

# Iowa Text Reader Project impacts student achievement

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During the 2004-05 school year, 40 percent of eighth graders were non-proficient in reading nationally. In Iowa, 29 percent of eighth grade students were reported non-proficient on standardized tests during the same time period.

In Iowa's attempt to find effective interventions to close the reading achievement gap between students with disabilities and their non-disabled peers, the Iowa Assistive Technology Liaison, a cross agency, multidiscipline leadership group, decided to expand on previous independent studies (Rachow & Rachow, 2001, 2004). A steering committee developed the design and implementation plan for the Iowa Assistive Technology Text Reader Project. It was a state-wide project that studied the impact of using a text reader on student achievement and attitudes. Fifteen school districts across the state participated and gathered data.

Concerned not only with the level of non-proficient scores but also the trend toward declining scores, it was determined researching the effectiveness of using text readers with embedded study skills as an accommodation for reading and access to general education curriculum would be the focus of our work. During the 2004-2005 school year, three days of training were provided to participants on the text reader with

embedded study skills, and the study's data collection strategies. A "train the trainer" model was utilized to teach how to:

- Implement the software
- Use embedded study skills
- Consult with teachers
- Collect the data
- Monitor the implementation of the research project.

The trainers then trained their local school staff and students.

The software used in this project provided an integrated technology tool that students and teachers could utilize for additional support for reading and access to general education curriculum. Based on strategies proven to be effective for students with reading and learning disabilities, the embedded study skills of pre-reading questions, highlighted text, and vocabulary building were emphasized. The tools within this software that support active learning and study skills included electronic highlighters for highlighting, electronic sticky notes and voice notes for pre-reading questions, and support for vocabulary including a dictionary, thesaurus, and spelling tools. For pragmatic reasons, Kurzweil 3000 was selected. The software had the targeted study skills, was the most widely used in the state, was cost effective, and provided an exact electronic copy of the text.

Participating school districts were recruited based on location, hardware, and district commitment to the project. Schools were provided a free copy of the text

reader and a scanned copy of a textbook of their choice. Ongoing bi-weekly support was provided to teachers by the assistive technology contacts. Middle school students were selected based on existence of a mild to moderate print disability, a special education reading goal in vocabulary, comprehension or fluency, and non-proficient reading comprehension subtest scores on the Iowa Test of Basic Skills. Eighty-four percent of the students had mild disabilities while 16 percent had moderate disabilities. The average time spent in general education environments was 62 percent. Written parental consent was obtained.

Following training, teachers implemented the use of the text reader in the content class of their choice. Typically, science, social studies, literature or language arts classes were supported with the text reader. Teachers provided various scanned materials. Students utilized scanned textbooks and the text reader to complete classroom assignments, tests, and papers.

Over a 23 week period, data was gathered on the participating teachers and students from multiple data sources. Teachers completed two instruments from the Concerns Based Adoption Model (CBAM). The on-line concern survey was completed quarterly by teachers and building administrators. During the bi-weekly consultation, Levels of Use interview data were collected and scored.

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The results of these instruments were used to provide support regarding their concerns.

At the conclusion of the study, teachers responded to an on-line satisfaction survey, assessing their impressions of the project and the impact of the text reader software. Nine teachers (45 percent) completed the on-line survey.

Teacher Satisfaction Survey Responses (see Figure 1, page 13).

Student reading skills were assessed on 73 middle school students twice a month using curriculum-based assessment techniques. Using Jamestown controlled reading passages, measures of reading fluency and comprehension were collected and monitored. The results showed growth in both reading speed and comprehension.

The average reading rates improved by 16 words per minute in 23 weeks. This is an average rate of improvement 2.3 times faster than would be predicted by research on students with special needs (Fuchs, Fuchs, Hamlett, Walz, & Germann, 1993.) With this rate of improvement, one could conclude that students would meet aggressive reading goals. This would help teachers to set more realistic goals, thus beginning to close the achievement gap.

The data also indicated a positive trend in the comprehension scores over the 23 week period. The average comprehension score improved by 13 percent per student. In our review of the literature, the typical growth rate of middle school reading comprehension had not been addressed.

Implementation data indicated there was a significant relationship between levels of use of the program and reading rate. One possible explanation was that as teachers' skills and use improve, student academic achievement improves. A small but significant relationship between levels of use and comprehension scores also was found.

At the conclusion of the study, forty-three students (59 percent) completed an on-line survey assessing their impressions of the project and the impact of the text reader software.

Student Satisfaction Survey Responses (see Figure 2).

In summary, 73 students from across the state of Iowa participated in a 23 week study of the impact of the use of a text reader software program on multiple measures of academic performance. Enhanced performance was observed in the areas of reading fluency and comprehension. Positive correlations were found between the teachers' level of implementation and the students' progress on reading fluency and comprehension. Both the students and teachers participating reported strong positive feelings on feedback surveys linking the use of the text reader to a variety of positive school behaviors. Areas for further study were identified.

The Iowa Text Reader Project experienced the challenges of conducting action based research. Multi-levels of support were needed to initiate and maintain the text reader innovation, Without adequate ongoing support, schools and students struggled to use the innovation to its maximum potential. Despite their interest and enthusiasm, teachers and students needed technical assistance and consultation to overcome systems barriers.

The outcomes document improved reading fluency and comprehension as well as very positive subjective responses from the students and teachers implementing the text reader project. Positive outcomes they associated with the use of the text reader software included improved academic performance, better on task behavior, more engagement in the instructional materials, and improved independent work completion.

Areas of further research were identified. During Year Two, the Iowa Assistive Technology Text Reader Project will use the Time Series Concurrent and Differ-

|       |   |
|-------|---|
| 100%  | liked using the Kurzweil text reader                                  |
| 78%   | said it was easy to learn   |
| 33%   | thought it was somewhat difficult to use                              |
| 0%    | said it was very difficult to use                                     |
| 100%  | reported it helped their students read                                |
| 100%  | reported it helped their students stay on task                        |
| 100%  | reported it helped their students work independently                  |
| 88.9% | reported it helped their students get better grades on tests          |
| 22%   | reported it increased attendance at school                            |
| 89%   | reported it helped students feel better about themselves              |
| 89%   | reported it improved students' interest in what they are learning     |
| 100%  | reported it helped students understand what is written in their books |
| 100%  | reported it helped students complete their work                       |
| 55%   | reported it helped students improve how well they wrote               |

Figure 1: Teacher Satisfaction Survey Responses.

|     |   |
|-----|---|
| 95% | liked using the Kurzweil text reader                        |
| 91% | thought is was pretty easy to learn                         |
| 93% | reported it helped them with their reading                  |
| 72% | reported it helped them stay on task                        |
| 86% | reported that it helped them work better independently      |
| 79% | reported it helped them get better grades on tests          |
| 56% | reported it helped them have better attendance at school    |
| 77% | reported it helped them feel better about themselves        |
| 75% | reported it increased attendance at school                  |
| 84% | reported it helped interest them in what they were learning |
| 81% | reported it helped them get their work done                 |
| 58% | reported it improved how well they wrote                    |

Figure 2: Student Satisfaction Survey Responses.

ential (TSCD) Approach (Smith, 2000) to study the enhanced performance of students using a text reader by comparing student reading fluency and comprehension on passages read with and without the text reader. Twice a month students will be tested on comprehension of passages presented, one in print, and one electronically using Kurzweil 3000 software. The order of presentation will be randomly varied. These repeated measures over time with and without assistive technology should provide evidence of the impact and outcome of assistive technology use. The expectation would be that enhanced performance would be evident and the achievement gap would narrow.

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