

BAR ILAN UNIVERSITY

Peer Mediation with Educational Electronic Book, for  
Promoting Literacy among Pupils with Learning  
Disability, as a Function of the Learning Context

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# Abstract

Students with Learning Disabilities (LD), or at risk for LD, typically present with multiple difficulties in language skill acquisition at the early stages of schooling. These struggles include phonological awareness, vocabulary acquisition and use, and challenges in text comprehension and retelling narrative content. Difficulties such as these demand effective and substantial early intervention methods, in order minimize cumulative educational gaps, improve educational achievements, and put them on par with their peers.

Educational e-books have been found to be effective in improving literacy. Research has found that when electronic book (e-book) learning is accompanied by meaningful mediation, educational achievements are improved for both facilitators and students. Peer mediation program was also found to boost educational achievement. Thus, students who practiced collaborative learning improved both their own learning ability and that of their peers.

The current study examined how a peer mediation program improved the literacy achievements of students with LD or at risk for LD. The program was designed for collaborative learning with use of an educational e-book. In addition, the level of mediation was studied with specific mediation measurements adapted for e-book learning as well as general measurements for mediation. Mediation levels were measured in two different learning modes of the e-book - “dictionary” and “play with the story”.

Eighty students participated in the study, 40 first grade at risk for LD students, and 40 third grade students who were identified as having LD. The participants were sampled according to inclusion criteria such as screened for normal cognitive abilities (TONI-3), and low verbal competencies expected for their ages (ITPA). Students with motor or vision difficulties and students with intellectual disability were not included in this study. The students were randomly divided into two research groups – experimental and control, in which each

group comprised equal numbers of students from third and first grades. All participants underwent phonological and vocabulary knowledge testing prior the intervention stage.

At the intervention stage, the third graders from the experimental group participated in peer mediation program with e-book, specifically designed for this study, to enable learning with educational e-books. Third graders in the control group continued with their regular school educational program. In the next stage, third graders in both groups conducted peer mediation for the first graders for four sessions using an educational e-book. Two sessions were in “dictionary” mode, which included learning definitions for new words in the story, and two sessions were in the “play with the story” mode, in which students learn to divide the words into sounds and syllables, through hotspots scattered throughout the text and illustrations. The first session in each mode was video recorded.

At the end of the peer learning stage, all participants again underwent literacy testing. In addition, story comprehension was tested as well. The videotaped interactions were analyzed and quantified according to specifically mediation measurements for e-book learning, and general mediation measurements for book reading.

The research findings indicated higher levels of specific mediation measurements in the “play with the story” mode as compared to the “dictionary” mode, with exception of the “encouragement” mediation measure. In addition, it was found that mediation measurements for focus attention and expansions specific to the e-book, were significantly higher for the experimental group in the “play with the story” mode. All mediation measurements specific to e-book learning were significantly higher in the experimental group than in the control group in this mode.

General mediation measurements showed no differences relative to the two learning modes, except for attaching meaning mediation, which was higher at “play with the story” mode. There was also no difference in those measurements between the study groups, except

for the focusing measurement. However, there were more non-mediation behaviors in the “play with the story” mode than in “dictionary” mode. These were significantly higher in the control group, as expected.

In examining literacy levels of the participants, the study’s finding indicated that as estimated all students’ scores improved in phonology and vocabulary following peer mediation learning with the e-book. There was no different in the improvement between the experimental and control group.

It was found that tutors from the experimental group showed better story comprehension than the tutors of the control group, but this difference was not found among first grade tutees. Contrary to hypothesis, there was no different in the improvement of literacy achievements of tutors and tutees between the experimental groups.

There were several of correlations between the mediation behaviors among the experimental group tutors in “dictionary” mode and their achievements in story comprehension. An interesting finding indicates that the higher the various measurements for specific mediation of e-book learning, the higher the tutors’ level of story comprehension was. Another finding indicates that non-mediation behaviors by tutors in the experimental group led to their peers’ tutees doing less well on story comprehension tests. Further, it was found that the higher the general level of mediation skill shown in the control group, the lower the levels of their mediated peers in story comprehension.

Correlations were also found between the mediation behaviors of the tutors from the experimental group in “dictionary” mode and their achievements in retelling the narrative test. The more they mediated to feelings of competence and self-regulation behavior specifically adapting to the e-book, the more achievements they showed in retelling the story. In contrast, mediators from the control group, who behaved in anti-mediation ways in “dictionary” mode, showed lower abilities in story retelling.

These research findings contribute to cumulative data about education in several ways. First, the findings demonstrate that peer mediation with an e-book contributes to the literacy achievements of the facilitators and the facilitated in student populations with or at risk for learning disabilities. Second, the findings show the influences of peer mediation programs with an e-book on mediation level in different learning modes. Third, the correlations that appeared in the research indicate the importance of combining the peer mediation program with e-books and the dictionary learning mode, as an important contribute to the improvement of literacy achievements of the tutors and tutees. The limitations of the research and recommendations are discussed in the discussion chapter.

This research is significant as it provides additional evidence data that may contribute to the development of computerized educational intervention models designed for populations with or at risk for learning disabilities, in ways that would improve and promote their literacy.