



INCLUSIVE LIFE

The suitability of tactile books for the target audience

INTRODUCTION

Nowadays, it is natural that all children, regardless of their special needs, get an education that meets their needs and abilities. We should take into account the special needs of the student when designing both learning tools and learning environments. However, practical experience and research have shown that both toys and educational materials do not always meet the specific needs of the students. (Kadastik, 2011; Perino, 2017).

THE AIM OF THE RESEARCH

... is to evaluate completed tactile books by measuring both classical aspects of usability and user experience (using UEQ, <https://www.ueq-online.org>) while using the books and seeing if the books match with the needs of the target group (visually impaired / blind) (TUET, <http://www.tuet.eu>).

COLLECTING DATA

The data was collected using Google Forms. The questionnaire consisted of two parts, combining the UEQ Short Version questionnaire and the TUET assessment tool adapted for tactile books.

The first segment the UEQ Short Version was used, the scale of which gives a comprehensive impression of the user experience. The scale was initially designed to evaluate interactive products.

questionnaire has been adapted into Estonian language and can also be used to help evaluate learning tools.

In the second part, the TUET toys and games usability assessment tool was used, this method takes into account the physical characteristics that are important to the visually impaired people.

RESEARCH PARTICIPANTS

An example group was used to enroll participants in to the study, which included students at Tallinn University's Inclusive Life and Folk Art courses (n = 28). 12 groups

were formed for evaluation. The students had previously studied the making of tactile books and had become familiar with the needs of the target group.

52 books were evaluated, 12 of which were evaluated twice by different groups and 40 once. A total of 64 reviews were collected. The data obtained by the UEQ were analyzed using the Data Analysis Tool (UEQ-S).

RESULTS

The evaluated books were made from 2005 to 2019. 13 evaluations noted shortcomings in wear and tear: in seven cases there were details that needed either replacement or reattachment, and in six cases there was either wear (fringe fracture) or dirt.

In most cases it is not possible to clean the tactile books, however, the evaluators noted that some books can be cleaned partly with a damp cloth.

The books teach the reader: seasons, Estonian symbols and customs, hygiene (brushing your teeth and hands), everyday skills (cooking, doing laundry), shapes, cognition of materials and numbers, songs, poems, fairy tales, legends, puzzles and educational stories about life. Many books are dedicated to nature (animals, plants, birds, natural phenomena).

The books were first evaluated using a UEQ questionnaire, the scale gives a comprehensive impression of the user experience. Both aspects of classical usability (effectiveness, perspective, reliability) and the user experience aspects (originality / novelty, stimulation) were measured. This gave an overall score for the books, reflecting their pragmatic quality (commodity quality) and hedonic quality (the like rating).

IN CONCLUSION

The results from the TUET questionnaire supported the results of the UEQ speed test. The books were found to be attractive and enjoyable, but some shortcomings were noted in consumer quality. Tactile and visual effects have been used in the books, but the use of other sensory effects (sound, vibration, smells, etc.) was noted by evaluators only at 15.6%. Similarly, tactile effects were clearly recognizable by touch and hearing only 20%.

Based on the survey data, it can be stated that when creating new books:

- greater use of sensory effects is needed
- one has to make sure the books are not too heavy;
- use sufficient contrasting colors;
- observe that if the contrasts between the surfaces are consistent with the visual and tactile information, the information of the two channels can be combined and tactile information supports and does not interfere with the use of visual information (Hyvärinen, 1992).

Figure: Schrepp, Hinderks, Thomaschewski, 2017

Analyzing the results of the study, main scales of pragmatic and hedonic quality were obtained, with values > 0.8 indicating a positive rating.

Short UEQ scales	
Pragmatic quality (consumer quality)	1.242
Hedonic quality (evaluation based on likes)	1.352
Summary	1.297