Support of Story Comprehension and Story Production Using E-books with Kindergarten Teachers' Mediation

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Abstract

This research is based on a combination of two theories that deal in the process of learning – the synergy theory which attributes importance to the use of multimedia as a way for effective learning, and the social-cognitive theory that places mediation at the center as a factor that influences learning and understanding. The electronic book (e-book), which includes diverse multimedia means, is today regarded as a tool that can support story comprehension and production. However, evidence indicates that young children need the support of an adult in order to benefit maximally from a learning activity using a computer. In the present study we tested the inclusion of the unique software synergy effect together with an adult's mediation, as support for story comprehension and production among kindergarteners. The activity took place in kindergartens, with integration of the kindergarten teachers in the e-book activity. We tested, what is the most effective way for implementation of these books in the kindergarten, for supporting story comprehension and production? To what extent will the kindergarten teacher's mediation help achieve this goal, compared to the children's independent reading? And what type of mediation by the kindergarten teacher will be the most effective, mediation according to her understanding, or mediation based on the reception of guidance from experts? The research groups worked on two e-books with a similar structure. The books included two separate channels for story content expansion: expansion at the details level (low level) and expansion at the details and inference level (high level). This activity enabled us to test whether children, who will read books with expansion at the details and inference level will progress in story comprehension, and production more than those, who will read it with expansion at the details level only. The intervention program took place in seven kindergartens in neighborhoods of families from a low socioeconomic status (N=224). The kindergartens were randomly divided into four equal groups, three intervention groups and one control group: (a) independent activity with the e-book; (b) activity with the e-book with mediation by the kindergarten teacher according to her understanding (after she received general guidance on the importance of technology); (c) activity with the e-book with mediation by the kindergarten teacher, who received guidance that focused on the e-book. In each research group, one kindergarten read the e-book with expansion at the details level, and the other kindergarten read the book with expansion at the details

and inference level. (d) The control group read the e-book independently and continuously, without expansions. The pretests and posttest were identical, and included story comprehension (an open-ended questions test and a closed questions test) and story production (number of words, identification of main events in the story and the story schema). In the pretest we also tested the children's prior knowledge of difficult words from the story. The research took place in two rounds for the two books which we developed. We hypothesized that children who will participate in the program in which the kindergarten teacher will receive guidance that focuses on the e-book will progress more, and that children who will receive support at the details and inference level will progress more than children who will receive support only at the details level. We further expected an interaction between these two measure, i.e. support at the details and inference level and guidance that focuses on the e-book will lead to the greatest progress. As hypothesized, the research findings indicated greater progress among children in the intervention groups, who read with mediation by the kindergarten teacher (with and without guidance) compared to children who read independently (with and without expansions) in all measures of story comprehension and production. Furthermore, reading with mediation of a kindergarten teacher who received guidance exhibited an advantage compared to all other groups in the story comprehension measures and in production of the story schema for the implicit elements (problem and its solution). However, in the explicit elements (background measures: time, place and figures), a difference was found between children who read with mediation by a kindergarten teacher who received guidance and those who read with mediation by a kindergarten teacher who did not receive guidance. Regarding the type of support that was given in the e-book (expansion at the details level compared to combined expansion of details and inference), an advantage was found for the group that read with the combined expansion, in some of the measures. The combined support advanced the children more than support of details only, in the items at the inference level that appeared in the closed questionnaire, in the open-ended questions at the inference level, in the number of content units that were produced by the children and in all measures of the story schema (except for indication of the figures). Regression analyses indicated that the intervention group in which the child participated contributed the most to the progress in story comprehension and production, and that the most effective intervention was reading with mediation of a kindergarten teacher compared to independent reading. The children's prior

knowledge of difficult words from the story did not contribute to their progress in the research measures. Furthermore, the lower the children's prior knowledge of difficult words from the story, the more did they progress in story comprehension. This indicates the effectiveness of the intervention particularly for the low achieving children. Based on the research findings, it is recommended to include mediation by the kindergarten teacher when using the e-book for supporting story comprehension and production and that kindergarten teacher will receive guidance that focuses on the use of these books. Nonetheless, independent reading of the book may benefit kindergarteners in these skills and can be included in the kindergarten's program. Regarding the development of e-books for young children, it is recommended to include expansions that combine support of the explicit details in the text and support at the inference level on implicit aspects of the story content, in order to support story content comprehension. We suggest the performance of similar continuation studies with a larger sample, and the inclusion of a series of books in order to establish and strengthen the findings of the present study. We further recommend testing whether the kindergarten teachers transfer their learning after participation in this type of program that includes guidance, to other educational activities with the children in the kindergarten.