Evaluating the user experience of learning tools with a focus on the pupils with profound intellectual and multiple disabilities

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Introduction

D. Norman has written that “Proper design can make a difference in our quality of life” (Norman 2002: 216). My previous study has shown that learning tools (with a focus on the pupils with PIMD) with unsuitable design (visual, tactile as well as auditive) do not support the understanding of what is being taught (Kadastik, 2011).

Regarding both small children and children with special needs it may be claimed, based on the literature, that many products for children are still analytically evaluated by adult experts only. However, it is not easy for an adult to step into a child’s world, and therefore, expert evaluation can miss important problems that could emerge when the final product is used by children (Marco et al., 2013).

Research about the user experience of children with PIMD is still in early stages; thus, the experiences of children with cognitive special needs have to be considered in current studies. It has been claimed that in the case of testing products with cognitively disabled children, the difficulties and challenges markedly increases (Marco et al., 2013).

PIMD children are users and are thus decision-makers. To create suitable learning tools, the user needs to be investigated. It enables to understand that each child has different needs, preferences and aims, and the task of the designer is to design according to these (Saffet, 2007: 31).

The aim

This study is one part of design research aimed to solve the problem of learning tools for pupils with profound intellectual and multiple disabilities (PIMD). Currently, these tools do not take into consideration the needs of the children. The aim of this part of the study was to develop a user experience evaluation system for pupils with PIMD, to find out which learning tools (or their details) are of interest for pupils and which tools they see as unpleasant.

Methods

Three pupils (9-14 years old) with PIMD were observed. Pupils’ activities in different situations were videotaped during one year. A questionnaire based on the taxonomy of 14 behavioral categories (Petry & Maes, 2006) was administered to their parents and support workers.

The individual profile of each child was created (based on the responses to the questionnaires) and compared to the assessment of the videotaped situations. Each behaviour has been coded as “very positive”(code 4) to “very negative”(code 1). Code 0 marked “cannot evaluate”

The pupils were observed in two situations: in an everyday situation (using learning tools at school) and in a new situation. The new situation involved using objects exhibited in a museum. The exhibition was about active smart interior textiles (Undefined Useful Objects, author Käri Ojavee, PhD).

The use of learning tools at school was evaluated with the help of behavioral indicators to which a text specifying the activity was added. The results were compared to the data from the interviews with parents and teachers.

The using of objects from the exhibition was evaluated with the help of behavioural indicators and interviews with teachers (Every pupil was accompanied by a teacher. The interviews were conducted together with K. Ojavee, who has analysed the interviews in her PhD thesis.).

Used assessing by mixed methods.

Results

<table>
<thead>
<tr>
<th>Category</th>
<th>Participant 1</th>
<th>Participant 2</th>
<th>Participant 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>favourite activity at school*</td>
<td>touching things, pulling things, listening to music, walking by oneself</td>
<td>likes (attention when being spoken to), activities related to music, listening to music</td>
<td>reading, computer class (smart board), wants attention, wants to be together with others, gets easily bored with activities</td>
</tr>
<tr>
<td>things that are not of interest**</td>
<td>small toys, toys made of thin plastic/paper, sponge, things attached with velcro which stick to the carpet</td>
<td>doesn’t like being forced, then apathetic, likes to be by herself, is not interested in group activities</td>
<td>sells, keys</td>
</tr>
<tr>
<td>materials that are of interest*</td>
<td>paper, plastic, yarn (a ball of yarn, a yarn tassel)</td>
<td>paper, newspaper</td>
<td>hair brush, new clothes in bright colours, removing tapes attached somewhere</td>
</tr>
<tr>
<td>materials that are not of interest**</td>
<td>very coarse materials</td>
<td>doesn’t like to lie on the floor, to smell scents</td>
<td>taking toy blocks from one box to another, smelling scents</td>
</tr>
<tr>
<td>unpleasant activity**</td>
<td>activity directed/guided by the teacher (morning circle)</td>
<td>independent investigative activity where she is not directed/looked at (Things, touches them, lifts and moves them). Material: woolen, grey (grey woolen carpet, sound pillow, tassel)</td>
<td>playing with a balloon together with a teacher, pulling straps of tape attached to a table, musical instruments and different materials (coarse, a bottle of cold water), likes to watch movement and move things by herself</td>
</tr>
<tr>
<td>pleasant activity**</td>
<td>making sounds and listening to sounds</td>
<td>lettering</td>
<td>playing with a balloon together with a teacher, pulling straps of tape attached to a table, musical instruments and different materials (coarse, a bottle of cold water), likes to watch movement and move things by herself</td>
</tr>
</tbody>
</table>

* based on structured interviews with parents and teachers
** based on the evaluation of videos with the help of behavioral indicators

Notes

The preliminary results indicate that the taxonomy of behavioral categories can be used as a significant part evaluating the user experience of learning tools with a focus on the pupils with PIMD.

Conclusion

Further studies should look at ways to evaluate the user experience in a combined way: the taxonomy of behavioral categories, concept mapping, questionnaires to professionals (and/or parents) and a psychophysiological measurement.

References


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