E-Drawings as an Evaluation Method with Deaf Children

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ABSTRACT

This paper describes a pilot test on the use of a drawing software program as an evaluation method for experiments with deaf children. We tested the effectiveness of such a method with a group of deaf children and a few hearing children, from eight to fourteen years old. As a testbed, we evaluated the readability of a set of stories, part of LODE [http://lode.fbk.eu], a literacy software tool for deaf children.

THE PROBLEM

Involving deaf children in evaluation experiments may be not easy. As children, they approach technology differently with respect to adult users. As deaf users, they may not have access to audio input/output material or to written material due to their literacy problems. Therefore, adapted evaluation methods may be needed when involving them in an experiment. Methods based on drawings seem to be a good alternative to traditional methods, because deaf children are visual learners, and visual learners use images, colours and maps to organise knowledge and communication.

OUR TEST

Fourteen Italian children, eleven boys and three girls, were involved. We first asked the children to read a story, then complete a series of traditional comprehension exercises and finally create one or more drawings with TuxPaint to illustrate the story they read. Before working on the story, children attended a short course (two hours) to learn how to use TuxPaint. After the test, we looked at the exercises' scores and at the drawings' content to measure the level of comprehension of the story read. We can say that the e-Drawing evaluation method is a valid alternative to traditional comprehension exercises with deaf children, if drawing analysis and exercise results coincide.

RESULTS

Both deaf and hearing children gave almost all the answers to the comprehension exercises correctly: only one deaf child had a low answer rate (3 to 12). The drawings of three deaf children and of two hearing children clearly illustrate an action of the story and at least one of the story's main characters is represented (see Fig.s 1,2,3,7,8). Following our criterion, this means that in these five cases the participants have understood at least part of the story read. This result is confirmed by the high number of correct answers (12/12 or 11/12) given in the comprehension exercises by all these five children. The drawing produced by another deaf child did not represent the story; the same child got a low score in the comprehension exercises (3/12) (see Fig. 4). In the remaining two cases, a deaf child and an hearing child, drawing analysis and exercises scores did not match (see Fig.s 5,6).

CONCLUSIONS

The results of our pilot test are promising. It seems that the e-Drawings-based evaluation method is a valid alternative to traditional methods in reading comprehension tasks with deaf participants. We believe that improving the training with TuxPaint, including notions on how to create animations and videos, will give even better results. Future work will require the development of better scoring criteria for the drawings, so that it becomes possible to judge the children’s reading comprehension more objectively. More research is needed to study which drawing’s elements can give relevant information on reading comprehension level, in addition to information given by traditional comprehension exercises. Moreover, the proposed method requires testing of different tasks and with a more significant number of participants.

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