A Fast Pace Method for Involving Children in Edutainment-Technology Design

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Abstract

Aiming at edutainment technologies for museums, elements of participatory design techniques and focus groups were combined under the theoretical framework of the cycle of creative imagination in order to involve 10 year-old children in the design process of such applications. In contrast to existing practices where children are called to evaluate games designed by adults, the proposed method involves children from the initial phases of development. The main advantage of the proposed method is its short duration (1-2 school days) allowing for its wide use. The distinct steps of the method assist children in visualizing the possibilities of using new technologies in museums. The method was tested with children in a primary school. The ideas produced by the children demonstrated their ability to generate concepts and inspire the development of new gaming technologies.

1. Introduction

Aiming at edutainment technologies for museums, we sought to involve children in the design process of such technologies, since children form a large group of users of gaming technologies. Research shows that education and entertainment are among the most important reasons why children and adults visit museums [8], [15]. Research also shows that it is possible to involve young children (8-10 years old) in the design process, since they are perfectly able to handle abstract ideas [11], scientific concepts [14] and produce original ideas [7]. Participatory design techniques have been used in the past, involving children in different phases of the design cycle [6]. For example, in the KidStory project, children worked as inventors and designers of new technology together with professionals for the design of collaborative storytelling technology [3,7, 9].

An important study by Scaife & Rogers [17] showed that it is possible to involve young children (4-6 years old) in the entire spectrum of design activities. However, as they also mention, although the findings are very useful, the complex methodology used was time consuming and required considerable effort. Similarly, Knutdzon, et al. (2003) aiming at providing digital library services for children 10-13 years of age, formed a design team with both children (6) and adults (3 professors and 3 graduate students). The study that lasted for three years produced rich results. The team met once a week for three hours each time. The researchers identified a number of challenges they faced in the first months of the process. First of all, it was difficult to find children to participate, since they are often overly committed to other activities. The StoryRooms project also required a large team (7 children, 6 adults) and a time frame of a school year plus two summer weeks, during which the team met twice a week. The goal of the study was to support children in becoming story authors rather than simply participants [1].

Despite the impressive outcomes of these studies, it is still relatively difficult to involve children in the design of new technologies mainly due to limitations of time and resources (considering that the KidStory project had a time frame of 3 years) The limited time of students together with restricted research resources does not easily allow for the wide involvement of children in such projects. For example, in Greece, when a researcher wishes to involve children in any activities she must obtain a permit from the Ministry of National Education and the Pedagogic Institute (including ethics approval) and all the activities must be concluded within two school hours per session and only three sessions are allowed per academic year and per class. The limitations of resources and time in involving children in design activities are widely acknowledged.

Bluebells was a methodology developed to enhance school visits in museums. The method produced results

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fairly quickly compared to a number of other studies that were mentioned above. However, the study produced a huge amount of qualitative data that was difficult to handle. It also required the presence of a design team [12].

For these reasons, we developed and tested a new method that combines elements of participatory design principles and focus groups, in order to provide quick data for the further development of new applications. In addition, we used different techniques to enable children to visualize new museum game applications. Moreover, it seems that in many cases, users are typically involved in the later stages of the design processes. Thus, users are usually involved in testing and evaluating different technologies [16]. In the present study, children were involved from the very beginning of the design cycle. It is our strong belief that children's wide imagination needs to be used at the stages of concept generation and the method proposed here also wished to test their ability to do so. Therefore, our goals for the present study were: 1) to involve children from the very beginning of a design cycle, 2) shorten the time and the resources needed for involving children in such activities and 3) study and assess their concept generation abilities for edutainment activities.

2. Method

2.1. Theoretical foundation: the Cycle of Creative Imagination

The Cycle of Creative Imagination by Vygotsky [21] provided the theoretical framework for the development of the method. The theory has been used in the past for the development of technological applications for children. For example, the theory was used as the basis for POGO, an educational environment for cooperative story building [4]. Briefly, the theory explains the processes needed for the emergence of creative imagination, which is an essential element for the focus group sessions and therefore, for concept generation. Creative imagination, according to the theory, develops in four phases: exploration, inspiration, production and sharing. During the exploration phase, the child interacts with her environment and collects experiences through the senses. The information gathered by the child is later processed and analyzed. The stimuli from the exploration phase will lead to the inspiration phase. The child can then try to associate different elements and transform them into the production of new ideas, concepts, and products. Finally, the child presents her work to the other children and together they share and evolve ideas further. According to Vygotsky [21], this cycle can enhance children's creativity and imagination. The presented method is using the Cycle of Creative Imagination in all the steps, in order to augment creative thinking, an essential element for concept generation during the focus group sessions.

2.2. The proposed method

Using the phases proposed above, we suggest some specific steps in order to inspire children and assist them with their design tasks. The exploration phase, suggested by the theory, implies a concrete experience for the children, during which they will have the chance to use their senses and feel the different characteristics of the environment. For our purposes, a museum visit is an ideal opportunity for the children to explore a museum and understand its reality, since they would be asked to think of new technologies for museums later. We designed the method being context specific. This implies that a concrete/ physical experience is needed. Depending on the applications we wish to design and implement, children need to be actively experiencing the context of the future applications. In this case, we needed museum edutainment technologies which were both context and place related. For this reason a museum visit was essential. Therefore, the first step is to:

- Provide the opportunity for a physical experience relevant to the application we wish to design. Allow the children to physically and cognitively explore the materials in their environment.

The stimulation from the museum environment (the concrete experience) will lead to the inspiration needed for the concept generation. Ideally, the discussion and the focus group sessions should take place in the museum right after the visit, or within the next few days. In that way, children do not need to be reminded of their visit. However, this is not always possible for many reasons, like the lack of space and /or time. When it is not possible to work with the children in the museum and/or soon after their visit, different material is needed in this phase to work as reminders. Visual material is important, like video presentations of the visit and the museum, or photographs. The next step is to:

- Provide visual or other material to remind children of their experience.

The focus group sessions and the discussions during these sessions correspond to the production phase. We whished to allow children to form their own groups, choosing their group members, since previous research [11] showed that children speak more freely when they are with friends. Each child produces and describes her

own ideas first. Past research has shown that it is difficult for children to listen to others and concentrate for a long period of time [13]. For this reason, we wanted to be particularly cautious and make sure that all children expressed their ideas and that these ideas were listened to. We also planned to keep the sessions for each group as short as possible (not more than one hour). Indeed, many ideas were produced and we were able to record many new concepts. We suggest the use of an audio recording device and/or keeping notes by hand. We decided not to use a camera, thinking that a camera might be intrusive, distracting or making the children feeling self-conscious. Thus:

- Ask the children to form small groups choosing their own group members.
- Ask each child to express their idea about the topic. Make sure that the other children listen to what is being said and do not interrupt.
- Sessions need to be short in order to have maximum concentration, avoid fatigue, etc. (with long sessions the rules of taking turns and allowing each child to express ideas without interruption are challenging).
- Keep notes of the children's comments and/or use an audio recording device.

Finally, and again during the focus group sessions, the children share their ideas and are able to elaborate further on individual thoughts, thus making creative concepts. The outcomes of the group discussion are new enhanced group ideas. Moreover, past studies have shown that children during design sessions are usually in a 'school mode', concerned about right and wrong answers or about implementability of their design ideas [13]. Being aware of the problem, we wanted to eliminate it by frequently reminding children that they should express their ideas freely without further concerns. Therefore, one needs to:

- Ask children to engage in a group discussion about the different ideas produced by the group members.
- Remind them often that there are no right or wrong answers.
- Make sure that all children participate and they are allowed to express their ideas and contribute in the group discussions.

In addition, we decided to form our groups only with children, since research shows that adults tend to exert too much control in similar sessions, although they are able to resurrect the discussion when it dwindles [2], [20]. However, we left this role to the researcher during the sessions, thinking that we want to test the children's own abilities in concept generation.

2.3. The participants

The participants were 10 year old children, students of the fourth grade in the 1st Elementary School of Peania (Greece). The school is located in the Athens suburbs and it is an ordinary public school. Research shows that children of that age are more articulate than children of other ages, since they are old enough to express their ideas and understand abstract concepts, without being limited by notions of group conformity that is observed in older children [5]. There were 9 boys and 3 girls, all randomly chosen, based on the way they were seated in the classroom (their teacher asked the children in the first two rows of seats to remain in the classroom and to participate in the study. The remaining children were moved to another class to continue with their daily school activities). The children were asked to form 3 groups of 4 and they chose their group members by themselves. All of the children were very enthusiastic about participating in the study. It is important to mention that they had good knowledge of the use of technology and they were all users of PCs, mobile phones and video games. Most children were also owners of mobile phones. The information about their level of familiarity with technology was elicited with questionnaires that were distributed to the participants before the focus group sessions (details will be presented at the following section). In addition, it was obvious during the discussion that the children were very familiar with all technology related issues. During the presentation of the technological applications available, the children did not have any problems recognizing the technologies and they only asked for some additional information for the PDAs and the functionality of virtual reality (VR) environments.

2.4. The researcher

The researcher had an educational, psychology and HCI background and had good experience of working with children of preschool and school age.

2.5. The process

The first phase of the method required a museum visit (exploration phase). The children of the fourth grade of the 1st Elementary School of Peania visited the Goulandris Natural History Museum in Athens [10] and were guided around the museum. The duration of the visit was a full school day. In our study, we were not able to perform the focus groups in the museum. We were also not able to have the sessions after the visit, since the visit was planed for the last day of the spring term and two weeks of holiday followed. In the

present study we used photographs from the museum environment and exhibits in a PowerPoint presentation. The photographs and the PowerPoint presentations worked really well, since the children did not have any problems remembering their visit and they were also very positive towards the use of such presentations that seemed to capture their attention.

Two weeks after the museum visit, the selected students were asked to complete a simple questionnaire asking them about their favorite games and some basic demographic information. Questionnaires were used in an attempt to avoid getting the same answers from all the children. As research suggests, in children's groups strong leaders can emerge, influencing the answers [2]. The questions included the following topics: 1) Name, 2) Date of Birth, 3) What is your favorite game? 4) How is it played? 5) What do you like most about this game? 6) Would you like to participate in a group discussion about games? 7) Do you play video games? If yes, which ones? 8) Do you play computer games? If yes, which ones? 9) Do you have a mobile phone? 10) Do you play games on mobile phones? Questions 7-10 were on a separate page, not to influence answers towards a technological direction.

After the completion of the questionnaires, two PowerPoint presentations followed (inspiration phase). The presentations focused on concepts necessary to help the children produce game ideas. The first presentation wished to inform about the notion of an inventor and the difference between an invention and a discovery. This preparation seems to be very important, since children of that age do not necessarily know the concept of an inventor [7]. Since, during the focus groups, they would be asked to invent new ways for the use of technology in museums it was important to understand the terms. The first presentation also introduced issues of museum definitions, reasons of having museums in our societies and the ways they are currently used. Pictures from the Natural History Museum were also presented in an attempt to refresh students' memories of their visit. During the presentation, we were discussing all the information with the children. The second presentation wished to introduce issues of technology to the children. Pictures of PCs, PDAs, Laptops, Museum audio guides, TVs, Videos, Robots and VR environments were presented.

After the two presentations and the discussion, the focus group sessions started (production and sharing phase). We were working with one group at a time. The children entered a room and sat down around a table having printed pictures of the applications shown to them during the presentation. First, the children were asked to read some of their answers from the questionnaires and explain to the other children what their favorite game was and why. After all the children had completed the task, the discussion started. Some of the issues discussed were: 1) different ideas of changing their favorite games, making them appropriate for museums (museum games), 2) ideas of playing collaborative games in museums (collaborative museum games), 3) the use of new technology and museum games (technology based –collaborative- games for museums) and 4) the possible use of mobile devices for museum games (mobile applications for museum). These questions were used for each child's favorite game and all children were allowed to participate and provide new ideas for the altering of the old games into new ones. These specific discussion topics were chosen in order to see children's concept generation abilities in multiple fields. In particular, the questions for the elicitation of collaborative museum games, were included since museums are places where people go together to experience new things [19]. In that light, it seemed appropriate to include questions about collaboration. We also included questions about mobile phones and related games, thinking that most children are very familiar with the daily use of these devices and they could provide us with rich ideas about mobile devices for museums, since mobility in a physical museum is essential. The duration of the focus group sessions was around 3 hours in total for all three groups (approximately 1 hour per group).

3. Children's Ideas

From the children's answers during the discussion we were able to record the following ideas, organizing them in groups. The different ideas produced are described in two axes. There were ideas 1) for single user games and multi-user/ collaborative games (the terms includes both cooperative and competitive games) and ideas 2) for non-technological and technological games. In the technological games we also have a subcategory of mobile applications. The different ideas are placed in the 4 different areas defined by the axes.

3.1. Non-technological Single User Possible Applications

- The children did not like the fact that they could not touch the exhibits. They wanted to be able to feel with all their senses. They particularly wanted to be able to play with the exhibits like riding the panthers and chase each other around the exhibits.
- The children also showed an increased need for interaction with the museum personnel (i.e. to tell them stories, to answer questions, etc). They wanted to

be able to play different games with at least one museum staff member (e.g. card games).

3.2. Non-Technological Multi-User/ Collaborative Possible Applications

During the discussion, most children mentioned that they preferred to play with others in order to have "worthy opponents", because "it is more fun to play with others" and because "it is not nice to play with fake opponents". Five ideas emerged:

- To be able to break the exhibits in smaller parts and rebuild them. They wanted to be able to deconstruct the items and construct them again.
- They would like to have a competition, like a knowledge competition.
- To collect cards or items of some sort and exchange them, making their own collection(s).
- To make teams and play conundrums (e.g. hangman).

3.3. Technological Single User Possible Application

Once issues of new technology were introduced, the children produced 6 types of ideas for technology based games for museums. It is interesting to mention that PlayStation seemed to be a very popular game console among the children and most of them (8 boys and 1 girl) mentioned it as their favorite game in the questionnaires.

- Children would like to have PlayStations in museums with games relevant to the Museum themes. For example, in the War Museum to have a PlayStation game with airplanes and fight simulations.
- To be able to create their own game worlds like the "Age of Empires".
- To have technological tools to allow them to make statues, swords and other items like the ones presented in the museum.
- To have robots (in the form of guides or animals, according to the museum theme) and play with them.
- They would also like to play games in 'VR environments'.
- An interesting idea included the use of robots in order to animate games from the PlayStation in the physical environment of the museum.

3.4. Technological Multi-User/Collaborative Possible Applications

Children liked the idea of playing with other people. The ideas mentioned in the non-technological collaborative section, were repeated here with two new suggestions:

- To have the tools to make their own museum film.
- Again, a child proposed a knowledge game, like "who wants to be a millionaire" arranged by the museum, with the use of different technological devices.

3.5. Mobile Single User Possible Applications

The questions in the final phase of the focus groups aimed at the elicitation of new ideas for mobile gaming in museums. The fact that all children were users and most of them were also owners of mobile phones, made the elicitation of these ideas particularly easy. The children had no problems visualizing the potentials and use of mobile phones in museums. In addition, all children mentioned in the questionnaire that they played games on mobiles phones:

- They would like to be able to control museum robots from their mobile phones.
- A child mentioned that a nice game would be to be able to play with the lights. For example, when she enters a room everything to be grey and as she moves along the exhibits, to light them up and color them with her mobile phone. Basically, she wanted a tracking device on her mobile phone that would control the museum lighting system and as she would move around the museum the different exhibits would light up depending on her physical proximity to them.

3.6. Mobile Multi-User/Collaborative Possible Applications

Finally, one idea involved multiple users and mobile devices:

- To have their own mobile phones and download a game available at the museum and play. They also proposed that this game should be easy to share from one mobile phone to another, in order to give it to friends that perhaps had not visited the museum.

4. Method Evaluation

As mentioned in the introduction, there are many good studies that have involved children in design activities. These studies, having a long time frame and having access to different types of resources (professional involvement, participation of professors and graduate students, access to different material and

laboratories, etc) provided a clear picture and produced rich results. Needless to say that with a method like the one described here, it is not possible to produce the quality and quantity of the results of the long term studies with complex methodologies. However, their strength becomes their weakness, considering that they cannot be easily used when restrictions apply to time and resources. For this reason, the quick method proposed here, solves some of these problems and still manages to provide a good list of implementable and original ideas. We view our method as an outcome of a trade off between quality of the produced outcome and efficiency in terms of time and resources. We also treat this work as a pilot study for future improvement of the method and further testing with children.

The subjectivity of evaluating qualitative methods that involve users has been well described in the literature. To evaluate such methods "it is important to create a rich picture of how it was applied, what expectations were and whether those expectation were met…not to determine whether this method is better that another…method, but whether it has provided the information we were hoping it would" [2], p 190. In this case, the plurality of the generated concepts supported the hypothesis that children of that age are capable of concept generation and production of original ideas, in a limited time frame and can therefore be included at the very beginnings of design cycles. In addition, and although it was not our main goal to gather user requirements, a good list of these was also collected, since children's impulsive critique of existing museum practices allowed it. We believe that all our goals were met, since children were indeed involved at the very beginning of the design cycle, the time needed for the process was very short and appropriate to the restricted school curriculum and the ideas produced were both original and applicable, further supporting the use of our method. The value of the method lies in the novelty and the originality of ideas, which have not previously been produced by professionals.

The proposed method aimed at involving the children in the design of gaming technologies for museums from the very first phase of the design cycle. However, the final goal is the development of such technologies and the employment of the children's ideas in the next phases of design. The method will be further validated by the implementation and testing of successful edutainment museum applications. Therefore, it seemed useful to consider the concepts created by the children and recorded above in two dimensions: the dimension of applicability and the dimension of originality.

The terms require some clarification, since they have a wide range of contexts in which they can be used. Here, applicability refers to the directness, ease and speed of possible development of any of the ideas. In the same way, originality refers to the novelty and uniqueness of the idea either because it is an entirely new concept or because it is an old concept in a new context. The terms do not indicate absolute distinction between the categories but should be considered as continuums, describing subjective placement of concepts in different locations.

Ideas of high originality were the making of museum relevant-collections in the museum, making museum films, playing conundrums, using robots to animate PlayStation games, controlling robots from mobile phones, and using mobile phones to control the museum lights.

The use of PlayStations although considered of low originality is also considered of high applicability, since it could be relatively easy to use PlayStations in museums, having first modified their content. Interactive exhibits are also of high applicability, since many museums already use them. Other concepts of relatively high applicability are: employing knowledge games and conundrums, construction and deconstruction of artifacts, making of collections, making museum films, using robots as guides, playing in virtual environments, playing with mobile phones, controlling robots from mobile phones, and controlling the museum lighting systems.

A further reading of the children's ideas shows that most applicable and original ideas involved mobile phones. It was indeed confirmed that the children's familiarity and daily use of these devices allowed them to move further and produce different contexts and ideas about their use.

In addition, at the end of the focus group sessions, children were asked to evaluate the process and talk about the elements they liked and did not like, as an attempt to collect participants' comments for further improvement. The children were also instructed to identify difficult tasks and think of possible improvements. Despite the instructions, only one group managed to evaluate the process. All the other children were very enthusiastic and did not find any negative aspects in the process. However, a participant in one group mentioned that it was a little difficult for them at the beginning to know what we expected them to do. A child said that "you should have told us exactly what you wanted us to do from the beginning, in order to connect our ideas. Now all these things we said seem impossible to connect and you will not be able to make sense out of it". The children were concerned that their ideas were not clear or realistic enough to be implemented. In addition, the small number of focus groups wade it problematic to gather more student comments for the improvement of the method.

5. Discussion

5.1. Method issues

Although the focus groups sessions were not held immediately after their visit, the children had no problems remembering their museum experience. However, if the method is used with younger children we recommend minimizing the lag between visit and sessions.

Although the children came up with many new ideas about games, they all involved new ways of using existing applications. It was very difficult to come up with new gaming content. We believe that the children of that age are perfectly able to be involved in content making [1], [13]. However, the present method did not give them the time needed to do so. Content making involves abstract thinking and this probably demands more sessions. Past research has also shown that children sometimes find it difficult to come up with new ideas. They seem to be very much influenced from their experiences with existing games [18].

It was also difficult to have expression of individual ideas. The children wanted to speak all the time and they did not allow everyone to finish their line of thought. They were all elaborating in a new idea simultaneously. It is important that the researcher allows all children to express their ideas, since it is common to have group leaders that control and dominate the discussion.

The children were also easily distracted and could not elaborate in great depth into their ideas. They were jumping from one idea to the next. However, they could easily return to the task at hand once they were told to do so. In other studies, when children's attention shifted to irrelevant topics, the adults participating in the sessions (designers, educators, etc) brought the discussion back to relevant topics [20]. In studies where only children participate, this is something the researcher needs to do.

Finally, the children seemed to particularly like the PowerPoint presentations. It was observed that when the same visual material was presented in other ways (pictures), children did not pay the same amount of attention, compared to the PowerPoint presentation. A possible reason for this might be the fact that PowerPoint presentations are not typically used in elementary school classes, unlike printed pictures and thus, their attention was easily captured. Previous research has also shown that the available material affects the outcome in one degree or another [20]. For this reason, it is important to plan the material that will be used with children carefully, since we do not want it to be ignored, but similarly, we do not want it to totally capture the children's attention and influence their answers to a great degree.

5.2. Children's feelings and concerns

To begin with, all the children showed great enthusiasm for participating. They did not show any sign of shyness, not even at the beginning, and they had many ideas. Although children feeling shy or self-conscious might be culturally dependent, other studies have also shown that 10 year old children do feel quickly at ease with the research conditions [2]. The fact that the process took place in their classroom seemed to help the children to feel at ease and comfortable with the researcher.

The new ideas did not always involve games. There were many new ideas about the use of technology in museums that were purely educational like having screens to view documentaries, or boards to explain the museum concepts. The children seemed to make distinctions between education and entertainment. The existing schooling system seems to reinforce these notions. Although it was explained that there were no right or wrong answers, the children often needed to be reminded of this. This is something that seems to be present in different studies, in different locations with children of different ages [13].

Past research describes participants' concerns about issues of cost and implementability of their ideas [20]. Although our participants had different age and nationality from that of the other studies, the results confirmed this finding. The children were concerned with such issues and it is important to remind them to feel free to express any idea, despite of the cost they think it might have or the difficulty in implementation. Throughout the discussion with them the theme of making money or how much something costs was frequently returning. In the first group, it was mentioned that by adding games in museums, more children would go and the museum would make more money. There were business plans like having a fee for the available downloads from the museum to their mobile phones or for copying CDs and DVDs or by having knowledge games where the winner would get some money (the amount of 500 euros was mentioned as a decent prize). It was very surprising to see that children of that age were very aware of the value of money and the process of money making.

All the groups also seemed to be concerned about their performance and the performance of the other groups. They all wanted to produce more and better ideas than the other groups. They often asked if their ideas were better or more. They also felt very

privileged that they were chosen for this experiment. They all wanted to make sure that the experiment would not be repeated with the other children in the school and especially with the children of the neighboring elementary school. They thanked the researcher many times for choosing them and for allowing them to miss the normal school class! Taxen [20] had similar findings with students feeling happy for missing lessons, although that study was completed in a different country (Sweden) with older students (high school students).

In our study, the children felt very unique and important because their opinions were recorded. Also found previously [13] children in similar activities feel proud that their ideas are heard. A child mentioned that it is nice for a change to have a teacher write and the children to speak. The reversing of the traditional roles in the classroom seemed to be very popular. They also asked whether their ideas would be implemented and what we would do with them. They asked if they would be famous from these ideas and if other people would know about them. They also volunteered to participate in a similar experiment on the future.

6. Conclusions

Since this was only a pilot study, the entire process needs to be repeated with more focus groups. The fact that 9 out of 12 children mentioned PlayStation as their favorite game restricted the generation of ideas and the discussion moved mainly around similar PlayStation applications. Increasing the number of focus groups might result in the formation of scenarios not based on PlayStation.

According to Druin [5] participatory design techniques for children are beneficial in many levels apart from the main goal, the design of new applications. During such procedures children learn to work with others, learn about design principles, and learn about new technology. The present method, based on Vygotsky's theory has a clear educational component, since it augments creative imagination and expression of ideas. The method is also useful when limitations of time and resources apply. The outcome of the sessions is a number of different game options for a specific place, which will hopefully result in different game applications in the museum, thus supporting different individual preferences.

Furthermore, we believe that it is of great importance to consider issues of the profile of the researcher that will be involved in activities with children. We highly recommend that the researcher has a strong educational background or at least a social and/or humanity sciences background. The researcher must always be available to answer children's questions and make sure children feel that they have, and actually have equal rights to the adults. In addition to the ethical aspect of any work involving children, a person with a good educational/ pedagogic background will also make the process more efficient. Such a researcher can: plan the material, the questions, define the appropriate language level to use with children of different age groups [2], plan the extent of the activities to avoid fatigue, avoid suggestive questions, resurrect the discussion, keep the children stimulated, allow all children to speak and express their ideas and show the appropriate respect in dealing with children.

In general, the method was very successful with the children that seemed to enjoy it and produced a good amount of valuable information on museums. The strong feature of the method was the limited time it needs in order to have results (under three hours for the focus groups and a school day for the museum visit), since it is very difficult to involve children in similar methods during the school year.

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