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ABSTRACT

This study investigates how the psychological and social processes of children participating in an instructional program in critical thinking become engaged as children incorporate cultural and sex-typed information into the development of specific cognitive skills. Forty boys and girls randomly selected from four fifth-grade classes at two elementary schools participated in the study. The children were administered pre- and post-measures that assessed cognitive skill development in a structured task and in a novel task. In addition, data on instructional practices, curricular materials concerning thinking skills, and students' communicative competence in pre- and post-interviews were collected for qualitative analysis. Cognitive skill development appeared to be developmental and learned. Students in both schools gained significantly in measures of cognitive skill development. However, students who were enrolled in the intervention school had better and more developed skills than those in the nonintervention school. The researchers hypothesized that boys and girls may be encouraged to develop, select, and apply cognitive skills differently according to situational demands and constraints. These data show that boys and girls are differentially exposed to teaching strategies aimed at the production of intelligent behavior. Pre- and post-measures indicate that boys and girls differ in their application of cognitive skills during different tasks. (Author/PCB)

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# Summary Paper: Gender Differences in the Instruction and Intelligent Behavior of Fifth-Graders



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Gender differences in the instruction and intelligent behavior of fifth-graders

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ABSTRACT

This study investigates how the psychological and social processes of children participating in an instructional program in "critical thinking" become engaged as they incorporate cultural and sex-typed information in the development of specific cognitive skills. Boys and girls randomly selected from four fifth-grade classes at two elementary schools (N= 40) participated in the study. The children were administered pre-and-post measures that assessed: Cognitive skill development in a structured task; and Cognitive skill development in a novel task. In addition, data on instructional practices, curricular materials in thinking skills, and students' communicative competence in the pre-and-post interviews was collected for qualitative analysis.

Cognitive skill development appears to be developmental and learned. Students in both schools gained significantly in measures of cognitive skill development, however, students who were enrolled in the intervention school had better and more developed skills than those in the non-intervention school. The researchers hypothesized that boys and girls may be encouraged to develop, select, and apply cognitive skills differently according to situational demands and constraints. These data show that boys and girls are differentially exposed to teaching strategies aimed at the production of intelligent behavior. Pre-and-post measures indicate that boys and girls differ in their application of cognitive skills during different tasks.

## INTRODUCTION

Most research on the development of cognitive skills has focused on the psychological processes present in the internal world of the individual (i.e., knowledge structures, symbolic abilities, information-processing capacities, etc.) as she or he comes to interact and learn from the environment (Flavell, 1985; Schneider et al., 1979). This research has some specific limitations when viewed within the broader framework of the cultural and educational contexts in which children are encouraged and called upon to think. For example, in the work of cognitive anthropologists, those such as Goodnow have noted important differences in the development and application of cognitive skills from culture to culture. Different cultures demand or value different skills, and as a consequence, these expectations are reflected at the level of behavior in various degrees and areas of skill (Goodnow, 1980). These same considerations have been applied to studies of cognitive measurement (Brody & Brody, 1976) as well as to research examining discrepancies in social behavior along racial and gender lines (Maccoby, in preparation).

With regard to gender, until recently little attention has been paid to the ways socialization and instructional practices influence the directive features of cognitive processing by providing different contents and sex-typed goals around which cognitive activity becomes organized for boys and girls. Yet, there is strong evidence to indicate (e.g., Block, 1973) that from early childhood boys and girls learn to think quite differently about themselves. They also have distinctly different ways of interacting with the world. Girls experiences tend to be more structured, while boys are given more freedom to explore the world. Boys have more experience in dealing with unfamiliar tasks and problems and in carrying out on-the-spot problem solving. These differences may have important consequences for the development and application of sex-typed cognitive skills.

The present study uses the living systems theory of human behavior and development (D. Ford, in press; M. Ford, in press) which asserts that individuals make decisions about how to behave and think on the basis of personally relevant sets of goals. This framework specifies that the environmental information and experiences available to children shape their perceptions of control over specific behavioral outcomes, and influences the types of goals they will strive to reach. This study describes the ways students participating in a thinking skills program were exposed to sex-typed information, how this information influenced goal formation, and the extent to which such differences were reflected in the intelligent behavior of fifth-graders when presented with two types of cognitive tasks.

## METHOD

Subjects. Forty fifth-grade students in two elementary schools were randomly selected to participate in the study. Twenty students were from an elementary school which was in its third year of implementing a schoolwide critical thinking skills program. Twenty students were from of a demographically similar school in the same district that had no critical thinking skills program. Each school drew its student population from a predominantly white, middle to upper middle class community.

Design. Since critical thinking and cognitive skills can be evidenced across a variety of domains and contexts, the design of this study used quantitative and qualitative measures to converge on the constructs important to the evaluation of the program's effectiveness and to the variety of cognitive skills and attitudes students might develop specifically from their exposure to the program. Students were administered pre-and-post measures that assessed: 1) attitudes toward thinking ; 2) cognitive skill development in a structured task; and 3) cognitive skill development in a novel task.

Systematic classroom observations were conducted in the program school to assess the frequency and types of thinking strategies teachers and students employed during the learning process. Program documents and audiovisual materials were analyzed to determine what skills were emphasized and how the teaching of critical thinking skills was contextualized. The responsivity of students, their communicative competence, and non-verbal language signs, as well as the content of conversation not central to the cognitive task was noted during and after a structured interview.

The specific hypotheses in this study were:

1) Students in the program school will demonstrate significantly greater development in cognitive skills from pre-to-post measures than students in the non-program school.

2) Males and females in each group will differ on pre-test and post-test measures of cognitive skill development. Specifically, males will have significantly higher scores than females on measures of cognitive skill development in the novel task and females will have significantly higher scores than males on measures of cognitive skill development in the structured task.

3) The thinking skills intervention will reduce the discrepancy between males' and females' cognitive skill development. The post-test scores for males and females in school one will be less significantly different than those of males and females in school two.

<u>Procedure.</u> Each subject was assessed at two separate administrations for each of the cognitive skill development measures. For the first measure (CSD in a structured task), each subject was asked to complete three structured paper-pencil problem solving tasks. The problems were ones similar to the kinds of events students experience in class, home or peer life (e.g. writing a report). In the second measure (CSD in a novel task), students were presented with novel problems (making a classroom more space-efficient; making the transition to sixth-grade) in which they were instructed to think aloud as they attempted to solve the problem during the structured interview.

*Variables*. In both the structured and novel problem solving tasks, the students were assessed on the following skills components of critical thinking:

1. Ability to generate problem-solving strategies and questions
2. Diversity of problem-solving strategies and questions
3. Ability to think of appropriate resources to help solve a problem
4. Diversity of problem-solving resource ideas
5. Ability to avoid irrelevant or inappropriate strategies or resources

In the written, structured task, students were also assessed on the following components of effective problem-solving:

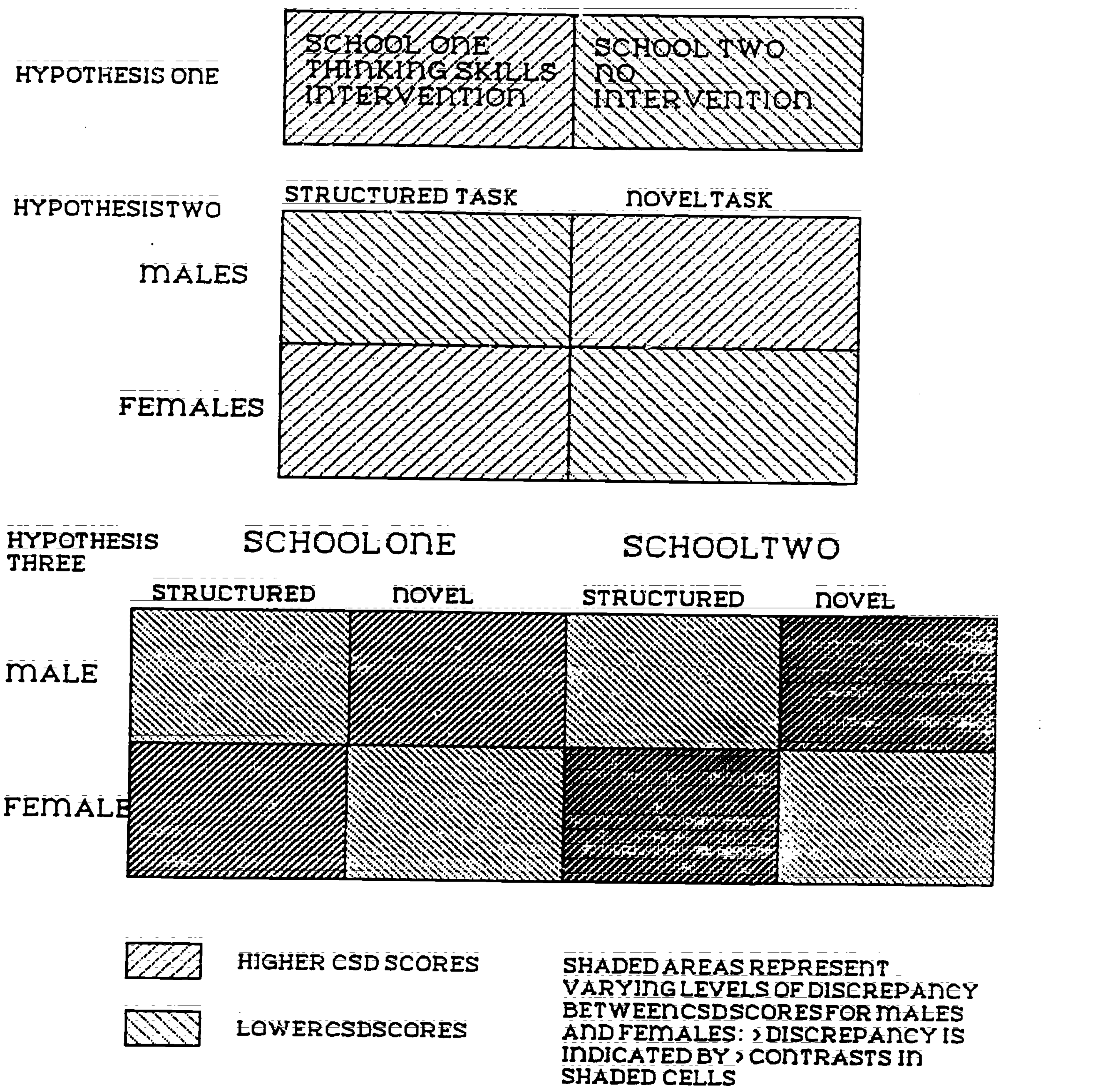
6. Ability to plan ahead and logically organize the steps involved in solving a problem
7. Ability to adapt one's problem-solving to an unexpected occurance

8. Ability to evaluate possible problem-solving strategies, questions, and resources

In the interview, novel task, students were also assessed on three additional components of cognitive development which promote effective problem-solving:

9. Communicative competence: vocabulary, ability to follow a line of questioning, and logical development of response
10. Creative thinking: using imagination, visualizing the task
11. Perspective taking: personalizing the task, having a sense of others in solving the task

# DESIGN




THE DESIGN EXAMINES GROUP DIFFERENCES ON EACH OF THE MEASURES FOR MAIN PROGRAM EFFECTS. MALES AND FEMALES WITHIN AND ACROSS GROUPS WERE COMPARED FOR DIFFERENCES IN BOTH MEASURES OF COGNITIVE SKILL DEVELOPMENT (CSD). DATA FROM BOTH SCHOOLS WAS COMBINED INTO A 2 X 2 FACTORIAL DESIGN. SINCE CSD MEASURES ARE CONSIDERED INDEPENDENT, ANOVAS WERE APPLIED TO FIND HOW EACH VARIABLE WAS AFFECTED BY THE GENDER-TREATMENT INTERACTION.

## RESULTS

Hypothesis 1: Students in the program school will demonstrate significantly greater development in cognitive skills from pre-to-post measures than students in the comparison (non-program) school.

Program and comparison students at the beginning of the 5th grade (pre-tests). As table 1 indicates, at the start of 5th grade, students in the program school showed greater development than comparison school students in some critical thinking skills. In solving the novel task (rearranging a classroom for better use of space), program students demonstrated a greater ability to think of resources to help them, and showed more diversity in their resource ideas and strategies than comparison students. Program students also scored significantly higher in thinking creatively and varying their perspective when solving the novel problem.

In the structured task (written test), significant differences between schools were absent except program students were more facile than comparison students at adapting their thinking to unexpected events .

Students exposed to a critical thinking program the previous year demonstrated a greater development than comparison students in some elementary critical thinking skills, such as generating a greater number of problem-solving resources. The program students also demonstrated a greater ability to use skills such as perspective taking and to be flexible in their thinking. but generally they were not significantly different than comparison students in their ability to engage more sophisticated problem-solving skills such as planning, evaluating, and avoiding irrelevant strategies. These differences in problem-solving, which may be a result of one group having been exposed to a critical thinking curricula during the fourth grade (even though the program was erratically implemented during its first year) are evident almost exclusively in the novel problem-solving/interview situation. Is there something about the development of critical thinking skills, or about the tasks that enables students to "try out" new problem-solving strategies in novel situations, but inhibits them from evidencing them in a traditional paper and pencil assessment?

It is likely that program students had more practice than the comparison students in dialogue and verbalizing their thinking. One of the objectives of the program school was to encourage students to articulate thinking and conditions in the classrooms were designed to promote this goal. Although we did not conduct systematic observations of the comparison classes, we can comment on the physical settings and their possible influence on the development and expression of students' critical thinking skills. In the program school the 5th graders' desks were in small clusters, enabling students to work in groups; in the comparison school, 5th graders sat in rows which makes it more difficult for students to work together and talk about what they are doing and why. The comparison students may also have been less apt to work in small groups because their class was a team-taught classroom with double the number of students; the program 5th grade classes were in single classrooms, each taught by one teacher.

<u>Gains in critical thinking skills during 5th grade</u>. Both the program school students and students in the comparison school made significant gains in critical thinking skills. These gains were more evident in the novel/oral presentation task.

In the structured problem-solving task, in which the children provided written answers to everyday tasks, the program students showed significant increases in their ability to think of ways to solve a problem and resources to help them. They also demonstrated a significant increase in their ability to evaluate the appropriateness and effectiveness of problem-solving strategies. Program school students showed no significant increases in the diversity of their problem solving ideas or in their planning or adaptive thinking skills.

In the structured task, the comparison school children made gains in fewer skills than the program students. These students made significant gains in their ability to think of diverse problem-solving resources and in their ability to adapt problem-solving plans to unexpected events. However, they did not evidence significant improvement in the basic problem-solving skill areas of generating strategies, resources, and evaluating.

Both groups made significant and widespread gains in cognitive skill development as evidenced in the novel task. In fact, on this task, the comparison school students demonstrated development in all but one skill area (diversity of resources); the program school evidence significant positive change in only three of the seven skill areas.

We believe these surprising results are related to the administration of the interview (novel task). During the process of collecting and analyzing the data, an independent rater determined that although following a standardized protocol, there were significant differences in the ways the two researchers responded to the students' answers. One researcher, reflecting her psychological testing background, responded with neutral "yes", "OK", or "can you think of anything else?" The other researcher, reflecting her counseling and teaching background responded by clarifying and elaborating the students' answers.

However, this was not necessarily a problem for the study because we had carefully balanced our design with each researcher interviewing an equal number of boys and girls from each class. All went well with the pre-test, and the results substantiated the expected (see discussion of Program and comparison students at beginning of 5th grade), that program students scored higher on some of the skills even before 5th grade, most likely as a result of exposure to the program in the 4th grade.

However, just as the final segment of post-testing was underway, nature intervened in the balanced study. The neutral-response researcher's daughter was born four weeks ahead of schedule. The reflective-response researcher took over and conducted 85% of the comparison school interviews. T-tests revealed a significant and systematic trend for students interviewed by the reflective-response researcher to have an average of one to two more strategies/plans/resources etc., for solving post-test novel tasks than students interviewed by the neutral-response researcher.

It is plausible that several other factors also contributed to the significant increase in comparison school children's novel problem solving. First, it is likely that some development will occur naturally, without a formalized curricula. And, it is likely that good teachers naturally include activities which promote good thinking skills into their classroom activities.

In addition, experiential learning may have played a role in the significant development of gains demonstrated by the comparison school on the novel task. During the post-interview about preparing for 6th grade comparison students reported that they had recently attended an orientation at their new junior high school. Program students reported that they were planning to attend their orientation in the near future. On the post-survey for the structured task, students were asked to plan out the steps in writing Jan's report. The comparison school teachers commented that this was a very relevant task for their students since they had just completed writing reports for class (as recently as the week prior to the survey). Students in the comparison school made significant gains on two measures of cognitive skills which related to Jan's report: diversity of problem-solving strategies and questions and ability to adapt one's problem-solving to an unexpected occurance. These results suggest that when students are actively involved in tasks and experiences which employ critical thinking, the development and application of these critical thinking skills are made salient to them when they are called upon to demonstrate their cognitive skill development in related tasks.

Hypothesis 2: Males and females in each group will differ on pre-test and post-test measures of cognitive skill development. Specifically, males will have significantly higher scores than females on measures of cognitive skill development in the novel task and females will have significantly higher scores than males on measures of cognitive skill development in the structured task.

Thinking Skills Instruction. Classroom observations (See Figure one) of the strategies used by teachers for teaching thinking yielded a profile which indicated questioning strategies (16%), prescription of student behaviors (13%), and clarification and expansion of students' responses (10%) were the three most frequently exhibited categories for teaching thinking. The two categories which had the highest frequencies of "missed opportunities" involved communicating the intentionality of instruction (32%) and summation and transcendence at the close of a unit of instruction (29%). Of these categories of observations, 41% of the teaching strategies were directed toward individual students.

Figure 2 shows the breakdown by gender and category for this percentage. Each category represents 100% of all the observed individual student-teacher interactions within that category. Across all categories, more thinking strategies are directed toward male students (81%) than female students (19%). Within the most frequently represented teaching thinking categories, male student-teacher interactions also dominate (e.g. 83% of individual questioning strategies were directed toward male students). Female students receive an equal amount of teaching thinking time in 4 of

18 categories, including use of vocabulary, bringing closure to a unit of instruction, questions used as a vehicle for classroom climate and control, and teacher modeling of thinking. They dominate in only one category (100%)--teaching routines (e.g., attendance, lunch count), which by definition is not a teaching thinking category. Wait time, bridging, and discipline strategies are solely targeted toward male students (100% of all individual interactions).

The Thinkabout program used in conjunction with classroom strategies for teaching thinking appeared to balance out the gender bias (see Table 4). Of the 60 15-minute video sessions, 3 were narrated and presented with no individual characters. 14% of the sessions involved groups of youngsters cooperatively involved in solving a problem. Of those sessions involving individual main and supporting characters, 44% of the sessions had male youth in the main (49%) or supporting (61%) role and 42% involved female youth in these roles (51% and 39% respectively). Females actually dominated in the main character roles. However, the students' responses to questions about the content and importance of the sessions indicated that a task or problem orientation was stressed more often than a social-interpersonal orientation (see Table 5). Most importantly, students perceived the sessions as emphasizing an orientation toward the self (i.e.,one's ability to feel confident in, monitor, and be responsible for oneself).

Gender-related differences in critical thinking skills. There were no significant differences in thinking skills between boys and girls in the pre-interview or pre-skills tests. All of the significant gender-related differences in thinking skills post tests support the hypothesis that males will have higher scores on the novel task and girls will have higher scores on the structured task. On the novel task, boys had significantly higher communicative competence scores than girls, $F_{(1)}=3.38$, $p=.08$. On the structured task, girls had significantly higher adaptive thinking scores than boys, $F_{(1)}=3.99$, $p=.057$, and had a significantly higher general problem-solving score (a composite reflecting breadth and depth of fundamental problem-solving skills) than boys, $F_{(1)}=5.2$, $p=.034$. These results suggest that sex-typed information and experiences in-class may be associated with gender-related differences in the development and expression of thinking and problem-solving skills, with boys excelling in oral presentation and spontaneous problem-solving and girls proficient in the written presentation of solutions to more structured and more familiar problem situations.

Hypothesis 3: The thinking skills intervention will reduce the discrepancy between males' and females' cognitive skill development. The post-test scores for males and females in school one will be less significantly different than those of males and females in school two.

<u>Within-school gender-related differences in the intelligent behavior of students.</u> Although gender appeared to play a minor role, generally the task presented to the students' was more influential in shaping the content of their responses than any differences in orientation and socialization patterns noted by other researchers (Gilligan, 1982). The thinking skills intervention appeared to equalize the tendency for males to represent the task from a problem orientation (75% at pre-intervention) to a social orientation (45.5% at post-intervention). Females in school 1 seemed to be equally as flexible at pre-and-post intervention interview assessments, and evidenced the greatest sensitivity to the task structure and content (e.g. in the problem oriented task 68% of their representations reflected a problem orientation. This pattern reversed in the social-interpersonal orientation task) (see Table 6).

The discrepancy between males and females thinking skills processes (i.e., representation and consequential thinking orientations) was greater in the non-intervention school than in the intervention school (see Tables 6-8). This trend was contradicted once by females in School 1 on measures of means-end thinking during the structured task. Of the four groups, these female students' responses supported what other researchers have found. Females in school 1 listed interpersonal communication methods as the primary vehicle (78% & 83%) for warning groups about a life-threatening hazard (see Table 9). For the majority of the measures, these results supported the third hypothesis.

Analyses of the within-school gender-related differences in thinking skills development (pre-post tests) were not conducted because the N's were too small. However, 2-way Anova's revealed a systematic pattern of significant school X sex interactions on four of eight post test novel task scores (ability to generate problem-solving strategies, communicative competence, creative thinking, perspective taking). All interactions reveal higher scores for comparison females than program females, and lower or equal scores for comparison males than program males. These interactions also showed a greater within-school discrepancy between males and females in the program school. It is likely that this pattern of increased thinking competence in the novel task by comparison school girls is related to differences in interviewer styles discussed in Hypothesis 1

## DISCUSSION

Programs and curriculum designed to foster and improve critical thinking skills in children often suggest that teachers should employ teaching strategies that allow children greater wait-time before responding to questions. Additionally, teachers are often encouraged to include more open-ended and unstructured questions in their repertoire of questioning strategies, trusting that such questions will result in higher order cognitive functioning in students.

In fact, this was an explicit goal of the intervention school. This school appeared to work from an implicit model of children's thinking which resembles current information-processing models of cognitive functioning. Using this model (input-processing-output), they emphasized the quality and level of input students received as a means of improving students' output or thinking performance. The most frequently represented category of teaching thinking strategies was the teachers' utilization of questioning strategies.

While such questioning strategies have obvious merit over rote questions and simple recall and recitation strategies, the results of this study suggest that in the upper elementary grades more guidance, structure, and scaffolding responses should accompany questioning strategies so that students become aware of their thinking processes and become more proficient at monitoring their own thinking during question-answer periods and problem-solving tasks. During classroom observations only 7% of the teaching behaviors exhibited involved active strategies to get students to talk about their thinking (i.e., increase students' metacognition). Likewise, students were observed demonstrating this ability (metacognition) only 3% of the time during their responses and participation in classroom processes (see Figure 3).

While a standard protocol was used in all interview cases, an analysis of interviewing styles yielded two distinct profiles: interviewer A utilized an experimental psychological research approach; interviewer B utilized a clinical psychological approach. These differences were accounted for in the design for data collection and a balance was achieved at both schools during the pre-assessments, and for school 1 during the post-assessments. However, during the post-interview assessments an unanticipated event resulted in interviewer B assessing 17 out of the 20 students in school 2. Her interviewing style involved guidance during the processing of responses to interview questions by providing reflective, clarifying, and affirmative feedback to students' responses.

In this study, students generally seem to benefit from a thinking skills intervention, and their own cognitive development appears to be cumulatively affected by exposure to such programs. Girls seem better prepared in general problem solving skills which are foundational to any type of problem or task they might encounter. They differed significantly from the boys in their ability to generate alternatives, resources, diversity of consequences and adaptive thinking in the structured task. Boys did not differ significantly from girls in the novel task except on one measure--communicative competence. They were more at ease with speaking out in the interview, brainstorming and articulating their thinking about the problem.

When the post-interview analysis singled out those students assessed by Interviewer B, girls in school 2 revealed the greatest gains on measures of cognitive development of any of the four groups. In structured tasks girls are more able to demonstrate the foundation or general thinking skills they have acquired. When girls are exposed to questioning strategies (input) coupled with clinical strategies that encourage them to reaffirm, monitor(or evaluate) and talk about their thinking (guided processing) they are able to perform or think effectively on novel tasks as well.

These unanticipated results may well be the most provocative finding of this study, primarily because they challenge current conventions in critical thinking skills curriculum which focus on input strategies while virtually ignoring the multiple strategies for guiding and structuring the students' processing during thinking. Furthermore, given the gender-related differences that were evidenced in the different task situations, greater attention needs to be paid to guiding boys in their development of general and thorough problem-solving skills and girls in their development of on-the-spot thinking and communication skills. Thus, both boys and girls should be given opportunities to think more completely and function more effectively across diverse tasks and problem-solving contexts.

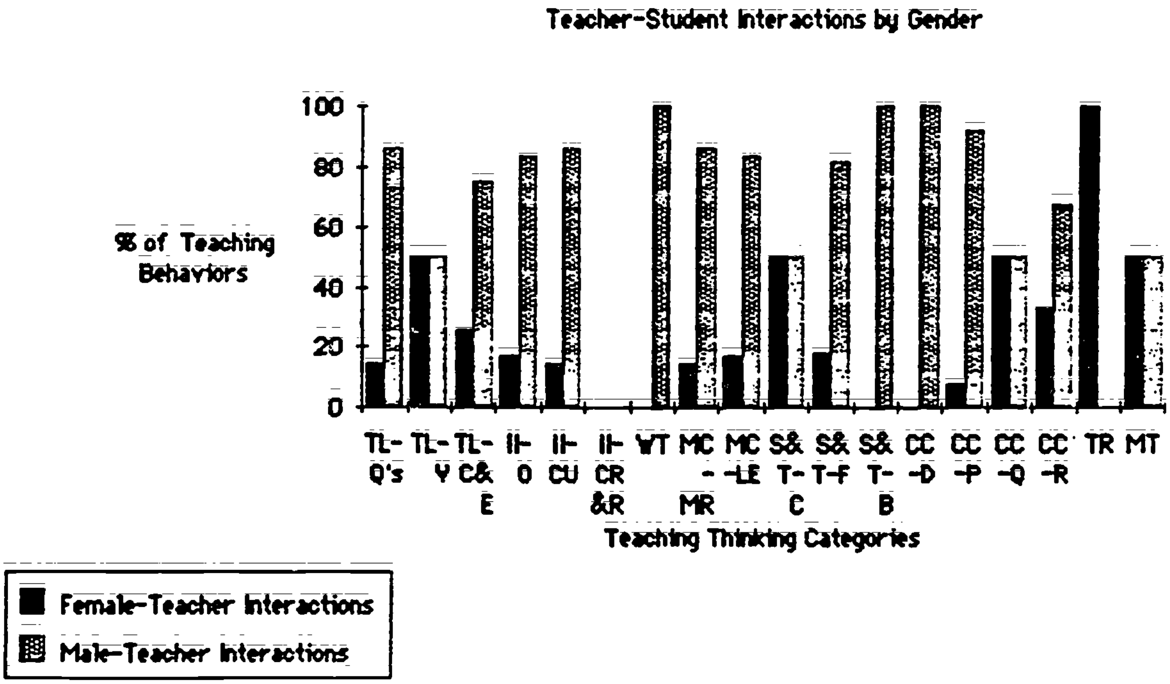



FIGURE 2

These percentages were derived from the total % of classroom observations of teacher behaviors which involved individual student-teacher interactions (41%) vs. group-teacher interactions (59%). Clearly, the dominant mode for teacher interactions with the class is to interact according to convention: by teaching to the whole class. Within the individual student-teacher interactions categories, males interacted 4 times as frequently with the teacher than did females. However, observations of student behaviors indicated that male students were only twice as likely to initiate interactions or respond to others (including peers and teacher) than were female students.

## Legend for Figures 1 & 2

Missed Opportunities

| Teaching Thinkir | % of Teacher B |
|---|---|
| TL-Q's | 3 |
| TL-V | 3 |
| TL-C&E | 8 |
| II-O | 11 |
| II-CU | 9 |
| II-CR&R | 12 |
| WT | 8 |
| MC-MR | 5 |
| MC-LE | 8 |
| S&T-C | 15 |
| S&T-F | 5 |
| S&T-B | 9 |
| CC-D | 3 |
| CC-P | 2 |
| CC-Q | 0 |
| CC-R | 0 |
| TR | 0 |
| MT | 2 |

Exhibited Behaviors

| Teaching Thinkir | % of Teacher B |
|---|---|
| TL-Q's | 16 |
| TL-V | 6 |
| TL-C&E | 10 |
| II-O | 7 |
| II-CU | 5 |
| II-CR&R | 5 |
| WT | 3 |
| MC-MR | 5 |
| MC-LE | 2 |
| S&T-C | 2 |
| S&T-F | 6 |
| S&T-B | 6 |
| CC-D | 8 |
| CC-P | 13 |
| CC-Q | 2 |
| CC-R | 3 |
| TR | 5 |
| MT | 3 |

CODES FOR TEACHING THINKING CATEGORIES

TL-Q's = TEACHING LANGUAGE: QUESTIONING STRATEGIES
TL-V = TEACHING LANGUAGE: INTRODUCTION OF VOCABULARY
TL-C&E = TEACHING LANGUAGE: CLARIFICATION & EXPANSION OF STUDENT RESPONSES
II-O = INTENTIONALITY OF INSTRUCTION: STATING CLEAR OBJECTIVES
II-CU = INTENTIONALITY OF INSTRUCTION: CHECKING FOR UNDERSTANDING
II-CR&R = INTENTIONALITY OF INSTRUCTION: COMMUNICATES RELEVANCE & RATIONALE
WT = WAIT TIME FOR THINKING
MC-MR = METACOGNITION: GETTING STUDENTS TO SHARE MENTAL REPRESENTATIONS
MC-LE = METACOGNITION: GETTING STUDENTS TO PROVIDE LOGICAL EVIDENCE FOR ASSUMPTIONS
S&T-C = SUMMATION & TRANSCENDENCE: PROVIDING CLOSURE ON UNIT
S&T-F = SUMMATION & TRANSCENDENCE: PROVIDING FEEDBACK REGARDING STUDENT PERFORMANCE & THINKING
S&T-B = SUMMATION & TRANSCENDENCE: BRIDGING TO OTHER DOMAINS AND RELEVANT LEARNING
CC-D = CLIMATE CONTROL: DISCIPLINE*
CC-P = CLIMATE CONTROL: PRESCRIBING STUDENT BEHAVIORS
CC-Q = CLIMATE CONTROL: ASKING QUESTIONS FOR STUDENTS TO SELF-REGULATE
CC-R = CLIMATE CONTROL: INVITATIONS FOR SHARING RESPONSIBILITY
TR = TEACHER ROUTINES*
MT = MODELING GOOD THINKING

*THESE CATEGORIES WERE NOT REFLECTIVE OF STRATEGIES FOR TEACHING CHILDREN TO THINK, BUT REPRESENTED A GREAT NUMBER OF THOSE TEACHING BEHAVIORS WE OBSERVED, THEREFORE WERE INCLUDED IN THE CATEGORIES

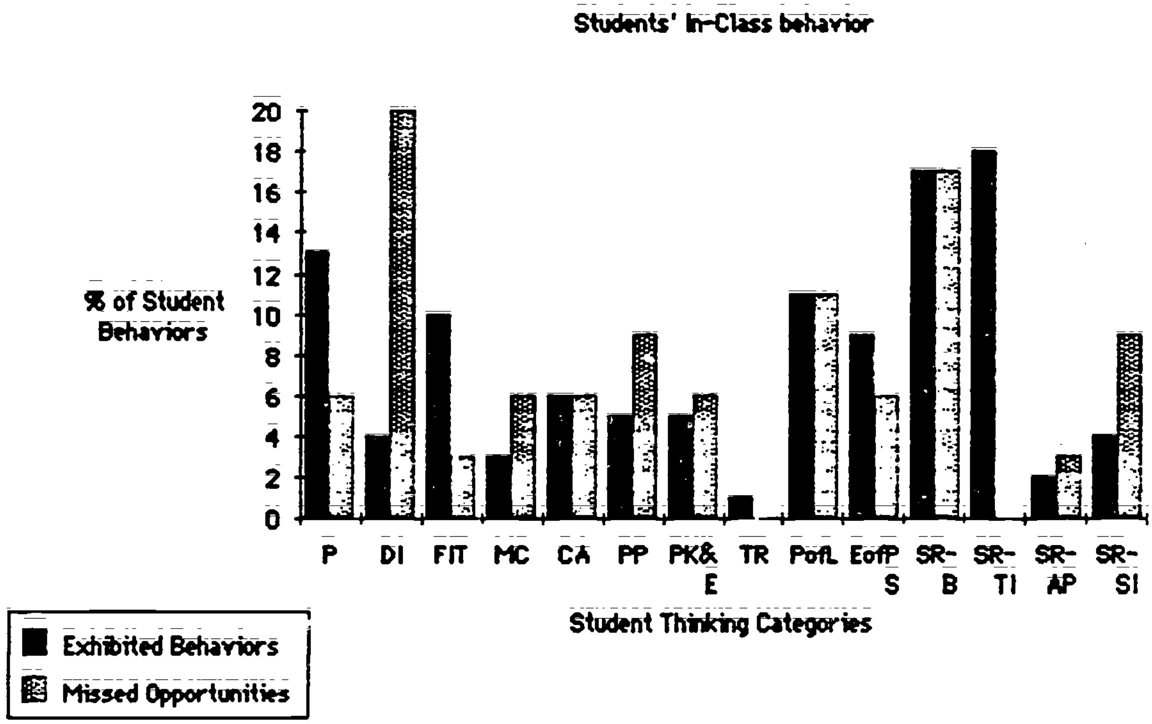

Students' In-Class behavior
% of Student Behaviors
20
18
16
14
12
10
8
6
4
2
0
P
DI
FIT
MC
CA
PP
PK& E
TR
PofL
EofP S
SR-B
SR-TI
SR-AP
SR-SI
Student Thinking Categories
Exhibited Behaviors
Missed Opportunities

FIGURE 3

## Legend for Figure 3

Missed Opportunities

| Student Thinkinc | % of Student Be |
|---|---|
| P | 6 |
| DI | 20 |
| FIT | 3 |
| MC | 6 |
| CA | 6 |
| PP | 9 |
| PK&E | 6 |
| TR | 0 |
| PofL | 11 |
| EofPS | 6 |
| SR-B | 17 |
| SR-TI | 0 |
| SR-AP | 3 |
| SR-SI | 9 |

CODES FOR STUDENT THINKING CATEGORIES

P = PERSEVERANCE
DI = DECREASING IMPULSIVITY
FIT = FLEXIBILITY IN THINKING
MC = METACOGNITION
CA = CHECKING FOR ACCURACY
PP = PROBLEM POSING
PK&E = DRAWING ON PRIOR KNOWLEDGE & EXPERIENCE
TR = TRANSFERENCE BEYOND LEARNING SITUATION
PofL = PRECISION OF LANGUAGE
EofPS = ENJOYMENT OF PROBLEM SOLVING
SR-B = SELF-REGULATION OF BEHAVIOR
SR-TI = SELF-REGULATION BY TAKING INITIATIVE
SR-AP = SELF-REGULATION IN TAKING AN ALTERNATIVE PERSPECTIVE
SR-SI = SELF-REGULATION IN INITIATING SOCIAL INTERACTION

Exhibited Behaviors

| Student Thinkinc | % of Student Be |
|---|---|
| P | 13 |
| DI | 4 |
| FIT | 10 |
| MC | 3 |
| CA | 6 |
| PP | 5 |
| PK&E | 5 |
| TR | 1 |
| PofL | 11 |
| EofPS | 9 |
| SR-B | 17 |
| SR-TI | 18 |
| SR-AP | 2 |
| SR-SI | 4 |

Table 1

Mean Difference in Thinking Skills Between Program and Comparison School at Onset of 5th Grade (Pre-Test)

| | Novel Task (Interview) | | | Structured Task (Written Test) | | |
|---|---|---|---|---|---|---|
| | Means Prog/Comp | t | p | Means Prog/Comp | t | p |
| **Thinking Skills** | | | | | | |
| 1 | 2.87/2.19 | 1.44 | NS | 15.35/17.81 | 1.82 | NS |
| 2 | 2.34/1.88 | 1.99 | .05 | 11.13/10.00 | 1.21 | NS |
| 3 | 2.38/1.48 | 3.28 | .002 | 2.00/2.35 | .95 | NS |
| 4 | 4.93/3.31 | 2.96 | .006 | ---- | --- | -- |
| 5 | .47/.50 | 0.10 | NS | 1.81/2.29 | 1.75 | NS |
| 6 | ----- | -- | ---- | 5.22/5.05 | .37 | NS |
| 7 | ----- | -- | ---- | 5.53/3.98 | 2.32 | .03 |
| 8 | ----- | -- | ---- | 3.71/3.52 | 1.35 | NS |
| 9 | 10.44/9.31 | 1.52 | NS | ----- | -- | --- |
| 10 | 7.26/5.13 | 3.50 | .001 | ----- | -- | --- |
| 11 | 10.32/8.82 | 2.15 | .04 | ----- | -- | --- |

## Table 2
## Mean Gains in Critical Thinking Skills During 5th Grade Within Program and Comparison Schools (Pre-Post Test Comparisons)

### Novel Task (Interview)

| Thinking Skills | Program School Means Pre/Post | t | p | Comparison School Means Pre/Post | t | p |
|---|---|---|---|---|---|---|
| 1 | 2.99/3.91 | 3.25 | .005 | 2.14/4.50 | 7.16 | .0001 |
| 2 | 2.36/2.94 | 2.33 | .032 | 1.82/3.00 | 5.52 | .0001 |
| 3 | 2.39/3.11 | 2.06 | .05 | 1.42/2.43 | 3.00 | .0001 |
| 4 | 4.67/5.08 | 1.45 | NS | 3.14/2.78 | 2.09 | NS |
| 5 | .36/.17 | .89 | NS | .53/.00 | 4.37 | .001 |
| 6 | ----- | -- | ---- | ----- | -- | ---- |
| 7 | ----- | -- | ---- | ----- | -- | ---- |
| 8 | ----- | -- | ---- | ----- | -- | ---- |
| 9 | 10.20/10.93 | 1.41 | NS | 0.33/10.83 | 2.69 | .021 |
| 10 | 7.14/6.28 | 1.50 | NS | 5.07/6.31 | 2.48 | .029 |
| 11 | 10.17/10.47 | .46 | NS | 8.46/10.92 | 5.69 | .0001 |

### Structured Task (Written Test)

| Thinking Skills | Program School Means Pre/Post | t | p | Comparison School Means Pre/Post | t | p |
|---|---|---|---|---|---|---|
| 1 | 16.03/17.75 | 3.41 | .006 | 17.57/15.92 | .94 | NS |
| 2 | 11.45/11.81 | .35 | NS | 9.86/11.36 | 2.50 | .03 |
| 3 | 2.08/3.00 | 2.30 | .05 | 2.46/2.66 | .49 | NS |
| 4 | ----- | -- | ---- | ----- | -- | ---- |
| 5 | .92/1.61 | .38 | NS | 2.20/1.66 | 1.07 | NS |
| 6 | 5.28/6.00 | 1.18 | NS | 5.06/5.93 | 2.05 | NS |
| 7 | 5.38/6.23 | 1.44 | NS | 3.86/5.06 | 2.55 | .02 |
| 8 | 3.74/3.43 | 2.23 | .04 | 3.56/3.59 | .19 | NS |
| 9 | ----- | -- | ---- | ----- | -- | ---- |
| 10 | ----- | -- | ---- | ----- | -- | ---- |
| 11 | ----- | -- | ---- | ----- | -- | ---- |

## Table 4
## Gender Differences in ThinkAbout Sessions

### Main Characters

| Group* | Male | Female |
|---|---|---|
| 22% | 49% | 51% |

### Supporting Characters

| Group* | Male | Female |
|---|---|---|
| 9% | 61% | 39% |

### Summary Characterization

| Group | Male | Female |
|---|---|---|
| 14% | 44% | 42% |

* Group - 3 or more of male and female characters. Additionally, each of the male and female categories were counted as being represented when a group appeared as the main or supporting character in the session. Same-sex groups of two ore more are recorded only once in the corresponding gender category. These groups were not represented in the group category.

N- 57 sessions. 3 of the 60 sessions were narrated and no characters appeared during the session

## Table 5

## STUDENT RECEPTIVITY & REPRESENTATION OF THE TEACHING OF THINKING

| | NEW LEARNING | INTERPERSONAL SKILLS | SELF-REGULATION | PROBLEM SOLVING |
|---|---|---|---|---|
| CONTENT OF PROGRAMS | 0% | 12% | 32% | 56% |
| IMPORTANCE OF PROGRAMS | 10% | 3% | 45% | 42% |
| RELATIONSHIP TO OTHER SUBJECTS | 25% | 25% | 33% | 17% |
| TRANSFER TO OTHER SITUATIONS | 25% | 12.5% | 62.5% | 0% |

Each of the categories represent mutually exclusive information and ideas generated by the students as to the content and importance of the ThinkAbout sessions they viewed throughout the year. These percentages reflect the breakdown in students' responses after they had viewed the complete ThinkAbout program (session # = 60) **New learning** refers to students' responses which reflected a gain in knowledge, information, or ideas (e.g., "You can get into trouble if you don't know what to do). **Interpersonal Skills** refers to students' responses which reflected an orientation toward others, social situations, or gaining skills in social interaction and communication (e.g., Help people get along with others). **Self Regulation & Self Efficacy** refers to students' responses which reflected an orientation toward self and one's ability to monitor and be responsible for oneself (e.g., If you doubt yourself you won't do it). **Problem solving** refers to students' responses that reflected a gain in skills (e.g., use time, make more sense and be better prepared):

Questions asked included: 1) What did the program teach you? 2) What's important about the programs? 3) How do the ThinkAbout sessions relate to what you're learning in other subjects? 4) In what situations outside of school do you think you could use the things you learned in ThinkAbout?

## Table 6

## GENDER DIFFERENCES IN PROBLEM REPRESENTATION

### Novel Task

| SOCIAL INTERPERSONAL FOCUS<br>Self & Problem in relation to others | | TASK- PROBLEM ORIENTATION<br>Self & Problem in relation to physical world | |
|---|---|---|---|
| **PRE: Prompt = spontaneous things to think about in rearranging a classroom** | | | |
| **Males:** | | | **N** |
| School 1 | 25% | 75% | 12 |
| School 2 | 23% | 77% | 11 |
| **Females:** | | | |
| School 1 | 32% | 68% | 9 |
| School 2 | 65% | 35% | 9 |
| **POST: Prompt = spontaneous things to think about going into 6th grade** | | | |
| **Males:** | | | **N** |
| School 1 | 45.5% | 54.5% | 12 |
| School 2 | 25% | 75% | 11 |
| **Females:** | | | |
| School 1 | 67% | 33% | 9 |
| School 2 | 51.5% | 48.5% | 9 |

**Content analysis of spontaneous representation and consequential thinking reflects the following coding scheme and construct definitions:**

1) the first three (3) items spontaneously generated by students' were categorized and recorded and figured into the percentages
2) When 2 or < items listed under prompt in interview were also included
3) In consequential post thinking, only first item of each of three prompts was included. If 2 or < listed, 1st 2 items of prompt 1, and 1st of prompt 2.

**Construct definitions:**

1) Social-Interpersonal orientation: State of being, emotions, sensitivity to individual regulation of behavior and use of action in relation to others or for purposes of cooperation.
2) Task-Problem orientation: Sense of management, maintenance or application of skills to task or environment in which problem is contextualized.

## Table 7

### GENDER DIFFERENCES IN CONSEQUENTIAL THINKING

### Novel Task

| | SOCIAL INTERPERSONAL FOCUS<br>Self & Problem in relation to others | TASK-PROBLEM ORIENTATION<br>Self & Problem in relation to physical world | |
|---|---|---|---|
| **PRE: Prompt - What might happen if noone thought of 'x' in rearranging the classroom** | | | |
| **Males:** | | | **N** |
| School 1 | 35.5% | 64.5% | 12 |
| School 2 | 26% | 64% | 11 |
| **Females:** | | | |
| School 1 | 36% | 64% | 9 |
| School 2 | 35% | 65% | 9 |
| **POST: Prompt - Another thing that might happen in the 6th grade is:** | | | |
| **Males:** | | | **N** |
| School 1 | 45.5% | 44.5% | 12 |
| School 2 | 19.5% | 80.5% | 11 |
| **Females:** | | | |
| School 1 | 42% | 58% | 9 |
| School 2 | 52% | 48% | 9 |

Content analysis of spontaneous representation and consequential thinking reflects the following coding scheme and construct definitions:

1) the first three (3) items spontaneously generated by students' were categorized and recorded and figured into the percentages
2) When 2 or < items listed under prompt in interview were also included
3) In consequential post thinking, only first item of each of three prompts was included. If 2 or < listed, 1st 2 items of prompt 1, and 1st of prompt 2.

Construct definitions:

1) Social-interpersonal orientation: State of being, emotions, sensitivity to individual regulation of behavior and use of action in relation to others or for purposes of cooperation.
2) Task-Problem orientation: Sense of management, maintenance or application of skills to task or environment in which problem is contextualized.

## Table 8
## GENDER DIFFERENCES IN PROBLEM REPRESENTATION

### Structured Task

| | SOCIAL INTERPERSONAL FOCUS<br>Self & Problem in relation to others | TASK- PROBLEM ORIENTATION<br>Self & Problem in relation to physical world | |
|---|---|---|---|
| **PRE: Prompt - What questions might you want to ask Marie( with regards to her vegetable garden?)** | | | |
| **Males:** | | | **N** |
| School 1 | 27% | 73% | 12 |
| School 2 | 18% | 82% | 11 |
| **Females:** | | | |
| School 1 | 56% | 44% | 9 |
| School 2 | 0% | 100% | 9 |
| **POST: Prompt - What questions might you want to ask Brian (with regard to his cookies?)** | | | |
| **Males:** | | | **N** |
| School 1 | 25% | 75% | 12 |
| School 2 | 27% | 73% | 11 |
| **Females:** | | | |
| School 1 | 22% | 78% | 9 |
| School 2 | 12.5% | 87.5% | 9 |

## Table 9

### GENDER DIFFERENCES IN MEANS-END & CONSEQUENTIAL THINKING

**Structured Task**

| **ORAL PRESENTATION** Formal or informal/group and individual presentation | | **MEDIA OR WRITTEN PRESENTATION** Use of printed/film/visual/audio material presentation | | |
|---|---|---|---|---|
| **PRE: Prompt = Ways to warn groups in relation to poisons** | | | | |
| **Males:** | | | **N** | **Don't Know** |
| School 1 | 60% | 30% | 12 | 10% |
| School 2 | 30% | 54% | 11 | 16% |
| **Females:** | | | | |
| School 1 | 78% | 22% | 9 | 0% |
| School 2 | 36% | 50% | 9 | 14% |
| **POST: Prompt = Ways to warn groups in relation to throw-away refrigerators** | | | | |
| **Males:** | | | **N** | **Don't Know** |
| School 1 | 27% | 67% | 12 | 6% |
| School 2 | 37.5% | 37.5% | 11 | 25% |
| **Females:** | | | | |
| School 1 | 83% | 17% | 9 | 0% |
| School 2 | 50% | 36% | 9 | 14% |

## Table 1

**Mean Difference in Thinking Skills Between Program and Comparison School at Onset of 5th Grade (Pre-Test)**

| | Novel Task (Interview) | | | Structured Task (Written Test) | | |
|---|---|---|---|---|---|---|
| Thinking Skills | Means Prog/Comp | t | p | Means Prog/Comp | t | p |
| 1 | 2.87/2.19 | 1.44 | NS | 15.35/17.81 | 1.82 | NS |
| 2 | 2.34/1.88 | 1.99 | .05 | 11.13/10.00 | 1.21 | NS |
| 3 | 2.38/1.48 | 3.28 | .002 | 2.00/2.35 | .95 | NS |
| 4 | 4.93/3.31 | 2.96 | .006 | ---- | --- | -- |
| 5 | .47/.50 | 0.10 | NS | 1.81/2.29 | 1.75 | NS |
| 6 | ----- | -- | ---- | 5.22/5.05 | .37 | NS |
| 7 | ----- | -- | ---- | 5.53/3.98 | 2.32 | .03 |
| 8 | ----- | -- | ---- | 3.71/3.52 | 1.35 | NS |
| 9 | 10.44/9.31 | 1.52 | NS | ----- | -- | --- |
| 10 | 7.26/5.13 | 3.50 | .001 | ----- | -- | --- |
| 11 | 10.32/8.82 | 2.15 | .04 | ----- | -- | --- |

Table 2
Mean Gains in Critical Thinking Skills During 5th Grade
Within Program and Comparison Schools
(Pre-Post Test Comparisons)

Novel Task (Interview)

| Thinking Skills | Program School Means Pre/Post | t | p | Comparison School Means Pre/Post | t | p |
|---|---|---|---|---|---|---|
| 1 | 2.99/3.91 | 3.25 | .005 | 2.14/4.50 | 7.16 | .0001 |
| 2 | 2.36/2.94 | 2.33 | .032 | 1.82/3.00 | 5.52 | .0001 |
| 3 | 2.39/3.11 | 2.06 | .05 | 1.42/2.43 | 3.00 | .0001 |
| 4 | 4.67/5.08 | 1.45 | NS | 3.14/2.78 | 2.09 | NS |
| 5 | .36/.17 | .89 | NS | .53/.00 | 4.37 | .001 |
| 6 | ----- | -- | ---- | ----- | -- | ---- |
| 7 | ----- | -- | ---- | ----- | -- | ---- |
| 8 | ----- | -- | ---- | ----- | -- | ---- |
| 9 | 10.20/10.93 | 1.41 | NS | 0.33/10.83 | 2.69 | .021 |
| 10 | 7.14/6.28 | 1.50 | NS | 5.07/6.31 | 2.48 | .029 |
| 11 | 10.17/10.47 | .46 | NS | 8.46/10.92 | 5.69 | .0001 |

Structured Task (Written Test)

| Thinking Skills | Program School Means Pre/Post | t | p | Comparison School Means Pre/Post | t | p |
|---|---|---|---|---|---|---|
| 1 | 16.03/17.75 | 3.41 | .006 | 17.57/15.92 | .94 | NS |
| 2 | 11.45/11.81 | .35 | NS | 9.86/11.36 | 2.50 | .03 |
| 3 | 2.08/3.00 | 2.30 | .05 | 2.46/2.66 | .49 | NS |
| 4 | ----- | -- | ---- | ----- | -- | ---- |
| 5 | .92/1.61 | .38 | NS | 2.20/1.66 | 1.07 | NS |
| 6 | 5.28/6.00 | 1.18 | NS | 5.06/5.93 | 2.05 | NS |
| 7 | 5.38/6.23 | 1.44 | NS | 3.86/5.06 | 2.55 | .02 |
| 8 | 3.74/3.43 | 2.23 | .04 | 3.56/3.59 | .19 | NS |
| 9 | ----- | -- | ---- | ----- | -- | ---- |
| 10 | ----- | -- | ---- | ----- | -- | ---- |
| 11 | ----- | -- | ---- | ----- | -- | ---- |

## Table 4
## Gender Differences in ThinkAbout Sessions

### Main Characters

| Group* | Male | Female |
|---|---|---|
| 22% | 49% | 51% |

### Supporting Characters

| Group* | Male | Female |
|---|---|---|
| 9% | 61% | 39% |

### Summary Characterization

| Group | Male | Female |
|---|---|---|
| 14% | 44% | 42% |

* Group - 3 or more of male and female characters. Additionally, each of the male and female categories were counted as being represented when a group appeared as the main or supporting character in the session. Same-sex groups of two are more are recorded only once in the corresponding gender category. These groups were not represented in the group category.

N- 57 sessions. 3 of the 60 sessions were narrated and no characters appeared during the session

Table 5

## STUDENT RECEPTIVITY & REPRESENTATION OF THE TEACHING OF THINKING

| | NEW LEARNING | INTERPERSONAL SKILLS | SELF-REGULATION | PROBLEM SOLVING |
|---|---|---|---|---|
| CONTENT OF PROGRAMS | 0% | 12% | 32% | 56% |
| IMPORTANCE OF PROGRAMS | 10% | 3% | 45% | 42% |
| RELATIONSHIP TO OTHER SUBJECTS | 25% | 25% | 33% | 17% |
| TRANSFER TO OTHER SITUATIONS | 25% | 12.5% | 62.5% | 0% |

Each of the categories represent mutually exclusive information and ideas generated by the students as to the content and importance of the ThinkAbout sessions they viewed throughout the year. These percentages reflect the breakdown in students' responses after they had viewed the complete ThinkAbout program (session # = 60) **New learning** refers to students' responses which reflected a gain in knowledge, information, or ideas (e.g., "You can get into trouble if you don't know what to do). **Interpersonal Skills** refers to students' responses which reflected an orientation toward others, social situations, or gaining skills in social interaction and communication (e.g., Help people get along with others). **Self Regulation & Self Efficacy** refers to students' responses which reflected an orientation toward self and one's ability to monitor and be responsible for oneself (e.g., If you doubt yourself you won't do it). **Problem solving** refers to students' responses that reflected a gain in skills (e.g., use time, make more sense and be better prepared):

Questions asked included: 1) What did the program teach you? 2) What's important about the programs? 3) How do the ThinkAbout sessions relate to what you're learning in other subjects? 4) In what situations outside of school do you think you could use the things you learned in ThinkAbout?

## Table 6

## GENDER DIFFERENCES IN PROBLEM REPRESENTATION

### Novel Task

| | SOCIAL INTERPERSONAL FOCUS<br>Self & Problem in relation to others | TASK- PROBLEM ORIENTATION<br>Self & Problem in relation to physical world | |
|---|---|---|---|
| **PRE: Prompt = spontaneous things to think about in rearranging a classroom** | | | |
| **Males:** | | | N |
| School 1 | 25% | 75% | 12 |
| School 2 | 23% | 77% | 11 |
| **Females:** | | | |
| School 1 | 32% | 68% | 9 |
| School 2 | 65% | 35% | 9 |
| **POST: Prompt = spontaneous things to think about going into 6th grade** | | | |
| **Males:** | | | N |
| School 1 | 45.5% | 54.5% | 12 |
| School 2 | 25% | 75% | 11 |
| **Females:** | | | |
| School 1 | 67% | 33% | 9 |
| School 2 | 51.5% | 48.5% | 9 |

**Content analysis of spontaneous representation and consequential thinking reflects the following coding scheme and construct definitions:**

1) the first three (3) items spontaneously generated by students' were categorized and recorded and figured into the percentages
2) When 2 or < items listed under prompt in interview were also included
3) In consequential post thinking, only first item of each of three prompts was included. If 2 or < listed, 1st 2 items of prompt 1, and 1st of prompt 2.

**Construct definitions:**

1) Social-Interpersonal orientation: State of being, emotions, sensitivity to individual regulation of behavior and use of action in relation to others or for purposes of cooperation.
2) Task-Problem orientation: Sense of management, maintenance or application of skills to task or environment in which problem is contextualized.

## Table 7

### GENDER DIFFERENCES IN CONSEQUENTIAL THINKING

#### Novel Task

| | | SOCIAL INTERPERSONAL FOCUS<br>Self & Problem in relation to others | TASK-PROBLEM ORIENTATION<br>Self & Problem in relation to physical world | N |
|---|---|---|---|---|
| **PRE: Prompt - What might happen if noone thought of 'x' in rearranging the classroom** | | | | |
| Males: | | | | |
| | School 1 | 35.5% | 64.5% | 12 |
| | School 2 | 26% | 64% | 11 |
| Females: | | | | |
| | School 1 | 36% | 64% | 9 |
| | School 2 | 35% | 65% | 9 |
| **POST: Prompt - Another thing that might happen in the 6th grade is:** | | | | |
| Males: | | | | |
| | School 1 | 45.5% | 44.5% | 12 |
| | School 2 | 19.5% | 80.5% | 11 |
| Females: | | | | |
| | School 1 | 42% | 58% | 9 |
| | School 2 | 52% | 48% | 9 |

Content analysis of spontaneous representation and consequential thinking reflects the following coding scheme and construct definitions:

1) the first three (3) items spontaneously generated by students' were categorized and recorded and figured into the percentages
2) When 2 or < items listed under prompt in interview were also included
3) In consequential post thinking, only first item of each of three prompts was included. If 2 or < listed, 1st 2 items of prompt 1, and 1st of prompt 2.

Construct definitions:

1) Social-Interpersonal orientation: State of being, emotions, sensitivity to individual regulation of behavior and use of action in relation to others or for purposes of cooperation.
2) Task-Problem orientation: Sense of management, maintenance or application of skills to task or environment in which problem is contextualized.

## Table 8
## GENDER DIFFERENCES IN PROBLEM REPRESENTATION

### Structured Task

| | SOCIAL INTERPERSONAL FOCUS<br>Self & Problem in relation to others | TASK- PROBLEM ORIENTATION<br>Self & Problem in relation to physical world | N |
|---|---|---|---|
| **PRE: Prompt = What questions might you want to ask Marie( with regards to her vegetable garden?)** | | | |
| **Males:** | | | |
| School 1 | 27% | 73% | 12 |
| School 2 | 18% | 82% | 11 |
| **Females:** | | | |
| School 1 | 56% | 44% | 9 |
| School 2 | 0% | 100% | 9 |
| **POST: Prompt = What questions might you want to ask Brian (with regard to his cookies?)** | | | |
| **Males:** | | | |
| School 1 | 25% | 75% | 12 |
| School 2 | 27% | 73% | 11 |
| **Females:** | | | |
| School 1 | 22% | 78% | 9 |
| School 2 | 12.5% | 87.5% | 9 |

Table 9

GENDER DIFFERENCES IN MEANS-END & CONSEQUENTIAL THINKING

Structured Task

| ORAL PRESENTATION<br>Formal or informal/group and individual presentation | | MEDIA OR WRITTEN PRESENTATION<br>Use of printed/film/visual/audio material presentation | | |
|---|---|---|---|---|
| **PRE: Prompt = Ways to warn groups in relation to poisons** | | | | |
| **Males:** | | | **N** | **Don't Know** |
| School 1 | 60% | 30% | 12 | 10% |
| School 2 | 30% | 54% | 11 | 16% |
| **Females:** | | | | |
| School 1 | 78% | 22% | 9 | 0% |
| School 2 | 36% | 50% | 9 | 14% |
| **POST: Prompt = Ways to warn groups in relation to throw-away refrigerators** | | | | |
| **Males:** | | | **N** | **Don't Know** |
| School 1 | 27% | 67% | 12 | 6% |
| School 2 | 37.5% | 37.5% | 11 | 25% |
| **Females:** | | | | |
| School 1 | 83% | 17% | 9 | 0% |
| School 2 | 50% | 36% | 9 | 14% |