What Works Clearinghouse

ies INSTITUTE OF EDUCATION SCIENCES

Early Childhood Education September 28, 2006

DaisyQuest for Preschool Children

Program description

DaisyQuest is a software bundle that offers computer-assisted instruction in phonological awareness, targeting children aged three to seven years (or preschool to second grade). The instructional activities, framed in a fairy tale involving a search for a friendly dragon named Daisy, teach children how to recognize words that rhyme; words that have the same beginning, middle, and ending sounds; and words that can be formed from a series of phonemes presented separately, as well as how to count the number of sounds in words. The What Works Clearinghouse (WWC) also reviewed the effects of *DaisyQuest* on the beginning reading skills of children in kindergarten through third grade and the findings are reported in a separate WWC intervention report.

Research

Two studies of *DaisyQuest* met the WWC evidence standards.[1] Together these studies included 68 preschool children from Tallahassee, Florida, and Orem, Utah, and examined intervention effects on phonological processing. The children studied were from families with low to middle socioeconomic status. This report focuses on immediate posttest findings to determine the effectiveness of the intervention.[2]

Effectiveness

DaisyQuest was found to have positive effects on phonological processing.

	Oral language	*Print knowledge*	*Phonological processing*	*Early reading/ writing*	*Cognition*	*Math*
Rating of effectiveness	Not reported	Not reported	Positive effects	Not reported	Not reported	Not reported
Improvement index[3]	Not reported	Not reported	Average: +25 percentile points Range: –13 to +34 percentile points	Not reported	Not reported	Not reported

1. To be eligible for the WWC's review, the Early Childhood Education (ECE) intervention had to be implemented in English in center-based settings with children ages 3–5 or in preschool.
2. The evidence presented in this report is based on available research. Findings and conclusions may change as new research becomes available.
3. These numbers show the average and the range of improvement indices for all findings across the studies.

Absence of conflict of interest

The WWC ECE topic team works with two principal investigators: Dr. Ellen Eliason Kisker and Dr. Christopher Lonigan. The studies on *DaisyQuest* reviewed by the ECE team included one study on which Dr. Lonigan was the primary author. Dr. Lonigan's financial interests are not affected by the success or failure of *DaisyQuest*, nor does he receive any royalties or other monetary return from the use of *DaisyQuest*. Dr. Lonigan was not involved in the decision to include the study in the review, and he was not involved in the coding, reconciliation, or discussion of the included study. Dr. Kisker led all review activities related to the study. The decision to review *DaisyQuest* was made by Dr. Kisker, as co-principal investigator, in collaboration with the rest of the ECE team following prioritization of interventions based on the results of the literature review. This report on *DaisyQuest* was reviewed by a group of independent reviewers, including members of the WWC Technical Review Team and external peer reviewers.

Additional program information

Developer and contact

Gina C. Erickson. E-mail: DaisyQuest@comcast.net

Scope of use

DaisyQuest was developed in 1992. Information is not available on the number or demographics of children or centers using the software.

Teaching

DaisyQuest is an interactive software program. The software is self-contained and teachers may send students to the computer to practice these skills, without any need to implement additional curricular materials. As children master each level of instructional activities, they are rewarded with clues that eventually lead them to discover where Daisy is hiding. *Daisy's Castle* is a follow-up instructional program to *DaisyQuest,* and both programs are bundled together. The activities in *Daisy's Castle* are linked through a similar fairy tale theme involving a search for Daisy's lost eggs. As children complete each level of instructional activities, they are given clues that take them to the location of the lost eggs.

DaisyQuest uses story lines and colorful graphics to engage children in the learning process. Children are able to navigate and enter responses by clicking with the mouse. Materials are presented using both digitized and synthetic speech. The programs also offer children choices about the sequence of instructional activities and keep track of children's responses. The software contains a tutorial that guides the child by explaining each skill or concept briefly and provides practice exercises with feedback for correct and incorrect responses. When the child completes the tutorial activities and questions—multiple choice or yes/no items—are presented that test the child's mastery of the skill or concept taught.

Included with the program is an adaptive test called *Undersea Challenge.* This test measures children's knowledge of rhyming; beginning, middle, and ending sounds; and phoneme blending and segmenting. The software also generates statistical reports that enable parents and teachers to view children's performance.

Cost

The *DaisyQuest* bundle (*DaisyQuest, Daisy's Castle*, and the *Undersea Challenge* mastery test) is available for $49.95, plus $6.95 shipping and handling.

Research

Two studies reviewed by the WWC investigated the effects of *DaisyQuest* in center-based settings. Both studies (Foster, Erickson, Foster, Brinkman, & Torgesen, 1994; Lonigan, Driscoll, Phillips, Cantor, Anthony, & Goldstein, 2003) were randomized controlled trials that met WWC evidence standards.

Research *(continued)*

Foster et al. (1994) included 27 four- to six-year-old low- to middle-income preschool children who attended a childcare center in Orem, Utah. Foster and colleagues compared phonological processing outcomes for an intervention group that used *DaisyQuest* with outcomes for children in a no-treatment comparison group who participated in their regular preschool program.[4]

Lonigan et al. (2003) included 41 three- to five-year-old low-income children attending a Head Start program in Tallahassee, Florida. Eighty-five percent of the children were African-American, 10% were Caucasian, and 5% were Hispanic. Lonigan and colleagues compared phonological processing outcomes[5] for an intervention group that used *DaisyQuest* and *Daisy's Castle*[6] with outcomes for children in a no-treatment comparison group who participated in their regular Head Start curriculum.

Effectiveness

Findings

The WWC review of early childhood education interventions addresses children's outcomes in six domains: oral language, print knowledge, phonological processing, early reading/writing, cognition, and math.[7]

Phonological processing. Foster et al. (1994) reported findings for two measures in this outcome domain. The authors reported statistically significant differences favoring the intervention group on both outcomes, and this statistical significance was confirmed by the WWC. In this study, the effect of *DaisyQuest* on phonological processing was statistically significant and positive, according to WWC criteria. Lonigan et al. (2003) reported findings for eight outcomes in this domain.[5] The authors reported, and the WWC confirmed, statistically significant differences favoring the intervention group on four of the outcomes (rhyme oddity, rhyme matching, word elision, and syllable/phoneme elision). There were no statistically significant effects for the other outcomes. In this study, the effect of *DaisyQuest* on phonological processing was statistically significant and positive, according to WWC criteria.

Rating of effectiveness

The WWC rates the effects of an intervention in a given outcome domain as: positive, potentially positive, mixed, no discernible effects, potentially negative, or negative. The rating of effectiveness takes into account four factors: the quality of the research design, the statistical significance of the findings,[7] the size of the difference between participants in the intervention condition and the comparison condition, and the consistency in findings across studies (see the WWC Intervention Rating Scheme).

4. Foster et al. (1994) also conducted a study with kindergarten children, but the kindergarten study is not included in the report because the children are outside of the eligible age range for the WWC ECE topic. The Beginning Reading team reviewed the kindergarten study. After the study authors completed the preschool phase of the study, *DaisyQuest* was modified.

5. Lonigan et al. (2003) included a number of measures other than the phonological processing outcomes, but posttest means and standard deviations were unavailable for these measures. So this report does not include results from the Expressive One Word Vocabulary Test-Revised (EOWPVT-R), the word identification subtest of the Woodcock Reading Mastery Test-Revised, or the letter knowledge outcomes.

6. Children participated in *Daisy's Castle* only after they had completed the *DaisyQuest* modules twice.

7. The level of statistical significance was reported by the study authors or, where necessary, calculated by the WWC to correct for clustering within classrooms or schools and for multiple comparisons. For an explanation about the clustering correction, see the WWC Tutorial on Mismatch. See the Technical Details of WWC-Conducted Computations for the formulas the WWC used to calculate statistical significance. In the case of the *DaisyQuest* report, a correction for multiple comparisons was needed.

The WWC found *DaisyQuest* to have positive effects for phonological processing

Improvement index

The WWC computes an improvement index for each individual finding. In addition, within each outcome domain, the WWC computes an average improvement index for each study as well as an average improvement index across studies (see the Technical Details of WWC-Conducted Computations). The improvement index represents the difference between the percentile rank of the average student in the intervention condition versus the percentile rank of the average student in the comparison condition. Unlike the rating of effectiveness, the improvement index is entirely based on the size of the effect, regardless of the statistical significance of the effect, the study design, or the analysis. The improvement index can take on values between –50 and +50, with positive numbers denoting favorable results.

The average improvement index for phonological processing is +25 percentile points across two studies, with a range of –13 to +34 percentile points across findings.

Summary

The WWC reviewed two studies on *DaisyQuest*. Both studies met WWC evidence standards and found positive effects for phonological processing. The evidence presented in this report may change as new research emerges.

References

Met WWC evidence standards

Foster, K. C., Erickson, G. C., Foster, D. F., Brinkman, D., & Torgesen, J. K. (1994). Computer administered instruction in phonological awareness: Evaluation of the DaisyQuest program. *The Journal of Research and Development in Education, 27*(2), 126–137.

Lonigan, C. J., Driscoll, K., Phillips, B. M., Cantor, B. G., Anthony, J. L., & Goldstein, H. (2003). A computer-assisted instruction phonological sensitivity program for preschool children at-risk for reading problems. *Journal of Early Intervention, 25*(4), 248–262.

For more information about specific studies and WWC calculations, please see the *WWC DaisyQuest* Technical Appendices.