

Abstract

Background

Young children in kindergarten and at early grades of elementary school show difficulty in the acquisition of language and emergent literacy, which puts them at a risk of learning disability (ALD). Such a state brings forward a real need of finding ways for positive intervention for enhancing literacy skills among ALD young children – aiming at closing future gaps between them and children with typical development. A variety of researches in the past two decades have found that learning environments, which integrate computer technologies into the process of teaching children with learning disability (LD), are effective. One of the technological tools which integrate multimedia programs and is considered as having potential for developing and fostering literacy skills is the Electronic book (E-Book). However, there are still questions concerning the different processes and contexts of learning which might promote learning via the E-Book among children with LD.

The purpose of the study

The current study investigated, for the first time, the impact of intervention means during Peer Mediation via an E-Book among children with Language Impairment. In this study, the contribution of Peer Mediation via an E-Book, with and without an intervention program, to promote the mediation style (process), language and literacy (vocabulary, phonological awareness, word reading and story comprehension) among children with LD (third grade) and ALD (first grade) was investigated. The degree of contribution of Peer Mediation without a Peer Mediation Program to promoting literacy among tutors and tutee and the extent of the Peer Mediation Program's unique contribution were examined.

Method

The study included 140 subjects, of whom 80 were third-graders with LD and 60 were ALD first-graders. Initially, screening tests were conducted to include students with a typical non-verbal cognitive level and with a verbal level lower than the chronological age. Third grade tutors participated in the Peer Mediation Program and moderated first grade tutees. The tutors were randomly assigned to four groups; three

experimental groups, and one control group. The three experimental groups included different types of mediation: Peer Mediation with the Peer Mediation Program (N=20), Peer Mediation without the Peer Mediation Program (N=20), Peer Mediation Program without mediation (N=20). The control group maintained the regular school routine (N=20). The third-grade tutors were randomly paired with first-grade tutees. The tutees were randomly assigned to three groups, two experimental groups and one control group. The two experimental groups were tutored by tutors which had participated in the Peer Mediation Program (N=20), tutors which hadn't participated in the Peer Mediation Program (N=20) and the control group, which maintained the regular school routine (N=20).

The study was conducted in three phases: pre-intervention, intervention and post-intervention. Prior to the intervention, the children underwent language and literacy skills assessment tests: phonological awareness, vocabulary, and word reading. Subsequently, the subjects were randomly assigned to four research groups and the tutors were given an introductory meeting with the E-Book in preparation for Peer interaction. In the intervention phase, tutors from the first and third groups participated in the Peer Mediation Program (with and without Peer Mediation). The tutors in the second group, who mediated without participating in the Peer Mediation Program, participated in an alternative program, in which they taught of the importance of peer assistance, as well as their role in the learning interaction. The control group maintained regular activity. After participating in a Peer Mediation Program, the tutors from the first and second experimental groups met with learners for Peer Mediation activity. The first meeting of each couple who went through Peer mediation was videotaped for tutors' mediation style evaluation in the two groups that included Peer Mediation (with and without a Peer Mediation Program). After the intervention, all subjects repeated the literacy skills assessment tests: phonological awareness, vocabulary and word reading, as well as tests to evaluate story comprehension.

Main findings

With regard to the effects of the various interventions on the tutors' mediation style, it can be seen that when it comes to mediation pertaining to iPad usage (mediation that is focused on the E-Book), it is apparent that the Peer Mediation Program had a positive influence on mediation behaviors that were not provided by E-Book mediation alone, such as the feelings of competence, intentionality and reciprocity. In the other

principles: regulation of behavior, transcendence and meaning, no significant differences were found between the groups. Mediation under these principles is inherent in the E-Book software, and therefore, based on the findings in adult mediation studies, it is likely that in these situations the tutors in the two groups (with and without the Peer Mediation Program) mimicked the computer program's mediation. In cases of mediation relating to discussion about the plot (general mediation), the tutors who had participated in the Peer Mediation Program performed better in all mediation principles compared to the control group, except for the regulation of behavior principle. It is likely that no differences were found between the groups, since, mediation according to this principle is an inherent part of the E-Book software, and the tutors in both groups mimicked the E-Book's mediation similarly. Moreover, differences were found in non-mediated activities and anti-mediation behaviors between the groups, where the groups that did not participate in the Peer Mediation Program demonstrated high prevalence of these behaviors.

With regard to the effects of the interventions on the literacy skills of both the tutors and the learners, the research findings suggest that in the tutors' phonological awareness skill, an advantage was found for tutors who participated in the Peer Mediation Program. In the word-reading skill of learners, an advantage was found for subjects whose tutors had participated in the Peer Mediation Program. It can be seen that the trained tutors, who had participated in the Peer Mediation Program, demonstrated awareness for the need for assistance when the first-grade learners showed signs of difficulty in reading. Furthermore, since there was no direct mediation for this skill in the E-Book, as in vocabulary skill, the abilities the tutors gained in the Peer Mediation Program assisted them utilize this skill during peer mediation. With respect to the vocabulary and story comprehension skills of both the tutors and the learners, it appears that the exposure to the mediation built-in the E-Book, was found beneficial for all tutors and learners in groups that included Peer Mediation, with and without the Peer Mediation Program.

Conclusions

The findings of the present study highlight the significant contribution of early participation in the Peer Mediation Program to the tutors' mediation style in mediation behaviors that are not included in the E-Book. The differences between the mediation style of the tutors who participated in the Peer Mediation Program, as compared to those

who did not participate in the program, were observed in instances where the no mediation was provided by the E-Book, as with the feelings of competence and intentionality and reciprocity mediation principles. In cases where mediation was provided by the E-Book itself, no differences were found between the groups. Similar finding also relates to the improvement in literacy skills. In skills that were not directly supported by the E-Book: phonological awareness and naming an opening syllable and a closing syllable skill in tutors, and word reading skill in learners, an advantage was found in participating in the Peer Mediation Program. It is worth mentioning that when structured mediation is provided by the E-Book, as with vocabulary and transcending the plot to promote story comprehension skills, it can be seen that Peer Mediation with E-Book (with and without a program), in both the tutors and the learners, is meaningful.

The findings of the present study are unique and innovative in several aspects; First, in the contribution to the accumulated knowledge about ways for advancing collaborative learning in a technological environment, and its impact on literacy achievements of both tutors and learners. The findings of the present research may contribute to the development of models for collaborative learning methods using technology, specifically an E-Book, as an instrument to promote the literacy of tutors and learners with LD. In addition, the findings of the present study highlight the importance of collaborative learning with an E-Book to promote vocabulary, word reading and story comprehension in children with LD. Furthermore, the findings of this study suggest that pre-training, such as the Peer Mediation Program in this research, may contribute to the advancement of additional skills, for which no structured mediation is provided by the E-Book (complex skills such as naming an opening syllable and a closing syllable and word reading), in ALD young children at risk for learning disabilities.

The findings of this study may help researchers and educators promote language skills and literacy in children at risk for LD.