An Evaluation of the Metalinguistic Awareness Program

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Metalinguistic awareness is "the ability to deliberately reflect on and manipulate
the structural features of spoken language, treating the language system

itself as an object of thought, as opposed to using the language system to comprehend and produce sentences" (Tunmer & Cole, 1985). That is, metalinguistic awareness refers to the individual's ability to understand the nature of language rather than the ability to use language to communicate meaning.

Tunmer and Cole (1985) identify four components of metalinguistic awareness. Phonological awareness refers to the ability to segment words into their constituent phonemes. Phonological tasks include recognition of rhyme and alliteration, the blending of phonemes, phoneme substitution and the appreciation of puns.

Word awareness is the understanding of a word as a constituent part of speech. It includes the ability to segment sentences and phrases into words, separation of words from their referent, ability to substitute words, and the recognition of synonyms and antonyms.

Form awareness is the ability to accurately evaluate the appropriateness of the structural elements of language.

Pragmatic awareness is the understanding of the use of language as a tool to communicate. It includes the ability to detect inadequacy in messages and understand failure in communication.

Tunmer and Cole (1985) suggest a hierarchical relationship between metalinguistic awareness and reading. Reading requires that children apply their knowledge of oral language to textual material. They argue that this must initially occur at the word level. The child's first task when learning to read is to recognise that one specific spoken word corresponds to one written word. Thus, word awareness is fundamental to the task of reading.

Phonological awareness assists in the ability to decode text. In order to develop automaticity in reading, children must "crack" the orthographic code by relating phonemes to graphemes. Development of an understanding of grapheme-phoneme correspondence requires phonological awareness.

Following development of decoding skills students require higher-order, metacognitive knowledge to aid comprehension. Thus, form awareness is

necessary to interpret linguistic information once it has been decoded from text.

Pragmatic awareness does not appear to be particularly related to reading (Tunmer, Herriman, and Nesdale, 1991).

This analysis suggests that three of the components of metalinguistic awareness are necessary, although not sufficient conditions for proficiency in reading. Furthermore, the components are hierarchically organised so that each builds on competencies developed at an earlier stage. Thus, in initially learning to read, word and phonological awareness are critical skills.

In terms of word awareness, many pre-school children have difficulty segmenting sentences into words (Ehri, 1975; Tunmer, Bowey and Grieve, 1983). However, the awareness of word boundaries in spoken language in beginning readers predicts later reading ability (Bowey, Tunmer and Pratt, 1984).

A large body of evidence has been accumulated to demonstrate that phonological awareness is essential to early reading success (Spear and Sternberg, 1987; Stanovich, 1986). Initially, studies showed that measures of phonological awareness could effectively distinguish between good and poor readers (Bradley and Bryant, 1978; Calfee, Lindamood, and Lindamood, 1973; Perfetti and Hogaboam, 1975). These studies indicated that competent readers performed better in a variety of measures of phonological awareness than poor readers. Tasks used by researchers included piglatin games, rhyming, segmenting words into syllables and phonemes, and phoneme deletion and substitution tasks.

Other research has shown that phonological awareness in preliterate children can significantly predict later reading achievement (Blachman, 1984; Bradley and Bryant, 1983; Fox and Routh, 1975; Tunmer, Herriman and Nesdale, 1988; Share, Jorm, MacLean & Matthews, 1984).

Finally, an increasing number of studies have shown that instruction in phonological awareness can result in increased levels of reading and spelling achievement (Ball and Blachman, 1991; Bradley and Bryant, 1983; Lewkowicz, 1980;

Lundberg, Frost and Peterson, 1988).

While research has consistently demonstrated the importance of metalinguistic awareness in learning to read the experimental studies cited have all been implemented by researchers as part of an experimental program. Little is known of the effectiveness of instruction in metalinguistic awareness when implemented at a systemic level by teachers as part of their ongoing instructional program.

This study tested the effectiveness of a metalinguistic awareness program, as implemented by classroom teachers, in facilitating the development of phonological awareness, and word awareness, and reading skills.

Method

Subjects

Subjects were 686 children enrolled in the first year of school in 14 Brisbane primary schools. Initially 857 children were pre-tested. However, only 686 were available for post-testing. A variety of reasons accounted for subject mortality, including student mobility and absences due to illness at the time of post-testing.

Instruments

Metalinguistic awareness was measured by three phonological tasks based on tasks described by Stanovich, Cunningham and Cramer (1984) and one word awareness task. The ability to rhyme was assessed by asking children to give a rhyming word for a specified word. Identification of initial phonemes was measured by two tasks. In the first, children were asked to provide a word beginning with a particular phoneme. In the second, children were asked to identify the initial phoneme given a CVC word.

Word awareness was measured by giving children words or non-words and asking them to indicate if the stimulus was a word or non-word.

All tasks comprised six items. Children scored two points if they provided a correct answer on the first attempt and one point if they answered correctly on a subsequent attempt. Thus, each task was scored out of a possible 12 points. Reading was assessed using the first twenty words of the Ready to Read Words Test (Clay, 1985).

The Metalinguistic Awareness Instructional Program was developed by a

multidisciplinary team within the Queensland Department of Education. The team comprised guidance officers, resource teachers, speech therapists, and regular classroom teachers. A university-based academic acted as consultant to the group.

The program consisted of three sections: word awareness, phonological awareness and representing words with symbols. Word awareness developed two areas. The first focused on the concept of "word". This component of the program sought to develop the understanding that:

- words exist and that language consists of words
- words can be used to name objects and actions, to describe and to perform other linguistic functions
- the same words are used in a variety of contexts to convey different meanings.

The second skill developed as part of word awareness was the ability to segment sentences into words.

Phonological awareness was developed in six steps: understanding rhyme, understanding the concept of a speech sound, identifying initial sounds, relating sounds to iconic symbols, identifying final sounds and identifying medial vowels.

The program focused on six consonants (s,f,m,b,t,g) and three vowels (a,e,o). Iconic symbols were used to assist in the memorisation of the sounds and to aid in the development of the understanding that symbols can represent speech sounds. The six symbols are shown in Figure 1. Each of the iconic symbols had embedded within it the conventional symbol for the phoneme.

Insert Figure 1 about here

Vowels were represented by pictures of mouth shapes used in saying the sound (see Figure 2).

Insert Figure 2 about here

After children had developed proficiency in identifying initial and final phonemes, and medial vowels and could associate the symbol with the appropriate phoneme, the

iconic symbols were used to develop the concept that words can be represented by symbols. Activities encouraged children to decode and encode a variety of CVC words using the iconic symbols.

While the program provided teachers with a structured sequence of activities and supporting materials, teachers were encouraged to adapt the program to suit their particular classroom situation. For example, in the Rhyme component teachers were encouraged to use rhyme throughout the day, e.g.

" Mary, come over here, dear."
" I've a hunch it's time for lunch."

Rather than detailing specific behavioural objectives, the program provided a discussion of the rationale and justification of each concept to be developed. Thus, it was intended that teachers should use their professional expertise to guide their delivery of the program rather than implementing the activities in a rote or mechanical fashion.

The program adopted a mastery approach to the learning of each concept. Along with instructional activities for each section, progressive and concluding assessments were provided. If a child failed to show mastery of any concept, s/he should be provided with additional instruction until the concept had been mastered.

Procedure

Subject selection: Forty classrooms were identified by a senior school administrator as being located in low socio-economic areas, and within schools where historically large numbers of children experience academic difficulties. Twenty classrooms were selected at random and the teachers taking them in the following year identified. These teachers were asked if they would like to run the program in the first semester of the following year. All except two of the teachers expressed willingness to implement the program. These two teachers were replaced in the study.

The twenty teachers who had not been selected to implement the program formed a control group.

Program inservice: A one-day inservice program was provided to implementing teachers. The rationale and theoretical basis of the program were discussed and the activities explained. The role of the study in evaluating the program was

also discussed.

Pre-testing: Pre-testing was conducted in the first week of school by trainee guidance officers. Each tester was asked to test one control and one experimental classroom. However, testers were blind in that they were unaware of group assignment.

Pre-testing consisted of the metalinguistic awareness test and the Clay Ready to Read Words Test. Based on pre-test scores, each experimental classroom was matched with a control classroom. The scores on the pre-test for each child in the class were sent to both experimental and control group teachers when coding was completed, approximately half way through the first semester of the year.

Program implementation: Teachers were asked to commence implementation of the program as soon as pre-testing was completed. The program has no specific length. Students progressed through the program at their own rate. Thus, each class completed the program when each child demonstrated mastery on the final concluding assessment. Generally the program lasted one semester.

Post-testing: A post-test comprising the same instruments as pre-test was conducted immediately teachers indicated that they had completed the program. Both the experimental class and the matched control were tested at the same time.

Results

The four components of the metalinguistic awareness test (rhyme, initial phoneme: a) sound supplied, b) word supplied; and word awareness) were analysed separately.

Frequency distributions at pre-test indicated that the data were not distributed normally. Most children scored either at or close to zero, or at or close to 100 per cent correct. Relatively few children scored in the intermediate range. Thus, for analysis, data were recoded into three categories: children who had no proficiency in the skill, children who were developing the skill and children who were proficient in the skill. A chi-square was used to test the significance between groups.

There were no significant differences between groups at pre-test.

The number and percent of children in each category at post-test on each metalinguistic awareness variable are given in Tables 1-4.

Insert Tables 1-4 about here

On all metalinguistic variables the experimental group performed significantly better than the control group. For the rhyming task, X2 (2, N = 686) = 39.64, p= .00, supplying a word given a specific phoneme X2 (2, N = 686) = 19.71, p = .00, identifying initial phonemes X2 (2, N = 686) = 15.76, P = .00, and word awareness X2 (2, N = 686) = 38.35, p = .00.

The mean for the experimental group on the Clay Ready to Read Words Test was 3.29 (S.D. = 4.12) and for the control group 3.72 (S.D. = 4.01). A t test indicated that the difference was not significant t (684) = 1.39, p = .17.

Discussion

The data are consistent with other studies in demonstrating that instruction in metalinguistic awareness can enhance children's development in the skill. Thus, this program implemented at a systemic rather than a researcher level was successful in increasing children's metalinguistic awareness.

However, children in the metalinguistic instruction group did not show a commensurate increase in reading skills which would be predicted on the basis of other intervention studies. The reason for this is not clear, however, it could be related to the children's general low level of reading competence at this stage of their schooling. If this is the case, it could be anticipated that improvements in metalinguistic awareness will enhance reading performance in experimental classrooms as children have greater experience with reading, although they were not detected at post-test.

One issue of concern in the implementation of the program is the number of children who showed no skill development on each component of the metalinguistic awareness test, in the experimental classrooms. Although, the numbers of children without the skill in the experimental classes are a little over half those in the control classrooms, this, nevertheless, represents a substantial group. This is of particular concern given the focus on mastery throughout the program. Thus, many classrooms appear to have progressed through the program without ensuring that all children mastered

each skill.
The number of children in each class is small, an average of three or four on each skill.
Nevertheless, these are the children who are likely to be at risk for further failure and thus constitute an educationally important group.

It is not clear why some children failed to benefit from the program, as measured by post-testing. Informal discussions with teachers indicated that they were frequently unaware of the level of achievement of the students in their class. Some felt that, given the very basic nature of the skills to be taught, all children had acquired these skills before commencing school. Many of these teachers were quite surprised when pre-testing indicated that children could not complete many of the tasks successfully.

Many teachers also reported a dilemma when working through the program and finding that all but one or two children had mastered the skill. The program suggested that the teacher should continue to work with these children until mastery had been obtained. Clearly many teachers elected not to do this and worked through the program at a rate consistent with mastery for most, rather than all.

This indicates that more comprehensive skill development may be achieved if the program incorporated alternative instructional interventions for children who have failed to develop proficiency after the majority of the class has reached mastery. Such an alteration would need substantial inservice support to modify a teaching approach which appears to be considerably entrenched.

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Figure 1. Iconic symbols used to represent consonants.

Figure 2. Iconic symbols used to represent vowels.

Table 1
Number and Percentage of Children in Each Group on Rhyming Task

Group	No Skill Number	No Skill Percent	Developing Skill Number	Developing Skill Percent	Competent in Skill Number	Competent in Skill Percent	Number
Control	163	46.4	34	9.8	153	43.8	350
Experimental	90	26.9	28	8.3	218	64.9	336

Table 2
Number and Percentage of Children in Each Group on Identifying Initial Sources
(Phoneme Supplied) Task

Group	No Skill Number	No Skill Percent	Developing Skill Number	Developing Skill Percent	Competent in Skill Number	Competent in Skill Percent	Total Number
Control	124	35.3	28	8.0	198	56.7	350
Experimental	74	21.9	25	7.5	237	70.6	336

Table 3
Number and Percentage of Children in Each Group on Identifying Initial Sounds (Word
Supplied) Task

Group	No Skill Number	No Skill Percent	Developing Skill Number	Developing Skill Percent	Competent in Skill Number	Competent in Skill Percent	Total Number
Control	121	34.5	16	4.7	213	60.8	350
Experimental	77	22.8	26	7.7	233	69.5	336

Table 4
Number and Percentage of Children in Each Group on Word Awareness Task

Group	No Skill Number	No Skill Percent	Developing Skill Number	Developing Skill Percent	Competent in Skill Number	Competent in Skill Percent	Total Number
Control	131	37.5	98	27.9	121	34.6	350
Experimental	75	22.3	77	23.0	184	54.7	336