Use of Survey Techniques as Usability Evaluation for Child e-Learning Programs

Asmaa Alsumait¹, Asma Al-Osaimi², Hadlaa AlFedaghi²

¹Kuwait University, ²Regional Center for Development of Educational Software (ReDSOFT)

Key words: e-learning, Usability evaluation, Human-Computer Interaction,

Abstract:

The objective of this study was to investigate the effectiveness of five survey techniques for the evaluation of the usability of e-learning programs for five- and six-year-old children. Results indicated that “Smileyometer”, “Best/Worst Activity Table” and “Again/Again Table” survey techniques were more reliable than “Word Box” and the “Remembering”. Recommendations of the best practices and how to adapt typical survey techniques to be age-appropriate are presented.

1 Introduction

Usability evaluation of e-learning programs is a maturing area. It investigates the usefulness of the interface from the human-computer interaction (HCI) point of view as well as the learning from the education point of view. Various usability evaluation methods (UEMs) exist, e.g. expert heuristic evaluation, survey, observational and experimental methods. In literature numerous studies have compared UEMs for adults [1, 2, 3]. However, fewer studies have compared the effectiveness of UEMs with children [4, 5].

Survey with children can be conducted using different techniques such as “Smileyometer Scale”, “Word Box”, “Best/Worst Game Table”, “Again/Again Table”, and “Remembering” [4]. In this study, we examined the effectiveness of five survey techniques in evaluating the usability of e-learning program dictated to five- and six-years old children and propose recommendations for each survey technique.

2 Exploratory Study

In this study, we evaluated an e-learning program developed by ReDSOFT for the Jordanian kindergarten children. Seventeen children (8 boys and 9 girls) from public and private schools participated in this study. All participants were familiar with the use of computers.

The first survey technique was the “Smileyometer Scale”. It demonstrates how good the child think an activity was. The rationale for this was that it gives an indication whether or not the child was subsequently let down by the activity, or pleasantly surprised. During our study, we used two types of the Smileyometer scales, one with six different emotional faces and the other with three different emotional faces (Fig. 1). We found that children where more comfortable with the six different emotional faces as they had more choices to express their feelings about the activity.

Fig. 1 Smileyometer with six and three emotional faces
Some previous research results indicate that Smileyometer scales are of limited value with very young children as nearly all of them pick ‘brilliant’, whatever the actual experience was [3]. However, in this study it was found that when critical incidents happen and children had trouble to complete an activity, the ratings on the Smileyometer scale was low for both type of scales.

The second technique used was the “Best/Worst Activity Table”. This technique lists pictures of all the activities the child explored. The child will be asked to pickup the most activity he liked and disliked. In spite of the fact that some children were uncomfortable with certain activities, when they were asked which activity they liked or hated, their answer was they did not hate any activity. Therefore, the survey terminology is critical and vague or depressing words should be avoided. We found that using “like the most” and “like the least” phrases were more appropriate for this age group.

The third technique used was the “Again/Again Table”. This technique is used to check which activity the child would like to do again. Pictures of all the activities the child explored during the experiment are listed. The child ticks either yes or no for each activity, having in each case considered the question “Would you like to do this again?”. In our study, although some of the children were unable to complete an activity successfully, their answer was they would like to try it again. The Again/Again Table was found reliable and confirm with our Observation and with the Best/Worst Activity Table results.

The fourth technique used was the “Word Box”. In this technique, positive and negative words about the child’s feeling of the program are listed. Words such as attractive music, annoying music, beautiful color and awful colors, etc were listed in columns. The tester asks the child to select the words that represents his feeling. During our pilot testing, we colored the positive words with green and the negative words with red. We found that the child kept selecting his favorite color regardless of his actual feeling. Therefore, in the actual study all word had the same color. We believe that this technique is relatively unreliable, because children kept picking positive words thinking those words implies to correct answers.

The last technique we used was “Remembrance”. At the end of the usability study the child is asked to draw what he remembers and the chances are, it will be the activity that were most enjoyed [4]. However, in our study some of the children faced difficulties in remembering unless the tester reminds them with some of the activities. Further, it was indicated that children seem not to draw what they enjoyed; they rather drew what they remember. This could be due to drawing what they actually were learning recently in class rather than what they learned from the e-learning program. We concluded that this technique is not a reliable technique for this specific age group.

3 Conclusions

It appears from this study that children can contribute to the usability evaluation for e-learning programs. Surveys can be used with young children and should be taken seriously and methodological effort should be paid to survey construction. When a survey is carried out with young children, it is advisable to use as many different techniques as possible in order to increase the validity of the findings. Smileyometer, Best/Worst Activity Table and Again/Again Table have proven to be more reliable survey techniques used with five- and six-years old children.
References:


Author(s):

Asmaa, Alsumait, Associate Professor.
Kuwait University, Computer Eng. Dept.
P.O.Box. 5969 Safat 13060.
alsumait@eng.kuniv.edu.kw

Asma, Al-Osaimi, Resercher.
Reserach Center, ReDSOFT
P.O.BOX 4585 Safat 13046
alosaimi@redsoft.org

Hadlaa AlFedaghi, Resercher.
Reserach Center, ReDSOFT
P.O.BOX 4585 Safat 13046
hadlaa@redsoft.org