The Effects of Metacognitive Reading Strategy Training on the Reading Performance and Student Reading Analysis Strategies of Third Grade Bilingual Students

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Abstract

Studies conducted over the last decade provide evidence that linguistically diverse children continue to lag behind monolingual English-speaking children in reading performance (Office of Bilingual Education and Minority Language Affairs, 1989-90) . At the same time, additional research provides evidence that bilingual Spanish dominant students use fewer cognitive strategies than children who communicate through the use of only one communication system (Padrón, 1985).

The bilingual Spanish dominant students in this experimental study were taught to use metacognitive reading strategies while reading in Spanish. Primary findings indicated that, following training in metacognitive Spanish reading strategies, Spanish dominant bilingual children improved in the area of reading performance on the La Prueba Spanish reading test and the Iowa Test of Basic Skills English reading test. Post interview results of the Burke Reading Interview, translated into Spanish, showed increases in the frequency of Spanish reading strategies following metacognitive intervention. A directionality was also found in the area of transferal of metacognitive strategies across languages (from Spanish to English).

Introduction

The term "metacognition" has been used to describe self-regulatory utilization of thought processes since the late 1800's (James, 1890). A century later, educators are still intrigued with the idea that students can be taught to independently employ specific reading strategies during the reading process. Hyde and Bizar (1989, p. 51) have written that "...metacognitive processes are those processes in which the individual carefully considers thoughts in problem solving situations through the strategies of self-planning, self-monitoring, self-regulating, self-questioning, self-reflecting, and or self-reviewing."

A review of the literature on metacognition indicates that monolingual English-speaking children have benefitted from metacognitive strategy training. Fewer studies, however, in the area of metacognition have been conducted with bilingual Spanish dominant children who are enrolled in bilingual programs. Flores (1980, p. 9) has defined a bilingual program as: "A program in which all or part of the curriculum is taught in more than one language with particular attention to the child's cultural heritage."

The core theoretical foundation for many current metacognitive investigations in the area of reading with monolingual English-speaking children are based on Flavell and Wellman's Metacognitive Taxonomy (Flavell & Wellman, 1977). This framework divides metacognition into three major variables:

a. person variables, knowledge an individual has about her /her own personal cognitive capacities;
b. task variables, knowledge about the nature and level of difficulty of certain problems;
c. strategy variables, knowledge of different types of cognitive strategies that could be used for specific problems and knowing which ones are the most appropriate in a given situation.

Teaching monolingual English-speaking students to utilize metacognitive strategies during reading has been the focus of investigations with monolingual English-speaking children (Gaskins, Downer, Anderson, Cunningham Gaskins, & Schommer, 1988; Palincsar & Brown, 1987; Palincsar, 1986; Schewel & Waddell, 1986). Fewer studies, however, have been conducted with bilingual Spanish dominant students which examine the effects of metacognitive reading strategy training on Spanish and English reading performance.

Metacognitive research with bilingual children poses some interesting issues. Because bilingual children are expected to function, academically and socially, in two languages questions often arise in regard to the practicality of initial reading instruction in the dominant language. Ambert (1986), for example, wrote that some educators feel that instruction in the child's primary language can impede English academic progress.

Cummins (1990), however, maintains that an instructional focus on the development of dominant language literacy will have a positive impact on second language literacy. Cummins' theory (1983) is described as the "Interdependence Hypothesis" and serves

as a foundation for the research he has conducted over the past two decades. His theory establishes a dynamic rationale for the utilization of a student's first language to assist in the formulation of second language literacy. Furthermore, Cummins (1987) maintains that once a student is literate in the primary language, and verbally proficient in a second language, cognitive and academic literacy skills transfer to the student's second language.

Mann and Sabatino (1985, p. 211) have described cognitive strategies as "...planned ways to achieve specific goals or results." At the same time, Thonis has written a powerful statement in reference to students who are challenged to become literate in two communication systems. Thonis (1983, p. 130) states: "Once a child has learned to read, or more generally, has acquired cognitive skills in a language, transference of those skills to the other language occurs easily and efficiently." This statement indicates that native language cognitive development may produce a more powerful level of English literacy as students transfer prior learned Spanish cognitive reading strategies to English reading situations.

The importance of first learning a reading strategy in the dominant language for the purposes of transferal has been documented by Robledo and Cortez (1983), as well. Robledo and Cortez have indicated that one reason why bilingual students' reading achievement is lower than monolinguals on standardized measures is due to lack of first language reading skills development prior to placement in an all English academic setting. Goldenberg (1987) has suggested that the variability in bilingual students' reading performance, in comparison with children who speak only one language, could be due to the lack of emphasis that is sometimes placed on dominant language reading skills and cognitive development in the lower grades. Therefore, the transferal process across languages could be hindered or delayed in instances where dominant language reading is postponed or omitted.

In spite of increased knowledge pertaining to positive transferal effects of dominant language cognitive literacy on second language literacy development, bilingual Spanish dominant children continue to perform at significantly lower academic levels than their monolingual English-speaking peers (Office of Bilingual Education and Minority Language Affairs, 1989-90). Furthermore, additional research yields findings that indicate that bilingual Spanish dominant children are most often required to produce lower levels of thinking through simple recall and recitation of basic information instead of

more cognitively demanding responses (Cummins, 1990; Chamot & O'Malley, 1987; Padrón, 1985).

The Office of Bilingual Education and Minority Language Affairs (1989-90) offers additional information which indicates that the teachers who participated in a longitudinal study did most of the talking during classroom experiences. The lack of giving Limited English Proficient (LEP) children the opportunity to react and respond to the ideas presented in the lessons did not allow the LEP students to develop original and higher-level cognitive processes.

Statement of the problem

Bilingual Spanish dominant children often experience problems in understanding the printed word (Cummins, 1990). At the same time, research yields findings that indicate bilingual Spanish dominant children are most often required to produce lower levels of thinking through simple recall and recitation of basic information instead of more cognitively demanding processes (Chamot & O'malley, 1987; Cummins, 1990; Padrón, 1985). Training these same children to utilize metacognitive reading strategies while reading in Spanish may assist in the achievement of higher levels of reading performance in the primary language. Furthermore, based on Cummins' (1983) Interdependence Hypothesis, metacognitive Spanish reading strategy training may increase English reading performance, as well.

Research questions

The research questions which guided the inquiry are stated below:

1. Will the Spanish reading performance of third grade Spanish dominant students increase following metacognitive reading strategy training in their Spanish reading program?
2. Will an increase in the English reading performance of third grade Spanish dominant students, following metacognitive strategy training in their Spanish reading program, indicate that a transferal effect has occurred across languages (from Spanish to English)?

Subjects

The bilingual students who participated in the project were enrolled in middle sized urban school district. The participants were ninety-five third grade bilingual Spanish dominant students. The students' second language was English. Chronological ages ranged from 8-9 years old.

Language dominance was determined through the administration of the Language Achievement Scales (LAS) (De Avila & Duncan 1987). The tests determined that each third grade student who participated in the study was Spanish-dominant in the area of oral language proficiency. The gender distribution was 53 girls and 42 boys.

Procedure

The sample of 95 Spanish-dominant students were randomly divided into an experimental (N=48) and a control group (N=47) The experimental group was trained to use metacognitive reading strategies for ninety minutes each day for six weeks during the Spanish reading period. Specifically, the metacognitive reading strategy with these participants was the development of self-generated questioning strategies. In this teaching technique, the teachers modeled by asking a variety of questions concerning comprehension of a story or text passage is read.

Following the modeling process by the teacher, the students became dialog leaders in their own small groups, taking turns at role playing the teacher and asking self-generated questions of one another. The self-generated questioning strategies utilized in this study were based on the research conducted by Andre and Anderson (1978; 1979), Biggs and Lipsky (1984), Cohen and Fitzgerald (1983), Raphael (1986), Schewel and Waddell (1986), and Singer and Donlan (1982).

The size of the groups became smaller each week until the children were finally working in pairs. During week six, the children were on their own for the questioning lessons. They read the story, a paragraph at a time, formulated self-generated questions, and wrote their questions on paper. Following, students discussed their answers with the teacher on an individual basis. At this point in the process, the children were strongly encouraged to self-generate questions at an independent level.

The control group was instructed with third grade Spanish basal readers that had been adopted by the school district (Flores,

Guzman, Long, Macias, Somoza, & Tinajero, 1987). The reading levels of the students had been determined by placement tests which were a part of this same Spanish basal reader series.

Instruments

The Burke Reading Inventory (Goodman, Watson, & Burke, 1987) was adapted and translated to determine the metacognitive reading strategies the children used before and after the metacognitive Intervention was administered. The Burke interviews were tape-recorded while the student read a passage in Spanish from a basal reader at his/her reading level.

English reading performance was examined through the use of the Iowa Test of Basic Skills (Level 8 Form H, ITBS) reading sections (Riverside, 1986). The La Prueba Spanish (Nivel 9) Achievement Test (Riverside, 1984) was used to evaluate Spanish reading only. In addition to the above assessment instruments, the Language Assessment Scales (DeAvila & Duncan, 1987) were used at the onset of the study to document Spanish and English oral proficiency levels of the sample.

Data Analysis

To address the research questions presented in this experimental study, it was determined that a randomized control group pretest-posttest design was appropriate. This design investigated the effects of the intervention (metacognitive reading strategies taught in Spanish) on dominant and second language reading performance. Multiple regression analysis was used to determine the impact of the metacognition intervention on the students' post Spanish and English reading performance. Descriptive and inferential statistics are also reported.

Results

The results of the La Prueba Spanish reading test for the experimental group shows a mean score of 22.042 on the pretest and a 24.458 on the posttest. A 2.416 improvement is shown in the Spanish reading for the experimental group for the six-week metacognitive intervention. The control group mean for pretest performance on the La Prueba Spanish reading test was 23.574 and the posttest mean was 25.021. A 1.447 gain is shown in the mean score of the control group following the study (see Table 1).

Table 1
Results of the La Prueba Spanish reading test for the experimental and control groups

Experimental Group n=48	**Mean**	**SD**	**Min**	**Max**
Pretest	22.042	3.222	13	28
Posttest	24.458	2.975	14	29
Difference	2.416	0.247		
Control Group n=47	**Mean**	**SD**	**Min**	**Max**
Pretest	23.574	4.122	12	29
Posttest	25.021	3.609	8	29
Difference	1.447	0.513		

The results of the ITBS English reading test for the experimental group shows a mean score of 34.875 on the pretest and a 40.771 on the posttest. A 5.896 gain is shown in the English reading for the experimental group for the six-week metacognitive intervention. The control group mean for pretest performance on the ITBS English reading test was 38.404 and the posttest mean was 41.085. An improvement of 2.681 is shown after the intervention (see Table 2).

Table 2
Results of the ITBS English reading test for the experimental and control groups

Experimental Group n=48	**Mean**	**SD**	**Min**	**Max**
Pretest	34.875	8.624	18	53
Posttest	40.771	8.151	29	53
Difference	5.896	.473		
Control Group n=47	**Mean**	**SD**	**Min**	**Max**
Pretest	38.404	8.096	21	55
Posttest	41.085	6.477	28	55
Difference	2.681	1.619		

This finding yields evidence that future studies designed for longer durations of instruction in the area of self-generated questioning strategies could have a greater impact on first and second language reading performance. At the same time, reading strategy analysis behaviors may also increase in both primary and second languages.

Multiple regression analysis was used based on the Spanish and English reading stanine scores. The Wilcoxen signed-rank test was used to determine the effects of the intervention on the Spanish and English performance of the sample. The dependent variables were the La Prueba and ITBS scores in stanine form. The variables that were used as control variables were gender, age, years in the bilingual program, free lunch status, and the La Prueba and ITBS pretest scores. After all the variance that could be accounted for by these variables was removed from the dependent variables (La Prueba and ITBS posttest stanines) then treatment (for the experimental and control groups) was entered into the predictive equation. In the Spanish reading test, regression analysis indicated that the pretest was the only significant predictor ($p<=.05$). As in this regression analysis, the pretest was the only significant predictor ($p=<.OS$).

At the outset of the translation of the Burke Reading Inventory, one reliability issue arose. The administration of the Burke Reading Inventories revealed that some of the children seemed hesitant in answering questions which referred to how the Spanish dominant third grade students viewed their teacher's reading and reading strategies. Many children in this particular sample seemed reluctant to speak in negative terms about their teachers' reading behaviors. Based on research with this population of students, children are taught to exhibit a large amount of respect for authority figures in their lives (Fillmore, 1981); a fact that may have influenced their reluctance to criticize the teacher.

Future research of this nature may include the development of interview questions which relate in a different manner to the reading behaviors of teachers dealing with Hispanic students. One example may be to compose questions which are directed to having the children imagine their teachers' reading behaviors when they were first learning to read as children.

The Burke interviews were also administered before and after the study in order to determine the extent that the children were

using metacognitive strategies. Descriptive statistics obtained from the data collected from the Burke Reading Interviews indicated that the experimental group used more metacognitive strategies than the control group following the intervention. These results are illustrated in Tables 3 and 4.

Table 3
Reading strategies the children in the control group used before and after receiving metacognitive reading intervention during Spanish reading

Results of Burke Inventories Control Group n=47			
Strategies Mentioned	**Pre-Interview**	**Post-Interview**	**Change**
Rereading	77	89	+12
Searching for details	2	6	+04
Self-generated questioning	1	18	+17
Concentrating	36	51	+15
Verbal questions	24	39	+15
Defining words	21	36	+15
Writes about passages not comprehended	5	8	+03

Table 4
Reading strategies the children in the experimental group used before and after receiving metacognitive reading intervention during Spanish reading

Results of Burke Inventories Experimental Group n=48			
Strategies Mentioned	**Pre-Interview**	**Post-Interview**	**Change**
Rereading	62	78	+16
Searching for details	04	09	+05
Self-generated questioning	03	44	+41
Concentrating	15	49	+34
Verbal questions	28	52	+24
Defining words	18	27	+09
Writes about passages not comprehended	03	18	+15

Conclusion and Implications.

The Burke Reading Inventories, which were a qualitative measure, yielded more positive results than the quantitative measures which were the Spanish and English standardized tests. This may indicate that conditions were present during the testing situation that may not have been present in the individual interview sessions. These interviews were informal and were administered under less structured circumstances than the La Prueba and ITBS tests. The interviewer took time to establish rapport with each student before the sessions were conducted and the language used during the interviews was Spanish. Since the children's dominant language was Spanish, this also may have enhanced the interview environment.

Significant improvements in the types and frequency of metacognitive strategies that the children were using during their Spanish reading at the outset of the investigation was documented. The main area of positive change was in the use of self-generated questions in the experimental group. These scores indicate that the children who participated in the experimental group engaged in metacomprehension strategies in the form of self-generated questioning to a greater extent than the control group.

Examination of the types of responses on the Spanish translated Burke Reading Inventories indicate changes occurred in the manner in which the children in the experimental group approached the reading task following the metacognitive intervention. For example, many of the children's responses to the first question: "When you are reading something and you come to something you don't know, what do you do?" changed after the intervention. "I ask my friend or teacher", "I skip it", and "I don't know" were the predominant responses in the initial interview sessions. However, following the intervention these same students responded to the question with such statements as "I write down a question about my problem" "I read the story over again", and "I think of questions about the people in the story." These post-intervention responses reveal that the children in the experimental group may have been utilizing metacognitive reading strategies.

In addition to the positive changes noticed in the responses to the aforementioned question: "When you are reading something and you come to something you don't know, what do you do?" there also appeared to be marked differences in the responses to the following

question: “If you knew someone who was having difficulty reading, how would you help them?” The responses to this question ranged from replies such as, “I don’t know”, “I would help him” (without being able to give a specific way they could help), to more independent responses at the post-intervention stage; such as “Tell him words he doesn’t know.”

Audio recorded responses to this same question, indicate a change at the post-intervention stage in the manner in which the children would help someone who was having trouble with reading. The majority of these responses were oriented towards the idea that they would pretend they were the teacher and have the friend “read the story and then ask questions about the story.” In addition to this type response, the children often stated that they would “make the friend write questions about the people, animals, and/or place” where the story took place.

Another interesting phenomena which surfaced during the study was that the children in the experimental group used self-generated questioning strategies in other social and academic situations, as well. One incident that was witnessed was the experimental group’s usage of self-generated questions during an assembly. The assembly had been held in order to visit with a well-known author of children’s’ books. The English-speaking author talked about his motives for writing children’s’ books and other aspects of writing. Upon the completion of this activity, the bilingual children who had received the self-generated questioning training participated in English, to a larger extent than the monolingual English-speaking children, in the questioning activity that followed the author’s presentation. The observation of this phenomenon leads to the suggestion that the students’ avid participation in the questioning activity could have stemmed from the metacognitive intervention which they had received in Spanish during the study. Thus, leads to establishing the possibility that the children were transferring the metacognitive training from the first language to the second language.

A positive directionality in the area of metacognitive strategy utilization was found in this study. Gains on the standardized measures by the experimental group show that, following Spanish metacognitive reading strategy training for a six-week period, this sample of Spanish-dominant third grade students improved their reading in both Spanish and English. The positive directionality of this investigation offers promise for future studies in the area of the

development of metacognitive reading strategies with bilingual/bicultural children. Future research with linguistically diverse students should be designed to consider the impact of earlier intervention of dominant language metacognitive intervention. Longitudinal studies which are initiated during the early years of bilingual instruction may reveal additional positive benefits. Also, as we approach a new millennium, bilingual educators should examine the effects of integrating metacognition in all academic subject areas.

Children who communicate through the use of two language systems should be expected to demonstrate metacognitive abilities during English reading and during the English as a second language period, as well. Metacognitive processing is a dynamic function that warrants the implementation of future investigations of all types. A focus on future metacognitive endeavors in a linear fashion which implies that one type of intervention leads to statistical significance in a particular battery of tests is not enough. It is imperative that future educators and researchers strive to examine the effects of metacognitive instruction on the overall improvement of dual language reading and biliteracy development.

Linguistically and culturally diverse children deserve the opportunity to develop cognitive domains other than lower levels of thinking through simple recall and recitation of basic information. The results of this study lend credibility to the notion that bilingual/bicultural children should be challenged to develop and employ more powerful levels of thought processing within the context of dual language reading curricula.

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