, the children had based large parts of their stories on the exact descriptions on the signs in the zoo</td>
</tr>
<tr>
<td>4 Groups ← 4 articles</td>
<td>All articles were returned</td>
<td>In some cases the teachers had corrected the articles, thus making them less suitable for determining the language and grammar skills of the children themselves. Furthermore, the children had based large parts of their stories on the exact descriptions on the signs in the zoo</td>
</tr>
<tr>
<td>Questionnaires</td>
<td>Fifty questionnaires were returned</td>
<td>Some questions were not answered at all; others could not be understood because of spelling errors</td>
</tr>
<tr>
<td>63 children ← 63</td>
<td>Of the 500 open questions, 95% were answered correctly</td>
<td>Some questions were not answered at all; others could not be understood because of spelling errors</td>
</tr>
<tr>
<td>questionnaires</td>
<td></td>
<td>Some questions were not answered at all; others could not be understood because of spelling errors</td>
</tr>
<tr>
<td>10 open questions × 63</td>
<td></td>
<td>Some questions were not answered at all; others could not be understood because of spelling errors</td>
</tr>
<tr>
<td>children = 630 answers</td>
<td></td>
<td>Some questions were not answered at all; others could not be understood because of spelling errors</td>
</tr>
<tr>
<td>17 closed questions × 63</td>
<td>Ninety percent of the 850 closed questions were answered</td>
<td>Some questions were not answered at all; others could not be understood because of spelling errors</td>
</tr>
<tr>
<td>children = 1071 answers</td>
<td></td>
<td>Some questions were not answered at all; others could not be understood because of spelling errors</td>
</tr>
</tbody>
</table>
many different elements were preferred rather than games with fewer elements. Based on some observations, and the description provided with the photo’s it was clear that children of this age group are not yet capable to do map reading, but manage to navigate through the zoo by asking adults and using the signposts. The designer also got a good impression of the kind of vocabulary and grammar that the children used, which informs the way that the information will be presented in the educational game. Finally, the designer also learned a lot about gender differences: what different aspects of games boys and girls prefer, and that there are some differences in the verbal skills of boys and girls.

In summary, the information helped the designer determine requirements for the topics and animals that should be covered by the educational game, what kind of game would be appealing for both boys and girls, and ideas about how the educational part of the EEIG might be embedded. Furthermore, knowledge about verbal and reasoning skills of this age group and ideas for supporting the children navigating through the zoo was acquired. As expected it was found that while some of the information was similar to that found in the literature, a large part of the information, such as preference for animals, vocabulary and grammar use, has turned out to much more detailed than the literature, thus allowing to make more informed decisions in the design process.

6. Impact on the design of the educational game

The impact of the information from the children on the design of the educational game will be illustrated with some examples of the final design. A short description of the design process is provided, to place this information in the context of the design project.

The two main components of the product consist of (1) the design of the game, and (2) the type and content of the questions that the children have to answer to make progress in the game. Since the emphasis of the paper is on the KidReporter method and not on the details of all the design decisions only a few examples are provided in this section.

- The design of the game was informed by information from the children about characteristics of games that were appealing to both boys and girls. This information was mostly gathered through the questionnaire. This made the designer create a game based on a construction component, which was one of the few game elements that were appreciated by both girls and boys, in the form of a ‘construct your own zoo’ game.

- The choice for the content of the questions and the phrasing of the questions was informed by the data from the pictures, interviews and questionnaires. The information helped select animals and topics that were of interest to the children. Furthermore, the information about their language skills gave input on the way the questions and answers should be phrased (see Fig. 3 for an example of a question’s flow-chart).

Subsequently, the most promising design ideas were further developed into a prototype, which focused mostly on the type and content of the questions. In an evaluation of the prototype design, some of the initial decisions based on the outcome of the KidReporter method, for example about the animals and topics to be covered in the game, were
confirmed. The children were clearly interested in finding the answers to the questions and were able to understand the questions and answers provided on the handheld device.

7. Conclusion and discussion

We have applied the KidReporter method for gathering requirements for one particular product and for one particular age group. The method was selected because we assumed it would enable children to be actively engaged in the requirement gathering activities. We will now discuss our opinion about various aspects of the method, such as how motivating the various activities are for children, what it takes to make it all work, and possible influences of the age group and the environment in which the method is used.

The original specification of the method stated that it would be suitable for children of six years and older. Special care should be taken to phrase the tasks clearly for a particular age group, taking into account their vocabulary, grammar and reasoning skills. In general, the planning of activities should be checked for being suitable for the age group involved.

Based on our findings, the fact that children could choose between different activities and worked with different media, and in some cases combined different activities contributed positively to the quality of their input. However, the results also show that many aspects of the actual implementation of the method can have a major impact on the outcome of the method. For example, because children were so interested in taking pictures, they took less time in writing the descriptions of the pictures. This in turn may
have influenced the quality of this material. This indicates the importance of conducting a pilot, and to be very alert during the sessions with the children, to adjust the approach to minimise unintended side effects of the set-up. Another point not addressed in this paper is whether having children involved in the creation of the newspaper itself, would lead to even more insights into good requirements. However, this was unfortunately not feasible in this project.

The success might also depend on how familiar the children are with the environment they work in and the topics they have to address. In the present study the children were already familiar with the zoo. They live in Amsterdam, where the zoo is located and had visited the zoo before with their class. So, children less familiar with the environment might be more interested in it, and thus more distracted from the tasks they are intended to perform. It is unclear whether the motivation to participate is a result of the motivating environment, the zoo, or the interesting activities. It really depends on choosing an inspiring environment, and phrasing concrete enough tasks for the children to contribute to the newspaper on a related topic. When the methods would be applied to a domain about which children have less knowledge, than it is likely that extra activities should be planned, to first provide them with enough knowledge to enable them to contribute to the making of the newspaper.

The success of the method was also a consequence of the fact that the designer was very motivated to do the user test, and also very successful in arranging other people to help her with supervising the children’s activities in the zoo. Without proper planning and help, the method would not have worked as well as it did. However, every design method depends on good preparation.

Whether the KidReporter method will work as well to gather requirements for other kinds of products is difficult to tell. The original description in the domain of after-school care services design only describes the method, and not a case of the application of the method (Rijnen and Schreuder, 2000). The requirements gathered with the method focussed mostly on domain related issues, and not on implementation platform issues. So, it seems that the method would in principle be equally suitable for designing products using other technologies as PDA’s.

When we compare the KidReporter method with other approaches that were applied during this project, we have clearly seen the benefits of the approach. Before applying the KidReporter method, the designer also observed children in the zoo. This was very informative for getting more global insights, such as the fact that children mainly look at animals that ‘do something’. However, the KidReporter method provided much more detailed information, such as why they found certain animals interesting. When individual children were interviewed in the zoo, they provided some detailed information, but they were generally less motivated and engaged.

How does the method compare to some other early user requirements methods that have been used with children? Cooperative Inquiry (Druin, 1999b) has components that are most similar to the characteristics of the KidReporter method. The children participating in the KidReporter activities have slightly less power in taking design decisions than in Cooperative Inquiry. Compared to the participatory design techniques embedded in Cooperative Inquiry the KidReporter method seems to provide similar opportunities for choosing between diverse media to express their opinion. In a similar
way to diaries, or photo diaries (Oosterholt et al., 1996), the KidReporter method allows children to describe what they are interested in using more than one media. Where diaries usually gather information over time, the KidReporter method gathers the data at one particular point in time. Finally, as with many requirements methods it is a real challenge to analyse all the data that is gathered and translate the findings into requirements for design.

In summary, our experiences indicate that even though the KidReporter method takes a lot a planning, and many assistants to make it successful, this is definitely outweighed by the benefits of the method. The method’s main strengths are that it is appealing for children, because it is fun to participate in the preparation of the newspaper and that based on the input from the various sub-methods it is possible to make stronger inferences about children’s opinions.

References