Building a Home for Thinking Transfer

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BUILDING A HOME FOR THINKING TRANSFER

A Thesis Presented

by

MARGARET M. BURKE

Submitted to the Office of Graduate Studies and Research of the University of Massachusetts at Boston in partial fulfillment of the requirements for the degree of

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BUILDING A HOME FOR THINKING TRANSFER

A Thesis Presented

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I dedicate this thesis to my husband, Michael, who has always offered me the freedom and flexibility to pursue my goals.
ABSTRACT
BUILDING A HOME FOR THINKING TRANSFER
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Thinking skills development is an important educational goal if students are expected to cope with the challenges of today's rapidly changing world. Teachers attempt to build the foundation for thinking by applying innovative programs that introduce and reinforce critical and creative thinking skills. Yet, educational practitioners and experts in the critical thinking field recognize that even those students who demonstrate mature thinking in school frequently fail to transfer thinking skills outside the classroom.

To maximize the possibility for transfer two approaches to thinking skills development were chosen for this thesis. First, methods employed in the classroom included direct instruction in thinking, practice in thinking using multiple experiences with varied contexts in socially interactive environments, and metacognitive instruction. Secondly, outside the classroom, parents and teachers joined in a mutually supportive partnership to extend thinking skills into the home. Parents modeled good thinking and employed high
level questioning strategies in a series of project activities designed to foster communication.

The thinking skills project involved twenty-five fourth grade students and their families participating for one full year to develop and transfer critical and creative thinking skills outside the classroom. Project activities employed strategies that elicited recall, application, analysis, and evaluation.

Conclusions were drawn from direct observation and evaluative instruments completed by parents and students both during the process and at the conclusion of the project. A summary of evaluative data indicated that the intervention was effective with the majority of students. Parents' awareness of critical and creative thinking also increased.

The curriculum and evaluation instruments are included in the appendix to serve as a resource for teachers and other practitioners. Primarily designed for elementary classroom teachers, both the content and the style of the curriculum project could easily be adapted by other practitioners working with parents and children.
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CHAPTER I

THE PROCESS OF SELECTING A SITE

Overview

This thesis presents a curriculum built like a new home. From the selection of a construction site to the housewarming, building a home requires careful planning, attention to detail, and expertise. The product reflects not only the dream of the homeowner, but also the vision of the architect, the practicality of the builder and the priorities of the family.

This thesis traces the construction of a curriculum from the identification of the problem, (The Process of Selecting a Site), through the theoretical framework, (The Process of Laying the Foundation), to the structure and design of the curriculum project, (The Process of Erecting a Structure), and finally to the implementation and results (The Process of Becoming a Home).

The home curriculum focuses on the transfer of thinking skills outside the elementary classroom. This tool involves students, parents, and teachers in a unique partnership to build an instrument for communication based on questions, discussion, and an exchange of ideas. Even though the curriculum project is designed primarily for elementary classroom teachers, it could be adapted in both content and style by other practitioners working with parents and children.
Decisions are often the result of an arduous process that includes establishing needs, setting priorities, and weighing options. One of the most important decisions when building a house is the selection of a construction site. More often than not, the site becomes a compromise between what could be and what can be. The realities of finances, family considerations, and proximity to a work site sometime overshadow the vision in the owner's mind of the ideal home. From many possibilities the homeowner ultimately selects one plot.

Although this may seem to be the beginning of the process, in reality it is not. Before construction even begins, the location of this new home reflects the critical evaluation of the values and priorities of the family, as well as the creative ability necessary to marry the dream and the reality of the perfect home. Both the house under construction and this curriculum require a combination of critical and creative thinking.

Ennis (1987) defines critical thinking as "reasonable, reflective thinking that is focused on deciding what to believe or do" (10), and Perkins (1985) describes creative thinking as "thinking patterned in such a way that tends to lead to creative results" (58). Both types of thinking facilitate the selection of a home site and students' decision making outside the classroom.
A traditional approach to change.

Most educators agree that thinking skills development is an important goal for education. Few would dispute the necessity of building a structure for thinking skills in school that would enable students to meet rapidly changing expectations in classrooms and in life. "Particularly today, when so many difficult and complex problems face the human species, the development of broad and powerful thinking is desperately needed" (Sagan 1977, 203).

Some educators addressed this issue by putting additions on an already overcrowded structure. The terms "critical thinking" and "creative thinking" appeared in teachers' editions and manuals. School systems identified critical and creative thinking as goals for education. Workshops in teaching thinking skills occupied the pages of educational journals. Some school systems implemented separate instructional programs for teaching students to think such as Odyssey, Project Impact, and CoRT (Swartz and Perkins 1989).

Thinking was the buzz word of the eighties. Teachers could build a home for thinking or buy one from a variety of available properties. Theory or rationale received very little consideration. Some viewed teaching students to think more like adding a new coat of paint to the classroom than fixing the plumbing. Teachers recognized the why of teaching thinking but the how, where, and when remained unclear. "We in no way wish to blame teachers for the lack in general of teaching thinking in schools. There is virtually no
Theorists stressed the importance of thinking instruction, but the implementation was left to the practitioners in the classrooms. As an elementary classroom teacher for over a decade, I was fascinated by the way children think and don't think. In the classroom, common sense was a rarity, and simple decisions seemed to take on monumental importance. Most students were averse to taking risks and appeared content with the safe answer instead of the curious response. Discussions indicated that students' ideas contain "fragile knowledge (that is) partial knowledge, inert knowledge, misplaced knowledge, and conglomerated knowledge" (Perkins 1986a, 5). The same students who identified the Atlantic Ocean on a map had no idea where to go to see it.

Through the Critical and Creative Thinking Program at the University of Massachusetts at Boston, I received the information, training, and support necessary to encourage the development of thinking skills in my classroom. For the first time, experts identified and defined for me critical and creative thinking skills. Courses introduced and evaluated strategies and instructional techniques. Practical applications merged theory with practice. This expertise facilitated the use of critical and creative thinking to address two areas where traditional learning strategies failed to meet the needs of my students.
First, I recognized the importance of developing good decision making strategies. Both in the classroom and elsewhere children encountered situations daily that required choices. From solving disputes on the playground and working in cooperative groups in the classroom, to the more serious considerations of resisting peer pressure or engaging in chaotic family dynamics, students needed to think. In my opinion, thinking strategies needed to become an integral part of education if teachers expected to make a difference in a child's life.

My second objective was to use thinking skills to combat the passive, uninterested, non critical attitude of many students. John Gatto, New York City's Teacher of the Year for 1990, lamented that his students had "no curiosity...They cannot concentrate for very long...are materialistic...and have a poor sense of the future. The students I teach are dependent, passive, and timid in the presence of new challenges" (Gatto 1990, 64).

Gatto painted a bleak picture of his students. Although the students discussed in this thesis are not twelve year olds from an inner city, but nine and ten year olds from a small suburb, striking similarities existed in the attitudes of both groups. Contrary to Gatto's call for sweeping changes in education, it was my contention that thinking skills instruction in the classroom improved students' attitudes toward learning and school.

For a year I implemented the thinking strategies and suggestions from my class work. My students enthusiastically accepted my role as learner and together we fashioned an environment for thinking
that reflected current research in psychology, philosophy and education.

To structure a classroom for thinking, I created a safe, non-threatening environment that valued inquiry and creative exploration. Students listened and shared their ideas and experiences (Dhoriay 1991; Hart 1983). By using silence, extending wait time, accepting and encouraging responses and facilitating the acquisition of data (Costa 1985c), students became thinking participants in the process of education.

Learning more about how thinking occurs in the brain assisted in developing strategies to enhance memory and cognitive processing. Music, color, visualization, and memory techniques (Hart 1983; Russell 1979) were extremely effective and students enjoyed designing their own brain stretching activities. Songs, raps, stories, and pantomime became the tools used to explain ideas and narrate information. Even the most reticent student failed to resist the offer to become a molecule moving in space. Others duplicated the sounds of the path of blood moving through the body.

"Many authors and psychologists feel that children learn to think long before they come to school and that educators need to create the conditions for their natural human inclination to think to emerge and develop" (Costa 1985c, 20). The enormous amount of information processed by very young children indicates that they are capable of thinking at a very early stage in their development. The skills necessary for language acquisition are far more complicated than any curriculum challenge.
The key to initiating thinking, as a natural process, was the involvement of students in multiple, concrete experiences that were meaningful to them. In order to promote the spontaneous use of good thinking skills, my students became interested in the subject, actively involved in the process, and conscious of how the subject was relevant in their lives (Caine and Caine 1991; Perkins 1986a and b; Sternberg 1985a and b).

Tailoring classroom experiences to initiate thinking produced immediate results. Primarily through literature, books, magazine articles, and news stories, students became adept at discussing ideas and critiquing information. Causal relationships, reliability of sources, prediction of outcomes and other critical thinking skills (Swartz 1987) revolved around stories of children facing unique challenges in life. News articles depicting similar themes made the issues current and close to home. Even math and science classes utilized hands on activities that reflected useful life skills.

The results were overwhelming. I considered the intervention a success. In the classroom children used the terminology of thinking. The students' ability to articulate ideas and express opinions impressed administrators and specialists. Each student used "better thinking (which yields) more reliable conclusions, deeper insights, sounder decisions, more finely crafted products, more creative inventions and keener critical assessments" (Swartz and Perkins 1989, 3).
The identification of the problem.

Slowly, however, my enthusiasm for the success of the project became tempered by indications that my students failed to transfer their thinking abilities outside the classroom. Transfer occurs when knowledge or skill from one context influences another (Perkins and Salomon 1988). Students who were capable of discussing primary and secondary sources of information, in class, often seemed unable to locate a book in the school library. From my observations and discussions with parents, decision making strategies utilized in school were seldom evident at home or on the playground. The conclusion seemed obvious. Although the students valued thinking in room 26, when they encountered opportunities to use their skills in other areas they seldom chose to do so. There were indications that transfer had probably not occurred.

My students associated thinking with the classroom in the same way a young man in the seventeenth century associated dancing with a trunk.

Having learned to dance, and that to great perfection, there happened to stand an old trunk in the room where he learned. The idea of the remarkable piece of household stuff had so mixed itself with the turns and steps of all his dances, that though in that chamber he could dance excellent well, yet it was only while that trunk was there: nor could he perform well in any other place, unless that or some other such trunk has its due position in the room. (Locke 1959, 533)
A site is selected.

In both my classroom intervention and in the story of the man who learned to dance, the environment affected the probability of transfer. It became evident to me that if I expected students to use critical and creative thinking skills as a process for life, they needed to practice these skills in some setting other than a classroom.

Since students spend significant amounts of time at home and the home/school connection exists, I began researching existing programs encouraging the use of thinking at home. It soon became evident that programs such as Talents Unlimited or Follow Through failed to meet the specific needs that I wished to address. A new curriculum intervention involving parents and students using thinking skills at home was needed.

I felt like every homeowner building a house who visits and evaluates each lot of land, but ultimately selects one. Each site had possibilities but the choice primarily reflects how the lot can be adapted to meet the family's needs. Possibilities for curriculum development to improve the quality of student thinking seemed endless.

I selected the site. My home for thinking would be a place where students could transfer their thinking skills through an intergenerational sharing of ideas, thoughts, and feelings. The curriculum would involve teachers, students, and parents in a
partnership to transfer critical and creative thinking skills into the home. Students would learn to transfer the wonder, curiosity, thoughtful reflection, critical evaluation and creative surprise evident in the classroom to situations outside school.

Summary

The remaining chapters in this thesis trace the construction of a home for thinking that focuses on transfer and parental involvement. Chapter II, The Process of Laying the Foundation, introduces the theoretical framework of the thesis by reviewing relevant literature in the areas of educational transfer and parental involvement in education. Chapter III, The Process of Erecting a Structure, describes in detail the components of the curriculum project. This chapter also outlines each aspect of the curriculum including the integration of critical and creative thinking skills in project activities. Chapter IV, The Process of Becoming a Home, summarizes the results of the implementation of the curriculum project by reviewing parent and student reactions. This chapter also includes reflections on the success of the project and revisions and extensions for future implementations.

The appendix contains all curriculum components described in chapter III including, parent correspondence, a student play, parent workshop materials, activity packet information, eight home activities, and evaluation instruments.
CHAPTER II

THE PROCESS OF LAYING THE FOUNDATION

Overview

The selection of the site for the new home is complete. The next step in the process of building a home is laying the foundation. The land is ready, but the foundation is more than poured cement. Before the heavy equipment arrives at the site, the homeowner seeks the expertise and advice of an architect and a builder.

The architect interprets the vision of the homeowner. Working as a team, each communicates ideas and presents possibilities. The process again reflects articulating priorities, weighing options, and making decisions. Finally, the vision appears in the form of a blueprint, depicting structure and site. During the process, the architect may identify a problem and offer a solution that alters some aspect of the dream but keeps the vision intact.

The builder constructs a house from the architect's blueprints. The success of the project is in his hands. Communication with the owner and the architect is critical if the builder is to complete the project and build the desired house. During construction the contractor may come across unfavorable weather, strikes, budget overruns, or defective materials. Decisions are made on a moment to moment basis. To succeed, the builder must take pride in the quality of the job and be committed to the owner's vision.
Transfer theorists are the architects of this curriculum project, and parents are the builders. This chapter reviews and synthesizes relevant literature and theory in the area of thinking skills transfer to provide a framework for the curriculum. Research on parental involvement in education identifies effective strategies to help parents build a home for thinking outside the classroom.

The Architect-Transfer

Definitions.

The architect's first priority is defining the structure.

Cognitive psychologists (Cormier and Hagman 1987; Gick and Holyoak 1987) and experts in the field of critical and creative thinking (Salomon and Perkins 1989; Swartz and Perkins 1989; Perkins and Saloman 1988; Sternberg 1985a and b) are studying the affect of transfer on the acquisition of skills, knowledge, attitudes, and cognitive styles.

There are four generic issues important to a comprehensive description of transfer, both as a learning phenomenon and as an event with substantial importance to real life situations. These issues are: (a) how transfer should be measured, (b) how training for transfer differs from training for rapid acquisition, (c) how direction and amplitude of transfer are determined, and (d) whether different principles of transfer apply to motor, cognitive and metacognitive elements. (Cormier and Hagman 1987, 1)
The definitions and applications of transfer discussed in this thesis represent the work of psychologists and educators studying educational transfer primarily as it applies to the transfer of thinking skills.

Perkins and Salomon (1988) define transfer as applying knowledge (far transfer) and skills (near transfer) learned in one context to other contexts and situations. Negative transfer is where skills or knowledge in one area interferes in another. They identify two types of transfer. Low road transfer "reflects the automatic triggering of well practiced routines in circumstances where there is considerable perceptual similarity to the original learning context" (25). In an elementary classroom setting, an example of low road transfer is a child who learns to read in class who also reads in the library or at home. High road transfer "depends on deliberate mindful abstraction of skill or knowledge from one context to another" (26).

Perkins and Salomon (1988) divide high road transfer into two categories. In forward reaching high road transfer "one learns something and abstracts it in preparation for application elsewhere" (26). Children demonstrate this type of transfer when they apply addition and subtraction skills to buying lunch tickets. In backward reaching high road transfer "one finds oneself in a problem situation, abstracts key characteristics from the situation, and reaches backward into one's experience for matches" (26). Children use backward reaching transfer when they apply classroom decision making strategies to problems on the playground.
Both types of high road transfer require abstract thinking on the part of students. Making connections, seeing relationships, and demonstrating creativity in applying skills and ideas from one context to another to solve problems or make decisions are all part of the thinking characteristics of this type of transfer.

"Understanding the mechanisms of transfer is inextricably linked to our knowledge of human memory, learning, categorization, reasoning, and problem solving" (Gick and Holyoak 1987, 41).

Facing the complexity of the task of teaching for transfer, educators often ask if transfer is a utopian ideal or a realistic goal for elementary students. The question becomes how important is transfer to the process of education. If the goal of education is to acquire knowledge or facts, then transfer plays a minor role. If the goal of education is to acquire "insight" (Perkins 1991, 5), a deep, useful understanding of concepts that can help students see relationships and make decisions in the classroom and in their lives, then transfer plays a major role in the process of education. Teachers demonstrate a commitment to "educating for insight" (Perkins 1991, 4) when they teach students to transfer the use of mature thinking skills to contexts outside the classroom. Education then becomes a lifelong experience that is unique for each individual.

An important tool for education.

The homeowner selects an architect not only for his ability to combine form and function, but also for the creativity of his designs.
Houses may have similar features, but each design must possess some identifying mark that sets it apart. Each homeowner expects the blueprint of his vision to depict a unique structure.

Like the architect, most educators’ goal is not to create cookie cutter citizens, but thoughtful, reflective adults capable of solving problems and making decisions for themselves, their families, their communities, and their world.

People become educated, as opposed to trained, insofar as they achieve a grasp of critical principles and an ability and passion to choose, organize, and shape their own ideas and living beliefs by means of them. Education is not a mere piling up of more and more bits and pieces of information. It is a process of autonomously deciding what is and what is not true or false. It calls for self motivated action on our own mental nature and a participation in the forming of our own character. It is a process in which we learn to open our mind, correct and refine it, and enable it to learn rationally, thereby empowering it to analyze, digest, master, and rule its own knowledge, gain command over its own faculties, and achieve flexibility, fair-mindedness, and critical exactness. (Paul 1987, 143)

Paul’s "educated citizen" uses thinking skills that depend on the elusive backward reaching transfer defined by Perkins and Salomon (1988). For schools, transfer plays an important role in helping students develop and integrate into their lives the thinking skills necessary to become thoughtful citizens.

There are three important, recognizable levels of transfer (Perkins and Salomon 1988) that occur in the process of education. The first level is the transfer of basic skills. Educators expect that students transfer the ability to read and write to daily activities.

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The next level is the transfer of knowledge or the data base students receive in school to help them think about problems in life. Finally, the transfer of thinking skills aims to develop in each student powerful critical and creative thinking abilities to define and understand his world.

For a significant period of time, "a child's life is his classroom" (Ryan and Sline 1991, 61). Each student is a unique individual extracting meaning from the experiences and environment present in the classroom. The quality of thinking schools model and teach have a direct effect on the extent to which students transfer these skills to situations in their own lives. Teaching that reflects a "concern with connecting things up, with integrating ideas within and across subject matters, and with elements of out of school life, inherently is a concern with understanding in a broader and a deeper sense" (Perkins 1991, 7).

Transfer provides an opportunity for developing students' use of thinking skills as a process for life instead of a process for school. "Since none of us can ever learn everything, isn't it far more sensible for schools to focus on developing minds with both the capacity and disposition to keep on learning?" (Kirby and Kuykendall 1991, 38).

The transfer debate.

During the process of combining all the elements for a new house the architect's blueprints often change. Problems arise that challenge his skill and creativity. Abandoning the vision is always a
possibility. Through perseverance the architect may discover that the solution to building a window lies in moving a wall, reframing a door, and redefining a workspace. Success combines changes in several areas of the blueprint to accomplish a single goal.

Experts in the critical thinking field recognize that students frequently fail to transfer thinking skills outside the classroom (Saloman and Perkins 1989). Like the architect building a window, the solution to the problem of transfer seems to require changing more than one piece of the blueprint.

The issue of thinking skills transfer is a controversial one. Ennis (1985b) notes that research data on the question of transfer are insufficient to come to any definite conclusions. Low road transfer of skills and knowledge does occur. There are a variety of theories to explain why the examples of high road transfer are rare. Perhaps, the skill or knowledge was not learned, or the skill was learned but when to use it was not directly included in the instruction. Or, in the case of literature, perhaps the transfer hinges on "creative discovery" (Perkins and Salomon 1988, 24).

Sternberg (1985b) suggests that "good thinking in one academic or practical area of endeavor does not guarantee good thinking in another" (278). Swartz and Perkins (1989) argue that "many patterns of thinking learned in one context, although in principle general, become associated with the context. It never occurs to the student to apply them elsewhere" (33). McPeck (1981) concludes that critical thinking is subject area specific and each content area is different. Ennis (1985b) presents an opposing view. Although he recognizes that information and skills in content areas are specific
to the subject, he believes there exist general thinking principles that bridge disciplines.

The debate centers on the question of whether cognitive skills are context specific.

Overall, research on transfer suggests...Thinking...depends on specific, context-bound skills and units of knowledge that have little application to other domains. To the extent that transfer does take place, it is highly specific and must be cued, primed, and guided; it seldom occurs spontaneously. (Perkins and Salomon 1989, 19)

Studies indicate that medical students often fail to integrate specific knowledge with general knowledge in a diagnostic setting. Chess experts are not especially good at problem solving in other contexts, and computer programming instruction shows little or no positive effect on improving cognitive skills (Perkins and Salomon 1989). Some combination of general and specific knowledge offers the best possibility for transfer to occur (Ennis 1989). Transfer of content specific knowledge from one area to another requires interaction between general and specific knowledge.

The debate over knowledge transfer overshadows the equally important issue of the role of the environment in transfer. The curriculum in this thesis, reflects my experience that elementary students proficient at utilizing both critical and creative thinking skills in the classroom seldom transfer these skills outside school.

"The environment in which learning takes place provides very important associations" (Russell 1979, 100). Students need to associate the thinking process with all areas of life. To do this each
must experience thinking in other areas to create the associations. It is my opinion that non-academic connections outside the classroom setting play a key role in the transfer of thinking skills.

There are many areas calling for critical thinking that are not subjects people are likely to have studied in school, thus requiring that we teach for transfer and that our efforts in school not be judged to have succeeded unless critical thinking instruction transfers to areas of practical concern. (Ennis 1987, 17)

Teaching for transfer.

Teaching for the transfer of thinking skills, like building a house, requires the communication of expertise and the execution of a plan. The planning phase of the construction of a new house ends with the acceptance of the final draft of the architect's blueprints. His job is also to communicate his ideas and explain the framework and the details of his design to the homeowner and the builder.

Experts in the critical thinking field agree that students need multiple experiences with varied tasks and situations in socially interactive environments. Control of the thinking moves from the teacher to the students as they ask questions, clarify their ideas, and justify their opinions. (Perkins 1991; Salomon and Perkins 1989; Swartz and Perkins 1989; Baron 1987; Ennis 1985 a and b)

Sternberg (1985a and b) addresses the issue of transfer in the area of problem solving. He suggests practice in problem identification and exposure to ill-structured problems with real
consequences. Content and informal knowledge assist students in solving problems that are meaningful to them.

Swartz and Perkins (1989) and Perkins (1991) propose an integrated curriculum approach that emphasizes making connections. "Hugging and bridging" (Perkins and Salomon 1988, 28) are two tactics that can be useful in an integrated curriculum for transfer. Hugging uses students' experiences to introduce a new idea by relating the similarities. In bridging, teachers compare or contrast ideas, and students make connections to new ideas.

"Recent research shows that when general principles of reasoning are taught together with self monitoring practices and potential applications in varied contexts, transfer often is obtained" (Perkins and Saloman 1989, 22). "The more varied the tasks and situations used to apply the criteria of good thinking skills and strategies, the more likely is the student to internalize and transfer their use" (Baron 1987, 228).

There is a consensus among critical thinking experts that any program successful in teaching for transfer must include metacognition. "Metacognition is shifting our attention away from what it is we are thinking about and focusing it on our own thinking" (Swartz and Perkins 1989, 178). Swartz and Perkins (1989) identify three levels of metacognitive instruction. "Aware use" (52) is the minimal awareness of thinking students experience when they are conscious of making a decision. "Strategic use" (52) of thinking skills includes the student's understanding that he is following a plan or a strategy for making a decision. "Reflective thinking" (52)
involves the student's ability to identify how he is thinking and how he should direct his thinking in making a decision.

**The Builder-Parental Involvement**

**Behaviors that influence cognitive development.**

Decision making is constantly necessary in the building process as well as the learning process. Whether the building under construction is a tree house or a new home, the builder's first priority is identifying the best tools, equipment, and materials needed to complete the job. The selection of materials reflects not only availability and financial considerations, but also the quality standards of the builder. In a similar way, parents need to be involved in the development of thinking skills in their children.

A section of this thesis reviews theories and research that target parental involvement in developing children's thinking skills, and the terms "cognitive development" and "development of thinking skills" in this thesis are used interchangeably. There is considerable research concerning the role of parents in the education of their children. "Most parents, educators, and educational administrators are very much in favor of involving parents in children's learning. However, there is little consensus on which specific behaviors are likely to maximize children's achievement" (Bempechat 1990, 6).
The easiest and probably the most effective way for parents to influence their children's cognitive development is by modeling good thinking. "Students learn best by imitating the adults around them" (Costa 1984, 60). Parents begin the process of developing thinking skills when they talk to their children about what they are thinking, saying, and doing.

When communication occurs during everyday activities in the kitchen, laundry room, dining room or in the car on the way to baseball practice, parents begin to foster in their children an interest about the world around them. Interest leads to curiosity; curiosity to questions; questions to answers and children begin to spontaneously use thinking skills, taught in school, outside the classroom. "Children involved in programs that combine school and home experience a more cognitively stimulating environment. The home end of the partnership is crucial to cognitive gains" (Schmitt 1986, 41).

Bempechat (1990) uses the terms "cognitive and academic socialization" (3) to clarify how parents direct the development of thinking. Cognitive socialization describes how parents influence the basic intellectual development of their children (Bempechat 1990; Epstein 1988; Rogoff and Gardner 1984; Sigel 1982). Research that focuses on parent (usually mother)/child interactions identifies the importance of distancing strategies to develop a student's representational competence, which is the ability to work with symbols (words and ideas) and to understand some rules about them. Representational competence is necessary for thinking and problem solving (Sigel 1985).
Sigel (1985) identifies three levels of distancing strategies (questioning techniques). Low level strategies request information and deal with the present. For example, what color is this shoe? Medium level strategies involve the interaction of people or things. For example, which shoe is larger? High level strategies demand that children infer, generalize, or abstract ideas and no longer deal with the present. For example, what kinds of shoes would a family need to take on vacation? "Parents' verbal engagement with their children making high level cognitive demands has a positive effect on their children's thinking and problem solving" (Sigel 1985, 45).

Questioning techniques that require critical and creative thinking are an important tool in developing and transferring thinking skills. "When parents recognize that children are thinkers and treat them accordingly, children are empowered to develop representational competence" (Sigel 1982, 160).

The methods parents choose to utilize in communicating with their children directly influence the way their children learn to think (Scott-Jones 1988). Children reinforce critical and creative thinking at home when parents ask questions, provide explanations, and talk to their children using high level questioning strategies.

Bempechat (1990) describes how parents influence the development of attitudes and motives that are essential for developing thinking skills through a process of "academic socialization" (6).

Research (Epstein and Dauber 1991; Bempechat 1990; Sigel 1985; Becker and Epstein 1982) suggests that parents' attitudes about school and learning influence their children's cognitive
development. Parents often carry the emotional baggage of past school experiences. For parents to be a positive influence in cognitive development, positive experiences in thinking must replace negative associations. Rogoff and Gardner (1984) suggest one strategy that involves parents and children working together on cognitive tasks structured at a comfortable but challenging level for the child, known as the "zone of proximal development" (101). Adults monitor the level of difficulty of the tasks and provide assistance. Through the adult/child interaction students develop self confidence in thinking through novel problem solving situations.

When parents actively engage children in positive experiences using critical and creative thinking skills, students are more apt to value thinking as a tool for making decisions and solving problems.

Parents probably have the most effect on children's abilities and inclinations for mental development. Concerned parents model thinking; their language engages differential cognitive structures. Often what we do in schools to teach thinking is remedial for students whose parents don't provide this mediation. (Costa 1985a, 31)

The structure of parent programs.

Just as the builder relies on communication skills to schedule equipment and negotiate with sub-contractors, communication is the key to developing thinking skills. Although the primary responsibility to build the house belongs to the builder, every contractor recognizes the fact that no one builder specializes in every area of construction. It is the responsibility of the builder to
bring together the best available specialists, masons, plumbers, electricians and others, to accomplish the task of building this house.

For the home for thinking under construction in this thesis, the parents (builder) identify and integrate aspects of parental involvement programs that relate to the goal of extending thinking skills into the home.

Greenwood and Hickman (1991) describe six basic types of parental involvement, namely "parents as audience, volunteer, paraprofessional, teacher of their own children, learner, and decision maker (281). Some parent programs target one aspect of involvement, such as parent councils, and others target all six, such as Head Start and Follow Through. The Follow Through program includes a Home Learning Activities component that complements not copies curriculum. The focus of these activities is on the process of communication between the parents and the students. Through the use of open ended questions students practice thinking skills.

Epstein (1988) suggests five goals for parent involvement programs. These goals are: to help parents create home environments conducive to learning; to provide frequent, clear communication about students to parents; to use parents as a resource; to provide assistance with learning activities in the home; and finally to encourage involvement in decision making in the school.

Seeley (1982) and Williams and Chavkin (1989) recommend a partnership between parents and teachers in which parents are
valued and respected in a mutually supportive atmosphere. "Many educators believe that a child's chances for success in later life are maximized when both the home and the school are involved in the child's education" (Olmstead 1991, 227).

Although there are many programs currently in existence that involve parents in the education of their children, few programs specifically target thinking skills development as a goal. Although thinking development is not the primary goal for some programs it is a component. The curriculum in this thesis incorporates ideas and components from the programs mentioned in this section.

Summary

Theories of transfer and parent involvement constitute the theoretical framework for the curriculum presented in this thesis. Thinking skills transfer is the goal of the curriculum project. Parental involvement is the vehicle through which students and parents work together toward achieving that goal.

The architect and the builder together create the unique structure that is the vision of the homeowner. From the initial sketches to the final blueprints the architect fashions an idea. The research in the area of transfer provides a framework for the design of the curriculum to build a home for thinking. From clearing the land to the final structure the builder applies the directives and suggestions of the architect to complete the job, just as parents implement the activities of the thinking skills project.
The next chapter in this thesis details the curriculum project. The architect turns the blueprints over to the builder. The next step in the process is erecting a structure. Construction of the home for thinking begins.
CHAPTER III

THE PROCESS OF ERECTING A STRUCTURE

Overview

Once the homeowner, the architect, and the builder complete the planning stages of building a new house, the idea begins to take shape. The process of erecting a structure starts with positioning the first plank of wood and ends with hanging the last set of curtains. The vision over time becomes a reality.

Each phase of construction requires different conditions and materials. Sub-contractors, specializing in a particular area, work together to integrate the job specifications and complete the task. The product is more than a building. The furnishings and landscaping alter the appearance of the house to reflect the personalities and priorities of the homeowner and his family.

Like a house, this thesis describes a curriculum that begins as a framework and moves through five distinct stages toward the goal of extending critical and creative thinking skills into the home.

This chapter explains each of the five phases: modeling; teaching for, of, and about thinking; the play; the parent meeting; and the project activities. Each phase has unique features and contributes to the goal of transferring thinking skills outside the classroom.
A new house first appears on the site as a wooden frame. The rooms are undifferentiated. Incomplete ceilings, walls, and staircases give only a hint of what the structure could become. At this stage of construction, the homeowner sees only what the bare structure of the house looks like. The building is impersonal.

Teachers who model thinking skills present to their students a similar framework. Students recognize the structure of critical and creative thinking but not the purpose, the process, or the value of developing these skills. The lesson is impersonal.

By modeling good thinking, teachers introduce students to critical and creative thinking. In some cases students copy these thinking behaviors, but in general the thinking skills remain in the domain of the teacher. This introduction is an important tool for teachers who are trying to influence students to adopt these thinking skills as a process for their lives.

If teachers expect students to develop and use powerful thinking skills, they must demonstrate these skills regularly in the classroom. Research in modeling confirms that "children acquire much of their behavior, feelings, attitudes, and values without direct instruction but through imitation of both adult and peer models" (Costa 1985b, 135).
This curriculum presents to teachers a program for thinking that begins in September and ends in June. From the first day of school students meet teachers who pose challenging questions and encourage discussion. If students are to use these skills in everyday life they must develop their own critical and creative thinking abilities.

Teaching For, Of, and About Thinking

The process of erecting a structure produces a newly framed house that offers minimal protection from the elements and fails to meet the needs of the homeowner and his family. Contractors arrive and the house comes alive with electricity, plumbing, and heating. These systems make the house livable and assure a certain quality of life for the family.

Sophisticated heating and cooling systems provide a comfortable environment while lighting and alarm systems increase safety. The homeowner uses these systems to offer comfort and security to his family, increase the value of his property, and enhance his lifestyle.

If teachers expect students' thinking to be more than newly framed houses offering minimal support, then they must teach critical and creative thinking systems in the classroom. Like the plumbing and heating systems that make the house livable, students use mature thinking skills to clarify their ideas, justify their decisions, and think through challenging situations.
Students are no longer passive observers to thinking but active participants possessing learning skills to enhance the quality of their lives. This curriculum and the process of developing critical and creative thinking skills begins in the classroom and moves into the home where students demonstrate these skills by completing project activities (see Appendix A).

**An integrated approach.**

The curriculum project emphasizes the development of both critical and creative thinking skills in an integrated approach. Although these two types of thinking differ by definition, there is a definite link between the two. "From a philosophical standpoint, the two can't be clearly separated. The creative thinker has to be critically aware because creative thinking, except in the simplest situations involves the generation and sifting of possibilities and reworking them. That has to be a critical process" (Perkins 1986b, 15). The critical thinker, alternately, uses the fluency and elaboration characteristic of creative thinking (Perkins 1985) to generate options and make decisions. Critical and creative thinking are the tools of the communication network in this curriculum in which students and parents share thoughts and feelings and convey ideas.
A framework for thinking.

Before project activities begin at home, an important phase of the curriculum occurs in the classroom. Students receive direct instruction in thinking skills following a framework of teaching for, of, and about thinking (Costa 1985c; McTighe 1985).

Teaching for thinking means that administrators and teachers "strive to create school and classroom conditions that are conducive to children's thinking" (Costa 1985b, 20).

Teaching of thinking involves the direct instruction in thinking skills in the classroom. Since the goal of the thinking project is the transfer of skills into everyday life, the curriculum encourages a "conceptual infusion approach" (Swartz 1986, 44) in which "the use of real life situations complements and...reinforces thinking skills infused into traditional content" (43).

Ennis (1987) identifies a comprehensive list of critical thinking skills and dispositions. This curriculum uses a less detailed list that combines critical and creative thinking skills and activities. Swartz (1987) categorizes some important thinking skills into three areas.

Skills at Generating Ideas
Multiplicity of ideas
Varied ideas
New ideas
Detailed ideas
Skills at Clarifying Ideas
Analyzing Ideas
Comparing/Contrasting
Classification/Definition
Conclusions/Reasons
Uncovering Assumptions

Skills at Assessing the Reasonableness of Ideas
Accurate Observation
Reliability of Sources
Causal Explanation
Prediction
Generalization
Reasoning by Analogy
Deduction
Conditional Arguments (If...then...)

(Swartz 1987)

This list presents skills that are appropriate for use at the elementary level. Students receive instruction in all critical and creative thinking skills, and teachers integrate these skills into a thinking strategy appropriate for the grade level. The direct instruction emphasis for this curriculum is decision making.

Teaching about thinking provides students with information about how processing occurs in the brain and how memory works. Students then monitor their thinking and identify thinking strategies that work for them. This metacognitive aspect of thinking instruction helps students take control of their own thinking and is critical to the transfer of thinking skills outside the classroom.

A sound program aimed at developing student thinking gives them the opportunity both to learn about thinking and to do it.
'Learning about' equips them to be aware of and reflective about their thinking processes, to ponder their attitudes and to edit their strategies. 'Learning to do' equips them with ways of organizing their thinking, provides practice in those ways, and encourages effort invested in the kind of thinking in question (Swartz and Perkins 1989, 30).

Teaching thinking skills in the classroom gives students the necessary tools to utilize these skills as a process for life. Before that happens, students must see the value in using these skills. Strategies for thinking are useful in the classroom, but to transfer these strategies to the home or the playground students must build thinking structures that are unique and useful for them. Students must take control of the thinking process.

The Play

The next phase in the construction of a new house creates ownership. By adding porches, decks, and walkways each house becomes unique. The addition of a fence reflects the owner's need for privacy and/or safety. The construction site now includes bushes and young trees and a small rock garden. The paint dries and for the first time the homeowner recognizes the house as his house.

In the home for thinking that this thesis is building, the play, "Is Any Thinking Going On Here?" (see Appendix B) provides an opportunity for students to personalize their thinking skills. Each aspect of production from the development of the script to the final
video taping session demands that students articulate and use both critical and creative thinking skills.

As the actors rehearse lines detailing the type of thinking that occurs in elementary classrooms, the other students in the cast use these thinking skills to make decisions about the setting, props, and taping schedules. Each decision presents an opportunity to consider options and evaluate possible choices. Each student in the class chooses how he or she contributes to the production. The production of the play becomes a valuable metacognitive activity as students explain, defend and justify their thinking.

The play accomplishes two things. First, it gives students the opportunity to use thinking skills in a personal way to work together to express their ideas about the value of thinking skills in a classroom setting. Second, it gives parents, who see the videotape of the play at the parent meeting, a chance to become familiar with the type of thinking teachers encourage in the classroom. The students are eager to feature their skills and involve parents and family members in the thinking project.

The Parent Meeting

With the basic structure of the building complete, the homeowner introduces his family to the new house. As they tour the property he explains the details of how the systems in the house work. By trying each switch and turning each knob members of the
family discover how this new house simplifies and improves the quality of their life.

This is an opportunity to communicate information and receive comments from other family members about the details of the new home. Negotiations begin on room assignments. Discussions lead to compromises as each member of the group surveys the property and seeks to define his or her own space.

The family separates and each member gravitates to an area of interest. It's a time for questions and comments about what is and what could be. The homeowner visits the basement and mentally begins constructing shelves and setting up tools and equipment. Children playing in the driveway imagine a basketball hoop on the garage. The visit creates an excitement about the move and the family is eager to begin the job of furnishing the new house.

During the initial stages of the curriculum, parents receive information about the project from students and class newsletters. Details are sketchy and parents begin to see themselves as players in a class activity to develop thinking skills.

Like the homeowner introducing his family to a new house, the goals for the parent meeting are to impart information, learn from experience, communicate ideas and opinions, and create excitement for a new venture. Before everyone can join in a partnership to transfer critical and creative thinking skills into the home, teachers and students need to introduce parents to the project.

The invitation to parents (see Appendix C) serves two purposes. First, it provides information about a meeting to detail the next phase of the curriculum project. Second, it establishes the key role
that parents play in the success of the project. The tone of the invitation is friendly and informal to encourage involvement. By providing baby-sitting during the meeting, teachers demonstrate the value of parent participation. The special video surprise is an incentive to attend.

The next step is for teachers to plan a parents' meeting that reflects the goals of the project (see Appendix D).

Before parents arrive at the meeting, the teacher moves desks in the classroom to facilitate interaction. A decorated box and a sign that reads, PLEASE DO NOT PEEK! are placed in the center of each group. Classical music is playing in the background to provide a relaxed atmosphere (Dhority 1991).

As parents arrive, the teacher personally welcomes each one and encourages introductions. Administrators attending the meeting circulate to support the project and to establish the school's commitment to the development of good thinking skills. The atmosphere is friendly and supportive. Each person at the meeting is important to the success of the project.

The first part of the meeting consists of communicating the goals of the thinking project. A summary of the initial stages of the development of thinking skills in the classroom introduces the importance of questioning techniques. Parents and the teacher share experiences in using open-ended questions to initiate discussion. The teacher outlines the decision making strategy children follow in class (Swartz and Perkins 1989).

A multi-colored sign on the chalkboard states the thinking goals for the classroom and the project.
Have faith in your own creativity.
Suspend judgment.
Become a keen observer of everything around you.
Ask penetrating questions. (Ray 1990, 2)

At this point, parents participate in a group activity that models the project activities (see Appendix E). Directions encourage members of the group to work together sharing ideas and experiences. The teacher circulates to encourage questions, discussion, and creative exploration of ideas and possibilities. At the conclusion of the activity, parents discuss the type of thinking the activity presents and share observations and questions. During the discussion, the teacher emphasizes each group's unique decision making strategies.

The parents then view the video presentation, "Is Any Thinking Going On Here?" which depicts their children using critical and creative thinking skills in a classroom environment. After the video, the teacher initiates discussion to parallel the thinking skills from the meeting activity and the play to reinforce the need for critical and creative thinking outside the classroom.

A chart outlining the project presents the contents of activity packets, the time line for activities, and the procedures for transmitting the packets. To encourage participation, activity packets replace homework during project weeks. To facilitate participation in all the activities, packets go home approximately every four to six weeks except school vacation months.
At this time, parents may also view the contents of activity packets and ask questions. Providing time for parents to discuss informally the activities with other parents helps to create interest and enthusiasm for the project. Discussions should emphasize the flexibility of project activities. The teacher reinforces the goal of the project which is to encourage communication.

**Project Activities**

Furnishing a new home is an exciting, challenging project that involves the homeowner and his family in a cooperative effort to select colors, fabric, and furniture that reflect the personalities and preferences of every family member. The process brings family members together to state requests, give opinions, and make decisions. Each member of the family brings to the discussion varying degrees of expertise in the area of design. Since the goal of the project is to furnish a house that reflects the personalities and unique character of the family, this stage must be done by the family members themselves. Participation is important; expertise is not.

The first thing the family must do is to decide what furnishings to move to the new house. Sometimes decisions reflect emotional ties to items that appear useless. As family members relate personal experiences that affect their choices, the process becomes a learning experience. Everyone's ideas and feelings become important as the family debates preferences and priorities. The key
to completing the process is compromise. By investing time and effort in sharing ideas the homeowner ensures that his house reflects the personality of each member of the family.

Goals.

The goal of the thinking activities is to create the same type of dialogue between members of the student's family that the homeowner creates furnishing his home. Through this dialogue, students and parents share ideas and experiences in a playful, informal atmosphere. Like the family furnishing a house, each member of the group brings past and present attitudes, beliefs, and values to the discussion. The thinking group fashions the activities to reflect the individual character of the family.

Children require practice using mature thinking skills in a safe, non-threatening environment. They need "to discover opposing points of view in non-threatening situations. They need to put their ideas into words, advance conclusions, and justify them..." (Paul 1987, 135). Moffett and Wagner (1992) describe this type of communication as rippling. "Rippling is the informal passing down of knowledge and skills from the more experienced to the less experienced in an unceasing wave so that people of all ages are at once teacher and taught" (25).

If thinking skills are going to transfer into the home, students need to experience using these skills in a practical way. The activities in this curriculum provide an opportunity for students to use their critical and creative thinking skills as a vehicle to voice
their opinions, share their feelings, and explore their ideas. This
dialogue unites both the knowledge acquisition of cognitive
dimensions of thinking with the emotion and feeling of the affective
dimensions of thinking.

If we want children to develop into adults with a passion for
clarity, accuracy, and fair-mindedness, a fervor for exploring
the deepest issues, a propensity for listening to opposition
points of view; if we want children to develop into adults with
a drive to seek out evidence, with an aversion to contradiction,
sloppy thinking, and inconsistent application of standards; then
we had better pay close attention to the affective dimension of
their lives from the beginning. We had better recognize the need
to unite cognitive and affective goals (Paul, Binker and
Charbonneau 1986, 5).

Parents and other participants in the thinking group must
recognize that each member of the group may not agree. Listening
and respecting children's ideas are important aspects of the process
of thinking, which is the focus of the project.

Format.

This curriculum includes activities that are flexible in design.
Each activity encourages convergent and divergent thinking.
Activity questions are open-ended to allow families to structure
the discussions in a direction that is significant to them. Some
activities are more focused on critical thinking; while others focus
primarily on creative thinking.
In each activity families make decisions following a decision making strategy that emphasizes gathering information, determining options, anticipating outcomes, and weighing options to make a decision (Swartz and Perkins 1989; Adams and Feehrer 1986).

The contents of each activity packet are the same (see Appendix F). Each packet contains a direction sheet to explain how to complete the activity (see Appendix G), a project activity sheet (see Appendices H-O), and separate response sheets for adults (see appendix P) and students (see Appendix Q).

The directions are simple and consistent for all activities. Each member of the group is equally important. The group selects a leader to read the activity sheet. The leader may change for each activity and may be a child or an adult.

The activity phase of the curriculum begins in October after the students develop thinking skills in the classroom. Each of the eight activity sheets in this curriculum contains a different theme but adheres to a similar format. The activity begins by welcoming the members of the group and reviewing the goals of using critical and creative thinking to complete the activity. Activity sheets suggest listening, sharing ideas, and working together to complete the task. Each activity contains a reminder to the group to relax and enjoy participating in the project.

The activity then presents a theme. In the first project activity the theme is Decisions (see Appendix H), and the leader instructs the group to think about the word "October". Group members share
their ideas and then work in groups (adults or children) to list any ideas that surround the word "Halloween".

The leader of the group then reads a series of open-ended questions to initiate discussion. The activity presents a dilemma which in this case is the selection of a movie to show on Halloween. The packet contains movie advertisements that members of the group discuss. The task is to choose a movie that the group accepts as appropriate. Everyone in the group may not agree, but the group must work toward a consensus. The leader reads a series of questions to assist the group in following a decision making strategy. The final questions in this activity ask the group to consider alternate approaches to solving the problem.

Integration of skills.

In approximately one hour of discussion group members use both critical and creative thinking skills. Generating ideas about October and Halloween and considering alternative approaches to solving the dilemma demonstrate creative thinking. Through the use of critical thinking and high level questioning strategies this activity compares and contrasts Halloween customs of yesterday and today, finds reasons and compares assumptions about the origin of Halloween, classifies and defines criteria for the selection of a movie, questions the reliability of a source of information about a particular movie, and generalizes and predicts consequences of selecting a movie.
This first activity primarily activates critical thinking skills, but the final activity of the year about Games (see Appendix O) focuses on students' and parents' creative thinking abilities. In the final activity thinking groups receive a small brown bag inside the activity packet. The bag contains a number of items from paper clips to golf balls. Each member of the group selects one item and spends two minutes thinking of all the ways to use the item. The group discusses the results and shares ideas for using each item in the bag. The activity then challenges the group to use these items to create an original game.

Although the creation of the game is a creative activity, the group uses a number of critical thinking skills as well. Group members compare, contrast and classify all the items in the bag. The group also makes predictions and generalizes about how to use the items to create the game.

Table 1 indicates the integration of critical and creative thinking skills (Swartz 1987) in the eight curriculum activities. The questioning techniques in each activity suggest possible topics for discussion, but consistent with the goal of encouraging families to personalize the activities each family makes independent decisions about the use of specific thinking skills. The goal of participating in the activities is to generate discussion and thinking.

Each activity packet includes a response sheet for adults (see Appendix P) and for students (see Appendix Q). Completing the response sheets is voluntary. Completing the sheets is a valuable metacognitive activity for parents and students. These sheets
Table 1.

Some important critical and creative thinking skills and activities

<table>
<thead>
<tr>
<th>Skills at Generating Ideas</th>
<th>Decisions</th>
<th>Food</th>
<th>Surprises</th>
<th>Zoo</th>
<th>Visitors</th>
<th>Beware</th>
<th>Change</th>
<th>Games</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiplicity of Ideas</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Varied Ideas</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>New Ideas</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Detailed Ideas</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

| Skill at Clarifying Ideas        |           |      |           |     |          |        |        |       |
| Analyzing Ideas                  | X         | X    |           | X   | X        |        | X      | X     |
| Comparing/Contrasting            | X         | X    | X         | X   | X        |        |        | X     |
| Classification/Definition        | X         | X    | X         | X   | X        |        |        |       |
| Conclusions/Reasons              | X         | X    | X         | X   | X        |        | X      | X     |
| Uncovering Assumptions           | X         | X    | X         | X   | X        |        |        | X     |

<table>
<thead>
<tr>
<th>Skills at Assessing the Reasonableness of Ideas</th>
<th>Decisions</th>
<th>Food</th>
<th>Surprises</th>
<th>Zoo</th>
<th>Visitors</th>
<th>Beware</th>
<th>Change</th>
<th>Games</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accurate Observation</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>Reliability of Sources</td>
<td></td>
<td></td>
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<tr>
<td>Causal Explanation</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Prediction</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Generalization</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Reasoning by Analogy</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
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<tr>
<td>Conditional Arguments (if ... then)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

List adapted from Swartz 1987
provide information on the effectiveness of the activities. The final response sheet is unique. This instrument asks parents and students to rank in order of importance several aspects of the project.

**Summary**

The curriculum described in this chapter addresses the problem of involving teachers, parents and students in a thinking project that transfers the use of critical and creative thinking skills into the home. To build a home for thinking transfer, teachers using this curriculum combine the elements necessary for transfer with the elements necessary to involve parents in a positive way in the thinking process.

To initiate transfer, students receive direct instruction in the thinking process through an integrated curriculum approach at school. The play provides an opportunity for students to metacognitively reflect on the type of thinking they use and take control of their own thinking processes. By participating in meaningful home activities, students practice thinking in a socially interactive environment outside the classroom.

Transferring thinking skills into the home requires a partnership between teachers, parents, and students. This curriculum encourages parents to learn about thinking and questioning strategies through the video and the parent meeting. Parent participation in the home activities helps students link the type of
thinking in the classroom to the outside world and directly influences a student's ability to see the value of thinking as a life long process. Parents who model good thinking skills and adopt high level questioning strategies at home contribute to the transfer of good thinking skills.

At the beginning of this chapter the homeowner's house is a wooden frame. Electricity, plumbing and heating make the house livable. The addition of porches, decks, and walkways makes the structure unique, and the family visit declares ownership. The furnishings the family selects give the home personality and style.

This curriculum represents a thinking framework. Modeling critical and creative thinking skills adds details to the basic structure. Teaching for, of, and about thinking gives students tools to use thinking skills to make decisions and solve problems. Parent involvement indicates the value of using thinking skills outside the classroom, and participation in the thinking activities provides an opportunity for students to personalize their thinking in a social setting by stating opinions, justifying attitudes, and clarifying ideas.

Both structures reflect individual goals and expectations. For a house to become a home a family needs to occupy it. For this curriculum to be useful teachers, parents, and students need to use it. In the next chapter, the family moves into a new home and the implementation of thinking project begins.


CHAPTER IV

THE PROCESS OF BECOMING A HOME

Overview

The day finally arrives when the homeowner and his family move into their new home. In a short time, the contents of the moving van empty into the rooms of the house. The family removes necessary items from the moving crates and stores other boxes to unpack at a later time.

With the initial phase of moving complete, everyone begins a period of adjustment to the new house. When the newly planted trees wilt in the yard, the owner tests the soil and adds nutrient to promote growth. The builder repairs an improperly sealed window and connects the air conditioning system. The family invites old friends to the new house and introduces them to new acquaintances. Gradually, the adjustments end and the house becomes their home.

The thinking project underwent a similar moving day and period of adjustment. I implemented the curriculum with a group of fourth grade students and parents in a suburban community during the 1990-1991 school year. Twenty-five students and their families were invited to participate in the project to develop and transfer critical and creative thinking skills.
Like the homeowner and his family, everyone made adjustments. I assembled materials and collated activity packets. Graphic organizers in my classroom displayed thinking strategies, and class activities reflected project themes. When parents indicated that finding time to complete projects was a problem, I reduced the number of projects from ten to eight.

Parents directed the activities at home. They juggled family responsibilities and extra curricular events to set aside family time to complete thinking packets. Many parents attempted to incorporate the questioning strategies of the project into everyday activities.

Students transported the activity packets and participated in the project. Each student adjusted to the demands of the thinking packets. During the course of the project lowered eyes, silence, and "I don't know" became unacceptable responses at home and at school. Each child was encouraged to answer "why?", "how?" and "what if?" questions.

In this chapter, I describe the implementation of the project including the formal and informal instruments used to evaluate the success of the curriculum. Parents' and students' comments provide valuable insight into how families responded to the transfer of thinking skills outside the classroom. This chapter also includes reflections on the project and revisions for future implementation as well as a summary of the main ideas of the curriculum.
Informal Evaluation

The informal evaluation of this curriculum includes my observations and parent and student comments during the project.

In the classroom, the students enjoyed preparing the video presentation of the play. Dialogue from the script crept into conversations as students discussed making decisions in other situations. The ideas and strategies in "Is Any Thinking Going On Here?" definitely influenced the transfer of thinking strategies to other activities within the classroom. Outside the class the transfer of thinking skills proved difficult to determine. Discussions with some students indicated that on the playground and in gym class instances occurred that indicated transfer, but these instances seemed isolated.

Parents' reactions to the meeting were extremely positive. Almost every family attended and there were numerous questions at the conclusion of the meeting. Parents confirmed that they valued the development of thinking skills and intended to participate in all the project activities. Many parents seemed hesitant about conducting the activities at home but were enthusiastic about trying the project.

According to some parents, the video presentation and the demonstration activity clarified the focus of the project. Subsequent conversations with parents indicated that they felt
secure about completing project packets because the open-ended format allowed families to complete the activity in any way they wished.

Throughout the year, parents repeated comments about the difficulty of finding time to work together as a family. Since the projects required approximately one hour of family time every four to six weeks the obvious conclusion was that many families spend minimal amounts of time talking to each other. Several parents suggested that when they became aware of this fact they committed themselves to initiating discussion and conversation with their children about everyday activities. These discussions enhanced the possibility of the transfer of thinking to all areas of everyday life.

Project discussions occurred almost on a daily basis during project weeks and after. Students eagerly discussed the activities with me and with other students. Ideas and experiences from home influenced discussions and curriculum in class. Students not only transferred the use of thinking skills into their homes, but also transferred the ideas and thinking strategies used at home into the classroom. In my opinion, the project was a success.

**Formal Evaluation**

The formal evaluation of this project occurred at three different stages. The first evaluation instruments were the Adult Response Sheet (see Appendix P) and the Student Response Sheet (see Appendix Q) completed at the conclusion of activities one through
seven. The second instrument was the Final Activity Response Sheet (see Appendix R) completed at the conclusion of activity eight. The final instrument was the survey (see Appendices S-W) completed approximately one month after the project activities concluded.

**Activity responses.**

Included in the packet for each activity were evaluation sheets for adults and students. Although directions stated that completing these sheets was voluntary, most families complied. The questions were open-ended and the process encouraged everyone to comment at will. These responses helped me adjust materials and activities during the year. They also reflected how parents and students accepted the project.

One parent commented that, "These activities are super. It is my hope that these experiences will carry over into my child's thinking processes on a regular basis." From another family came this response, "I've noticed that since we've been doing these activities there has definitely been a positive change in the way we have conversations together as a family." Still another mother said, "Being a large family, we don't get an opportunity to talk much. There is always something to be done. This activity forced us to sit and talk. We all had a great time and it didn't hurt a bit. We'll do it more often."

Students' responses were brief. One student said, "I like to listen to my parents talk. This time I got to talk too. Nobody was
right or wrong so it was fun and we talked a lot to each other."
Similar comments received from other students included: "I like to
work with my family. That's the best part."; "I like to talk about my
ideas and make stuff with my family."; and "These things are fun
because no one is wrong. It makes me want to try and sometimes I
have great ideas."

Some activities created more discussion than others. Parents
and students reacted favorably to "Beware" (see Appendix M). When
asked if this activity was a valuable learning experience, every
comment indicated, yes. One father's response addressed the
question of transfer.

Unfortunately I was brought up in a family that thinks about the
worst negative possibilities in any situation which often held
me back from enjoying things. We never talked about
possibilities. I think this will help kids to think about
consequences, but take risks too, thanks!

One grandmother enjoyed talking to her grandchildren who "Let
their imaginations run wild. It was great to hear their creative
ideas." Her grandson wrote, "Using your imagination to create wild,
bonker ideas was fun."

On the back of one response sheet, I received a letter that
indicated the extent to which some families utilized critical and
creative thinking skills and encouraged family discussion and
interaction. A father stated that the activity, "Beware" (see
Appendix M) was his favorite because, "You can be silly and really
get into it. Adults don't get much chance to do that." The letter
continued, "Thanks. This activity was super. I'm not usually a very
creative person, but Timmy said that in class you have a sign that says everyone is creative and he encouraged me to try. My family liked my story so I'm sending it to you."

I came home one night to my house to see that it had grown arms, legs and a face. It was very mad at me for letting it get so dilapidated. It did not want to keep my car warm at night and it was sick of heating up in the winter. It hadn't been painted in years and it felt very naked. The windows were so upset, they wouldn't open and the toilets, sink, and dishwasher were on strike. The stove would not cook any more food. My bed had long arms and said it would eat me up if I tried to sleep in it. It was hopeless. My house was totally against me. It said if I didn't shape up it would not let me live there anymore!

The letter concludes by saying, "Timmy then suggested a conversation with the house. We all took parts. Timmy wanted to be the house so that he could talk about all the things that my wife and I haven't done. Boy, the roles were reversed."

The reaction to this activity and others convinced me that through the activities parents and students used critical and creative thinking skills at home. By sharing ideas and experiences, family members also learned about each other. As parents reported: "The boys learned why I do some things, and I learned that they are able to think for themselves."; "My girls learned to communicate their ideas and they even convinced us to change our decisions."

In response to the activity, Decisions (see Appendix H), the comments and questions surrounding the selection of a movie seemed particularly appropriate for a parent/child discussion. One parent wrote, "The movie discussion was great. We always screen movies but never before had we talked to the kids about why or
listened to their opinions." For another father this activity was relevant. He thought, "Being able to make decisions is crucial to daily life. This activity was realistic, since the question of choosing a movie comes up often."

Many comments on the response sheets submitted to me were very similar to those detailed here. Families were talking, sharing ideas, and relating experiences. Students and parents learned to value the unique ideas and thinking strategies of others. The poems, stories, and games sent to class indicated the extent to which families enjoyed the project. It was clear that the school family of teacher, parents, and students had created a home for thinking transfer.

**Final activity responses.**

After the final activity of the year, parents and students completed the Final Activity Response Sheet (see Appendix R). The sheet detailed ten aspects of the thinking project and asked participants to prioritize the list by order of importance. To complete the list parents and students reflected back on the eight activities and the thinking that occurred during the project.

I distributed several final activity response sheets to each family and encouraged responses from anyone who had participated in any activity of the project. From the twenty-four families who participated in the project, there were thirty-four adult responses and thirty-five student responses. The results (see Table 2.) will provide valuable information for future implementation.
Table 2.

Final activity responses from adults and students

<table>
<thead>
<tr>
<th>ADULT RESPONSES</th>
<th>STUDENT RESPONSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share feelings</td>
<td>1. Spend time together</td>
</tr>
<tr>
<td>Seek solutions</td>
<td>2. Present your ideas</td>
</tr>
<tr>
<td>Have no homework</td>
<td>3. Share feelings</td>
</tr>
<tr>
<td>Make decisions</td>
<td>4. Hear ideas and opinions</td>
</tr>
<tr>
<td>Spend time together</td>
<td>5. Enjoy fun activities</td>
</tr>
<tr>
<td>Present your ideas</td>
<td>6. Share experiences</td>
</tr>
<tr>
<td>Share experiences</td>
<td>7. Make decisions</td>
</tr>
<tr>
<td>Enjoy fun activities</td>
<td>8. Explain a point of view</td>
</tr>
<tr>
<td>Hear ideas and opinions</td>
<td>9. Seek solutions</td>
</tr>
<tr>
<td>Explain a point of view</td>
<td>10. Have no homework</td>
</tr>
</tbody>
</table>

MOST IMPORTANT..............................................LEAST IMPORTANT
1........2........3........4........5........6........7........8........9........10
The responses also indicated a difference in what parents and students considered important. For students, the most important aspect of the project was spending time together. Adults felt the most important aspect was sharing feelings. I shared the information with students who were eager to rationalize choices and explain differences. We all enjoyed speculating about the results, especially why the lack of homework was more of a priority for parents than students. The discussions were an important link between the thinking project and thinking as a life skill whether a child or an adult.

Survey.

The final component of the formal evaluation of this curriculum was a survey. The survey discussed thinking and communicating within the family. The goal of the survey was to detect differences in parents' information and attitudes, between families who had completed the project and those who had not. The students in all five fourth grade classes and their parents completed the questionnaires (see Appendices T-W). Only one fourth grade class (mine) participated in the thinking project.

The fourth grade teachers distributed the survey approximately one month after my thinking project concluded. All fourth grade students completed the questionnaires in school. Of the group of parents who participated in the project, 96% responded to the survey. The response rate for other fourth grade parents was 83%.
The survey consisted of a transmittal letter (see Appendix S), Parent Questionnaire #1 (see Appendix T), Parent Questionnaire #2 (see Appendix U), Student Questionnaire #3 (see Appendix V) and Student Questionnaire #4 (see Appendix W). Participants in the thinking project completed all forms. All other fourth grade parents completed Questionnaire #1 and students completed Questionnaire #3.

The results of this survey were inconclusive. There were small differences in the responses of those parents and children who participated in the thinking project with those parents and students who did not participate. Many factors probably influenced responses from both groups. Parents may have been influenced by the fact that their child's teacher would read the survey. Students and parents may have given socially acceptable responses. Groups of parents may have discussed the questions and adapted their answers.

Since this was a curriculum evaluation and not a formal study I focused my attention on the information the survey provided and implications for future curriculum projects. If I were to use this curriculum again, I would add an instrument to gather information at the beginning of the project in order to compare and contrast results.

One aspect of the survey seemed significant. When asked to rate the amount of time spent sharing ideas, talking to each other, and learning from each other, the parents who had not participated in the project indicated more time. Since project families repeatedly discussed the problem of finding the time to complete activities, this response seemed unusual.
One explanation for the difference could have been that the group of families that participated in the thinking project was unusual in the amount of time they originally spent together. My colleagues and I theorized that the families involved with the project completed the survey more critically than those families not involved. The assumption in this theory was that the project created an awareness in participating families of the quality and quantity of time families actually spend thinking and talking together.

This increased awareness reflected one of the goals of the thinking project. Responding to specific questions about the project, parents and students defined the goals of the project as: extending thinking, developing critical and creative thinking skills, improving communications in families, and increasing self confidence in expressing ideas and making decisions. The survey indicated that project activities addressed each goal.

When asked if this project was of any value to your family, one family wrote, "Yes, we learned how to think together, to make decisions and share creative ideas. We discovered that we are all pretty interesting people." A single parent of one of the fourth grade boys wrote, "We both learned by thinking and talking things out that we can eliminate a lot of confusion. I am less anxious about the time I spend with him as long as we keep communicating and talking."

In response to the question, How would you describe this teacher's educational approach?, one response reflected the goals of the thinking project. This parent replied, "Mrs. Burke is family oriented. She educates through experience encouraging children to
work cooperatively, but think independently. She also respects the children's point of view and let's them know that their ideas are heard."

Reflections

Student.

Throughout the year, students discussed the thinking project. The most important aspects to them were: spending time with adults talking and sharing ideas and activities. When I asked my class if the project had any impact on their lives, the responses were startling. One comment that I heard often was that parents are listening more to children's ideas.

Several students reported that allowances, bedtime and household jobs were negotiated by parents and students. Frequently I distribute passes that allow students to omit homework assignments. One girl was extremely excited at the prospect of being able to choose when to use her homework passes. Her mother had always determined the best time to use them, but after the activity on decisions the passes were given to her to use independently.

Another student discussed planning his birthday party with his friends. His parents had given him a budget, and he was making decisions about every aspect of the party.
During the final week of school, my class discussed skills that became automatic in their lives like talking, walking, taking a bath, combing their hair, and adding and subtracting numbers. As an assignment I asked groups of students to develop strategies that would make using thinking skills automatic.

The discussions were animated. Some strategists suggested keeping a thinking diary, writing notes to yourself, starting a thinking club at school, or creating thinking games. One group thought about writing a book on thinking, and another decided that no strategy was necessary because the group decided they would always use their thinking skills.

The message was clear. Thinking had become a priority because in their words, "It's fun...school's not boring...it's easier to learn stuff this way."

Teacher.

As I reflected on the thinking project, I concluded that the curriculum achieved stated goals. I observed students' growth in the ability to listen, respect ideas and express opinions. Parents nurtured, developed and valued thinking at home. Evaluations convinced me that thinking skills had transferred outside the classroom.

In my opinion the project ignited parents' interest and enthusiasm for thinking skills development. The commitment that they demonstrated guaranteed the growth their children experienced.
In response to issues raised during the project, I would make some changes for future implementation of the curriculum. I would include an instrument to gather information at the beginning of the project. I would also use the revised copy of the Response Sheet for Adults (see Appendix P) included in this curriculum which replaces some open-ended questions with multiple choice items. This sheet was revised during the project in response to parent comments.

Although experts suggest limiting the number of parent meetings, I would include volunteer sharing sessions. At these meetings parents and others could discuss the project activities with other parents or me. These meetings could be videotaped and made available to anyone who could not attend.

Finally, I would consider some vehicle to continue the process at the conclusion of the project. A newsletter, paper, or workshops could keep families involved in developing thinking skills.

**Summary**

I began this thesis by identifying thinking skills transfer as the goal of this curriculum project. Experts in the field identified for me components of a program that would maximize the possibilities for thinking transfer. By researching model parental involvement programs, I isolated key aspects of each program that facilitated developing a partnership with parents to reinforce thinking.

For one school year twenty-five students and their families participated in a thinking project. Parents modeled good thinking,
and employed high level questioning strategies. By engaging students in the use of critical and creative thinking at home, families demonstrated the value of using mature thinking. Parents joined with me in a partnership in which their ideas were respected and considered vital to the success of the project.

Throughout the year, students and their families completed home activities utilizing thinking skills in varied, meaningful contexts. There was no right way to complete the activities which parents considered a positive aspect of the project. Although few families completed the activities exactly as I envisioned, the outcomes were similar. Families were thinking, talking, asking questions, and explaining ideas. Project activities employed strategies that elicited recall, application, analysis, and evaluation.

Both formal and informal evaluations indicated the critical thinking skills of students and some parents were strengthened, and that creative thinking skills were enhanced by participation in the project. Survey results showed that parents and students valued thinking, curiosity, respect for ideas, independent thinking, and creative exploration.

Whether students were in my classroom or their own living room, they felt at home using thinking skills to challenge their imaginations or facilitate making decisions. The parent, teacher, student partnership was a success. Together we had built a home for thinking transfer.
REFERENCES


———. "Infusing Teaching for Critical and Creative Thinking into Standard Subject Area Instruction." 1987 (mimeographed handout).


APPENDIX A

CONTENTS OF THE APPENDIX

The Appendix contains a curriculum to transfer critical and creative thinking skills into the home. To maximize the potential for transfer, this curriculum is designed to be used as part of a thinking skills development program that involves a partnership between home and school. Before these skills can be transferred, teachers must model and teach mature thinking skills in the classroom.

SCHOOL BASED ACTIVITIES:

Appendix B  "Is Any Thinking Going On Here?"
Appendix C  Invitation To Parents
Appendix D  Parents' Meeting
Appendix E  Welcome To The Thinking Project

HOME ACTIVITIES:

Appendix F  Contents Of The Activity Packets
Appendix G  Activity Directions
Appendix H  Project Activity-Decisions
Appendix I  Project Activity-Food
Appendix J  Project Activity-Holiday Surprises
Appendix K  Project Activity-It's A Zoo
Appendix L  Project Activity-Visitors
Appendix M  Project Activity-Beware
Appendix N  Project Activity-Change
Appendix O  Project Activity-Games

EVALUATION INSTRUMENTS:

Appendix P  Adult Response Sheet
Appendix Q  Student Response Sheet
Appendix R  Final Activity Response Sheet
Appendix S  Letter of Transmittal
Appendix T  Questionnaire #1
Appendix U  Questionnaire #2
Appendix V  Questionnaire #3
Appendix W  Questionnaire #4

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APPENDIX B

"IS ANY THINKING GOING ON HERE"?

SETTING:

TIME: Sometime during a normal school day
PLACE: A fourth grade classroom

CHARACTERS:

Mary Good - newscaster
11 Students
2 Make-up artists

Ron Thinking - newscaster
Camera Operator
Grip

PROPS:

2 towels, hairbrush, make-up brush
2 microphones, camera, (can be made by students)
clipboard, paper and pen, an apple, a crumpled paper

STAGE DIRECTIONS: ( )

(As the play begins, Ron and Mary are outside a classroom
preparing to tape a news broadcast. Make-up people are
fixing hair and make-up. Ron and Mary are straightening
their clothes and talking to each other about the broadcast.)

Grip....Two minutes everyone!

(Ron and Mary take their place in front of the closed classroom
door.)

Grip....Action!

Ron....Hello everyone. This is Ron Thinking.
Mary....And I'm Mary Good. Today, we have brought the Channel 30
News Team to an elementary school to answer the question,

IS ANY THINKING GOING ON IN OUR SCHOOLS?
Ron...(looking into the classroom through the glass window)
The answer to that question is obvious.

Mary...What do you mean, it's obvious? That question was debated in
the halls of Congress! Teachers argue about it all the time. If
you asked parents and kids, what do you think they'd say?

Ron...I don't know.

Mary...I rest my case!

Ron...But Mary, there are kids in this classroom. Someone had to be
thinking to get them here. And, they have clothes on, so they
had to be thinking to get dressed.

(Ron walks over to an open locker.)

Look! I found an apple in this locker. Someone had to be
thinking he'd eventually be hungry or it wouldn't be here. So,
thinking is going on here.

(Ron takes Mary's arm and begins to leave.) That was easy!
Let's go to lunch; that apple made me hungry.

Mary...(stopping Ron in his tracks) Not so fast. What if someone's
mother put the apple in the locker?

Ron...I guess you're right. I hadn't thought of that.

Mary...You see. I agree that people are thinking all the time. But,
there are different kinds of thinking. We're looking for
problem solvers, people with creative ideas., people who use
good thinking, thinking with a capital T.

Ron...Well, I'll bet we'll find that kids do that kind of thinking, too.

Mary...We'll see, (turning to the camera) and you'll see too as we
take our broadcast into a fourth grade classroom on our quest
for good thinkers.
(The camera person follows Ron and Mary into the classroom.)

Ron (looking around the room, whispers to Mary) Mary, this could be tough. How are we going to be able to tell who is thinking?

Mary....(sarcastically) You have to watch their faces, and when they are really thinking they turn green!

Ron....That's neat. This will be a cinch.

Mary....Be serious. We have to listen, and watch, and maybe ask questions.

Student #1....(turning in his seat to talk to the boy behind him) I found this paper on the floor. What should I do with it?

Ron....(whispering) Why doesn't he...

Mary....Quiet!

Student #2....Well, what are your options?

Student #1....What do you mean?

Student #2....Think. How many things could you do with it? You could eat it.

Student #1....Yuk!

Student #2....You could wear it.

Student #1....That's dumb.

Student #1....You could put it in your desk.

Student #1....But, my desk is a mess now, why would I want to put trash in it?

Student #2 ....Then, what makes sense?

Student #1....It's going in the trash.

(Student gets up and throws the paper in the trash.)

Mary....Now that's good thinking.

Ron....Can we eat now?
Mary...Look at that group in the corner. They seem to have a problem. Let's listen.

(Mary and Ron and camera person cross the room to where several students are arguing.)

Student #3....We can't go into the hall. Mrs. Burke said that we have to stay inside the classroom.

Student #4.... But, where are we going to work?

Student #5.... Let's just stay here.

Student #6.... It's too noisy here. How about in that corner?

Student #7.... I don't think that there's enough room for all of us to work in that corner.

Student #8.... Besides, if we work over there, the other groups can hear our ideas.

Student #9.... Wait a minute. We're wasting a lot of time. Let's think of all the things we need.

Student #8.... Quiet!

Student #9.... We need space to work together.

Student #7.... I think we should have a table or something to write on.

Student #6.... I'd vote for some privacy.

Ron.... I think they're out of luck. They probably should just stay where they are.

Mary.... Some problem solver you are!

Student #7.... I have it! Why don't we work in the math area. If we work together we can move the equipment and put some desks together to form a table. We'll be in an area that is quiet, private, and big enough for everyone to work together.
Students #7,8,9....(together) Super! Great! That's good thinking. Let's get started.

Ron....Well, are you satisfied, Mary? These kids do think with a capital T.

Mary....(turning toward the camera) Well folks, as you can see, it seems that there is good thinking going on in our schools. However, over in that corner I see a student who appears to be doing nothing. Let's go see if any thinking might be taking place.

(Ron and Mary move to another area of the classroom where a student is sitting staring into space.)

Ron....(turning toward Mary) Maybe he is thinking up a new way to do math, or a new ending for a story, or a great game to play at recess, or...

Mary....(turning to Ron)SHHHH! (then turning toward the student) Excuse me. My name is Mary Good and I was wondering, just what are you thinking about?

Student #10....(hesitantly) I was out of the room, and now I don't know what to do.

Mary....(writing on her clipboard) Hmm.

Ron....Wait a minute! Wait a minute! (turning toward the student)

Listen. What do you see around you?

Student #10.... Kids.

Ron....What are they doing?

Student #10....They have their spelling books out and their crayons so they must be color coding their spelling words. Mrs. Burke
says that way both sides of our brain work together to help us remember the spelling. I know! I should be doing spelling.

Ron....(looking smugly at Mary) Good thinking.

Student #10....Thanks for the help.

Ron....No problem. You did the thinking.

(Ron and Mary move toward the door that is at the front of the classroom.)

Mary....You saved that one. However, I have heard students ask questions without thinking first like:

"Mrs. Burke, why won't the computer work?"

"Mrs. Burke, do I have to do all the questions on the test?"

"Mrs. Burke, I don't understand what to do on this problem?"

"Mrs. Burke, is this the right kind of book for my report?"

Ron....(looking disappointed) I guess sometimes you just have to give answers.

Mary....Wrong! Each time Mrs. Burke was asked a question she said, "What do you think?" or "What could you try?" or "What are your options?" Each student thought about the problem and came to a decision about what to do.

Ron....Look! There's a boy with a question. Let's see what he says.

Student #6....Mrs. Burke are we going to go to gym today?

Mary....I guess not everyone is thinking with a capital T. On the wall there is a chart that gives the day and the time that these students have gym. So, I suppose that wasn't a very good question.

Student #11....(frantically waving her hand in the air) Wait!

Sometimes questions that seem kind of dumb aren't so dumb at
Timmy didn't ask Mrs. Burke if we were going to gym because he didn't know. He did it to remind her that it's almost gym time.

Ron....Good thinking. Great idea! I'll have to remember that.

Mary....*(Facing the camera)* Well our time is up for today. We are visiting a fourth grade classroom in search of good thinkers. What we have discovered is that a lot of thinking with a capital T goes on in our schools. Sometimes we all just need to be reminded to use thinking skills.

Ron....With a little help, everyone can become a good thinker.

Mary....This is Mary Good

Ron....and Ron Thinker saying good day and good thinking.

Grip....Cut!
DEAR PARENTS/GUARDIANS,

THIS YEAR YOUR CHILD WILL BE PARTICIPATING IN A SPECIAL CRITICAL AND CREATIVE THINKING PROJECT DESIGNED TO DEVELOP THESE SKILLS AT HOME AND AT SCHOOL. THE MOST IMPORTANT INGREDIENT FOR THE SUCCESS OF THIS PROJECT IS YOU!!!!!!!!!!

A SPECIAL MEETING WILL BE HELD ON ____________ IN ROOM _________ AT __________ TO EXPLAIN THE PROGRAM. THE STUDENTS HAVE ALSO PREPARED A VIDEO SURPRISE THAT WILL BE PRESENTED AT THAT TIME.

PLEASE COME!

STUDENTS WILL NOT ATTEND THE MEETING. SPECIAL ARRANGEMENTS HAVE BEEN MADE TO PROVIDE BABYSITTING DURING THE MEETING.

PLEASE SIGN AND RETURN THIS FORM BY ____________.

_______ YES, I/WE WILL ATTEND

_______ NO, I/WE WILL NOT ATTEND

______________________________
PARENT/GUARDIAN
APPENDIX D
PARENTS' MEETING

ADVANCE PREPARATIONS:

Group desks to facilitate interaction.
Set up a children's movie in an adjoining room with adult supervision.
Place at the center of each group a uniquely decorated box.
(The box will be used in the hands on activity, Appendix D.)
Beside each box place a sign that says,
PLEASE DO NOT PEEK!
Display the these phrases in a prominent place in the room.
THERE IS ONLY ONE RULE FOR THIS ACTIVITY
AFTER EACH QUESTION YOU MUST TELL
WHY, WHY, WHY!

DURING THE WORKSHOP:

WELCOME:
Play classical (Baroque) music in the background to set a relaxed mood.
As parents arrive, welcome them and invite them to sit at a group. If parents do not know each other, facilitate introductions.
Introduce facilitator and any administrators attending the meeting. Thank parents for participation.
Briefly discuss the Thinking Project including goals for developing thinking skills.

ACTIVITY:
Present the activity. (see Appendix D)
During the activity, circulate and encourage questions and discussion.
At the conclusion of the activity, invite parents to discuss the thinking the activity encouraged, as well as any observations they wished to share.
Next, parallel this activity with the activities included in the project.
VIDEO:
Present a video presentation entitled, "IS ANY THINKING GOING ON HERE?", (see Appendix A) adapted from a play written by M. Burke but edited, produced, directed and performed by students.
The video depicts the application of critical and creative thinking skills in the classroom.
Provide an opportunity for questions and discussion.

PROJECT DISCUSSION:
Dispense information about when and how packets would be sent home.
Display the contents of a sample packet.
Explain each component (directions, activity sheets, materials, and response sheets)
Discuss special considerations for no homework during project week.

CLOSING:
Thank parents for their interest and enthusiasm.
Allow time for questions and comments.
APPENDIX E

WELCOME TO THE THINKING PROJECT

This activity is identical to one of the activities you will do with your thinking group at home. Please select one person in your group to read the directions marked with an asterisk (*). As each question is read, work together and share your ideas. Remember the rule, ALWAYS EXPLAIN WHY, WHY, WHY.

Good luck and have fun!

*Your task is to try to discover what is inside the box.

*What are the characteristics of the item in your box? (size, shape, weight, texture)

*What leads you to that conclusion?

*Name three things that couldn't possibly be in the box. Why not?

*In making your decisions were you influenced by the fact that you are in a classroom? How?

*Do you think your choices would be different if you were asked to do this activity somewhere else, for example, at a doctor's office, the local Bingo game, a friend's cocktail party,?

*Were you influenced at all by the packaging of the box? In what way?

*What sources (senses, previous information) did you use to make your decisions?

*Before you open your box, if you had to rate the accuracy of your guess would you say you were: positive.......very certain.......certain.........unsure.......no idea

*If you could get additional information to help make your decision, what would you like to know? Sorry, only one guess!

*Make your decision. Open the box.

*Discussion
APPENDIX F

CONTENTS OF THE ACTIVITY PACKETS

TRANSMITTAL ENVELOPE:
A large envelope (10"x13") was assigned to each family.

ITEMS CONTAINED IN EVERY PACKET
- Direction Sheet (see Appendix G)
- Activity Sheet (see Appendix H-O)
- Adult Response Sheet (see Appendix P)
- Student Response Sheet (see Appendix Q)
- Additional Materials (see list below)

ADDITIONAL MATERIALS REQUIRED FOR EACH ACTIVITY:

DECISIONS (SEE APPENDIX H)
- 2 sheets of paper labeled either Adults or Children.
- Photocopies of 4 newspaper advertisements for movies: adult and children's selections.

FOOD (SEE APPENDIX I)
- Pictures of food from the four basic food groups.
- A picture of food often classified as "junk food"
- A list of people who might come to dinner, e.g. teacher, boss, best friend, movie star, wrestling star, doctor, dentist, a favorite aunt who is on a diet, a grandparent who has no teeth, the President of the United States.
- 30 blank file cards each cut in half.

HOLIDAY SURPRISES (See APPENDIX J)
- 2 paper bags (any size)

IT'S A ZOO (SEE APPENDIX K)
- 20 animal cards
- An outline of a plot of land on blank paper (several sheets)

VISITORS (SEE APPENDIX L)
- (NONE)
BEWARE (SEE APPENDIX M)
20 situation cards, each stating one situation, e.g.
brushing your teeth, answering the phone, vacuuming, mowing
the lawn, watching TV, dancing, playing ball, curling your hair,
loading the dishwasher, eating breakfast, shopping, exercising.
Several sheets of blank paper that are labeled BEWARE!

CHANGE (SEE APPENDIX N)
A copy of the story "A NEW WORLD FOR AARDU"
Feeling cards: Each card states and illustrates a feeling.

<table>
<thead>
<tr>
<th>Cabin</th>
<th>Sad</th>
<th>Excited</th>
<th>Upset</th>
<th>Uncertain</th>
</tr>
</thead>
<tbody>
<tr>
<td>happy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>sad</td>
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<td></td>
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</tr>
<tr>
<td>excited</td>
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<td>upset</td>
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</tr>
<tr>
<td>uncertain</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

GAMES
A paper bag containing the following items:
1 styrofoam cup
4 paper clips
1 golf ball
3 elastics
silver cardboard (6"x16")
poster board (8 1/2"x11")
1 pencil
3 craft sticks
1 pipe cleaner
1 plastic fork
Final Activity Response Sheet (see Appendix R) replaces
the response sheets used in previous activities (See Appendix P-Q).
APPENDIX G

ACTIVITY DIRECTIONS

WELCOME!

ACTIVITY DIRECTIONS FOR ALL ACTIVITIES (SEE APPENDIX H-O) ARE SIMPLE:

1. SELECT ONE PERSON TO READ THE ACTIVITY SHEET TO THE GROUP.

2. STOP AT EACH STATEMENT OR QUESTION THAT BEGINS WITH *.

3. DISCUSS YOUR IDEAS, ASK QUESTIONS, SHARE EXPERIENCES, STATE YOUR OPINION, EXPLORE POSSIBILITIES.

4. REMEMBER THE RULE. ALWAYS EXPLAIN WHY.

5. RELAX

ENJOY

HAVE FUN
WELCOME TO THE FIRST ACTIVITY OF OUR THINKING PROJECT!

Remember the goal of the project this year is to:

- Work together............Everyone's ideas count.
- Listen and share ideas and activities.
- Ask questions......even silly ones!!
- Become excellent observers.
- Stretch your imagination.
- Exercise and Strengthen Critical and Creative THINKING.

Does that sound like a lot?
RELAX, ENJOY, HAVE FUN.

*What's the first thing children usually think of when someone says OCTOBER? Was it Halloween? For most kids, Halloween is one of the highlights of the Fall season. Halloween has changed over the years. Inside your envelope you will find two sheets of paper. One is marked "adults", the other "children". Take some time and fill the paper with anything you think of when you hear Halloween. Adults work together and children work together.

*Share your ideas.

*Are your sheets the same? What is different? What is the same?

*Why do you think the celebration has changed?

*Can you imagine how or why a celebration like Halloween began? Does anyone in your group know? (Information is available in class if you are curious)

THERE'S GOING TO BE A PARTY!

*Has anyone in the group attended a Halloween party? What happened at the party? How was it different from any other party?
This year you are going to have a party! You invite some of your friends and your parents invite some of your younger cousins. You and your friends decide to rent a movie.

*What kind of movie would you rent? Why?

Inside the envelope are advertisements for four movies. Your group task is to select one of the movies. Everyone in the group must agree.

*Look at each ad carefully. What information about the movie can you see from the ad? Remember to read the small print!

*As you look at each ad, what can you tell about the movie from the pictures?

*Are there any movies that any member of the group will not accept? Why?

*If so, has that member of the group seen the movie? If not, how can he or she make a judgment?

*Do any of the following facts affect your decision about the movie?

Your best friend’s mother will not let him watch adult movies.
Your cousins are four and five years old.
Your special guest hates cartoons.

*What problems must you solve before you can make a decision?

*What are your options (even strange, silly ones)?

*Discuss one of your options. Have everyone in the group list all the pros and cons of selecting that movie.
Follow the same process with the other options.

*Think about the results. Does one option seem better than the rest? Can you make a decision?

*What if you don’t like any of the options? Can anyone think of a creative solution to this dilemma?

THINK ABOUT IT!
It's harvest time and with Thanksgiving approaching food seems to be everywhere.

*Can you remember everything you ate today? On separate file cards write each food that you ate. If, for example, you ate a peanut butter sandwich, the peanut butter goes on one card and the bread another. Each person in the group participates.

*When you have finished put all the cards together and group the foods that are alike. Discuss how you are making groups and what you would call each group. Work together and talk about why some foods go together and some do not.

*People group food in many different ways, e.g. color, texture, type, nutritional value, cooked/uncooked, cold/hot, sweet/sour. How are your foods grouped? Explain.

There are pictures of foods from the four basic food groups in the envelope. There is also a picture showing other foods.

*Working together place your food cards under one of the five pictures. This is a group project. Talk about where each card is placed and why.

*Label the foods listed under each picture.

*For a balanced diet, doctors recommend eating items from the four basic food groups every day. Classify your diet today.

excellent.............very good................good.............needs work........................

*What kinds of things affect what you eat?

*Does everyone in this country eat the same things? Why or why not?

*Talk about your favorite food. What would happen if you ate your favorite food every day? What would happen if you ate only your favorite food?
SOMEONE IS COMING TO DINNER!

Inside the envelope is a list of people who may come to dinner.

*Working as a group, select one person and plan a menu for dinner. Explain your choice of foods.

*One person in the group makes a menu and the others try to guess who is coming to dinner! This activity can be done by more than once.

*What other things are important considerations when planning a dinner?

Now that you are an expert, think about Thanksgiving.

*What new food would you add to your family feast to begin a new tradition?

*Is there agreement in the group about which food to select?

*If not, how would you convince other members of the group?

THINK!
APPENDIX J

PROJECT ACTIVITY-HOLIDAY SURPRISES

Holiday time is around the corner and gaily decorated packages are appearing everywhere. Being a good detective can sometimes help unravel mysteries or uncover secrets!

*Inside the envelope you will find two bags. While you close your eyes, Mom or Dad will put one item in each bag. (Parents, try to challenge the group! Remember the activity presented at the meeting. Things are not always what they seem!)

Now close your eyes. But listen carefully. Parents signal when ready.

*What were you thinking with your eyes closed?

*Name three things that are definitely not inside the bags. Explain how you made that decision.

*Select one bag. What can you tell about the size, shape, or smell, of the item in the bag? You may handle the bag.

*If you were doing this activity at a friend's party, would your guess be the same or different?

*How are you getting information about what is inside each bag?

*If you could ask one question to help you make a decision, what would you ask?

It's time to guess!!!! After you have guessed, you may open the bags. Surprised?

*Now that you know what is inside the bags, what facts could you have used to make your guess?

NOW THAT YOU ARE AN EXPERT DETECTIVE, IT IS YOUR TURN TO CHALLENGE THE ADULTS! BE CLEVER! BE TRICKY! BE CREATIVE! Repeat the activity.

*If you want to keep your holiday secrets, how are you going to wrap your gifts?

THINK ABOUT THIS QUESTION, BUT KEEP YOUR IDEAS TO YOURSELF!!!!!
This is a group project. Everyone should work together to complete the task. You are not expected to be an animal expert. Use your head, your imagination, and enjoy yourself.

*Do you have a pet? Do you think that animals need special care?

*If you could choose any animal for a pet, what would you select? Each member of the group selects one animal.

*Do you think some animals make better pets than others? Explain.

*On a scale of 1-5. If 1 is not a very good pet and 5 is a great pet, what number would you give to the animal you selected? Why?

*If all the animals selected by your group were in your house together, what do you think would happen? Why?

*Discuss for a few minutes the homes, food, and other requirements for the animals your group selected.

*Do you think that designing a zoo for these animals would be hard or easy? Explain.

*What would be the biggest problem? Why?

Remove the animal cards from your envelope. Your group is going to select at least five cards. Group members should make the decisions together. Your task is to design a zoo that will include these animals.

*What plans do you need to design your zoo?

*What facts about your animals must you consider?

*Can you think of other things you must consider?

*Have you ever visited a zoo and wanted to make changes? What were they?
*Do you plan to include these ideas in your zoo? Why or why not?

Inside the envelope is an outline of the land that the town has donated for your zoo. As you place your animals, don’t forget that this is a zoo and people visit animals.

*Discuss what needs a zoo designer must include for visitors.

*Will you charge admission to visit your zoo? If so, what will you do with the money you collect?

ARE YOU READY? DESIGN YOUR ZOO. WORK TOGETHER. YOU MAY DRAW AND LABEL THE OUTLINE OR COMPLETE THE TASK IN ANY OTHER WAY. BE SURE TO INCLUDE THE ZOO NAME, AS WELL AS THE ANIMALS IN THE ZOO.

ALSO INCLUDE A COMING ATTRACTION AREA OF THE ZOO THAT WILL HOUSE THE NEXT ANIMAL YOU WOULD LIKE TO INCLUDE. (GIVE A FEW HINTS SO VISITORS CAN GUESS THE ANIMAL.)

This activity is open-ended. You may use any materials.

BE CREATIVE....THINK CRITICALLY....ENJOY!
APPENDIX L

PROJECT ACTIVITY-VISITORS

NEWS FLASH! PLANET ZIRCON DISCOVERED! INTERGALACTIC MESSAGES RECEIVED BY THE WHITE HOUSE!

A family of Zirconans will visit the United States for a week. A computer selected your family to host the visitors. There is very little information available about the Zirconans. Government officials will support and assist the visiting family.

*At a meeting scheduled to provide you with information, what are the five most important questions your group would ask? Discuss.

The government decided to pay all expenses for the visitors and provide transportation for your family and the visiting family anywhere in the United States.

*Describe how your group feels about hosting this family. What questions and concerns still remain unanswered?

NEWS FLASH! Visiting Zirconans speak English.

*Is this news important? Why?

NEWS FLASH! Zirconans possess the ability to change their appearance.

*Is this news important? Why? At what times during the visit would this be helpful?

*Before the visitors arrive, your family must decide if you wish to meet them in their Zirconan state. Discuss your ideas. Everyone must come to a decision together.

NEWS FLASH! Zirconans possess the ability to read minds.

*Is this information disturbing? Why?

*Rank how your family feels about this visit.

very excited............excited............uncertain...........nervous..........Yuk!.............
*The purpose of this visit is intergalactic communication and friendship. The Zirconans will come to learn about life in the United States from a typical American family. Decide as a group what the Zirconans should learn.

*This is an opportunity for your family as well. What information about Zircon interests your group?

NEWS FLASH! The Zirconans have arrived in the United States. The family consists of three adults and one child.

Your group has 24 hours to plan a complete itinerary for the visit. Remember the government is paying all expenses, so money is no object. A limousine and a fully equipped airplane are at your disposal.

*All decisions are up to you. Where will you go? What will you see? Will you introduce the visitors to your neighbors and relatives? Will the visitors stay at your home or at a hotel?

*Plan the visit together. All ideas are important!

*Predict the biggest problems with the visit. Discuss solutions.

*Decide as a group the most important part of this visit?

*The Zirconan family invited you to the planet Zircon for a visit. This time you are the intergalactic family visitors. Would your group accept the invitation?

THINK
APPENDIX M

PROJECT ACTIVITY-BEWARE!

Have you ever wondered how kids get toys stuck in their throats or how adults lock keys in the car, or why someone brushes his teeth with first aid cream?

Everyday activities can be hazardous to your health!

DANGER....WARNING.......CAUTION..........WATCH OUT
BE CAREFUL.......HAZARDOUS

Each of these signs tell us to take care. But what about ordinary, everyday dangers? For example:

BEWARE!!!!

*You are tying your shoes. Think about all the things that could happen to you as you tie your shoes.

*Did you think about tying the laces together, breaking the laces, or falling down? If so, that was good thinking. But, did you think about tying the laces around your finger so tightly that your finger fell off? What about tying the laces too tight that it caused friction to start a fire and burn a hole in your sneaker? Maybe you thought about tying your sneakers so tight that they stopped the circulation in your feet and you fainted in your yard and were carried off by an army of invader ants that landed in your yard from another planet?

I THOUGHT YOU THOUGHT OF EVERYTHING!

*Inside your envelope there are situation cards. Each member of the group is given one minute to think of as many things as possible that could happen while you are doing this activity.

*Take turns sharing your ideas. Remember anything is possible. Stretch your imagination!

*Did you think of everything? Do you think anyone in the group thought of everything? Why or why not?
*Did some people in your group think of more things than others? Discuss why this may or may not be true.

*Did some members of the group find it difficult to think of "far out" possibilities?

*When you are getting ready for school, or riding to work, or washing the dishes, do you ever think of all the things that could go wrong? Why not?

*Can you think of a time in your life when you do try to think about all the possibilities before you do something? Explain.

*Should you try to think about every possibility all the time? Could you?

*Was it fun to imagine weird, far out, improbable happenings?

Inside your envelope you will find a sheet of paper labeled, BEWARE!!!!

*On this sheet of paper write a poem or a story about a strange, unexpected, or humorous situation, or draw a cartoon or a series of cartoons.

This is a group activity. Involve everyone! This is not the time to make sense, or be logical, or say, BUT THAT CAN'T POSSIBLY HAPPEN!

After all, strange things do happen every day, so

BEWARE!
APPENDIX N

PROJECT ACTIVITY-CHANGE

Everything changes! We often change our clothes, our furniture, our cars, and our hairstyles. What one word comes to mind when you hear the word, CHANGE?

Not all changes can be seen. People also change their ideas, attitudes, opinions, and beliefs.

*Which is easier, changing your clothes or your ideas? Explain.

*Which is easier, changing your home or your attitudes? Explain.

*One member of your group reads,"A NEW WORLD FOR AARDU". After each section of the story, stop and discuss how Aardu feels or how he has changed. People express ideas differently, so every person in the group is important.

*Select five words to describe Aardu at the beginning of the story. Work together but explain your reasons.

*Now select five words to describe Aardu at the end of the story.

*Each person thinks of one time in life when a change occurred. Share these experiences and feelings.

*Words often give a mental picture, a feeling, or an idea. Close your eyes and listen to these words.

(Group reader reads the words very slowly.)

HOT FUDGE ICE CREAM SUNDae
RECESS
SKIING
SUN
A BABY KITTEN
SPINACH
A LARGE DISEASED RAT

*What changed? Explain. Can you think of a word that paints a picture? Try it!
*Try putting two words together, e.g. recess/rat, sundae/sun
Here are two sets of words describing Kermit the frog.

FROG, GREEN, SMALL

FUNNY, SMART, CRAZY

*Discuss how these sets of words are different or the same.

*Inside the envelope are sets of feeling cards for each person in the group. Work together or with a partner. Read each word below. As you hear a word, select a card that displays a feeling.

red-black-spring-summer-rain-Superman-President Bush-Freddy Kruegar-Madonna-Mickey Mouse

*That was easy! How often were the pictures the same? Different?

*The youngest person in the group chooses one of the words on the list. The group must work together to select one picture. Remember explain all ideas and opinions.

*Can you think of one person who never changes? Would you like to be that person? What would your life be like?

THINK!
Once upon a time, in a town not so far away, there lived a very young wallaby named Aardu. He lived at the zoo with the other Wallabies in a grassy area where he could run and play and watch the visitors to the zoo as they watched him. Aardu was a very lucky wallaby because he was not put in a cage. He was free to wander in his small area. Aardu loved to jump and explore. Whenever visitors stopped to watch, the young wallaby would show off his great skill by leaping over rocks and bushes. Hour after hour Aardu spent watching the other animals. He wondered what they thought and dreamed.

One day, as Aardu was jumping, he suddenly found himself outside his special place. The other wallabies were still in their pen and they called to him to come back into the wallaby area. But, Aardu just looked across at the other wallabies and began jumping, jumping, jumping as fast as his strong hind legs would allow.
When the escape was discovered, the zoo keepers began a search for the young wallaby who was unfamiliar with the dangers that existed outside his small, safe, special area. Everyone worried about cars, and bikes, and hunters who may be frightened by a small wallaby on an adventure. Aardu, who was beginning to tire from all his jumping, was suddenly aware of voices nearby. The forest area was full of trackers and the young marsupial frantically began searching for a small, safe place.

The woods beckoned. Aardu jumped as fast as his legs would go to the thick trees and bushes where a three foot tall animal could hide. The posse searched for days but Aardu, who was a very clever wallaby, never left the safety of his new forest home. He began to forage for food and water and discovered an abundance of both. He encountered animals that were not behind gates or pens who seemed puzzled at the sight of this small kangaroo. Soon, Aardu discovered that he was the only wallaby in the forest. He thought about his friends at the zoo and wondered what they would think of the forest. He tried to make friends with some of the animals, but they did not seem to understand him.
One day Aardu awoke in the forest to no new sounds. He drank from the stream and he went to the clearing to forage for leaves and grass. Something had changed. Later in the day, as Aardu was resting, he heard the rustle of something approaching. The scent of humans was in the air. Oddly, Aardu was not afraid.

The capture was easy. The humans declared the little wallaby sick or afraid. Aardu smiled a little wallaby smile and thought, not so. The return of Aardu was in all the newspapers. People came from all around to see the little wallaby who was still jumping and playing inside his pen in the same way........only different.
This is the final activity for this year. You have become a thinking, problem solving team. This activity will challenge your skills. Remember......WORK TOGETHER, AND LISTEN TO OTHER POINTS OF VIEW.

*Inside this envelope you will find a small brown bag. Open the bag and spread out the contents.

*Each person in the group should select one item from the bag. On a piece of plain white paper spend two minutes thinking of ALL THE WAYS THAT THE ITEM CAN BE USED.

*Share your ideas.

Did you forget something? Did someone in your group think of something else? Good!

*Now that your ideas are flowing, your task is to use the items in the bag to make an original game. Use all of the items or as many of the items as you need to make your game interesting.

You may use scissors, tape, markers, etc. to complete your game.

*You must give your game a name and write directions for playing the game on the paper provided. Also, include how to score the game, as well as how to win.

REMEMBER, THIS IS A GROUP PROJECT. EVERYONE IS WORKING TOGETHER TO DESIGN ONE GAME. I hope some of you will share your ideas with me. I'd love to see the final products.

Enjoy!
APPENDIX P
ADULT RESPONSE SHEET

THE GOAL OF THIS ACTIVITY IS TO INITIATE THINKING, AND REINFORCE THE PROCESS OF USING CRITICAL AND CREATIVE THINKING AT HOME, AT SCHOOL, AND IN ALL AREAS OF LIFE. THE QUESTIONS ARE DESIGNED TO GIVE ME FEEDBACK AS TO THE EFFECTIVENESS OF THE ACTIVITY. THE INFORMATION ON THIS SHEET IS NOT USED FOR GRADING PURPOSES. IF YOU FEEL MORE COMFORTABLE ANSWERING THESE QUESTIONS ANONYMOUSLY FEEL FREE TO EXERCISE THAT OPTION.

WHAT DO YOU THINK WAS THE POINT OF DOING THIS ACTIVITY?

WAS ANY PART OF THE ACTIVITY UNCLEAR OR DIFFICULT? DIRECTIONS........TASKS........GOAL........PACKET MATERIALS........

DID ANY ASPECT OF THIS ACTIVITY RELATE TO YOU AS AN ADULT?
YES........NO........HOW?

THROUGHOUT THIS PROJECT IT IS MY HOPE THAT YOU ENCOURAGE YOUR CHILD TO THINK, QUESTION THE OBVIOUS, CREATE THE UNUSUAL, AND APPLY THESE IDEAS TO SITUATIONS IN REAL LIFE.

TO WHAT EXTENT DID THIS ACTIVITY INCLUDE THESE SKILLS?

NOT AT ALL.........A LITTLE.........QUITE A BIT.........A LOT.........

RANK THE VALUE OF THIS ACTIVITY AS A LEARNING EXPERIENCE.

1........2........3........4........5........6........7........8........9........10
EXTREMELY VALUABLE...........................................NOT VALUABLE

DID YOU ENJOY YOURSELF?
APPENDIX Q

STUDENT RESPONSE SHEET

THIS PAPER WILL NOT BE GRADED. RELAX AND ENJOY YOURSELF. YOU ARE BECOMING A GOOD THINKER!

WHAT DO YOU THINK WAS THE POINT OF THIS ACTIVITY?

HOW WELL DO YOU THINK YOU ARE ASKING QUESTIONS, SHARING YOUR IDEAS, AND LISTENING TO OTHERS?

HOW EASY OR DIFFICULT WAS THIS ACTIVITY FOR YOU?

WHAT WAS EASIEST?

WHAT WAS MOST DIFFICULT?

TELL ME THREE THINGS THAT YOU LEARNED FROM THIS ACTIVITY.

DID YOU HAVE FUN? WHY OR WHY NOT?

HOW DO YOU THINK THAT THIS ACTIVITY WILL HELP YOU BECOME A BETTER THINKER?
APPENDIX R

FINAL ACTIVITY RESPONSE SHEET

CONGRATULATIONS!
Your family has completed the activities involved in the Thinking Project presented this year. Some important aspects of the project are listed below. Please take a few minutes to tell me what you think. Several of these sheets are included in your packet. Anyone who has participated in the project, at any time, may complete a sheet. Everyone's ideas are important. Each person, adult or child, completes a separate sheet. Please number these items from 1-10 in order of importance. (#1 most important, #2 next important and so on #10 is the least important)

MOST IMPORTANT.............................................. LEAST IMPORTANT
1........2........3........4........5........6........7........8........9........10

PLEASE USE EACH NUMBER ONLY ONCE.

_______ Enjoy fun activities
_______ Share stories of life experience
_______ Spend time together
_______ Have no homework
_______ Share feelings
_______ Consider many possibilities and seek an original or unique solution to a situation or a problem
_______ Present ideas, and opinions
_______ Explain a point of view, justify an action, or describe reasons for making a decision
_______ Hear ideas and opinions of others
_______ Make decisions by critically evaluating alternatives

This form was completed by (Please check one)

adult........................................child..........................

103
MAY 3, 1991

Dear Fourth Grade Parents,

Can you believe it? Fourth grade is almost over, and you and your child have survived book reports, science projects, more involved classwork and finally homework of all kinds.

As the year draws to a close, the fourth grade teachers are evaluating both in class and out of class projects. We need your help. Your opinion about the type of homework or class activities that have been presented this year would help us in planning for next year.

This is your chance to convey your ideas, comments, and suggestions. Completing the survey attached to this letter would give us valuable information about how you feel. No names are necessary. The results of the survey will only be used to plan curriculum. A short summary of the results will be sent to you before the end of the year.

Please return the surveys in the envelope provided as soon as possible.

Thank you for your cooperation!

Fourth Grade Teachers
Thank you for taking the time to answer this survey. You may put your name on the survey, or not. If you wish, you may use the space beneath each question to explain your answer or make additional comments.

Please answer the questions by using the following scale.

1........................2.....................3....................4....................5.....................6....................7 ..................... ..........................LEAST AMOUNT

GREATEST AMOUNT

******************************************************

1. __________ Rank the amount of time your family spends discussing ideas.

2. __________ Rank the amount of time your family spends together learning from one another.

3. __________ Rank the amount of time your child spends on homework.

4. __________ Rank the amount of time an adult spends helping with homework.

5. __________ Rank the amount of time your family spends sharing experiences.
6. ________ Rank how well you believe that you understand your child's learning and thinking.

7. ________ Rank the degree to which you believe home activities influence student learning at school.

Any additional comments.

Thank you for your cooperation.
APPENDIX U

QUESTIONNAIRE #2

This year your family participated in a special critical and creative thinking project.

1. What, in your opinion, was the purpose of the project?

2. What was the easiest part of the project?

3. What was the most difficult part of the project?

4. Did you enjoy participating in the project? Why/Why Not?

5. Was this project of any value:
   To your child? (explain)

   To your family? (explain)
6. How would you describe this teacher's educational approach?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

7. What is your opinion of this survey?

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

8. Please feel free to add any suggestions or comments (positive or negative) about the project.

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Thank you for your cooperation.
APPENDIX V

QUESTIONNAIRE #3

Thank you for taking the time to answer this survey.

Your ideas are important!

You may put your name on the survey, or not.

If you wish, you may use the space beneath each question to explain your answer or make additional comments.

Please answer the questions by using the following scale.

1. __________ Rank the amount of time your family spends discussing ideas.

2. __________ Rank the amount of time your family spends together learning from each other.

3. __________ Rank the amount of time you spend on homework.

4. __________ Rank the amount of time an adult spends helping with homework.
6. __________. Rank the degree to which you believe home activities influence student learning at school.

Any additional comments.

Thank you for your cooperation.
APPENDIX W

QUESTIONNAIRE #4

Your ideas are important! Will you share them with me? This paper will not be graded. You may put your name on the paper, or not.

1. What do you think was the point of the thinking project this year?

2. What was the easiest part of the project?

3. What was most difficult?

4. Tell me three things that you learned from these activities.
   1.
   2.
   3.

6. Did you enjoy the project? Why or Why Not?

7. Have these activities affected your thinking? How?

THANKS FOR YOUR HELP!