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ABSTRACT

Programs are described for learning-disabled or mantally-handicapped elementary and secondary students in regular and special classes in Union, New Jersey, and approximately 58 instructional episodes involving student made objects for understanding technology are presented. In part one, components of the model program such as the multi-learning disability class, core program, occupational program for retarded students, employment orientation, a perceptual training activity bank, and inservice training using a microwave television broadcast system are described. Appended are by-laws for a teacher/parent council, an equipment list for the occupational center, and descriptions of vocational/occupational programs for handicapped students. In part two, teacher developed regular class activities for the children's technology curriculum are usually described in terms of academic area to be remediated, source of materials needed for construction, motivation, and procedure (diagrams are included). At the lower primary level, students are introduced to use of basic tools. At the primary and intermediate levels, students make items such as a potholder rack, book rack, sawhorse, and bluebird home, or use the adding machine, calculator, and typewriter. Included for intermediate level students are activities for experimenting with plants and for building a galvanometer, a weather station, an incubator, an electric question game, and a water table demonstration model. (MC)

a model program of comprehensive educational services for STUDENTS WITH LEARNING PROBLEMS

Township of Union Public Schools, Union, New Jersey 07083

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A MODEL PROGRAM OF

COMPREHENSIVE EDUCATIONAL SERVICES FOR

STUDENTS WITH LEARNING PROBLEMS

TOWNSHIP OF UNION PUBLIC SCHOOLS

UNION, NEW JERSEY 07083

Senator Alfred N. Beadleston examines leather craft work being completed in the Occupational Conditioning Center under the direction of Mr. Leland Felt, Class Instructor.

Acknowledgements

Title VI-B Funds were instrumental in permitting Union to expand and enrich its program of Special Education. Mr. Paul Porado, Director, Bureau of Program Development and Evaluation – Special Education, New Jersey State Department of Education provided substantial advice and direction during the early years. Mr. Jose Alvarez, Supervisor, Special Education, Title VI, New Jersey State Department of Education continued this fine cooperative effort without which we would not have been able to complete the comprehensive program.

Title III Grants permitted Union to establish an essential component of the total program enabling Union to identify and remediate perceptual problems of the kindergarten and primary grade child. Mr. Robert Ward, New Jersey State Department of Education, Director, Office of Program Development, provided essential support for this effort. Dr. Jane Padalino, Project Director in Union, was responsible for the design and education of the study.

The Vocational Education Division, New Jersey State Department of Education was instrumental in the establishment of the Occupational Conditioning Center in Union. We are indebted to Mr. John Wyllie, Director, Bureau of Special Needs and his staff for their advice and help.

Special thanks go to Mr. Joseph Kordys', Director of the Industrial-Vocational-Technical Education Division of the Union Township Public Schools for his contribution to the design of the vocational components described on these pages and for his expert advice and encouragement throughout each stage of implementation.

Many others have contributed to the development of the services described in this report. Among those to whom we owe a special debt of gratitude are: Dr. William West, County Superintendent of Schools and his able staff of Child Study Team members including Mrs. Ruth Granstrom, Social Worker; Miss Jane Henry, Supervisor of Child Study; and Miss Averil Toker, Learning Disability Teacher Consultant.

Dr. Guy Barbato, Principal of Connecticut Farms School and director of the Title VI-B "Career Orientation" Program has given generously in time, talent and effort to the full development of this many faceted elementary program. We appreciate his commitment and that of his Project staff which made Part II of this booklet possible. Every Administrator and Director has been deeply involved in the structuring of the model program described in Part I. We appreciate their heartfelt effort.

The inspiration and leadership provided by Dr. Fred Stahuber, Superintendent of Schools and Dr. James M. Caulfield, Assistant Superintendent made all these program components possible. The wisdom and deep commitment of the Union Board of Education to the student with special needs must receive our most grateful acknowledgement.

Mr. Frank Moretti, Director
Department of Student Personnel Services

Dedication

Senator Beadleston has been closely associated with legislation for the handicapped students for over fifteen years. His leadership and dedication to improve educational opportunities for the handicapped has been instrumental in placing New Jersey in the forefront of those states that have distinguished themselves in their efforts for this segment of the student population. Programs depicted herein reflect the success of his efforts, those of his colleagues, and of the many interested citizens who lent their support.

The Township of Union Public Schools dedicate this report to Alfred N. Beadleston, Champion of Education for the Handicapped.

Background

Union, situated in east central New Jersey is in the Newark metropolitan and the greater New York metropolitan areas. It is a community of 54,000 inhabitants with 8,500 public school students. There are six K-5 elementary schools, one school for all sixth grades, two junior high schools and one senior high school. Approximately fifty-four percent of the graduates attend four year colleges. An additional twelve percent pursue further training in areas such as technical training, business or nursing.

The average family income is $11,000. The average home cost is $29,000. Most homes are single family dwellings. Seventy percent of the area is zoned residential, twenty-five percent industrial and five percent commercial. Approximately sixty percent of the adults are engaged in crafts, operations, and clerical occupations. The remainder are equally distributed amid professional, managerial, sales and unskilled occupations.

Union Township schools pioneered programs for children with special needs. The Department of Student Personnel Services was formed in 1938 under the direction of Dr. E. Cecelia Kernan with special groupings having been instituted in 1929. The Department now includes 60 staff members: guidance counselors, psychologists, psychiatrist, home instruction teachers, special education teachers, speech correctionists, and learning disability teacher consultants, social workers, and supplementary instructors.

Over the past six years new program components have been initiated in Union that now provide comprehensive educational services for children with learning problems. These programs were made possible through the efforts of the Board of Education supplemented by federal funds made available through the State Department of Education.

The purpose of this report is twofold. Part I depicts the significant components of this program. Part II presents specific episodes designed for use in regular class which are uniquely structured to provide special assistance to the child with learning problems.

Production operations in the Occupational Conditioning Center attract the attention of Senator Alfred N. Beadleston.

Introduction

The programs described in this report were initiated in an attempt to provide realistic educational opportunities for students manifesting a wide range of learning problems. Since most students with such problems are in the mainstream, special emphasis has been placed on strategies that are essentially of a preventative nature or ones which minimize the problem. Others are rehabilitative and aim at returning the student to the mainstream wherever and whenever possible. All components are structured to provide practical application, reinforcement and career orientation.

Episodes provided in Part II exemplify these approaches while providing additional components of practical application, correlation with academic areas, motor activity and high motivation. All students will enjoy these episodes which were most often developed in regular classrooms. Students with learning problems in regular class made significant progress using the episodes. Special education teachers found the "hands-on-approach" essential to successful instruction.

The total effect of the recently initiated programs described here is to complete a sequence of activities that, together, will provide a complete kindergarten through grade twelve service to students with a wide range of learning problems.

No effort is made to describe the more traditional elements of a quality Student Personnel Services Department. Thus, while home instruction, psychology, social work, supplementary instruction, guidance, group testing (psychometry) speech correction, and the traditional special education arrangements are basic elements in Union's program, the reader is undoubtedly familiar with these activities and functions. The single most important purpose of this report is to present what may be unique problems or unique components of already existing programs which may suggest to the reader possibilities worthy of consideration for his own school situation.

Most children with learning problems remain in regular class with program modifications. Here, child study team members meet with the principal and classroom teacher to discuss specific educational plans.

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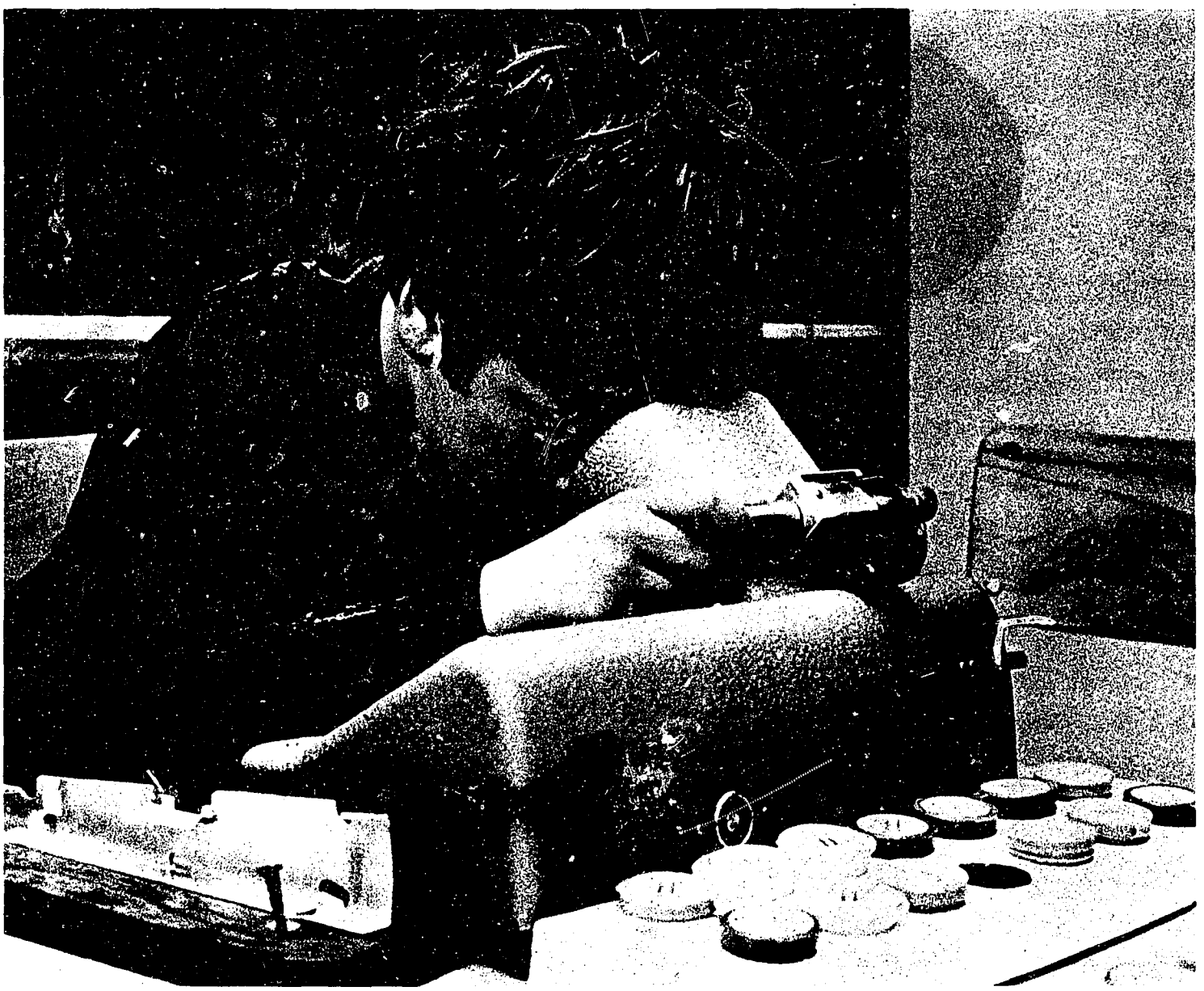

A variety of teaching machines, such as the viewer seen above, are used throughout the program to reinforce learning and raise the level of motivation.

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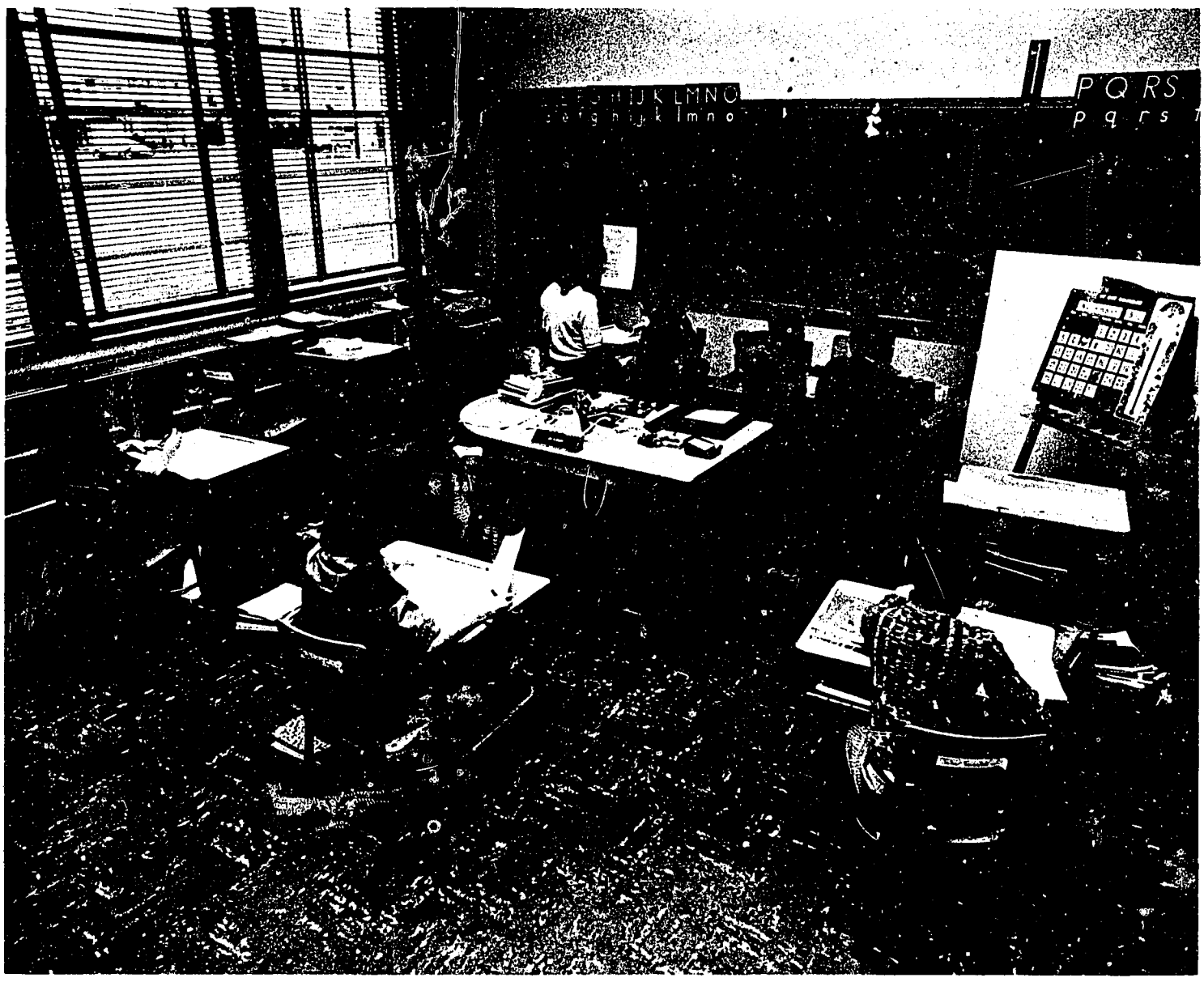

Each student in the Multi-Learning Disability class is provided with an individual educational prescription.

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Multi-Learning Disability classes are given the highest priority in terms of location, equipment, materials and support to insure optimum learning opportunities.

PART I — MODEL PROGRAM COMPONENTS

Multi-Learning Disability Class Concept

ORGANIZATION

Elementary special education students are grouped in a manner that assures the most effective instruction. The students are grouped by ability rather than disability. This "compatibility grouping" not only puts special emphasis on the classification of the child, but also considers such variables as academic performance, and patterns of social and emotional behavior, age, sex and race. Classes are limited to eight students.

Classes are reorganized each year. Child Study Team members and classroom teachers meet and decide the most favorable grouping to insure an optimum learning atmosphere. The number of groupings — six, allows students to progre yearly from level to level thus simulating the same promotional pattern afforded all regular class students. Annually, during the summer preceding the school year, each special education teacher meets with each child and parent, reviews al available data and prepares an individual prescription for each child. The prescription is reduced to individual weekly an daily assignments which are written in a behavioral objectives style.

INSTRUCTION

The program uses a multi-modality approach and includes a variety of appropriate equipment and materials. All lessons for children with special needs are career and activity oriented. Adding machines, typewriters, talking pages, language masters, listening corners, tape recorders, and controlled reader may be found in each classroom. The "episode included in Part II are employed to motivate and impart learning without undue emphasis on print material. Tool carts and related technology are an integral part of this endeavor and further the goal of career orientation.

Part II of this report provides the teacher with classroom tested episodes. Most of the episodes were designed and executed in the regular classes in the Union Schools. However, some originated in the Multi-Learning Disability classrooms. While the "hands-on" career oriented projects are of value to all students, they are of critical importance for the child in the regular class who has learning problems. The episodes can be even more vital to handicapped students in special education classes.

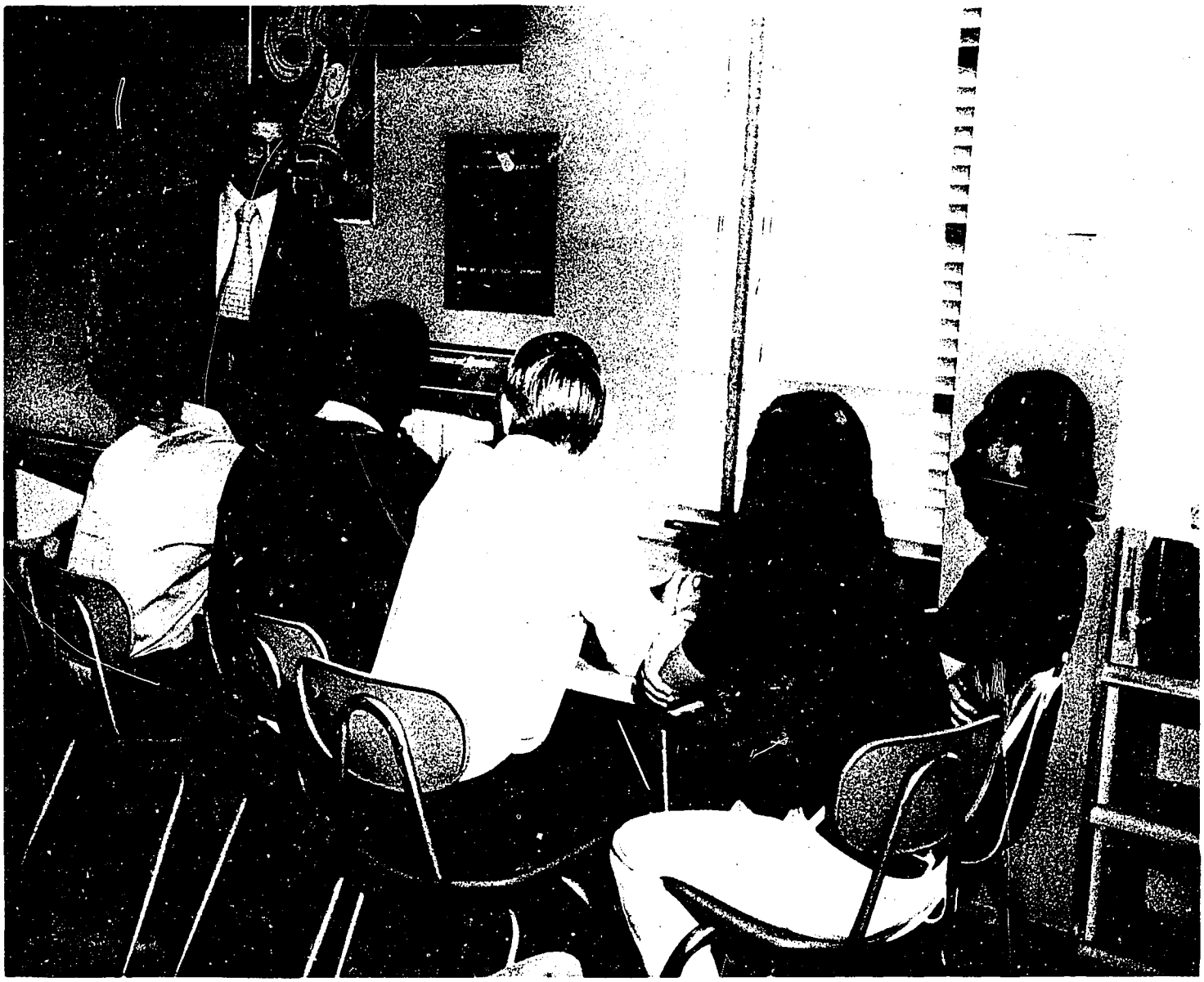
Students in the Core Program often distinguish themselves. Dr. Lawrence, Principal of Burnet Junior High School is seen presenting an award to one of these students who demonstrated the most improvement during the school year.

TRANSITION

The objective of all special education is to phase every child into the regular class. All special education programs are housed in regular elementary, junior high, and senior high school buildings. Location of rooms receives the same consideration as all other groups within the building. The building principal administers the program in his building. The Director of the Department of Student Personnel Services coordinates all phases of the program including organization, placement and instruction.

Wherever and whenever possible, students from the special classes participate in regular class activities including academic and non-academic subject areas. Rehabilitation is complete when the student no longer needs the individual attention of a small group setting.

To insure success on entering a regular class, on a full time basis, the student is provided with a supplementary instructor as long as is necessary.



The Core program offers the secondary school student with learning problems the opportunity of small group instruction in the academic areas.

Core Program

ORGANIZATION

Students who continue to need substantial academic assistance throughout the secondary school years complete their studies in a Core Program. A study center is maintained in the junior and senior high. Students report to regular homeroom and attend non-academic subjects with their peers. These students report to the study center for language arts, social studies, science and mathematics. They are phased-into academic classes when appropriate.

INSTRUCTION

A special education teacher services the Core component at both junior and senior high levels. Consultation with department chairmen results in a modified course of studies. The Core teacher works closely with guidance counselors, the vocational-technical director, co-op supervisors and rehabilitation commission staff members. Union High School offers 12, two year, three hour per day, vocational programs including dental technician training, graphic arts, beautician training and drafting.

EVALUATION

The highest award for "most improved student" was awarded to a Core program junior high student. The certificate of recognition for outstanding performance, attitude and scholarship in the two year auto body training program was awarded to a Core program student. Every year, students from the Core program graduate from Union High along with 700 other students, receiving a regular diploma awarded to everyone completing a prescribed program of studies.

A strong parent organization is essential to a successful program for students with learning problems. Pictured here is the Executive Board of the Multi-Learning Disability Council.

Parent Involvement

ORGANIZATION

A well organized Multi-Learning Disability Council exists in the Union School. Council members are active participants in all educational activities. Reactions and suggestions are solicited (See Appendix I for model constitution).

CAMPING

A yearly camping weekend is sponsored by the Council and is staffed and administered by the Department of Student Personnel Services. All handicapped children participate in this three day experience in group living and learning. Community service organizations and the Board of Education fund the camping weekend.

PLAYGROUND

A summer program of recreational activities has recently been initiated under the sponsorship of the Union Township Recreation Department. A special playground area has been designated, equipped and staffed by personnel certified in special education. This was another project of the Council.

CHILD MANAGEMENT TRAINING

Parent organization members meet to discuss common problems and to receive specific counseling by Dr. Regan, child psychiatrist, and other members of the Child Study Team.

Resource Centers in each school, staffed by a Learning Disability Teacher Consultant and a tutorial teacher, service a wide range of learning problems through diagnosis, remediation and teacher consultation.

Child Study Team Satellite Service

RESOURCE CENTER

Each school building has its own resource center. This room is generously equipped with remedial tools and materials to provide instruction for regular class students with learning problems. Kidney shaped tables in each center permit the teacher to establish the close relationship necessary for the one to one or small group instruction critical to successful remediation.

STAFF

Two full time supplementary instructors are located in the Resource Center in each school building. One is a certified learning disability consultant. The second staff member is a tutorial teacher providing reinforcement in skill areas for students with less complex learning problems. All students receiving service are pre and post tested. Students are seen from two to five times a week in thirty-minute sessions.

DIAGNOSIS

Four psychologists, a psychiatrist (servicing Union one full day per week), eleven certified learning disability teacher consultants (L.D.T.C.) and two social workers provide all classification services. The L.D.T.C. in each building has on hand all diagnostic tools to provide a complete diagnostic evaluation.

CONSULTATION

The learning disability teacher consultant advises classroom teachers as to how best to implement instructional strategies for students. 'Activity banks" providing over 500 tailored remedial activities are available in each resource center (See "Activity Banks").

The Occupational Conditioning Center training laboratory provides pre-vocation training for the T.M.R. and E.M.R. student in repetitive operations similar to those used in industry.

Occupational Conditioning Center

BACKGROUND

In Union there were an insufficient number of trainable mentally retarded students to offer a complete program. Roselle, a neighboring community, had a like problem. It was thus determined that Roselle would service all of the elementary age students while Union would establish a secondary school age program designed as a pre-vocational learning laboratory. Surrounding districts participate in both segments sending additional students on a tuition basis.

ORGANIZATION

The program in Union provides academic and vocational activities. Two classes of ten students each are serviced in Union. Students begin the day in the Occupational Conditioning Center at Burnet Junior High School in either the academic laboratory or the skills training laboratory. After lunch, the groups exchange laboratories. Remedial physical education is an additional daily activity conducted by Union's two remedial physical education teachers.

INSTRUCTION

The skills training laboratory located in the industrial arts wing of Burnet Junior High has been modified to resemble an industrial shop. Activities are aimed at preparing the students for successful entrance into a sheltered workshop or competitive employment. Students "punch in" using a time-card and perform repeatative operations on an assembly line basis or at work stations that develop skills requisite to successful job placement. Socializing activities so vital to job adjustment are reinforced through "coffee-breaks", "clean-up time" (each student has a shop locker, apron, goggles, etc.) and group assembly line activities (see Appendix II for a list of equipment used in this laboratory).

The Occupational Conditioning Center's academic laboratory provides essential training for the T.M.R. student.

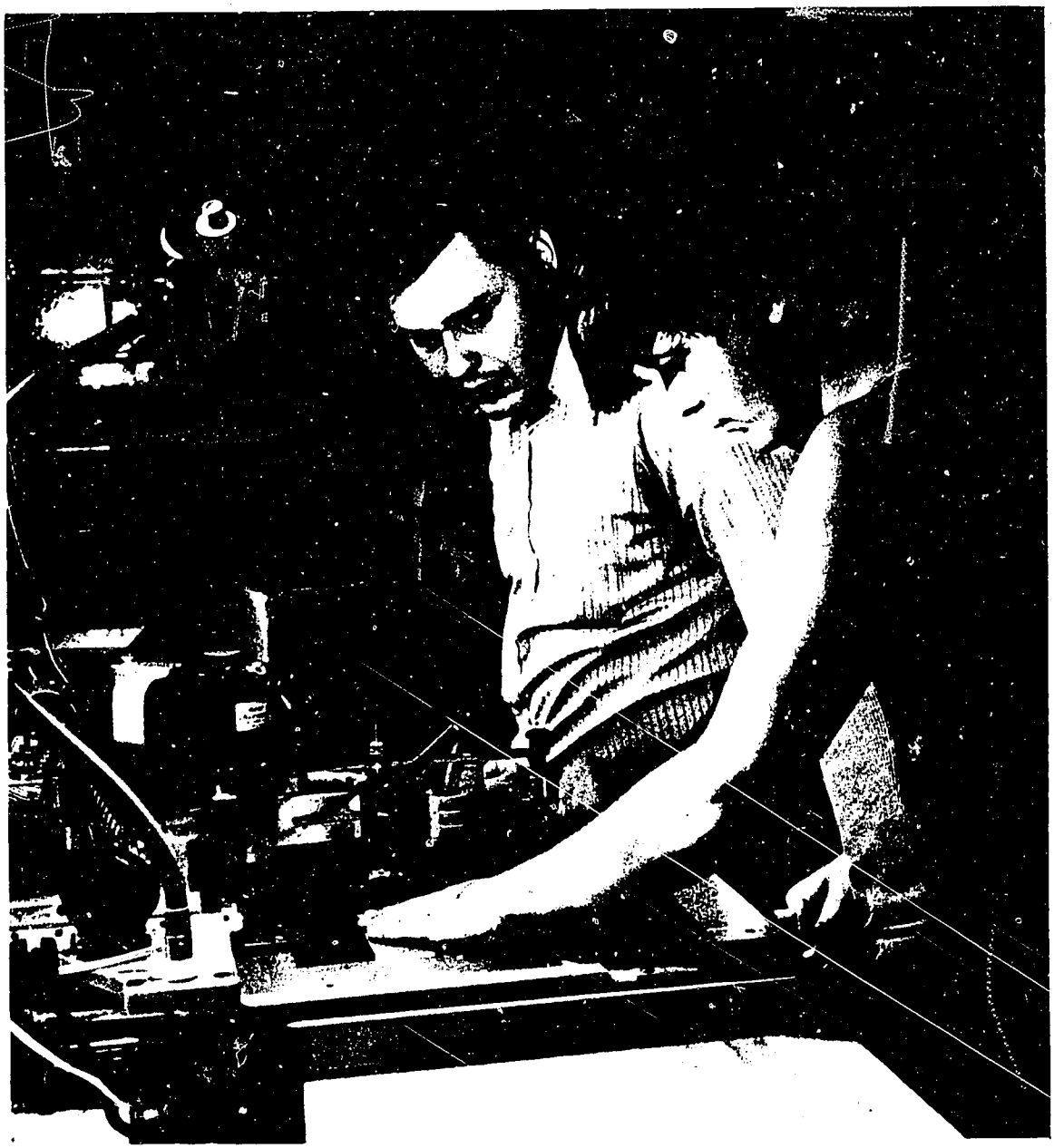
The academic sequence of experiences is coordinated with those of the shop. Learning units include shop safety, travel precautions, grooming, health habits, self-care, identification of tools and equipment, recognition of signs and eye – hand coordination activities.

INCENTIVES

To complete the simulated work experience each student receives regular pay (script) which he later exchanges for a commercial item of his choice, e.g. transistor radio, tape recorder or watch. Each production or developmental activity has its own rate of pay. Many reports, guides and booklets are printed, collated, punched and bound in this shop for use throughout the school system. The "incentive component" thus becomes for the trainable mentally retarded student what the report card, athletic letter or other scholastic award becomes for the more able student, recognition for quality performance.

REHABILITATION COMMISSION

The services of the State Rehabilitation Commission are employed for all students with a disability that would interfer with successful job placement. All students in the above program are enrolled with the Commission immediately before they become sixteen years of age, thus giving the Rehabilitation counselor ample time to make necessary preparation for appropriate services to the new "clients".



The graphic arts production laboratory provides pre-vocational skill training of a highly motivational nature with an incentive component for the junior high school student with adjustment problems.

Employment Orientation

ORGANIZATION

The junior high school student with adolescent adjustment problems is not a new phenomenon. The thirteen to fifteen year old may sometimes experience difficulty adjusting and may become a classroom problem. For a few such youngsters the problem becomes so aggravated that it calls for the direct intervention of a totally different approach to learning. The following is such an approach:

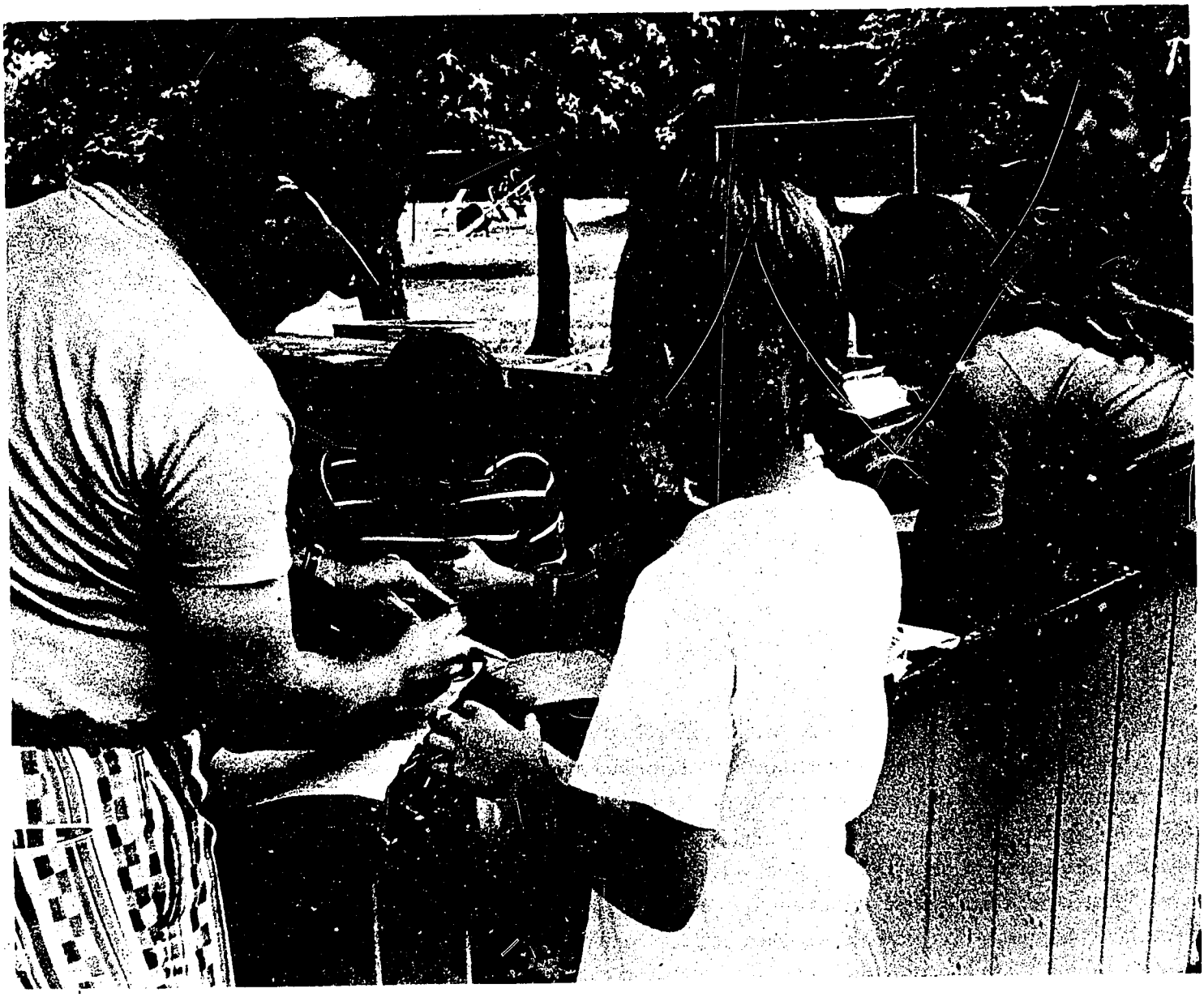
Two additional laboratories have been established at Burnet Junior High. The first is equipped as a graphics production plant with engravers for production of laminated signs, addressograph equipment, offset press, spirit duplicator, plate maker and associated collators, punches and binders.

The second laboratory is equipped to provide basic skills training in electric appliance repair and maintenance as well as gas driven equipment such as lawn mowers and outboard motors.

PROGRAM

Select students are permitted to elect one or two periods per day in one or the other of these laboratories. Groups are limited to twelve students. The "incentive component" described above, is in effect. Incentives are accrued at a greater rate since the students are naturally more efficient. Incentive "purchases" are delayed if the student is suspended, given detention or otherwise fails to perform in his regular academic program. Incentives may only be earned for quality work performed. "Job foremen" are appointed from the particular "shift". The plant "Foreman," teacher, with special education and industrial arts background, insists on punctuality, cooperation and quality workmanship. Every item (booklet, name plate, addressograph work) is inspected before shipment to the customer (one of the 10 schools). Thus, the student begins to see in a new context the relationship between good workmanship and return for such effort.

Parallel scheduling allows for termination of the program if the student responds negatively. Incentives may be accrued over an entire year and exchanged for an especially coveted purchase, e.g. bicycle, camera, radio kit, therefore, working for remote goals is taught.



This playground for children with learning problems was established by the Township of Union Recreation Department with the efforts of the Multi-Learning Disability Council.

This program, like the one mentioned earlier, includes a six week summer segment of orientation, evaluation and trial teaching.

EVALUATION

Success is measured by a reduction of "misconduct reports", increased attendance and motivation, improved marks and successful entrance into senior high. There, the problems often disappear with the increased age and the more immediate goals now in view, i.e. vocational training, work experience, graduation and employment.

Each of the 500 activities in the kit give the specialist or classroom teacher complete instructions for preparing materials and carrying out the activity.

Perceptual Training Activity Bank

BACKGROUND

A three year Title III Grant (1967-1970) enabled Union to develop a program to identify and remediate perceptual problems among kindergarten and primary grade children. The program demonstrated the worth of such training by reducing or eliminating the need for continued remediation, allowing for promotion where retention was predicted and by producing grade level reading achievement for a significant number of program participants.

ACTIVITY BANK

A bank of 500 activities for students with perceptual problems was produced by the project staff. The kits are indexed by grade and deficit area; visual, auditory, kinesthetic, tactile, and gross motor. While most materials needed may be made, there is a listing of commercial products that may be purchased.

To cover cost of printing, the kits are sold at twenty-five dollars per two box unit. A summary report may be obtained, without charge, or a complete 100 page final report at two dollars per copy. Inquiries may be made by writing to Mr. Frank Moretti, Director, Department of Student Personnel Services. Activity banks are being used by Learning Disability Teacher Consultants in districts throughout the United States and Canada.

New teaching strategies are introduced through in-service courses and intensive three day workshops.

In-Service Training

BACKGROUND

A micro-wave television broadcast system with complete studio facilities permits Union to produce programs to train teachers who work with students exhibiting learning problems. The facility also permits direct broadcast to parents for workshops in areas such as "speech development for the pre-school child."

Workshops are conducted to acquaint teachers with the latest techniques and teaching styles that prevent or minimize learning problems. A number of videotapes, i.e., Perceptual Training, are available upon request for a minimal cost.

Group counseling techniques are discussed by Dr. John Regan, Psychiatrist, as part of a television series prepared for staff training. Pictured from left to right are: Mr. Joseph Walsh, Mrs. Florence Sullivan and Mr. Peter Gualtieri, Guidance Counselors, Dr. John Regan and Dr. James M. Caulfield, Assistant Superintendent of Schools, who moderated the sessions.

APPENDIX I

By-Laws

SECTION I. NAME

This organization shall be known as the MULTI-LEARNING DISABILITY COUNCIL, TOWNSHIP OF UNION, UNION, NEW JERSEY (A Non-Profit Organization).

Definition: These children have been classified by the basic child study team in the school district as prescribed by Rules and Regulations Pursuant to Title 18A, Chapter 46, New Jersey Statutes, Title 8, Chapter 28, New Jersey Administrative Code.

SECTION II. OBJECTIVES

The objectives of the Council are:

(a) To promote greater awareness of the problems of children enrolled in the school district's MLD classes and those who are enrolled in our out-of-district programs, so that parents and teachers may cooperate intelligently in the training of the child.

(b) To promote the general welfare of the child with learning disabilities by establishing, or causing to be established, summer camps, recreation programs, and other social, recreational and educational programs that may benefit the children.

(c) To seek professional guidance to further mental and social development of the child and parent.

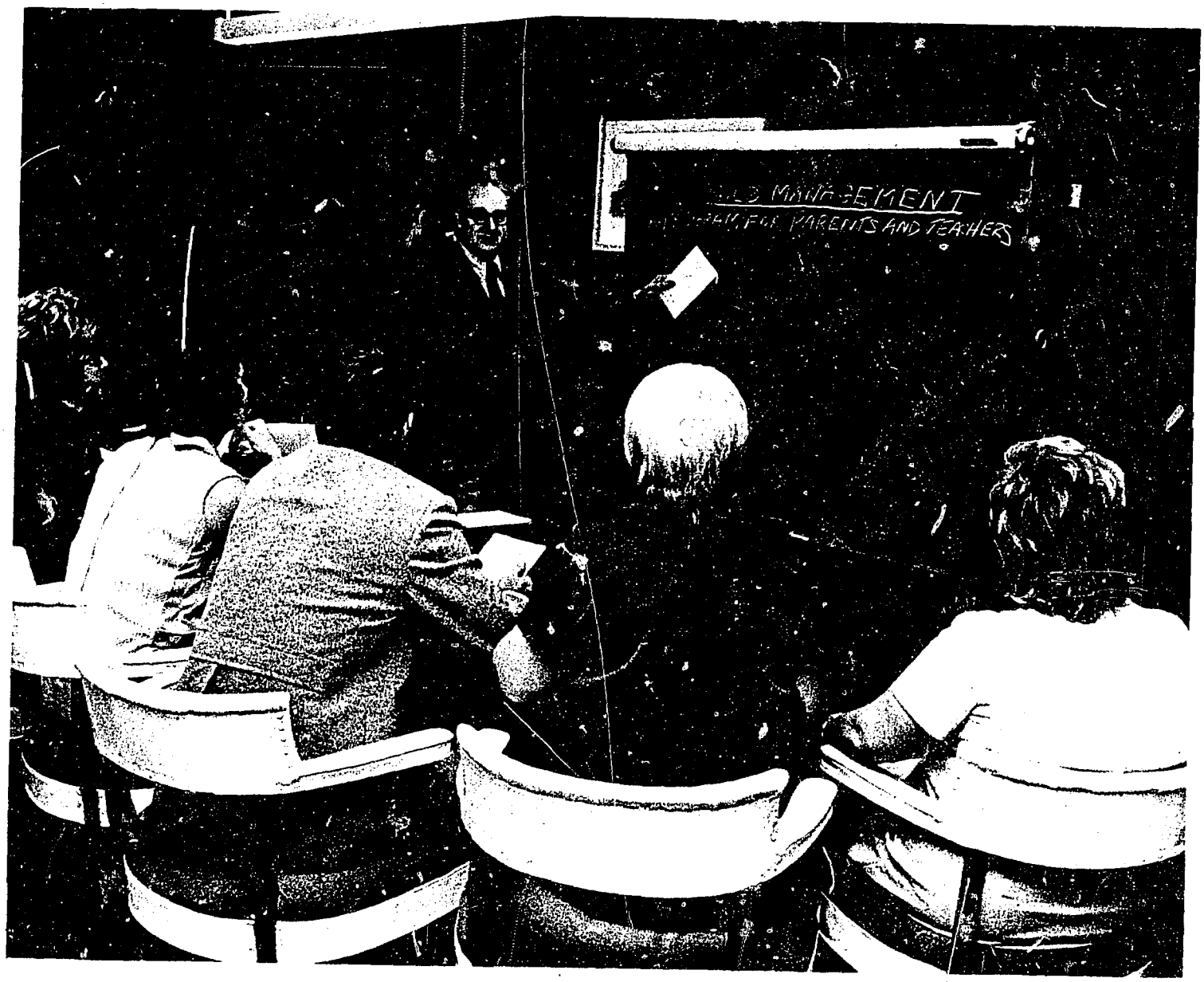
SECTION III. MEMBERSHIP

A. Any person who is a parent or guardian of a child enrolled in the MLD classes shall be accepted as a member.

B. Any person who is an administrator, educator, and/or staff member associated with the Department of Student Personnel Services of Union Public Schools shall be accepted as a member.

C. Any other person who is interested in furthering the objectives of the Council.

D. Dues shall be set by the membership at the Annual Meeting or otherwise as may be necessary.



Student improvement is the result of a close relationship among parents, teachers, children, and child study team members. Mr. Frank Moretti, Director of Student Personnel Services, is conducting a group session on child management.

SECTION IV. **OFFICERS AND EXECUTIVE BOARD**

The officers of this Council shall be President, Vice President, Second Vice President, Secretary, Treasurer and Advisor to the Board.

A. The President shall preside at all general meetings and Executive Board meetings.

B. The Vice President shall preside in place of the President in the absence of the President.

C. The treasurer shall be responsible for maintaining the financial records of the Council. The treasurer shall accept, record and account for all funds entrusted to him/her and shall render financial reports at all general and Executive Board meetings.

D. The Secretary shall record the minutes of each general and Executive Board meeting, and read the minutes at each subsequent meeting.

E. The Second Vice President and Advisor to the Board shall provide direction and guidance to the members at large.

SECTION V. **EXECUTIVE BOARD**

The above mentioned officers shall be members of the Executive Board. All past presidents shall automatically become members of the Executive Board. The Board is responsible for developing plans and programs subject to approval by the membership. It shall be responsible for the conduct of the routine business of the Council and for the disbursing of funds when necessary. A quorum of four (4) officers shall be required in order for the Board to conduct business.

SECTION VI. **ELECTIONS**

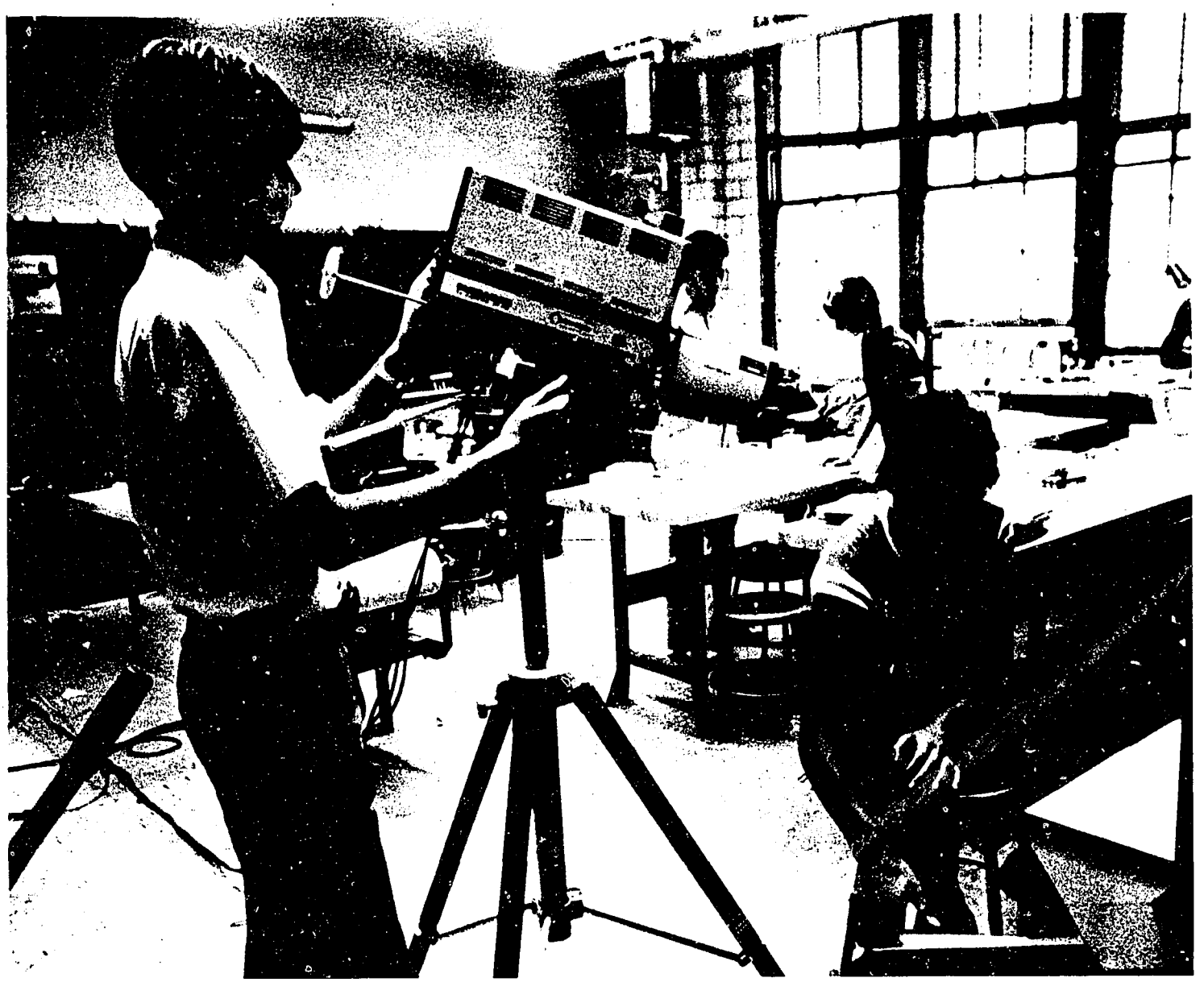
The officers of this Council shall be elected by a majority vote at the Annual Meeting. They shall hold office for one year, unless removed for cause, or until their successors are elected.

SECTION VII. **MEETINGS**

A. The Annual Meeting of the Council shall be held in June of each year.

B. The Executive Board shall have at least four (4) board meetings, each to precede a general meeting and more than four meetings a year if necessary.

C. There will be membership meetings at least four (4) times a year.



Television programs are prepared depicting various phases of the special programs. They are used for orientation and training purposes.

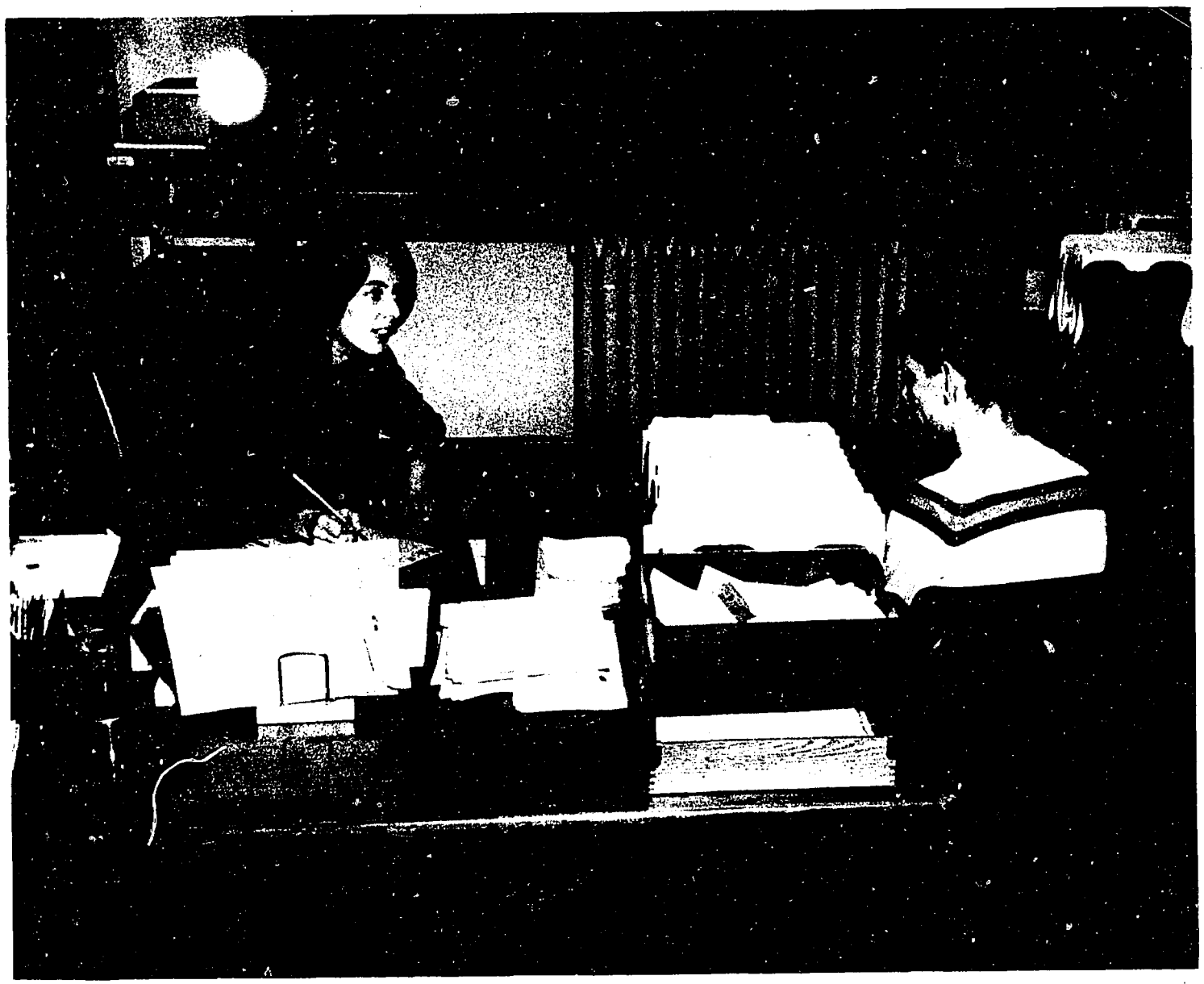
SECTION VIIi. COMMITTEES

The Executive Board shall have the authority to appoint committees as necessary. Standing committees shall be as follows:

Ways and Means
Membership
Publicity
Refreshments
PTA Liaison

SECTION IX. AMENDMENTS TO BY-LAWS

Amendments to the By-Laws may be made at any general meeting and a vote of 2/3 of the members present and voting shall be sufficient to sustain a proposed amendment.



Individual counseling is an essential service provided for students with learning problems. Mrs. Florence Peterson, school psychologist, is seen above counseling a student in our Core Program.

APPENDIX II

Initial Equipment List for Occupational Conditioning Center

Graphic Arts Area

1 Multilith Model 85 offset press
1 C & P pilot press
1 A. B. Dick Model 120 photocopier
1 GBC combo punch/binder
1 GBC 8 page collator
1 GBC plastic laminator
1 3M Thermo-Fax Model 45C
1 Challenge 19" paper cutter

Plastic Area

1 Hermis engraver
1 Hermis beveler
1 Hermis table shear
1 Unex Jet plastic injection molding machine

Textile Area

1 Wendicot 20" loom
1 Peacock 12" loom
1 Singer heavy duty sewing machine

Woodworking Area

1 14" Powermatic band saw
1 26" J-Line scroll saw
1 Powermatic belt/disc sander
1 Assortment of hand tools

Metalworking Area

1 Delta table model drill press
1 Bench grinder
1 Buffing machine with stand
1 Assortment of hand tools

Utility/General Production Area

1 B & D heavy duty wet/dry shop vacuum
1 Electric dispensing machine
1 Electric saddle stapler
1 3/8" Electric HD hand drill
10 Movable work tables, 30" x 60"
1 Stock cart, 26" x 48"
1 Cincinatti Clipper time clock w/card racks

APPENDIX III

STATE OF NEW JERSEY
DEPARTMENT OF EDUCATION
DIVISION OF VOCATIONAL EDUCATION

DESCRIPTION OF VOCATIONAL EDUCATION
AND OCCUPATIONAL TRAINING PROGRAMS
FOR HANDICAPPED STUDENTS

Technology for Children (T4CP): Technology for Children is a multi-media, multi-sensory, hands-on approach to education through the introduction of modern technologies into the existing curriculum.

Principally, T4CP will enrich the disciplines – Language Arts, Science, Mathematics and Social Studies. It will also focus on new, emerging, and present technologies to include world of work concepts in addition to better understanding the vast range of jobs available in professional fields service, non-professional and individual pursuits.

Introduction to Vocations (IV): Programs designed as an integral part of the students overall education and school guidance program. It is a vocational guidance program to help students gain occupational awareness and to give students a better foundation for later career and educational choices. The children are cycled into six areas: Know yourself, Home Economics, Health, Industrial Arts, Business Education and Science. Additional important parts of the program are: "hands-on" activities and trips to business and industry.

Employment Orientation: An in-school, hands-on, vocational program which involves two phases of development: The first phase called "similated work" exposes the student to similated work tasks to help him develop sound work habits and attitudes, and to relate satisfactorily to his peers and supervisors. The "Basic Skill Training Phase" provides the individual student with basic skills in the occupational areas for which he has shown interest and aptitude.

Part-Time Cooperative Employment Orientation (C.I.E. # 3): This program represents a cooperative effort between school and industry. It offers Special Needs students an opportunity for part-time on-the-job work experience and provides an environment for meeting an educational need which cannot be met within the school plant. In a relatively sheltered and closely supervised work station, students can be instructed, observed, and have frequent evaluation of their progress.

PART II

TECHNOLOGY FOR CHILDREN

EPISODES

PART II

Acknowledgements

It is with grateful appreciation that we acknowledge the interest and support of Dr. Fred Stahuber, Superintendent of Schools and Dr. James Caulfield, Assistant Superintendent of Schools, the principals of our elementary schools for their cooperation in the project, the eleven teachers who formed the nucleus of our project for their hard work and commitment in a totally new program.

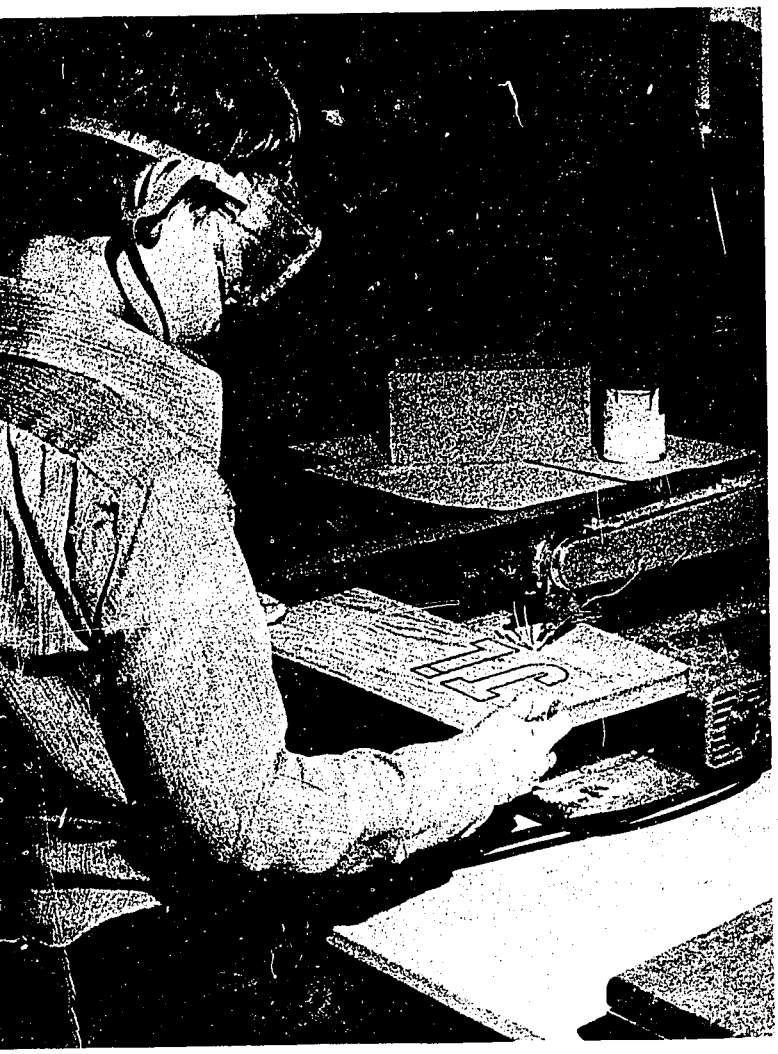
Our sincere thanks to Mrs. Mary Ann Vierheilig for her fine job in typing and setting up the original manuscript.

To the teachers who did such a fine job in the writing of these episodes our appreciation for a job well done.

Mrs. Ronnie Burge

Mrs. Maureen Girgenti
Mrs. Maribeth McCarthy
Mrs. Shirley Malamut
Mrs. Joan Pagano
Mrs. Joan Pikula
Mr. Herbert Smith

Dr. Guy F. Barbato
Project Director



Rationale

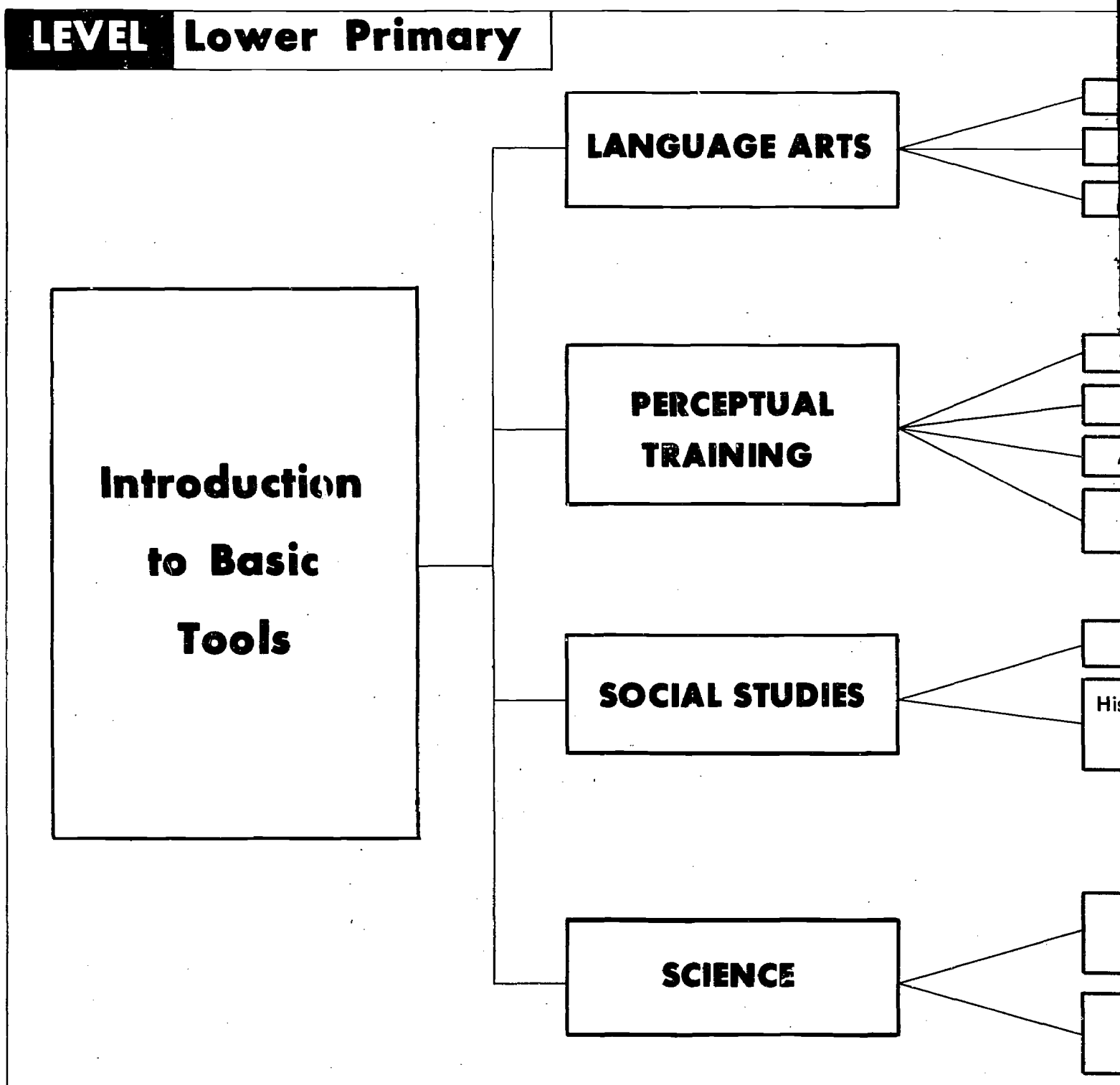
Technology for Children Curriculum has been developed and sponsored by the Division of Vocational Education, New Jersey State Department of Education. A child should learn as early as possible how man has employed technology in solving the problem of his needs. The ever-evolving nature of technology demands complete facility in problem solving abilities with tools, machines, and concepts related to technology. The program involves hands-on experiences and technological activities which automatically causes the children to engage in multi-sensory learning. Children are involved and see tangible, concrete evidence of effort. Open-ended activities cause children to seek answers which make it necessary for them to communicate, research, and solve problems. Technological activities contribute to making education relevant for children and enhance their learning.

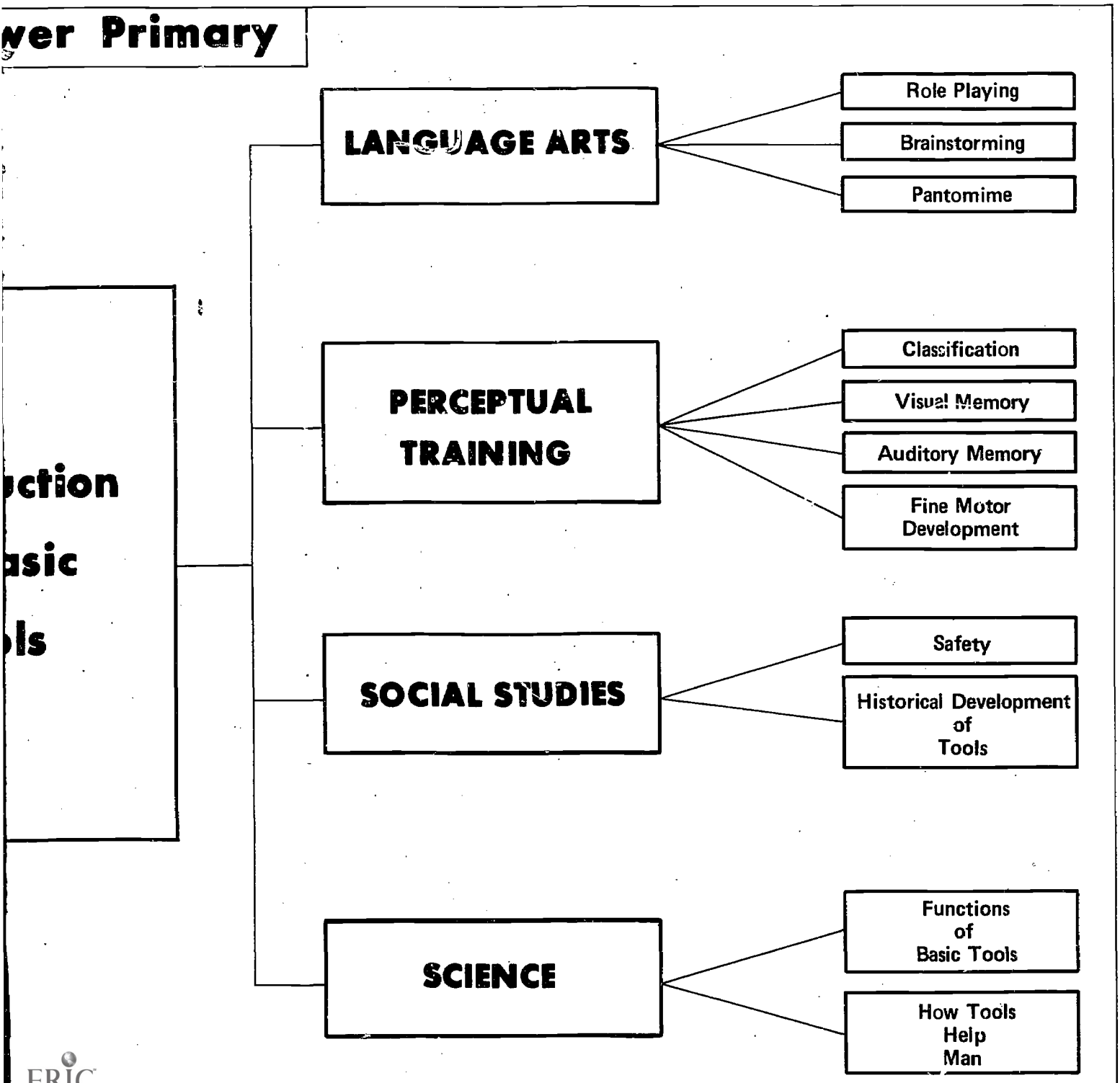
This program offers children opportunities to discover and develop problem solving abilities using manipulative apparatus, tools, and a wide variety of materials. Children begin to understand their future career roles in society.

Our program was designed for children within the regular classroom and those children with special educational needs. More specifically, our general objectives were: to enhance the learning progress at the elementary level through a varied form of motivation; to enlarge the child's understanding of vocational choice; to develop his economic competence in a changing world of work through the establishment of a systematic program of occupational education.

During the short time our program has been operational, we have found that the children are highly motivated toward academic areas through the experiences provided by Technology for Children. There has been less absenteeism, a greater desire to learn, more success with less frustration, and a greater enjoyment from school. There is a constant demand for more work. The comment from the children "What do we do next?" is common.

Following are some of the episodes developed by our teachers during the year. They are guides or starting points for further development by creative teachers. They are open-ended to encourage invention or modification to meet individual needs.


LEVEL Lower Primary
Introduction to Basic Tools
LANGUAGE ARTS
PERCEPTUAL TRAINING
SOCIAL STUDIES
His
SCIENCE


wer Primary
LANGUAGE ARTS
Role Playing
Brainstorming
Pantomime
PERCEPTUAL TRAINING
Classification
Visual Memory
Auditory Memory
Fine Motor Development
SOCIAL STUDIES
Safety
Historical Development of Tools
SCIENCE
Functions of Basic Tools
How Tools Help Man

I. Physical Environment

A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
Variety	Wood scraps	
Variety	Tag board	
Variety	Nails	
Variety	Paints	
Variety	Crayons	
Variety	Sand paper	
Variety	Shellac	

C. Equipment

No. Needed	Item Description	Where Available
Variety	Hammers	
Variety	Hand saws	
Variety	Hand drills	
Variety	Screwdrivers	
Variety	Pliers	

D. Motivating Devices

1. Films, filmstrips.
2. Tool panel.
3. Pictures of tools.

II. Procedure

A. Language Arts

1. Role playing.
2. Pantomime.
3. Brainstorming – Child gives an
   a specific picture of a tool. Ch
   when another child gives an ap
   that picture.

B. Perceptual Trainin

1. Classification
2. Visual memory – sequential.
   Show a series of pictures to ch
   and go to the tool shed and bri
   (Number of pictures vary acco
3. Auditory Memory.
   "I'm building a house and I wi
   Each child must remember pre
4. Fine Motor Development.
   Experiment with wood scraps.

C. Social Studies

1. Safety.
2. Historical development of tool

D. Science

1. Functions of Basic Tools.
   a. Films, filmstrips.
   b. Discussion.
   c. Experimenting
2. How Tools Help Man.
   a. Experimentation.
   b. Discussion.
   c. Classification – according

ıl Environment

ıom

dable Materials

Item Description	Where Available
Wood scraps	
Tag board	
Nails	
Paints	
Crayons	
Sand paper	
Shellac	

ıent

Item Description	Where Available
Hammers	
Hand saws	
Hand drills	
Screwdrivers	
Pliers	

ting Devices

nstrips.
el.
f tools.

II. Procedure

A. Language Arts

1. Role playing.
2. Pantomime.
3. Brainstorming – Child gives an appropriate response to a specific picture of a tool. Child passes picture along when another child gives an appropriate response to that picture.

B. Perceptual Training

1. Classification
2. Visual memory – sequential.
   Show a series of pictures to child. He must remember and go to the tool shed and bring the specific tools. (Number of pictures vary according to ability.)
3. Auditory Memory.
   "I'm building a house and I will need . . . ".
   Each child must remember previous responses.
4. Fine Motor Development.
   Experiment with wood scraps.

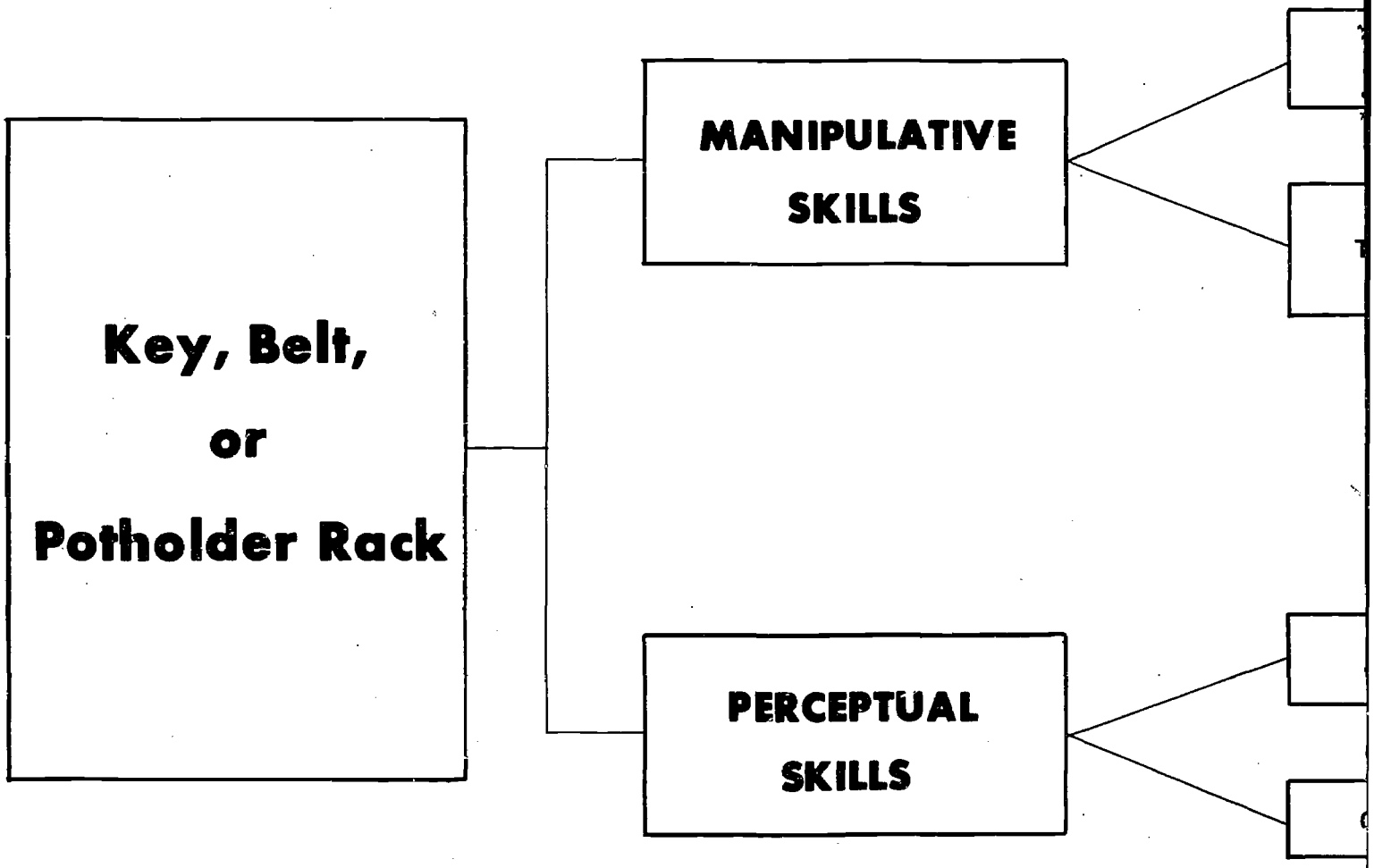
C. Social Studies

1. Safety.
2. Historical development of tools.
   - films
   - filmstrips
   - library
   - make tools of early times

D. Science

1. Functions of Basic Tools.
   a. Films, filmstrips.
   b. Discussion.
   c. Experimenting
2. How Tools Help Man.
   a. Experimentation.
   b. Discussion.
   c. Classification – according to occupation.

LEVEL **Primary - Intermediate**
As an introduction to Tools.



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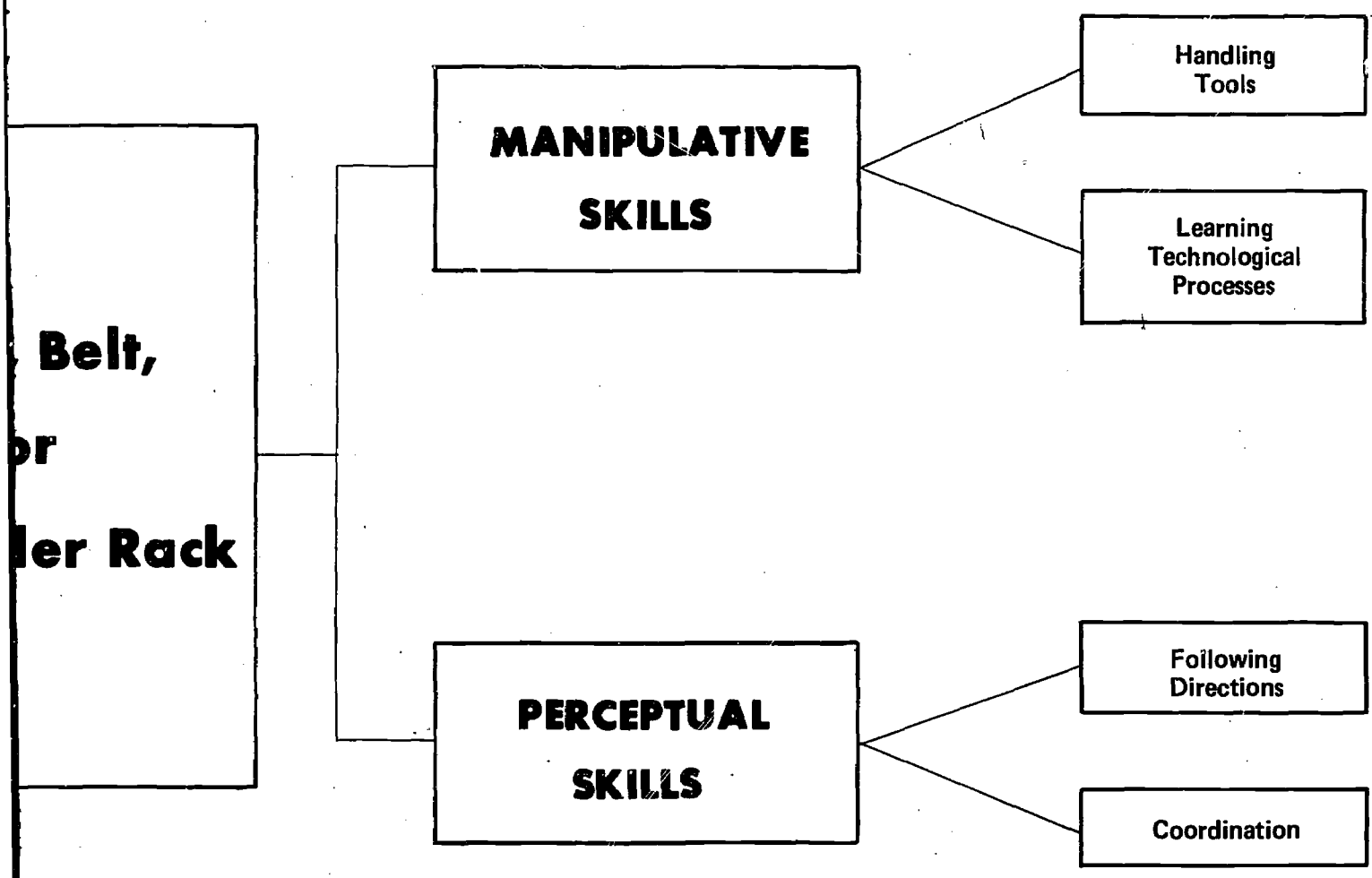
s an introduction to Tools.



I. Physical Environment

Teacher's Notes

A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
1	Piece of wood (size optional)	Lumber yard
6	Cup hooks (number optional)	[illegible] & 10
1 quart	Paint or varnish stain	Hardware store
1	1" Brush	Hardware store
1 sheet	Sandpaper	Hardware store

C. Equipment

No. Needed	Item Description	Where Available
1	Hand or sabre saw	
1	Pencil	School supply
1	Ruler	
1	Drill	

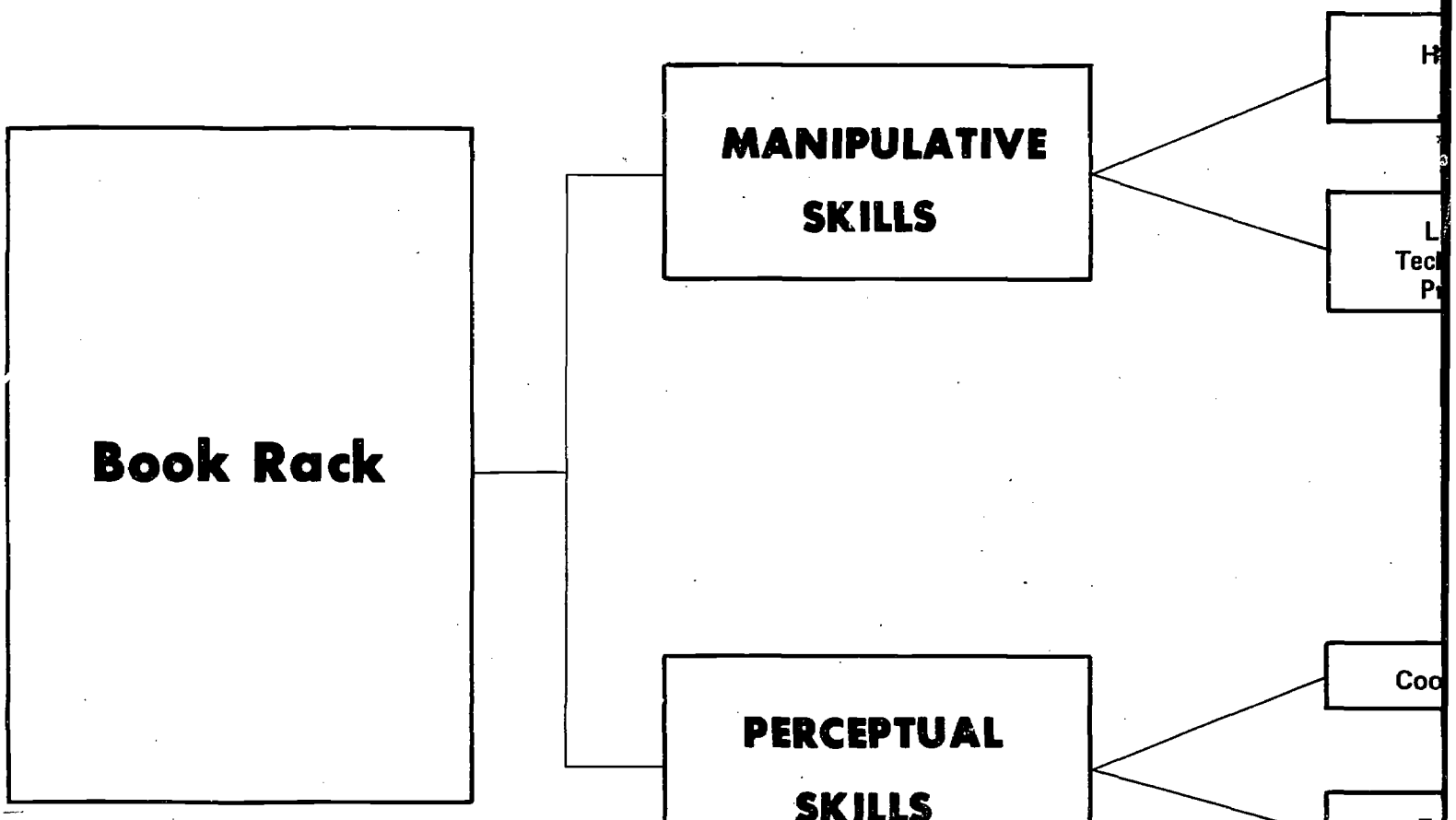
D. Motivating Device

Gifts for Mother's Day or Father's Day.

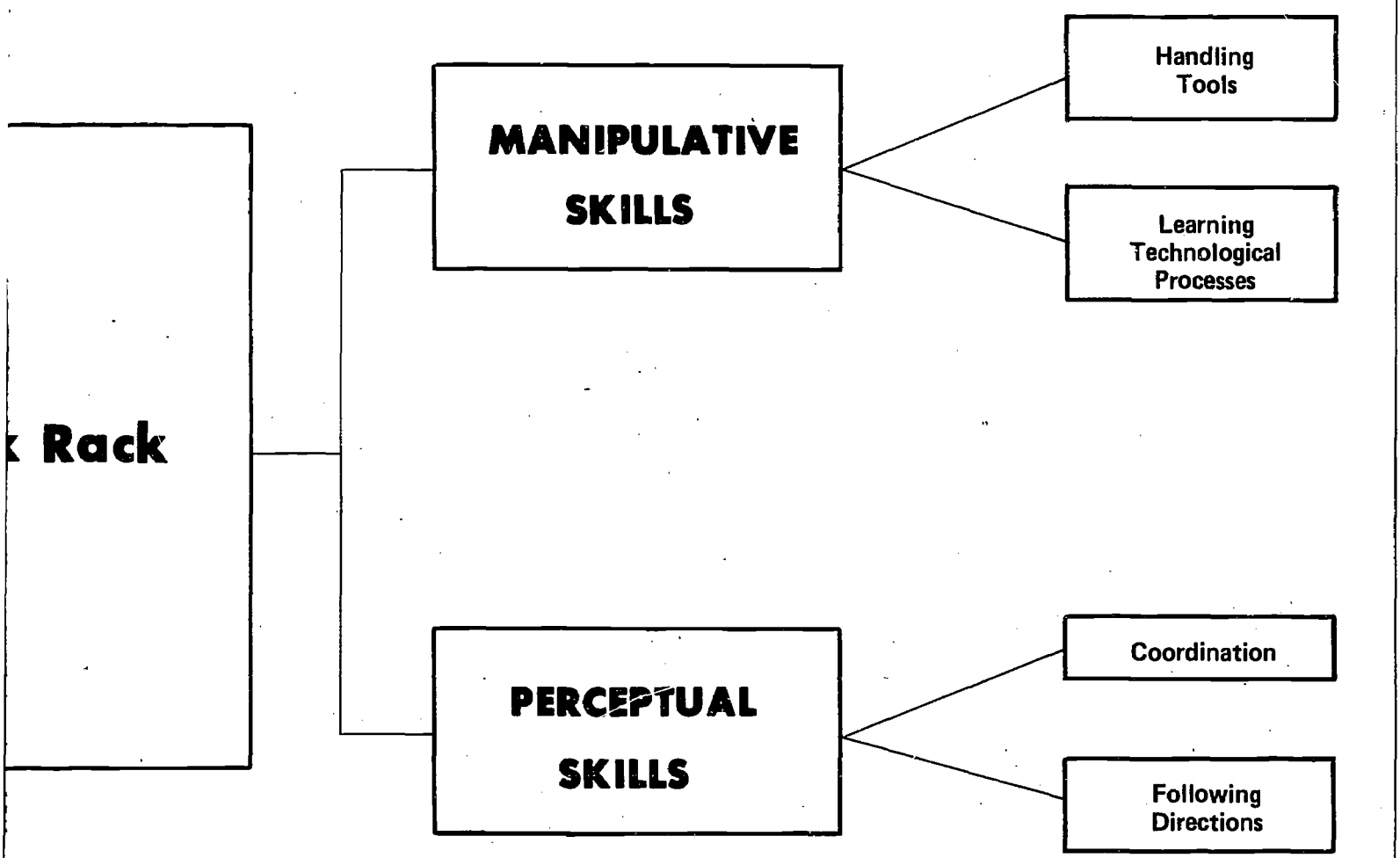
II. Procedure

1. Cut wood to desired shape and size.
2. Sand edges with sandpaper.
3. Drill hole in top for mounting.
4. Paint or varnish entire wood.
5. Screw in cup hooks where desired.

LEVEL **Primary - Intermediate**
Introduction to Tools.



imary - Intermediate
troduction to Tools.



I. Physical Environment

Teacher's Notes

A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
1 piece	7" wide x 18" length 1" thick pine	Lumber yard
2 pieces	7" wide x 6" length 1" thick pine	Lumber yard
6	Nails	Hardware store
1 bottle	Elmer's glue	Hardware store
1 pint	Varnish stain	Hardware store
1 sheet	Sandpaper	Hardware store

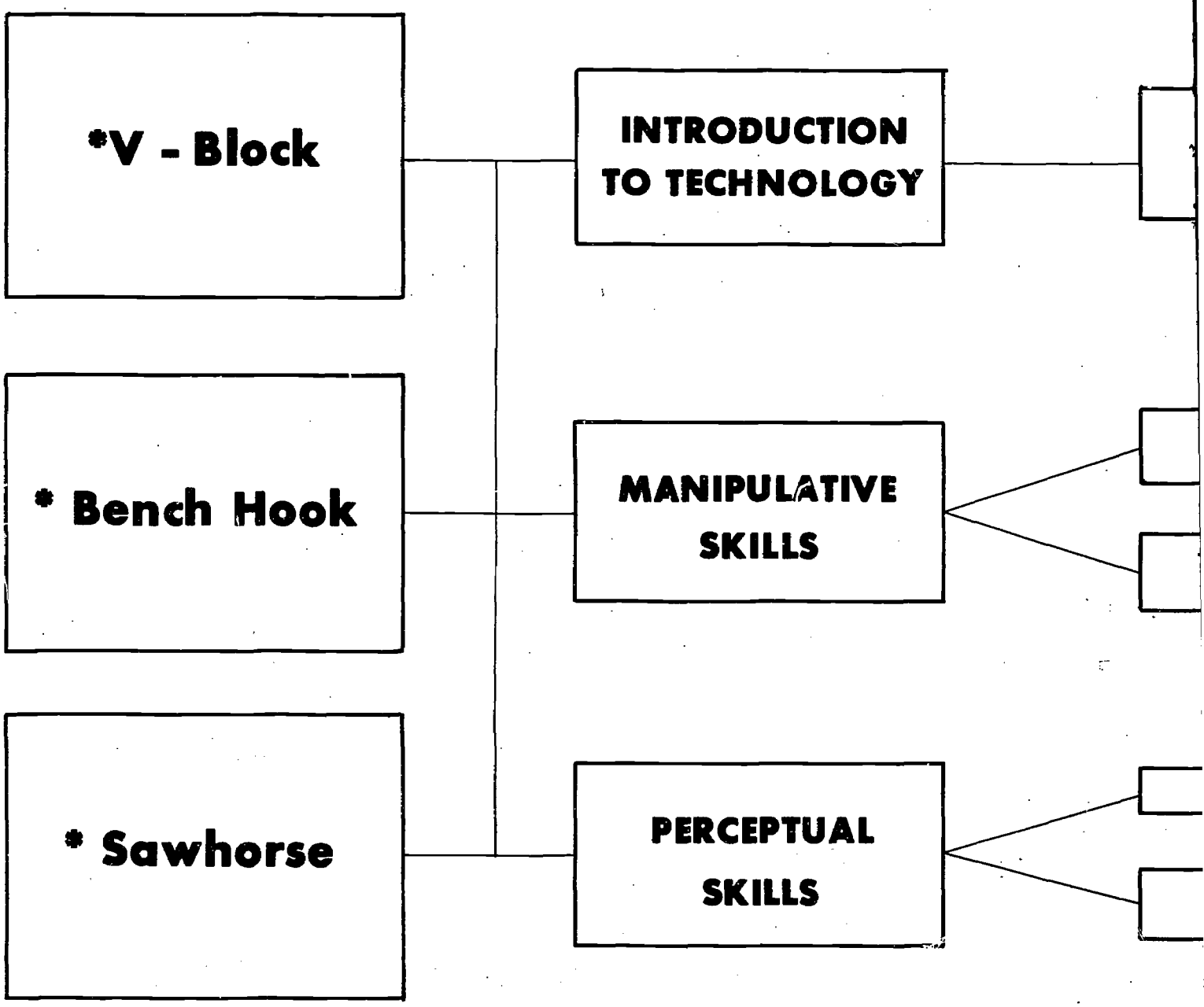
C. Equipment

No. Needed	Item Description	Where Available
1	Square	
1	Pencil	
1	Saw	
1	Chisel	
1	Hammer	
1	Back saw	

II. Procedure

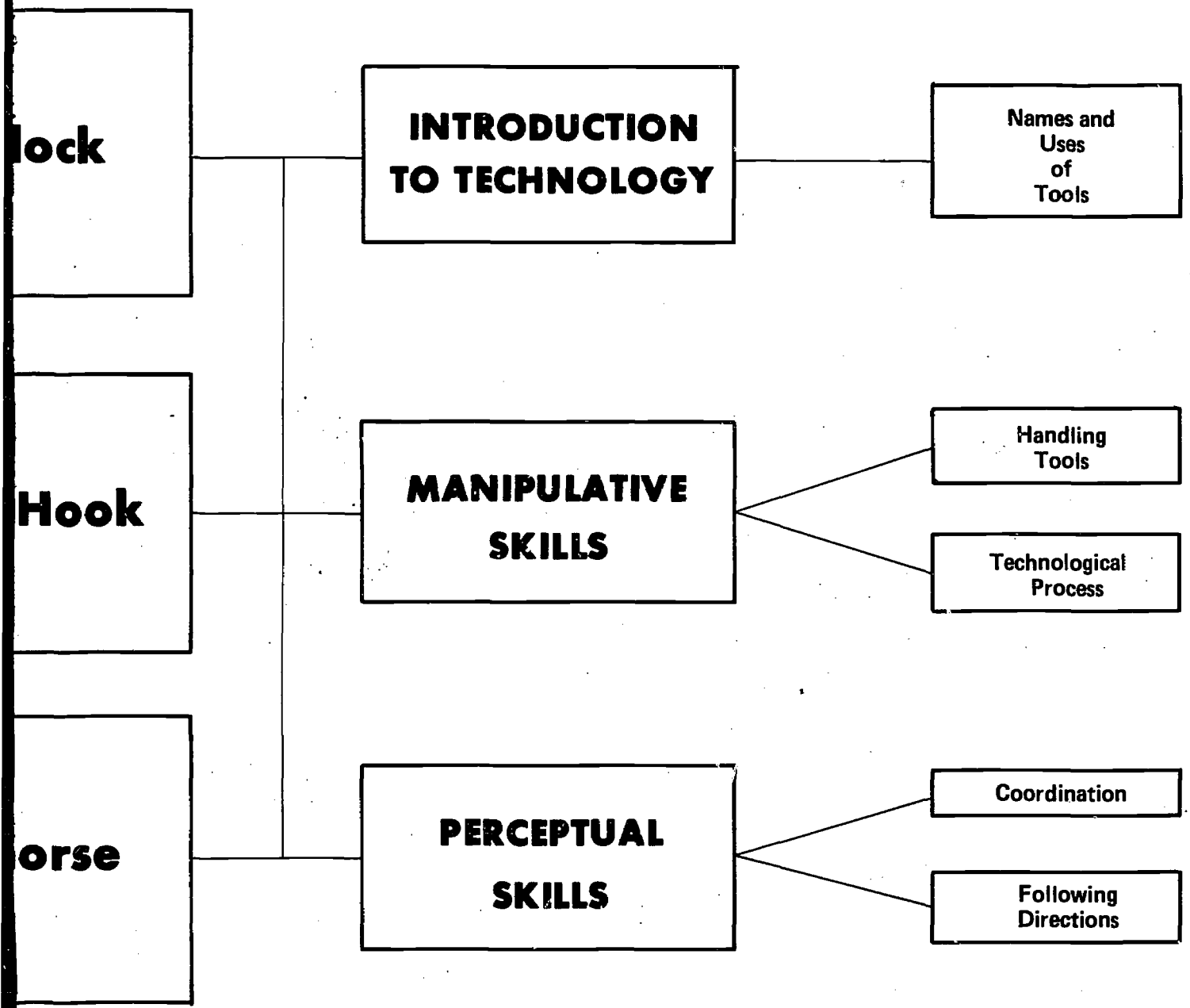
1. Cut 3 pieces pine in specified sizes.
2. On larger base piece (7" x 18" x 1") measure and mark lines 3" from each edge of base.
3. Using back saw, saw down on each marked line 3/8".
4. Using hammer and chisel, gouge out wood between saw markings.
5. Glue side pieces into slots.
6. When glue is dry, turn book end upside down and secure sides into base with two nails.
7. Sand entire project.
8. Brush on varnish stain.
9. Wipe off, let dry.

LEVEL **Primary - Intermediate**



*This is not only a project in itself, but can be put to functional use when making future projects.

nary - Intermediate



self, but can be put to functional use when making future projects.

PHASE I
V - Block

I. Physical Environment

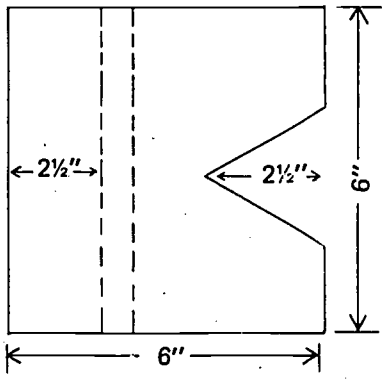
A. Classroom

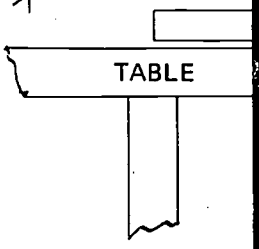
B. Expendable Materials

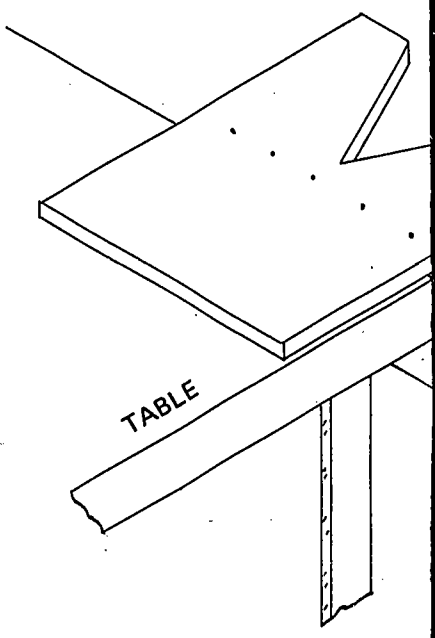
No. Needed	Item Description	Where Available
2 pieces	1" x 6" No. 2 Pine	Lumber yard
3	Nails	Hardware store
1 bottle	Elmer's glue	Hardware store

C. Equipment

No. Needed	Item Description	Where Available
1	Coping saw	
1	Chisel	
1	Hammer	
1	Back saw	







II. Procedure

1. From one piece pine, cut "V" (see diagram), with coping saw.
2. Measure a 1" wide slot across width of piece.
3. Using back saw, make a 3/8" deep cut on each line.
4. Chisel wood out of slot.
5. Spread glue into slot and insert second piece of wood.
6. Nail piece in.

PHASE I
V - Block

Environment

m

ble Materials

em Description	Where Available
" x 6" No. 2 Pine	Lumber yard
ails	Hardware store
lmer's glue	Hardware store

nt

tem Description	Where Available
Coping saw	
Chisel	
Hammer	
Back saw	

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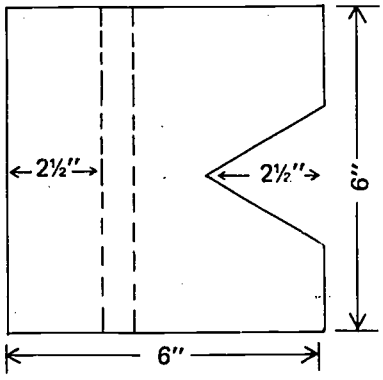
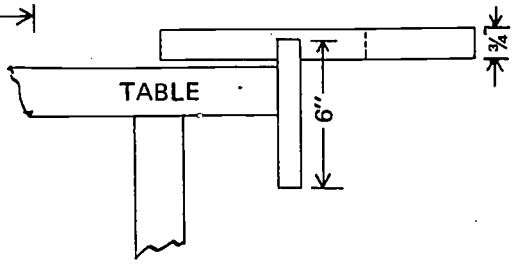
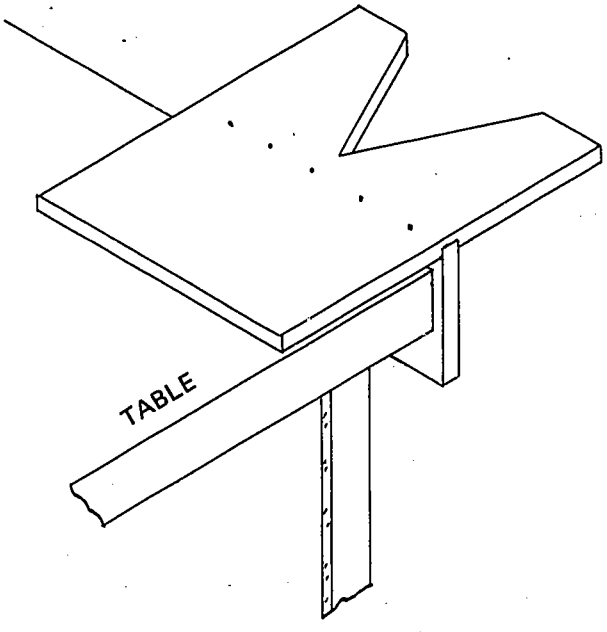
e, cut "V" (see diagram), with

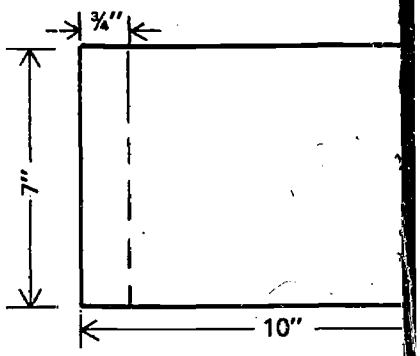
lot across width of piece.
ke a 3/8" deep cut on each line.
slot.
and insert second piece of wood.







PHASE II
Building a Bench Hook

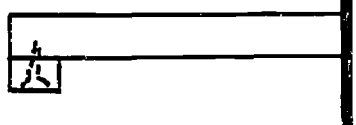


I. Physical Environment

A. Classroom

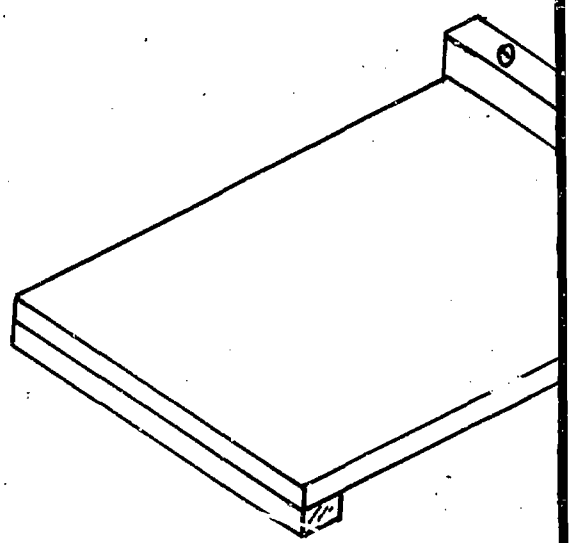
B. Expendable Materials

No. Needed	Item Description	Where Available
1	8" x 10" – 1" pine	Lumber yard
2	2" x 6" – 1" firring strips	Lumber yard
4	Flathead screws	Hardware store



C. Equipment

No. Needed	Item Description	Where Available
1	Drill	
1	Countersink	
1	Screw driver	



II. Procedure

1. With drill, set guide holes equidistant from each end of firring strip.
2. Using countersink, make two holes.
3. Attach to board (see diagram) with screws.

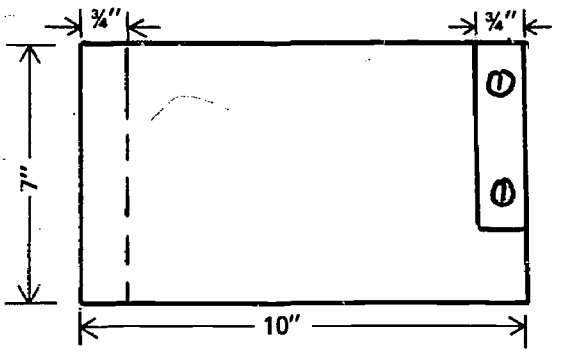
PHASE II
Building a Bench Hook

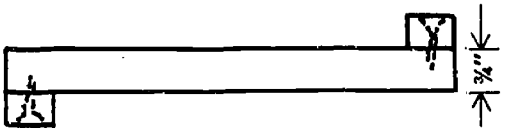
l Environment

om

able Materials

Item Description	Where Available
8" x 10" – 1" pine	Lumber yard
2" x 6" – 1" firring strips	Lumber yard
Flathead screws	Hardware store





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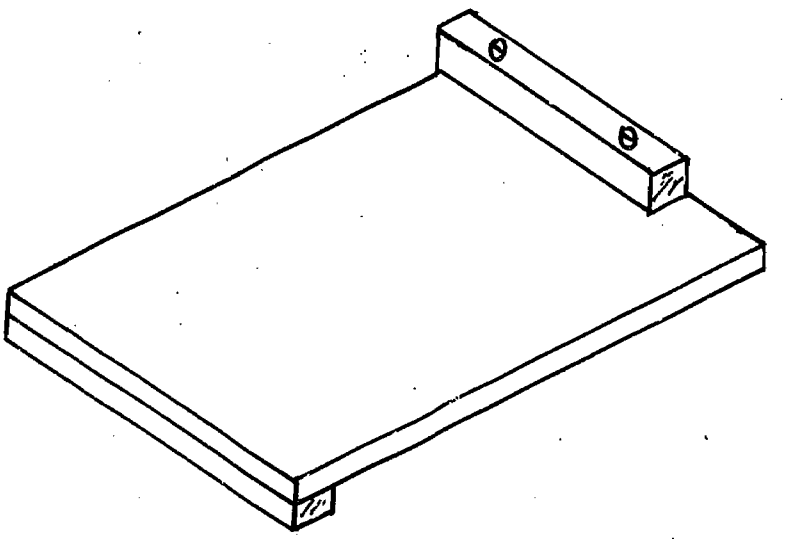
Item Description	Where Available
Drill	
Countersink	
Screw driver	



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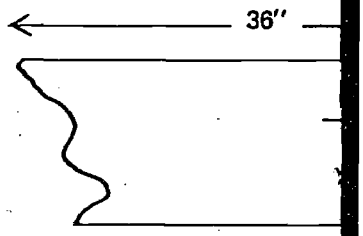
e holes equidistant from each end of

make two holes.
ee diagram) with screws.

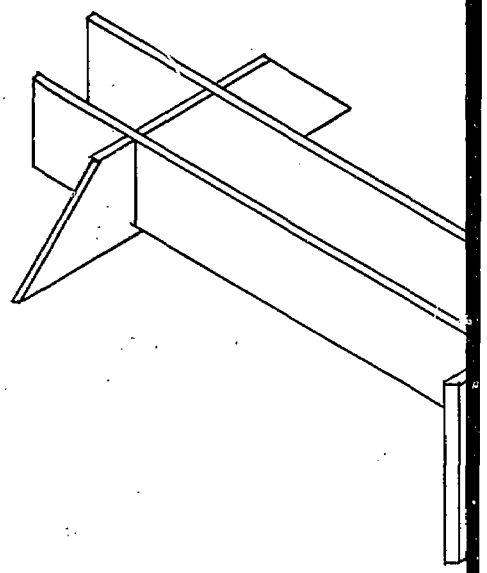
PHASE III
Building a Sawhorse



I. Physical Environment

A. Classroom

B. Expendable Materials



No. Needed	Item Description	Where Available
1 piece	6' – 3/4" x 6" plywood	Lumber yard
1 piece	3' – 3/4" x 18" plywood	Lumber yard

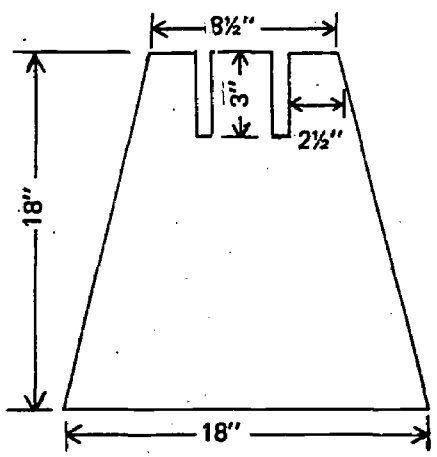
C. Equipment

No. Needed	Item Description	Where Available
1	Sabre saw	

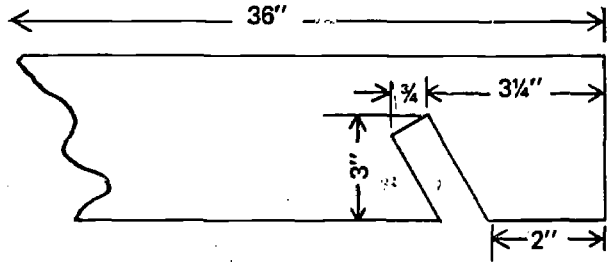
II. Procedure

1. Cut each piece of wood in half.
2. Slot according to diagram.
3. Fit together (see diagram).

NOTE: This can be disassembled for convenient storage.



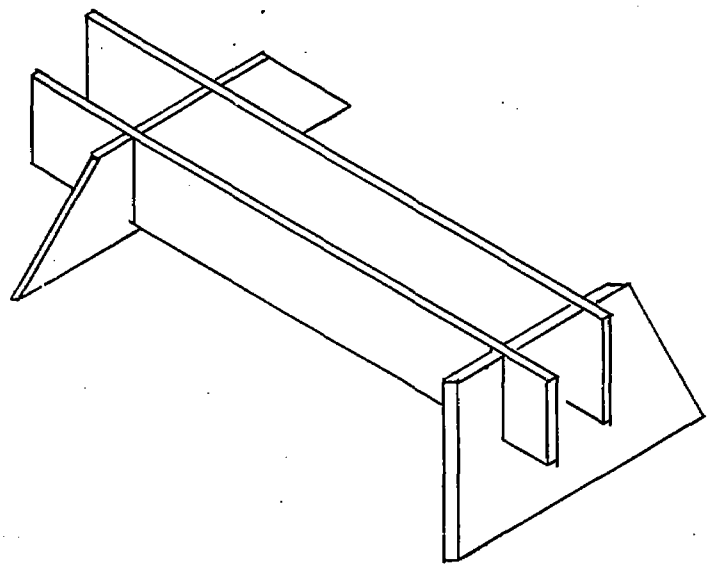
PHASE III
Building a Sawhorse



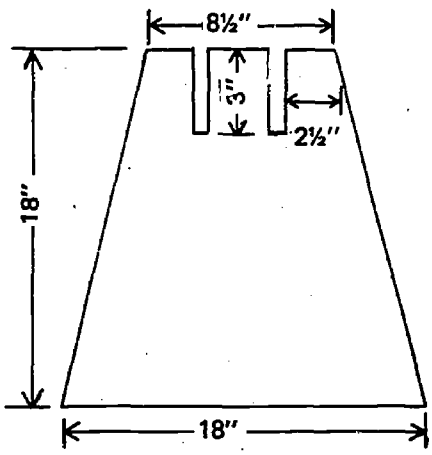
Environment

le Materials

n Description	Where Available
3/4" x 6" plywood	Lumber yard
3/4" x 18"	Lumber yard
wood	



Description	Where Available
e saw	



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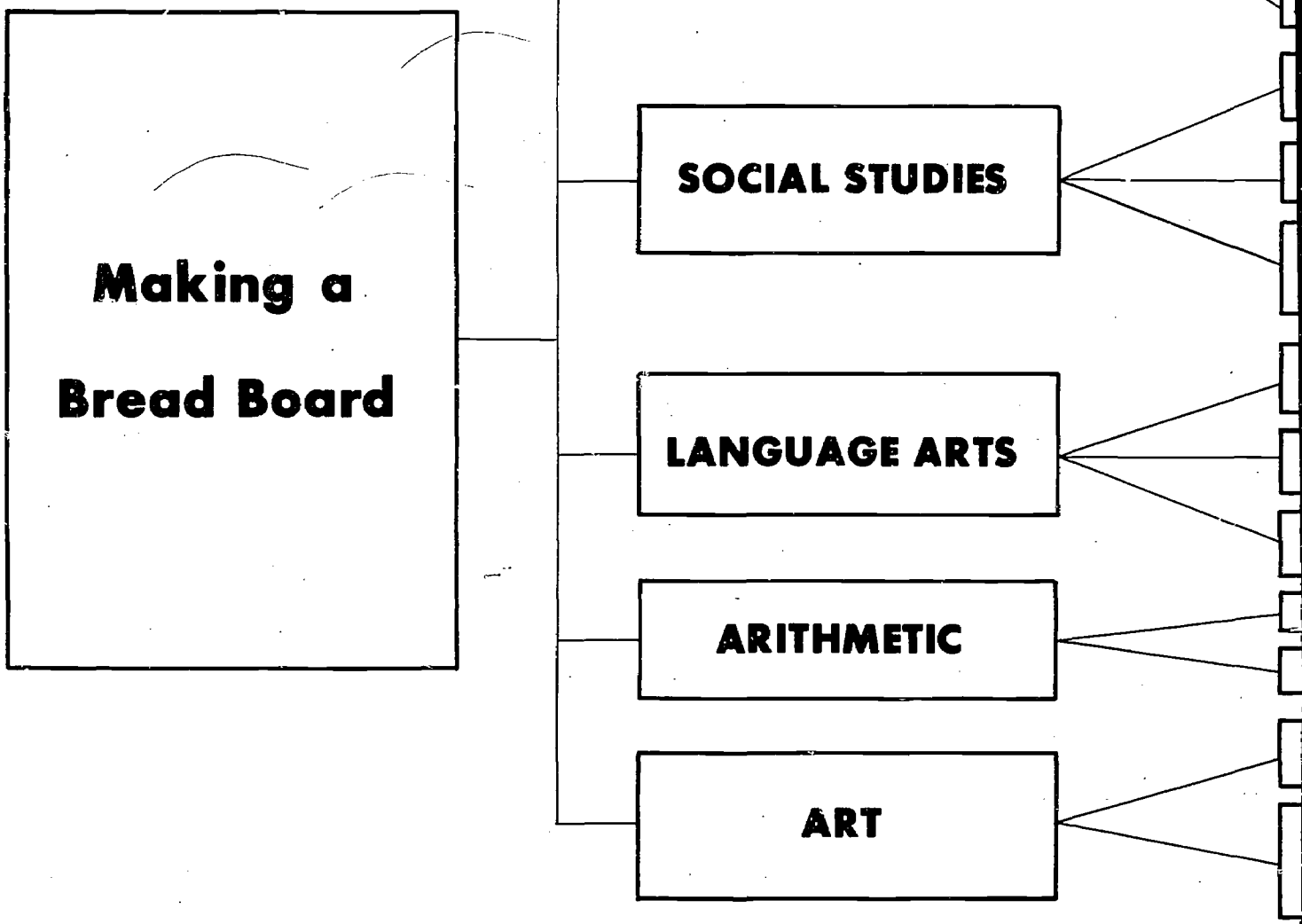
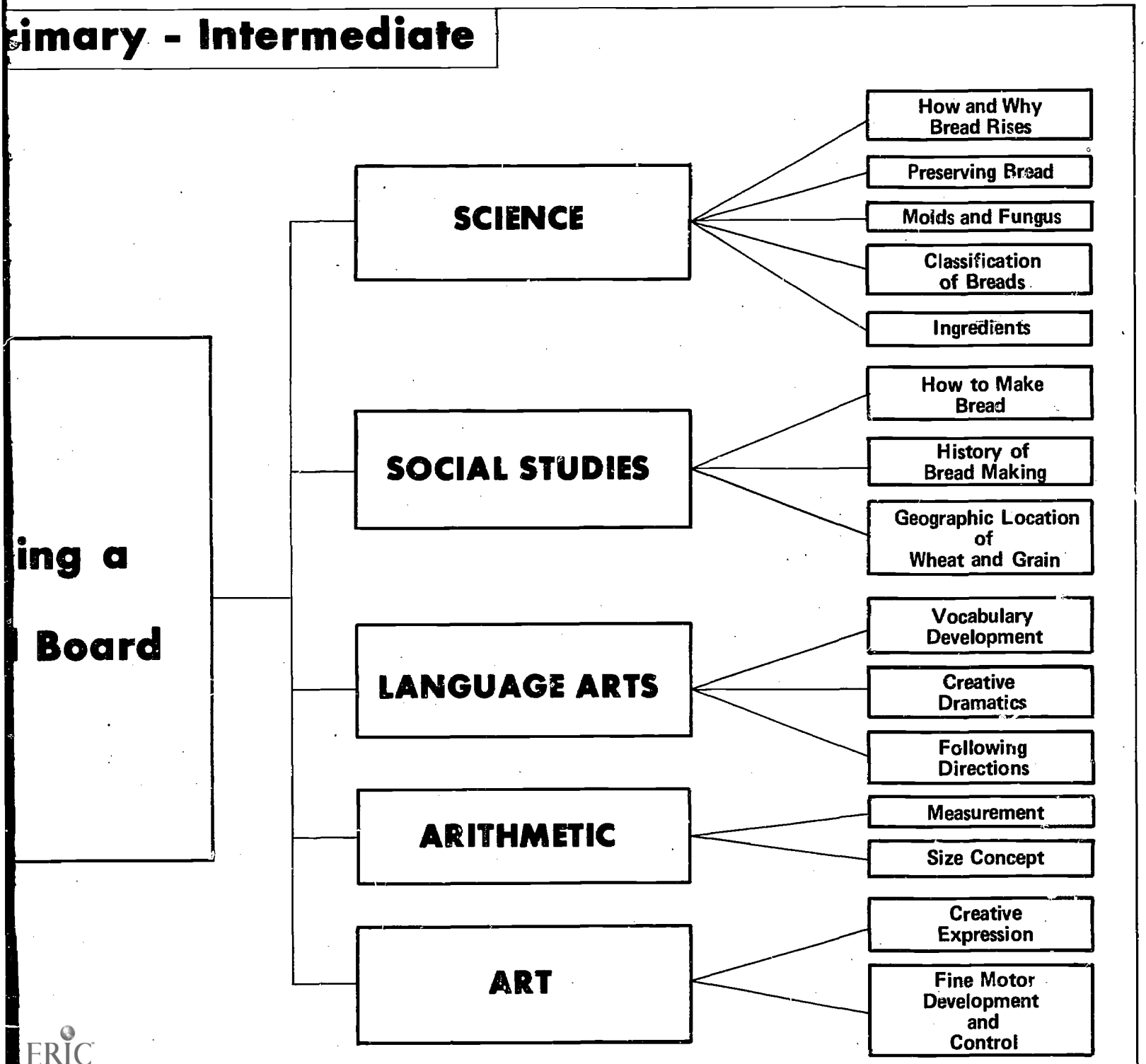
LEVEL Primary - Intermediate



imary - Intermediate



I. Physical Environment

A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
1	Maple 3/8" or 5/8" (11" circle) or 8" x 12" rectangle	Lumber yard
1 pint	Latex paint (optional)	Hardware store
1 pint	Shellac	Hardware store
1 pint	Alcohol	Hardware store
1 sheet	Sandpaper	Hardware store
1 sheet	Newspaper	
	Leather lacing	Leathercraft
	Cooking oil	Home

C. Equipment

No. Needed	Item Description	Where Available
1	Sabre saw	
1	Drill (hand or power)	

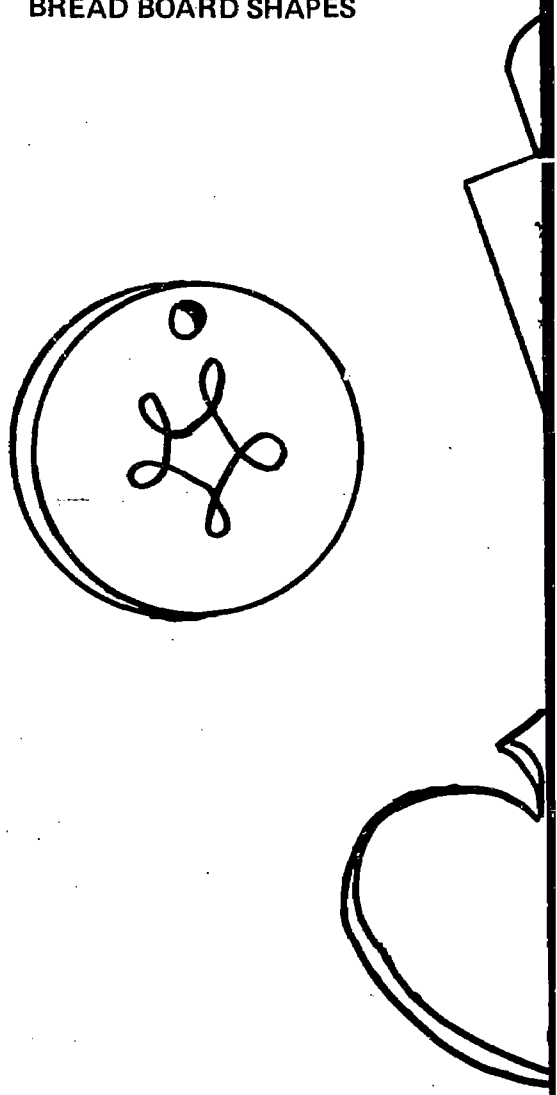
D. Motivating Device

1. Films and filmstrips.
2. Make bread.

II. Procedure

1. Cut wood to specific size or shape. Maple is the best kind of wood to use, however, this may be too difficult for primary students to cut. If the board is used for decorative purposes, plywood may be substituted.
2. Drill hole for hanging.
3. Sand.
4. Shellac — only side not being used.
5. Optional: Paint and decorate one side.
6. Oil side that is going to be used.
7. Insert leather lacing through hole.

SAMPLES OF BREAD BOARD SHAPES



l Environment

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lable Materials

Item Description	Where Available
Maple 3/8" or 5/8" (11" circle) or 8" x 12" rectangle	Lumber yard
Latex paint (optional)	Hardware store
Shellac	Hardware store
Alcohol	Hardware store
Sandpaper	Hardware store
Newspaper	
Leather lacing	Leathercraft
Cooking oil	Home

ent

Item Description	Where Available
Sabre saw	
Drill (hand or power)	

ting Device

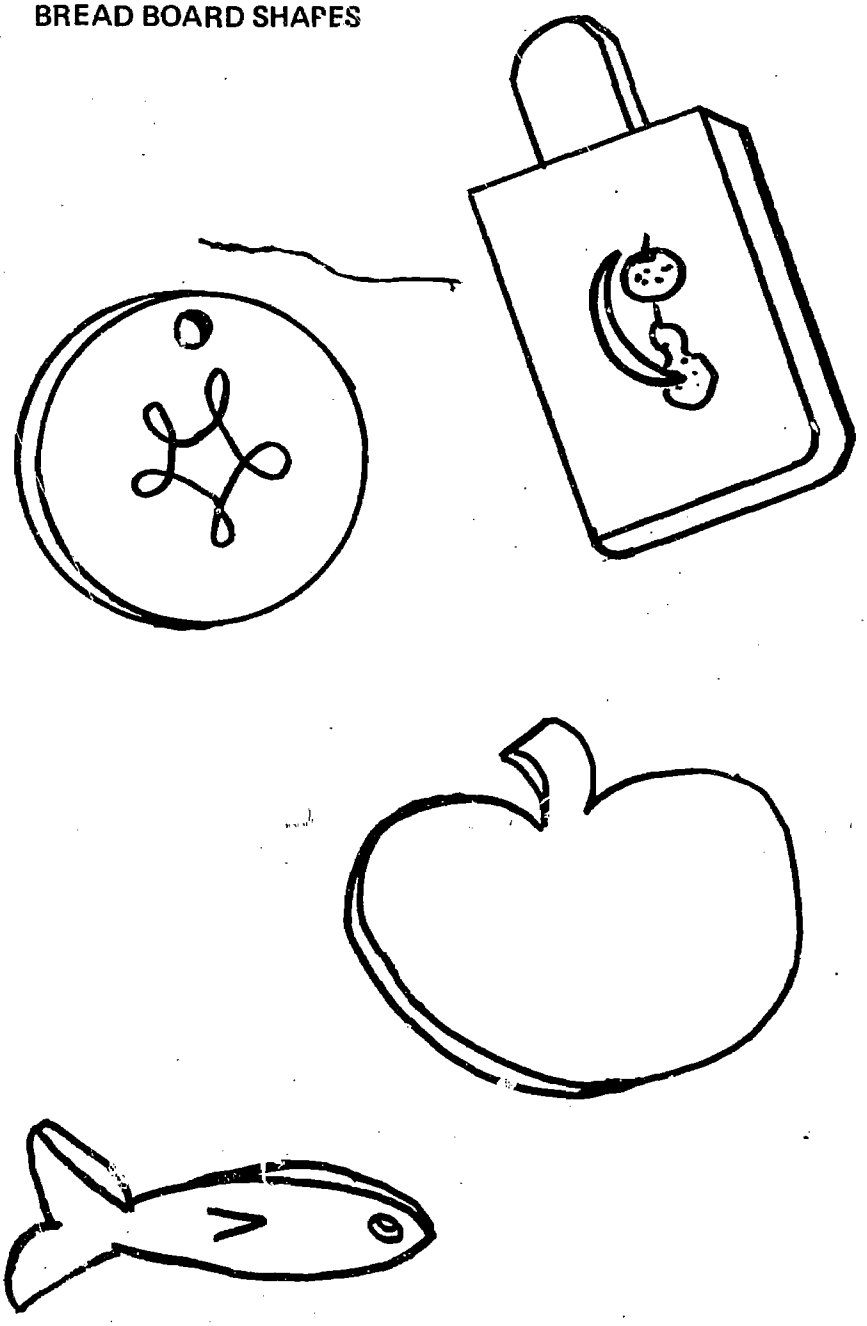
filmstrips.
d.

ure

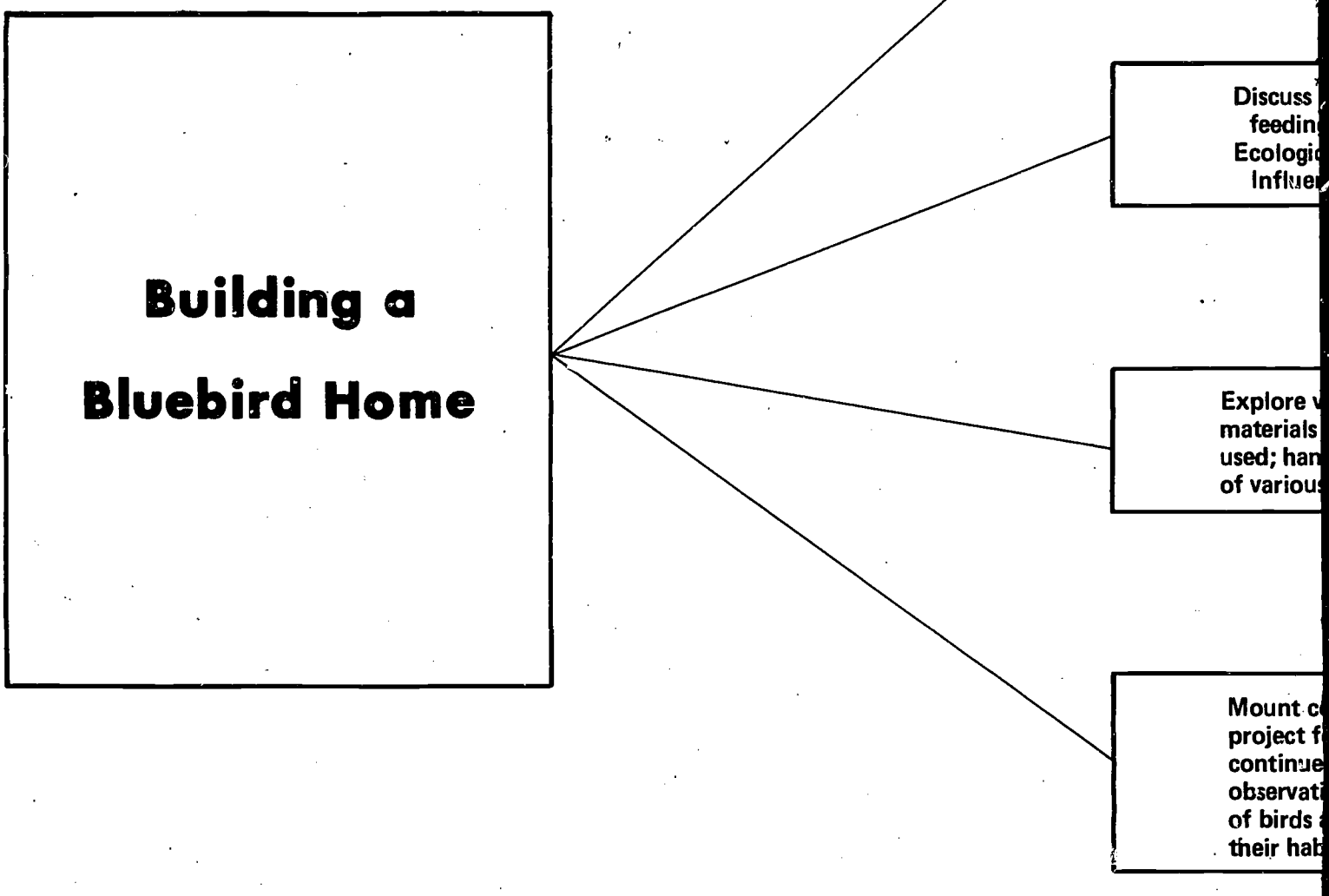
ific size or shape. Maple is the best
se, however, this may be too difficult
nts to cut. If the board is used for
es, plywood may be substituted.
ging.

e not being used.
nd decorate one side.
r used.
gh hole.

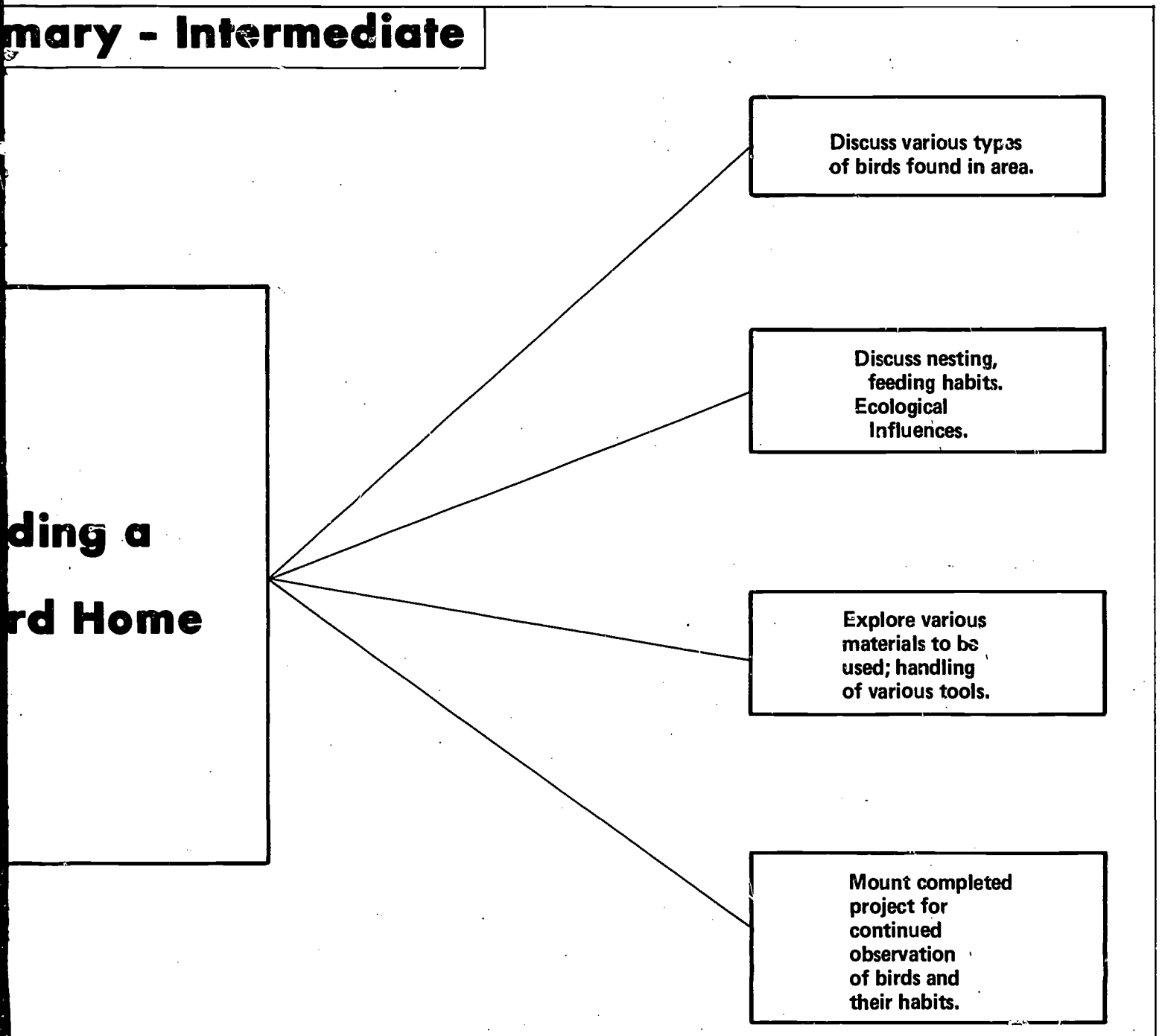
SAMPLES OF
BREAD BOARD SHAPES



LEVEL **Primary - Intermediate**



mary - Intermediate



I. Physical Environment

A. Classroom

B. Expendable Materials

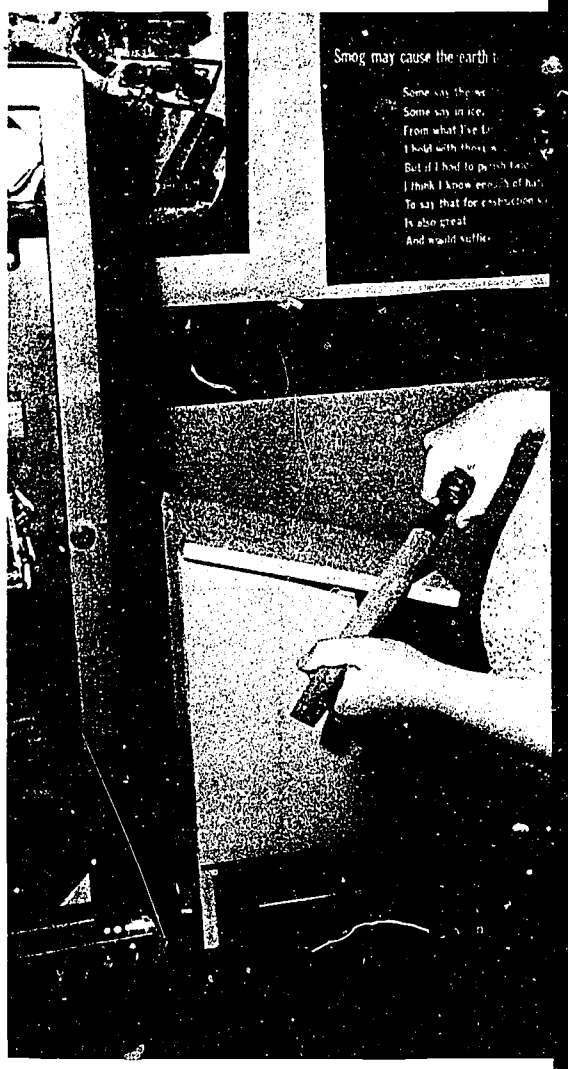
No. Needed	Item Description	Where Available
1	4 x 8 1/2" exterior plywood	Lumber yard
26	Finishing nails	Hardware store
1	Hinge	
2	Screws	
1 piece	Sandpaper	
1 pint	Exterior paint	

C. Equipment

No. Needed	Item Description	Where Available
1	Square	
1	Straight ruler	
1	Sabre saw	
1	Hand drill	
1	File	
1	Hammer	
1	Screw driver	
1	Paint brush	

D. Motivating Device

1. Films.
2. Filmstrips.
3. Display: Birds and Their Environment.



II. Procedure

1. Cut pieces of wood for back, sides (2), front, bottom and top.
2. Drill hole in front piece for entrance; widen with rasp or sabre saw.
3. Drill screw holes, holes for ventilation.
4. Sand individual pieces.
5. Assemble back, front, sides, bottom, and top pieces.
6. Paint.
7. Attach hinge.

l Environment

om

able Materials

Item Description	Where Available
4 x 8 1/2" exterior plywood	Lumber yard
Finishing nails	Hardware store
Hinge	
Screws	
Sandpaper	
Exterior paint	

ent

Item Description	Where Available
Square	
Straight ruler	
Sabre saw	
Hand drill	
File	
Hammer	
Screw driver	
Paint brush	

ting Device

s.
Birds and Their Environment.

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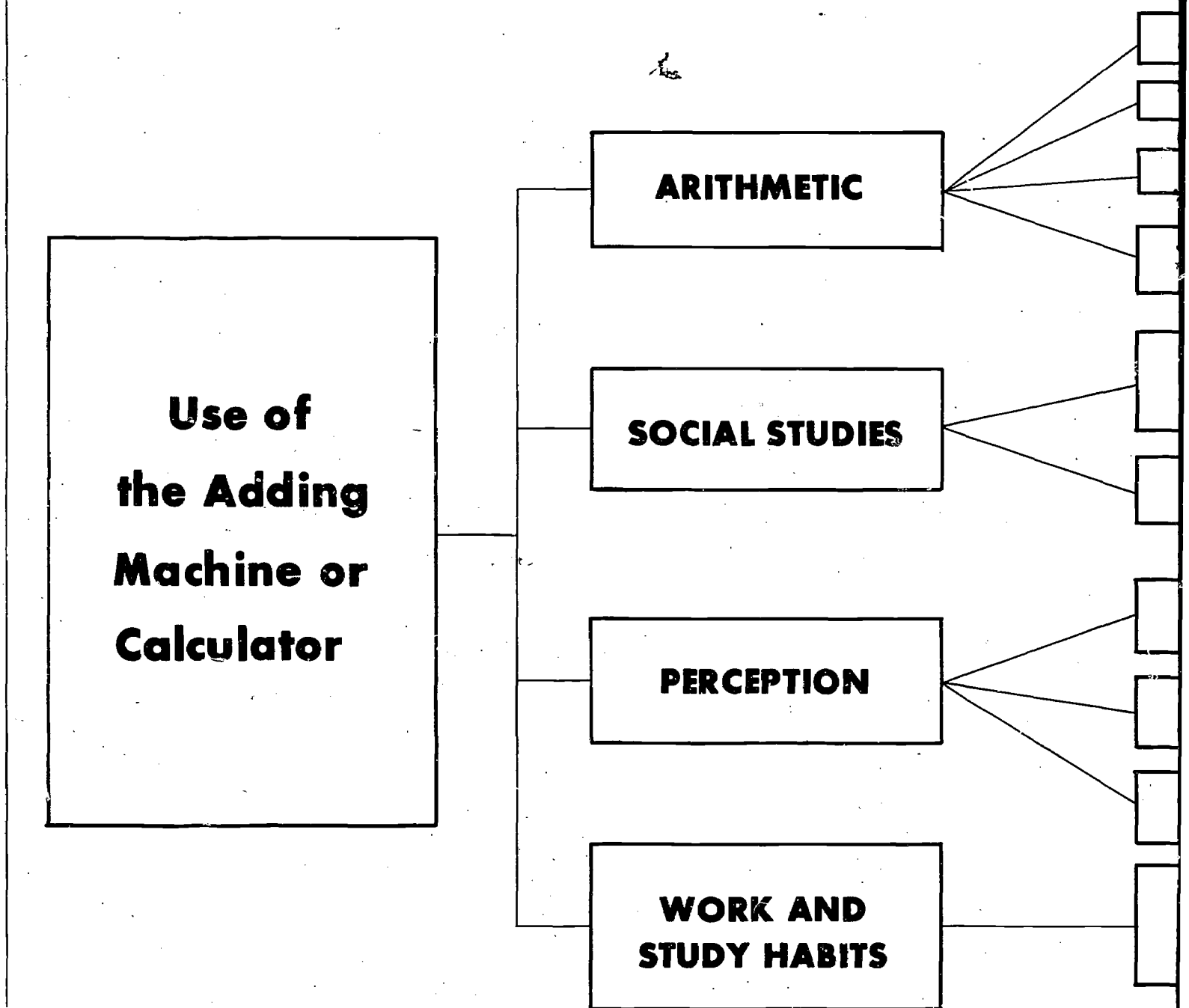
ood for back, sides (2), front, bottom

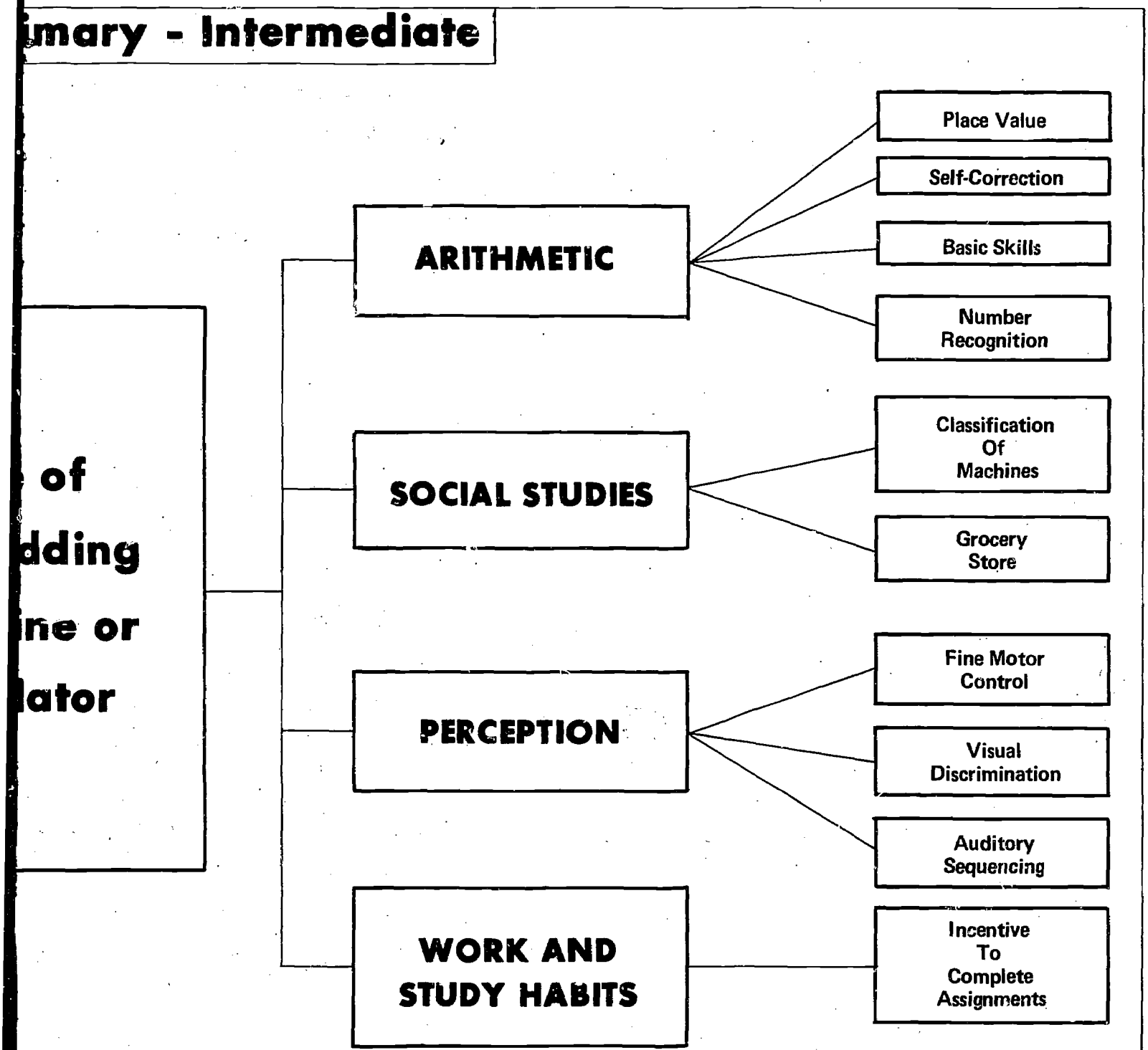
nt piece for entrance; widen with rasp

, holes for ventilation.
pieces.
front, sides, bottom, and top pieces.

LEVEL Primary - Intermediate



imary - Intermediate



I. Physical Environment

Teacher's Notes

A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
1 package	Adding Machine Paper	
1	Adding Machine Ribbon	

C. Equipment

No. Needed	Item Description	Where Available
1	Adding Machine	

D. Motivating Device

1. Machine itself.

II. Procedure

Use of adding machine or calculator in various areas of study.

A. Arithmetic

1. Instruct children how to do simple addition, subtraction, multiplication, and division using the machines.
2. Children do simple basic fact problems on paper; they attempt to solve same problems on adding machine or calculator, and compare for self-correction.
3. Grocery Store.
   a. Establish grocery store in classroom.
   b. Use adding machine as cash register. Children can buy, sell, make change.

(Procedures continued)

B. Social Studies

Teacher's Notes

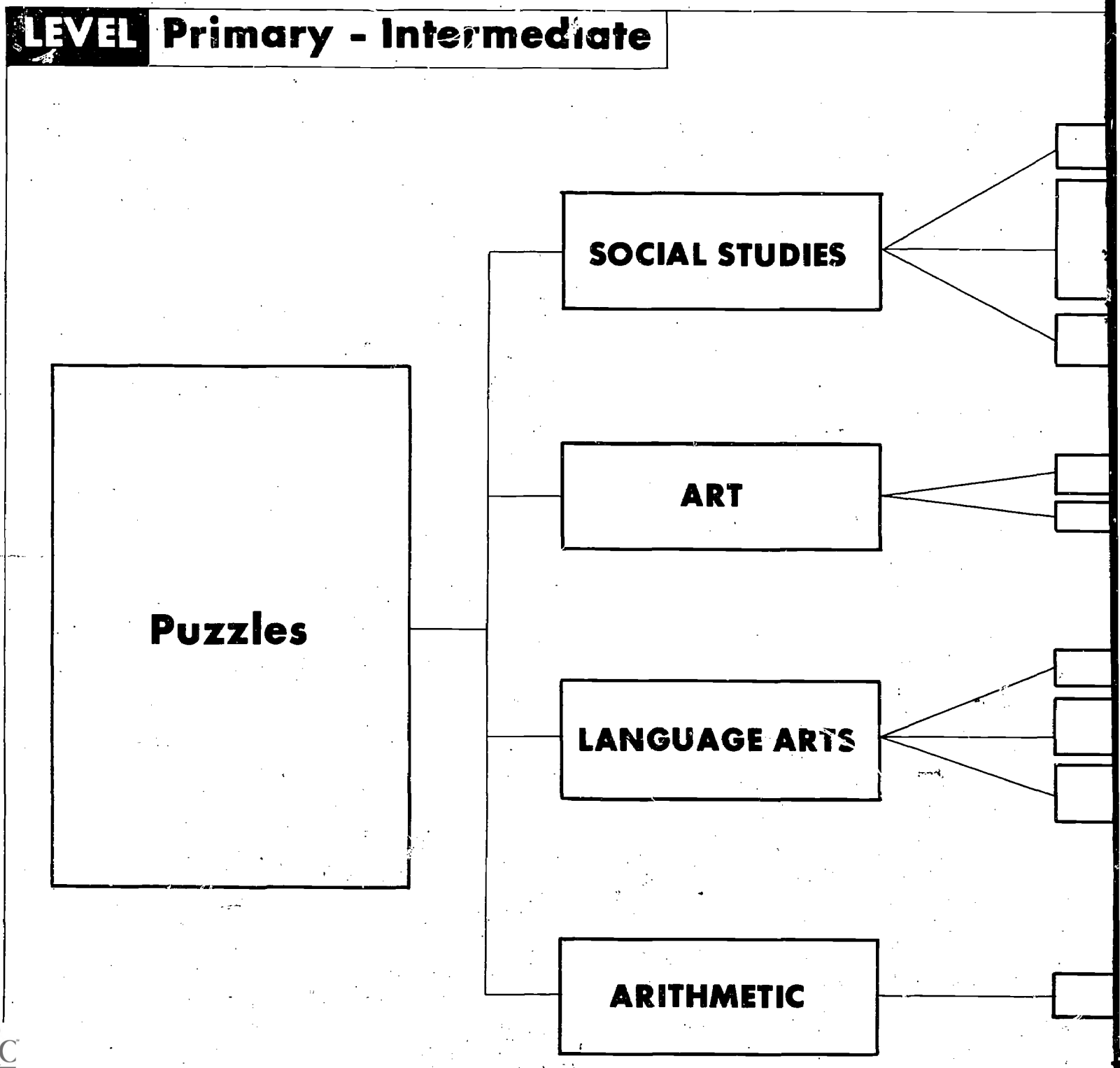
1. Classification of Machines.
   a. How man uses machines to make his work easier.

C. Science

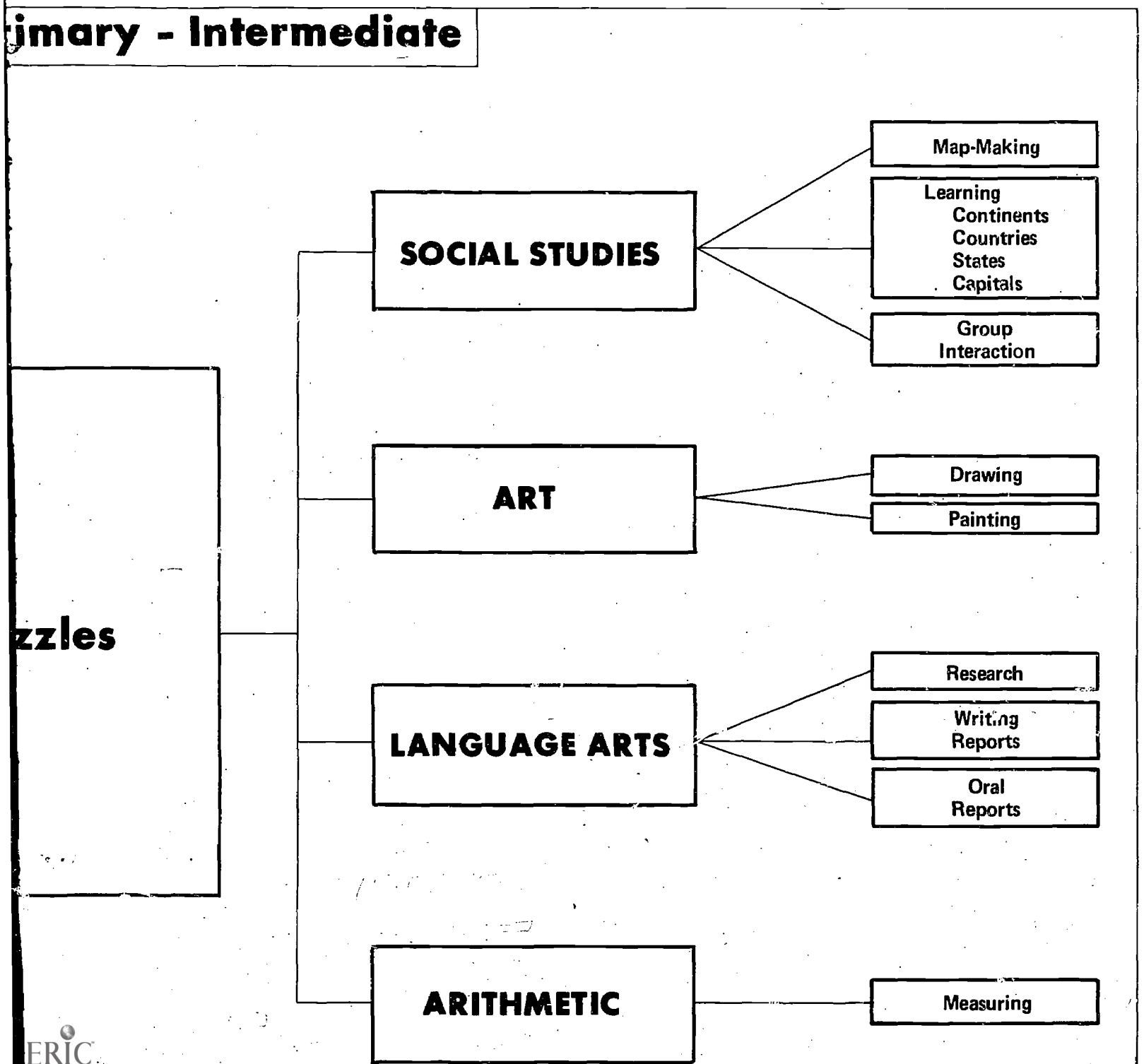
1. Principles of Machines.
   a. How simple machines work.
   b. Kinds of business machines (maps, charts).

D. Perceptual Activities

1. Fine motor control – child must press number just once.
2. Auditory Sequencing – give child series of numbers orally.


LEVEL Primary - Intermediate
Puzzles
SOCIAL STUDIES
ART
LANGUAGE ARTS
ARITHMETIC

jmary - Intermediate



I. Physical Environment

A. Classroom

B. Expendable Materials

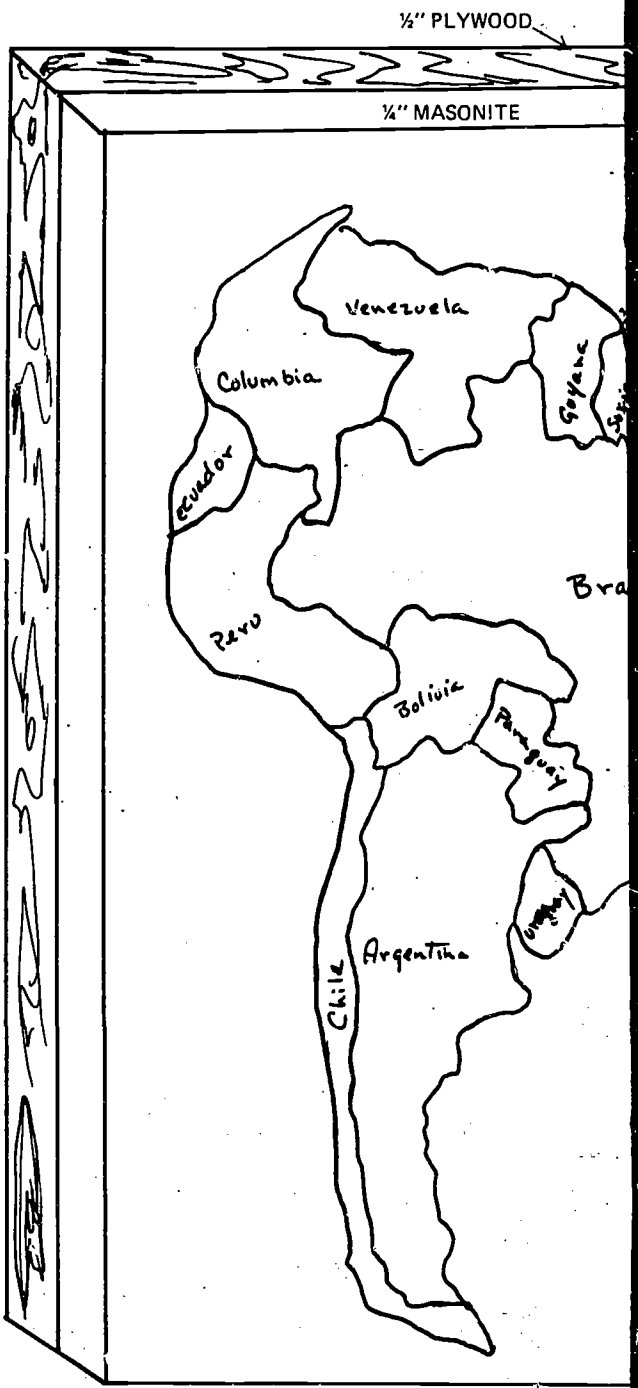
No. Needed	Item Description	Where Available
1 sheet	1/2" plywood 2' x 2-1/2'	
1 sheet	1/4" masonite 2' x 2-1/2'	
1	Pencil	Student
	Various colors of Tempera paint	Art room
1	Elmer's glue	Hardware store
1	Can of clear shellac	Hardware store

C. Equipment

No. Needed	Item Description	Where Available
1	Sabre saw	
1	Dremel saw	
4	Paint brushes	Art room

D. Motivating Device

1. Film on mapmaking.
2. Stories on countries.
3. Posters of countries, continents, etc.



II. Procedure

1. Cut 2 2' x 2-1/2' pieces; 1 masonite, 1 plywood.
2. From masonite, cut map outline with dremel saw.
3. Draw countries onto outline — label and cut out.
4. Paint all pieces.
5. Glue masonite to plywood piece.
6. Shellac complete project.
7. Assemble puzzle.

Environment

n

ple Materials

em Description	Where Available
'2" plywood x 2-1/2'	
'4" masonite x 2-1/2'	
encil	Student
arious colors of empera paint	Art room
mer's glue	Hardware store
an of clear shellac	Hardware store

t

em Description	Where Available
bre saw remel saw	
aint brushes	Art room

g Device

making.
untries.
untries, continents, etc.

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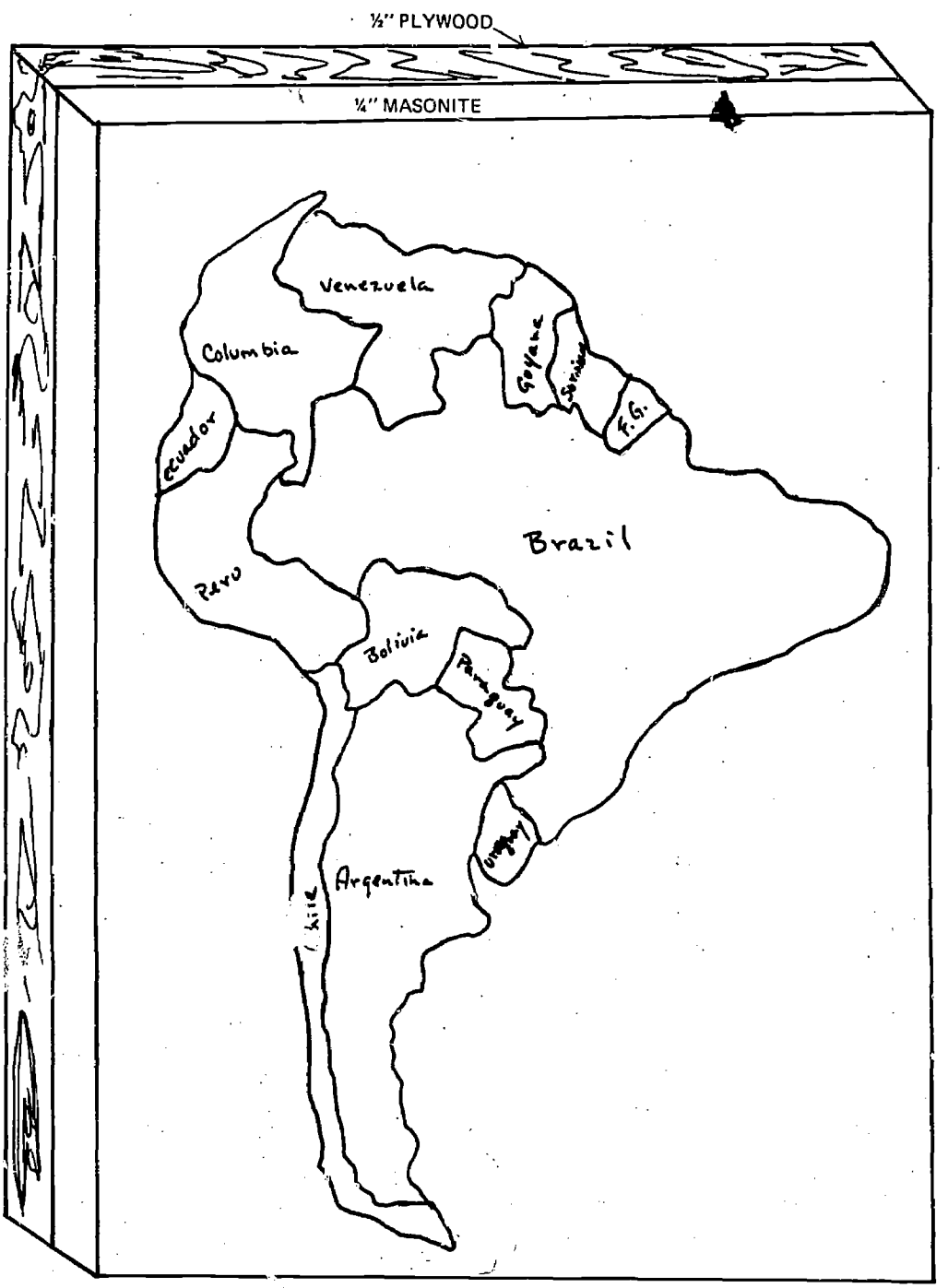
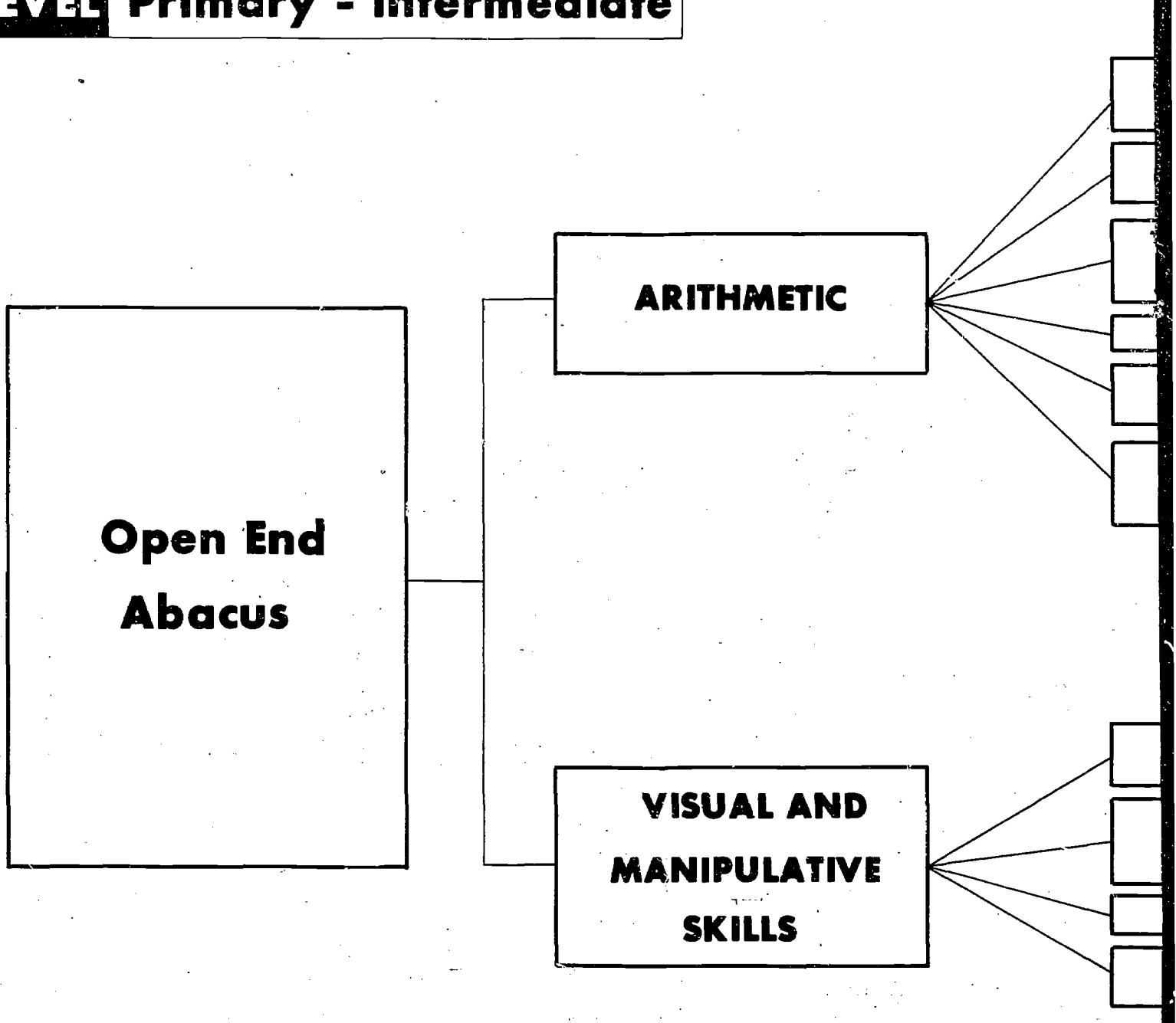
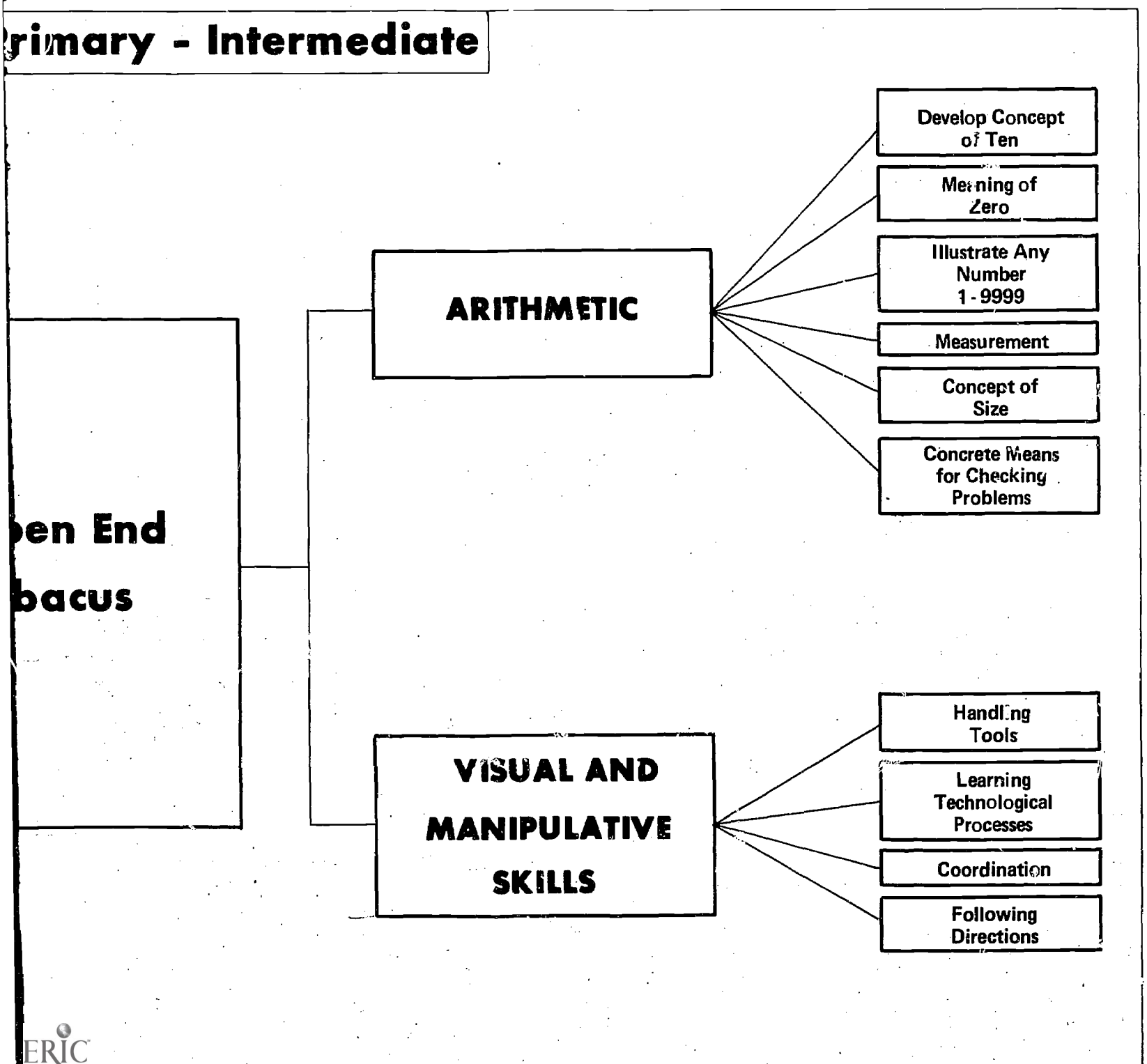
pieces; 1 masonite, 1 plywood.
ut map outline with dremel saw.
to outline – label and cut out.

plywood piece.



LEVEL Primary - Intermediate




rimary - Intermediate
Develop Concept of Ten
Meaning of Zero
Illustrate Any Number 1 - 9999
Measurement
Concept of Size
Concrete Means for Checking Problems
ARITHMETIC
pen End
bacus
Handling Tools
Learning Technological Processes
Coordination
Following Directions
VISUAL AND MANIPULATIVE SKILLS

I. Physical Environment

Teacher's Notes

A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
1 pine base	5" wide x 14" long x 3/4" thick	Lumber yard
4 dowel rods	3/8" diameter x 7-5/8" length	Lumber yard
36 pine counting blocks	1" wide x 1" long x 1/2" thick	Lumber yard
1 bottle	Elmer's glue	School supply
1 sheet	Sandpaper	Hardware store

C. Equipment

No. Needed	Item Description	Where Available
1	Hand saw or sabre saw	
1	Ruler	
1	Pencil	

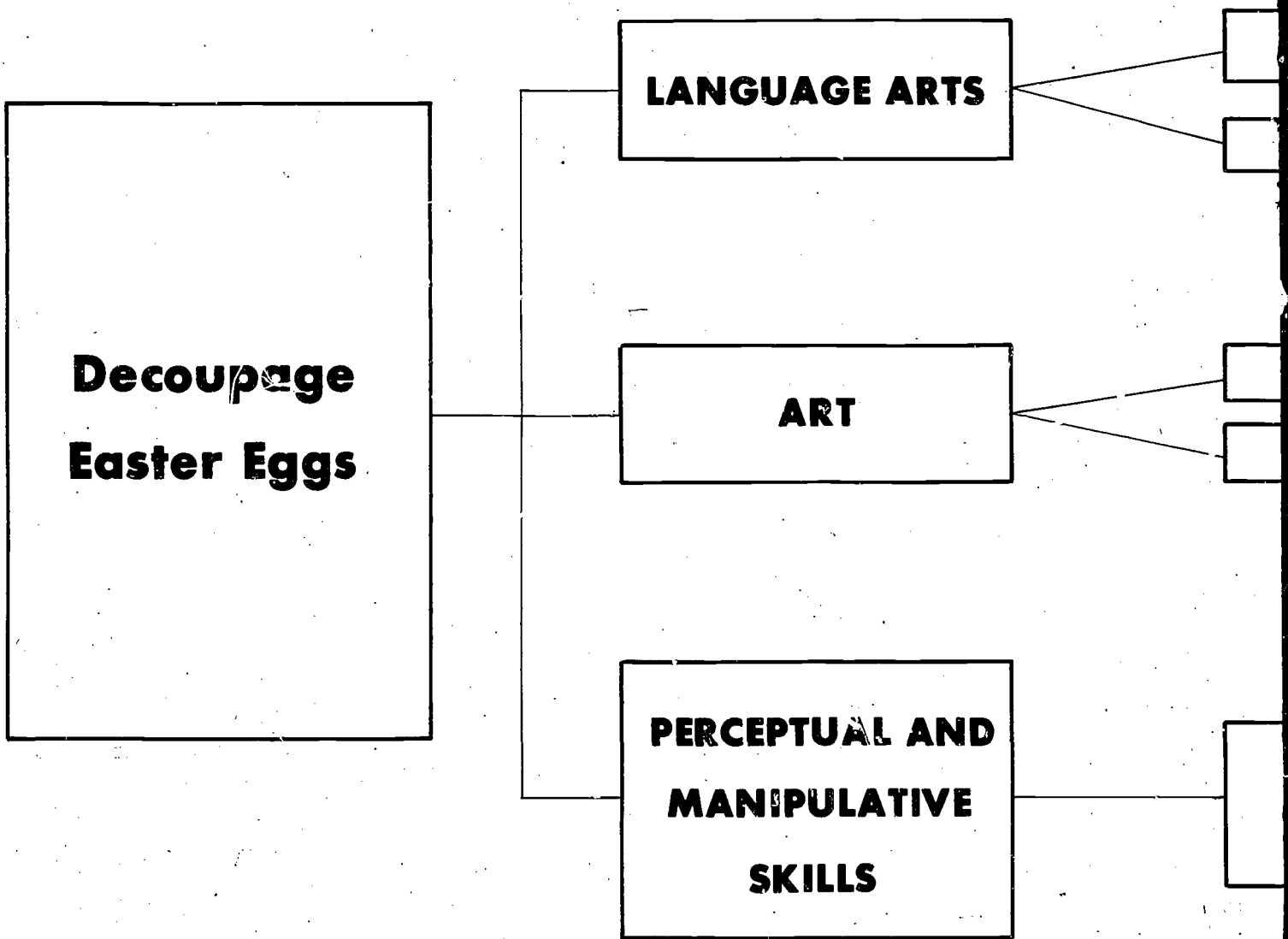
D. Motivating Device

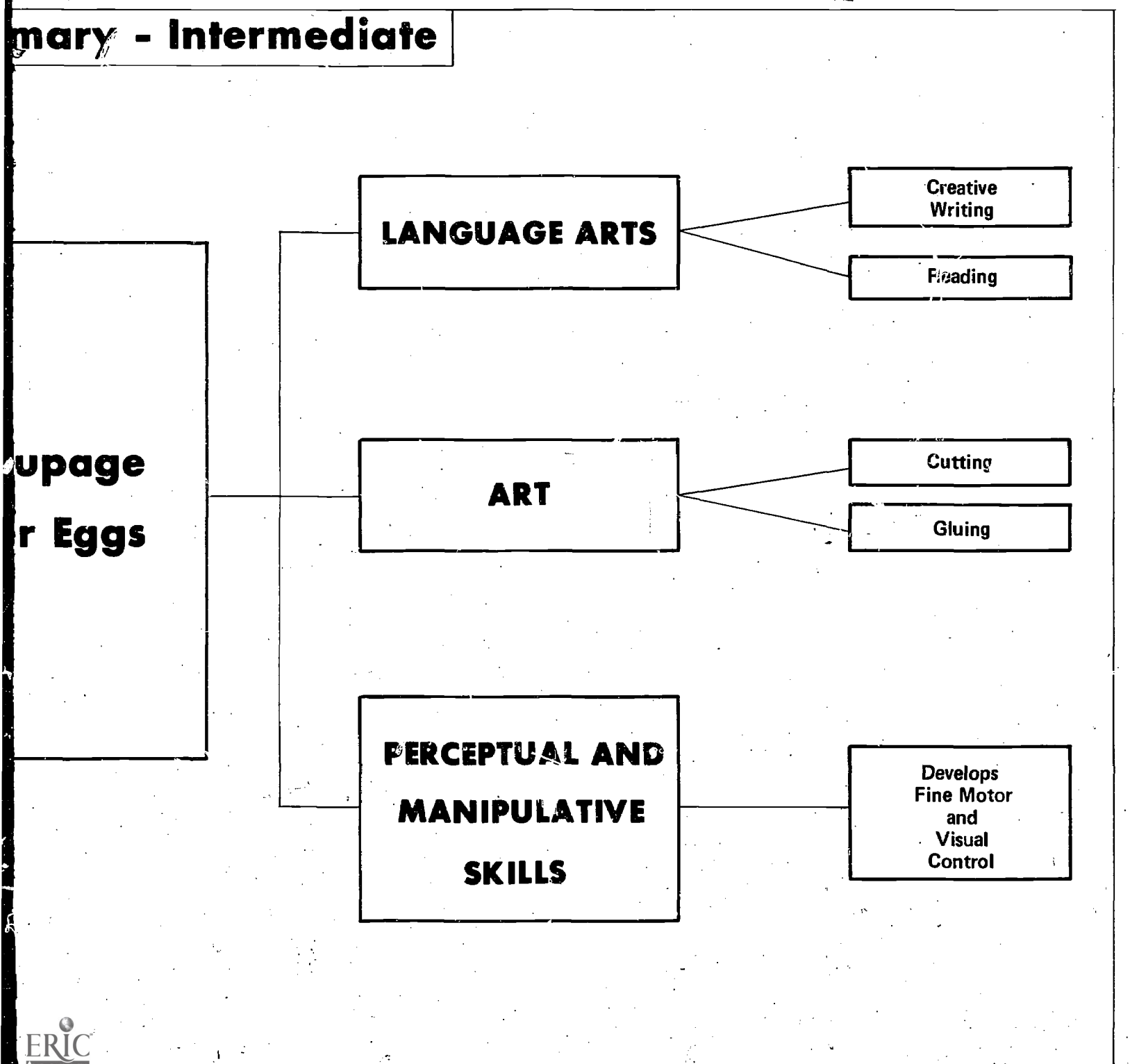
1. Project itself as most children like something to manipulate.

II. Procedure

1. Cut out base to correct size.
2. Equally space four holes on base.
3. Drill the holes 5/8" deep.
4. Drill holes in center of pine counting blocks.
5. Cut dowel rods to suggested length.
6. Sand all the parts.
7. Glue the dowel rods into the holes.
8. Finish as desired — natural, stain and varnish, or paint.

LEVEL Primary - Intermediate




mary - Intermediate
upage
r Eggs
LANGUAGE ARTS
Creative Writing
Reading
ART
Cutting
Gluing
PERCEPTUAL AND MANIPULATIVE SKILLS
Develops Fine Motor and Visual Control

I. Physical Environment

A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
One for each child	2" styrofoam eggs	Wholesale florist
1 quart	Elmer's glue	Hardware store
2 or 3 pkgs.	Easter Holiday napkins	5 & 10
One for each child	Strip of 1/8" wire	Hardware store
8 or 10 pkgs.	Dream dust	Arts and craft store
One for each child	Styrofoam scraps	Wholesale florist
One for each child	Cafe curtain ring	5 & 10

FIG. A

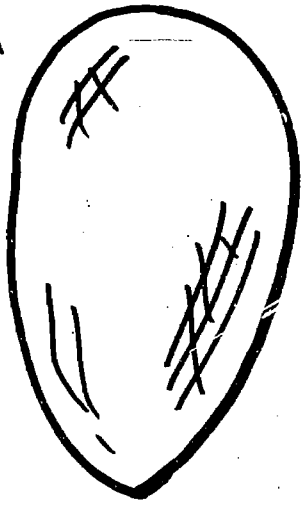
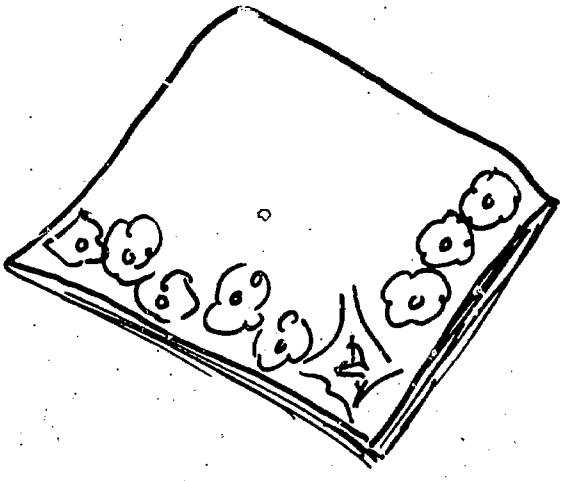


FIG. B

C. Equipment

No. Needed	Item Description	Where Available
One for each child	Poster brush	Art Teacher

FIG. C



D. Motivating Device

1. Show a finished egg.
2. Read an Easter story.

al Environment

om

dable Materials

Item Description	Where Available
2" styrofoam eggs	Wholesale florist
Elmer's glue	Hardware store
Easter Holiday napkins	5 & 10
Strip of 1/8" wire	Hardware store
Dream dust	Arts and craft store
Styrofoam scraps	Wholesale florist
Cafe curtain ring	5 & 10

FIG. A

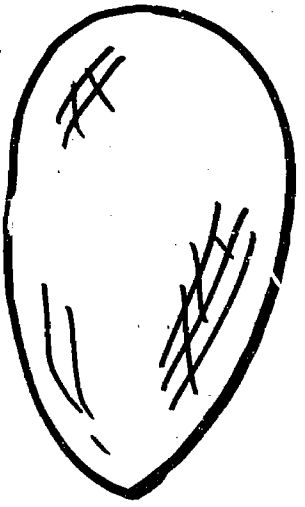
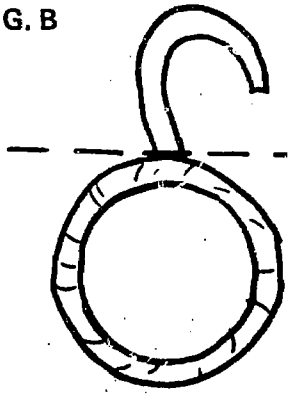


FIG. B



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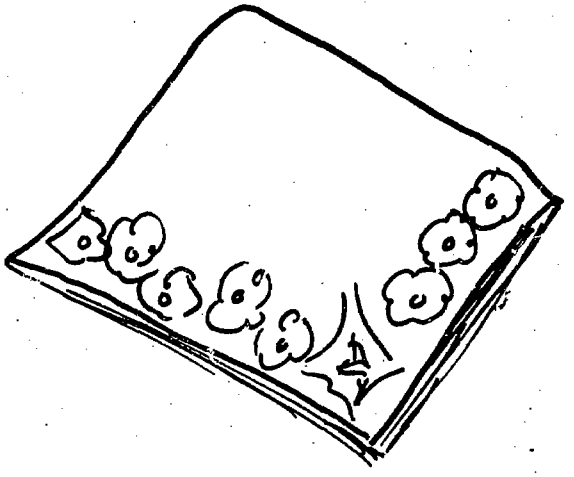
Item Description	Where Available
Poster brush	Art Teacher

FIG. C



ing Device

hed egg.
ter story.

II. Procedure

1. Stem wire through egg.
2. Tear desired picture from napkins -- 3 or 4 depending on size of pictures.
3. Peel top layer of pictures from napkins.
4. Brush glue mixture over egg.
5. Place pictures on egg and secure by overlapping with more glue.
6. Let stand to dry for 24 hrs. by inserting wire into scrap of styrofoam.
7. Brush entire egg with glue-mixture again.
8. While wet, sprinkle with dream dust.
9. Place to dry again.
10. Glue cafe curtain ring to bottom for a stand.

Teacher's Notes

FIG. D

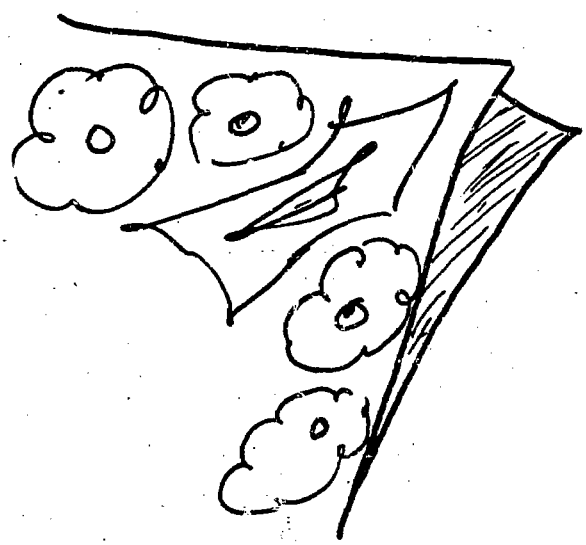
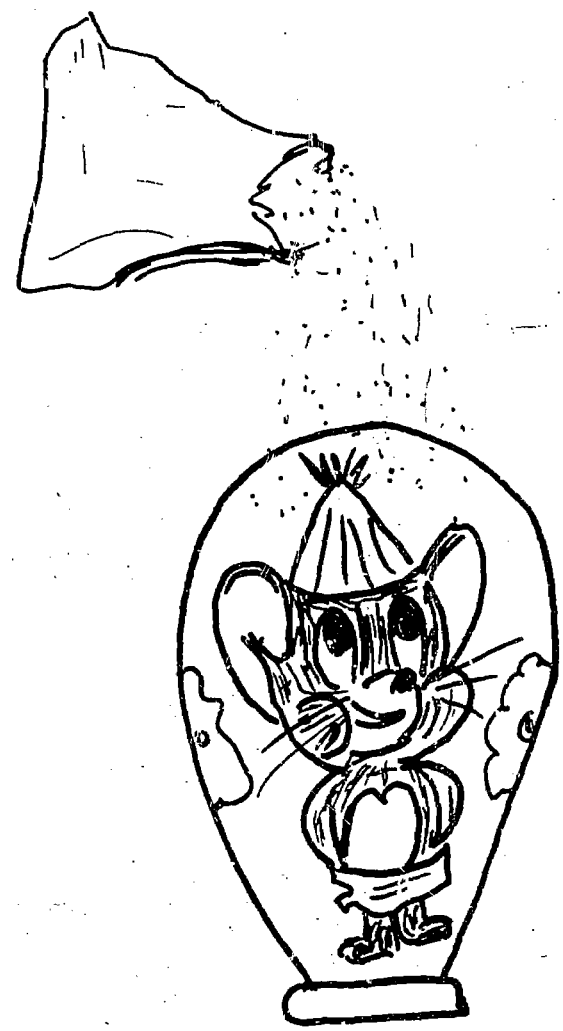
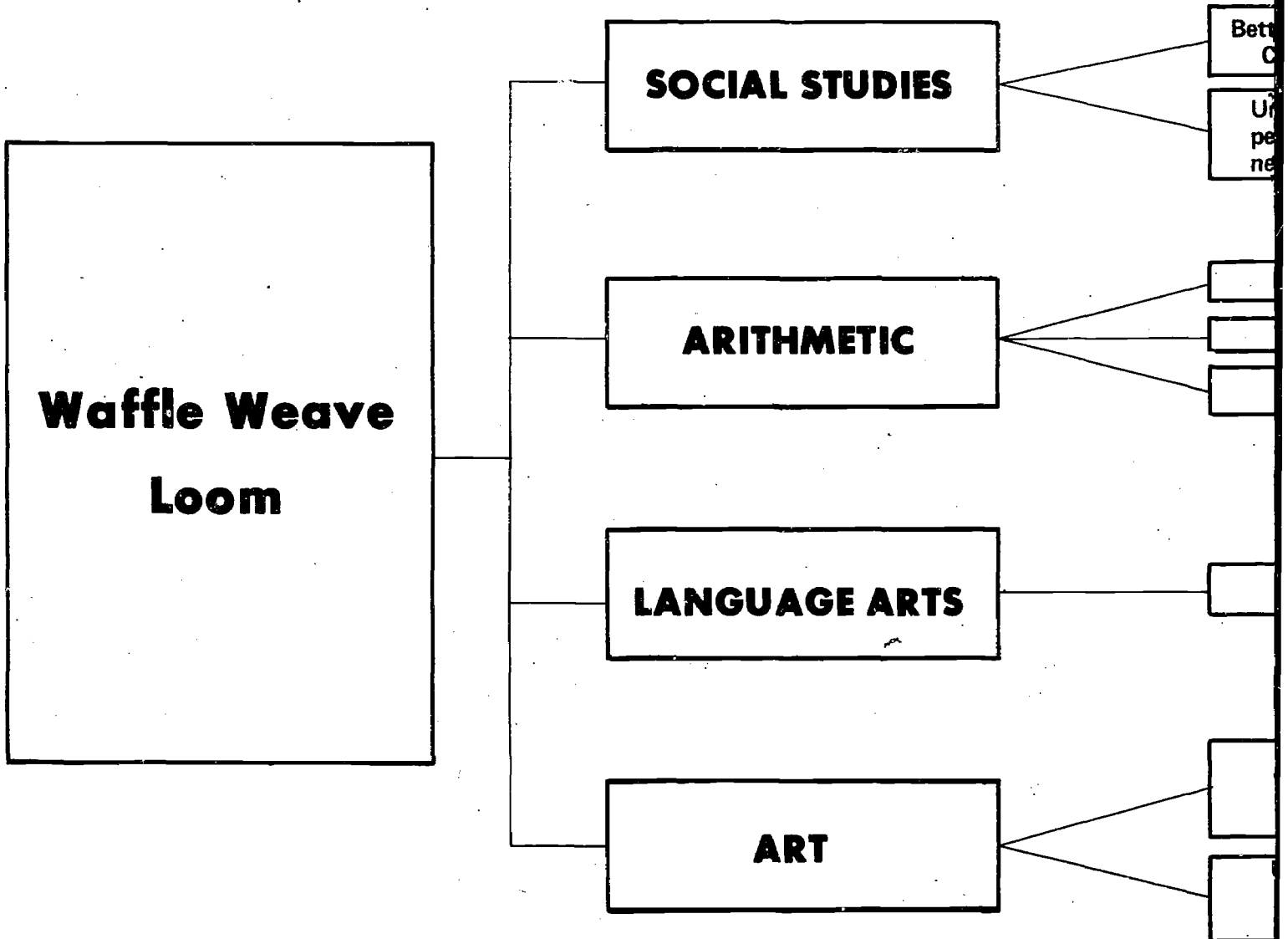


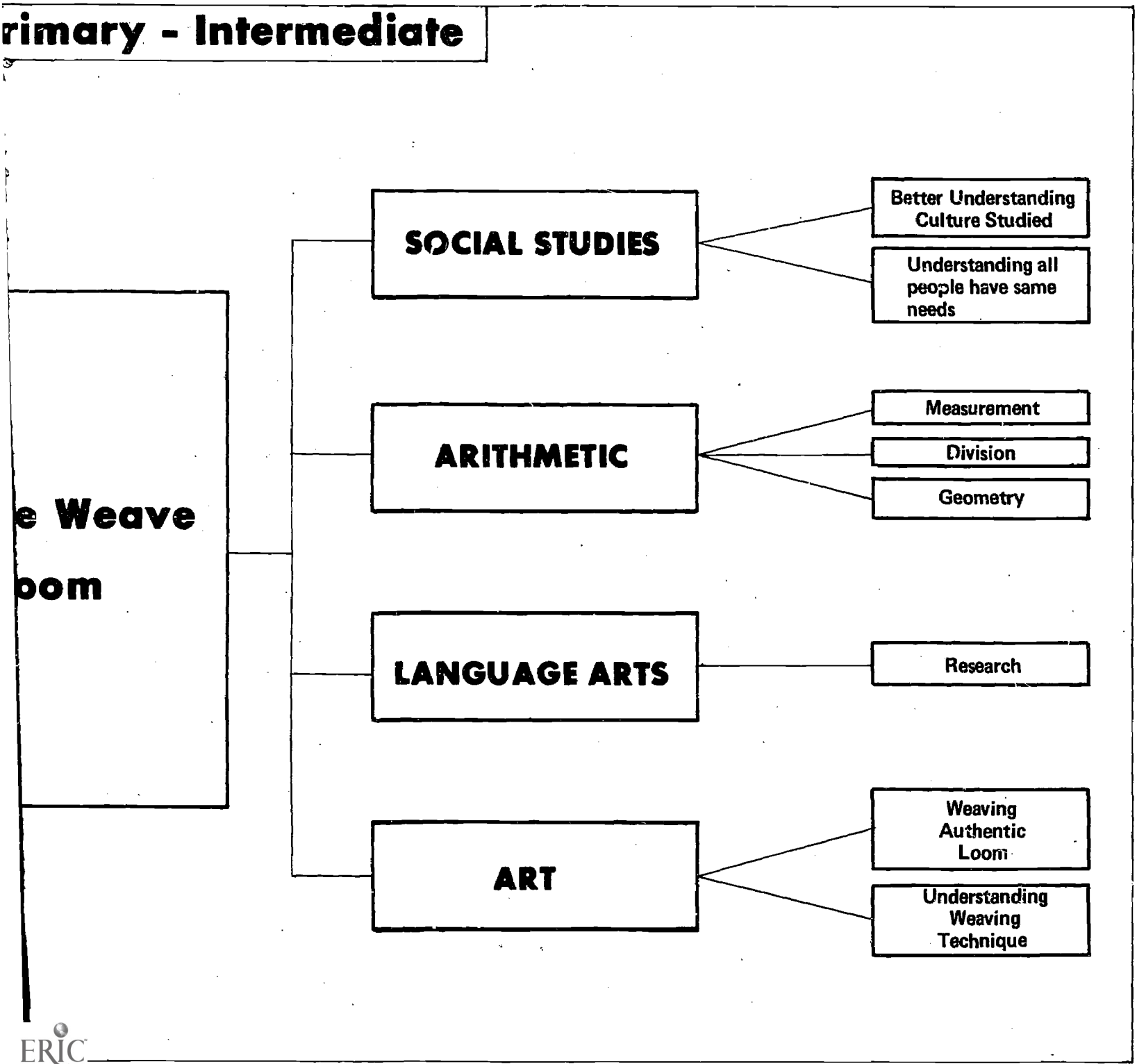
FIG. E



LEVEL **Primary - Intermediate**



rimary - Intermediate



I. Physical Environment

A. Classroom

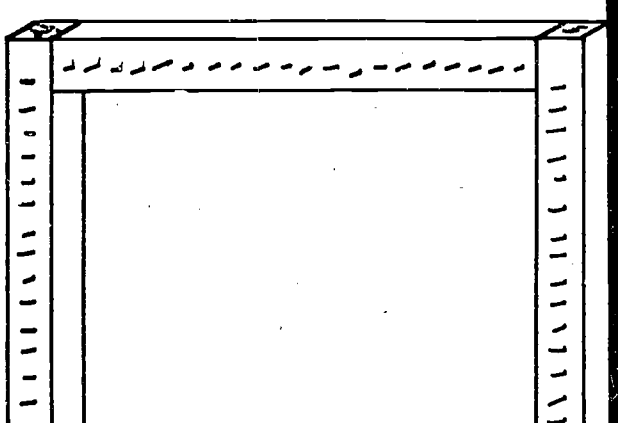
B. Expendable Materials

No. Needed	Item Description	Where Available
2 lengths (size optional)	3/4" x 1-1/2" white pine	Lumber yard
1 box	3/4" or 1" brads	Lumber yard
1 skein	Yarn	Knitting store
1 bottle	Elmer's glue	
1 roll	Store string	Hardware store

C. Equipment

No. Needed	Item Description	Where Available
1	Hand saw	
1	Hammer	
1	Ruler	
1	Scissor	

FIG. A



II. Procedure

1. Cut strips into desired lengths. Two sides will be of the same size.
2. When figuring dimensions allow an inch for joining the corners and for the exact placement of the nails.
3. Glue the sides of the frame together.
4. Draw a line at the center of each side of the frame; then mark the exact placement of the brads with dots - either 1/4" or 1/2" intervals. Plan an odd number of nails on each of the four sides - make sure they are placed exactly vertical.

6. Weft threads are strung from one side to the other. (see diagram)
7. String warp and weft threads back and forth in each direction several times to build up alternate layers of yarn. These layers do not pass over each other as in regular weaving. Each layer is complete and separate in itself and always lies at an angle to the layer beneath it.
8. Each layer goes across the pattern before the next layer is laid at right angles.
9. After all layers of yarn are put into place, bind each intersection together by tying strong thread such as store string or if course enough, the same weaving material.
10. Knot mat by starting at any corner.
11. Push a needle containing the binding string down through hole 1 and up again through hole 2. Run the needle through the twisted loop of thread held in your hand and pull the knot tight (see diagram).
12. Pass the needle down through hole 3 and back up through hole 4, this time running the needle through the open or twisted loop. (see diagram)
13. Knots should always crisscross the intersection and be secured in place with two diagonally tied knots.
14. Repeat the crisscross knots at every intersection.
15. Remove mat from frame by cutting the strings at each nail with a pair of scissors and at the corners.
16. Trim off any uneven fringe.

FIG. B

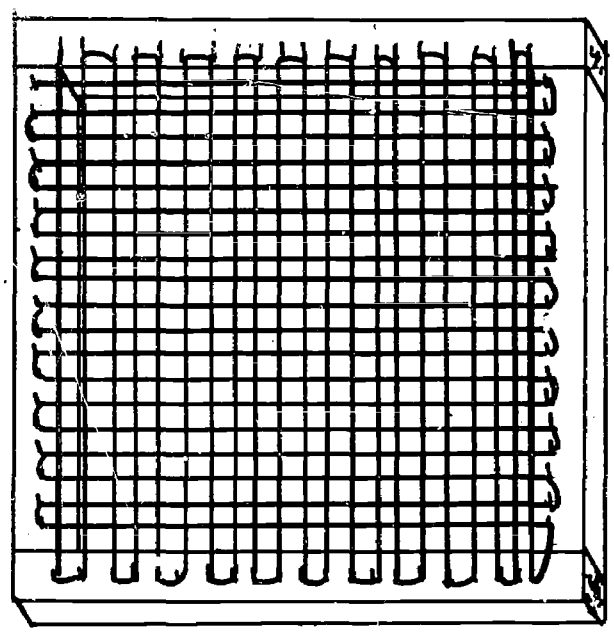
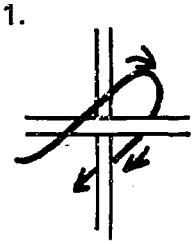


FIG. C

1.



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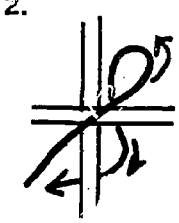

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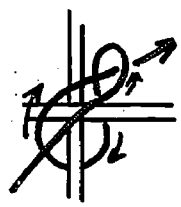

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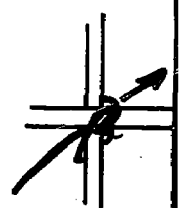
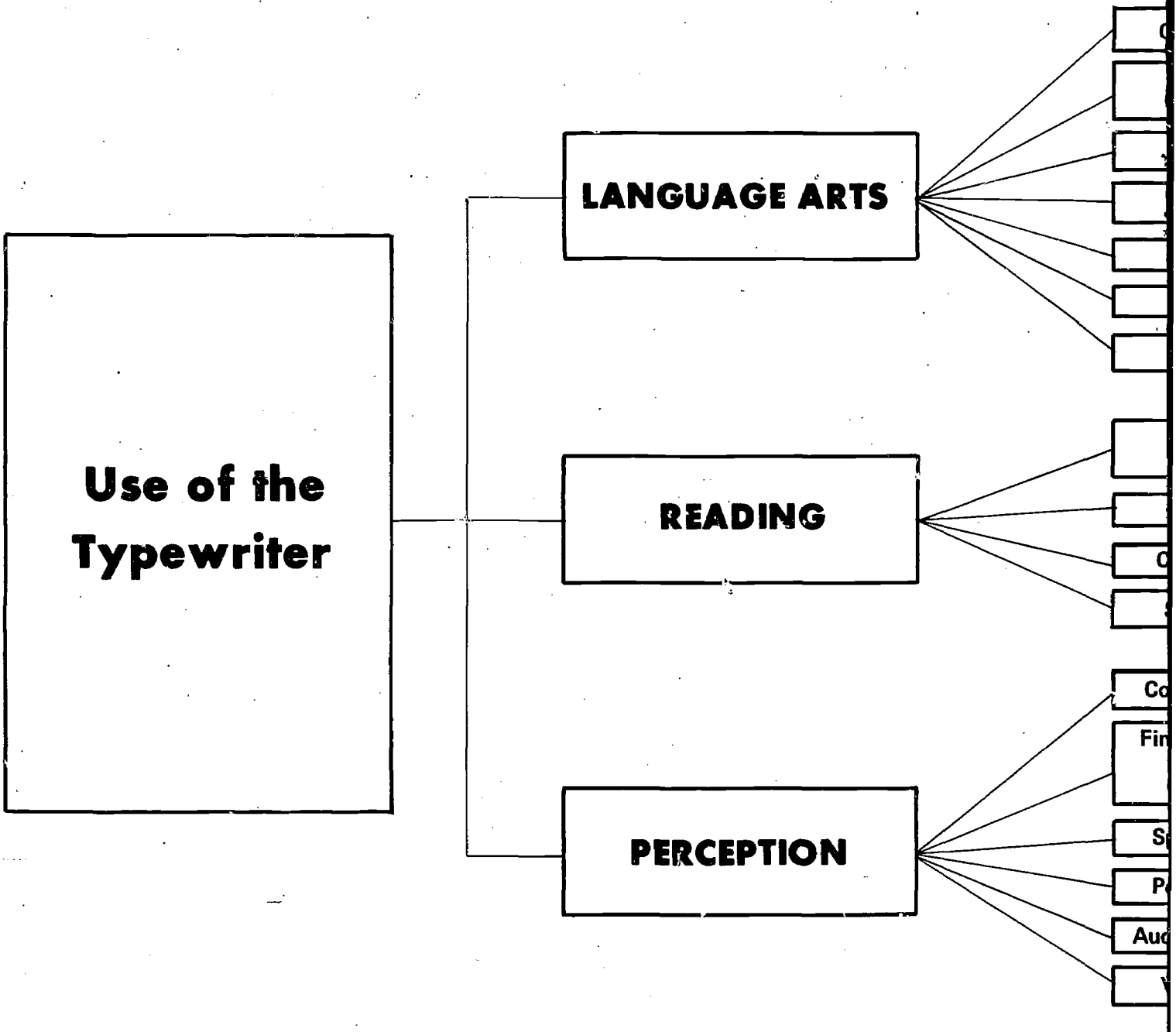
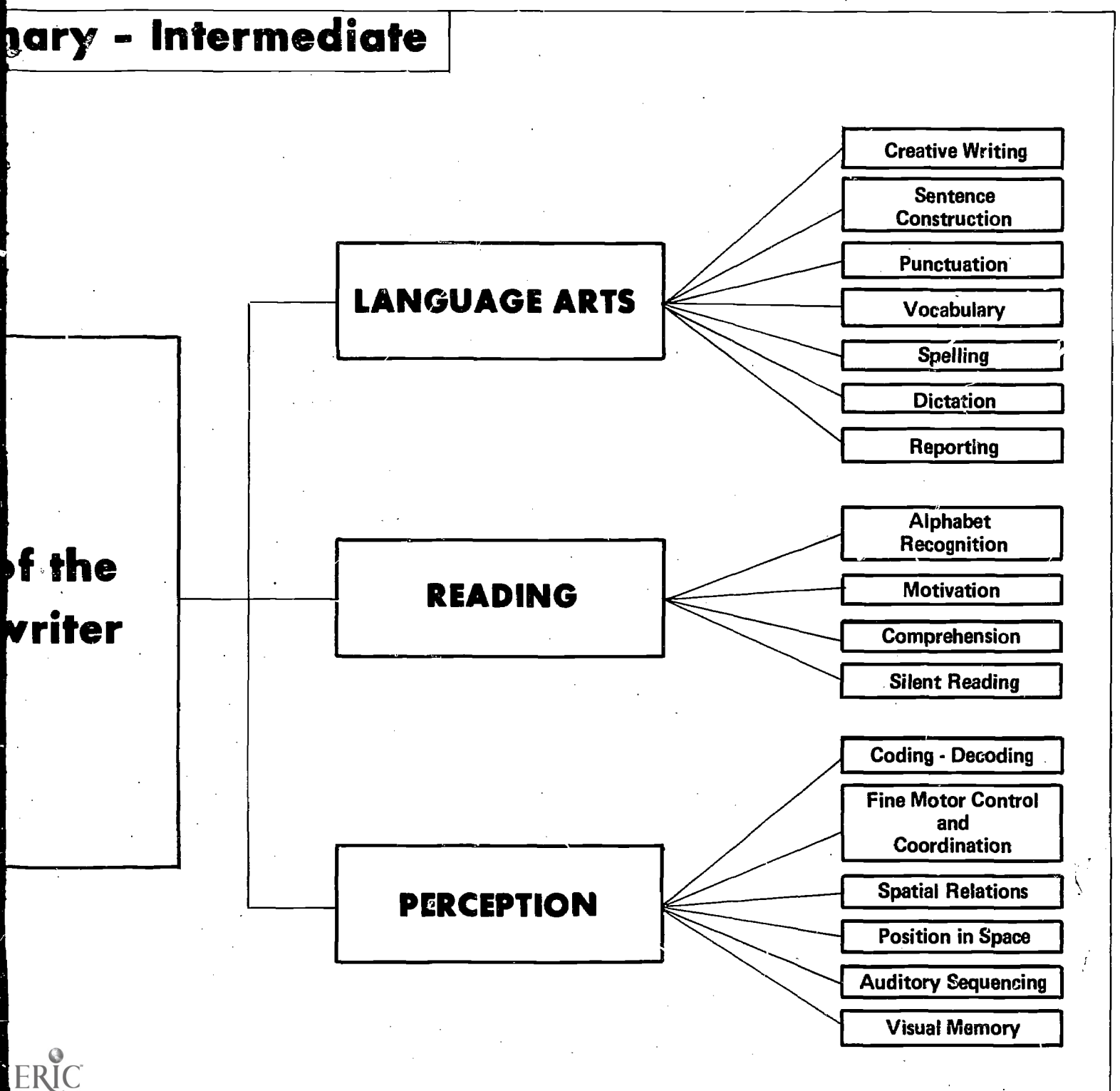


from Miller, Boyd Teaching Elementary Industrial Arts.

Teacher's Notes

LEVEL Primary - Intermediate

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vriter
LANGUAGE ARTS
Creative Writing
Sentence Construction
Punctuation
Vocabulary
Spelling
Dictation
Reporting
READING
Alphabet Recognition
Motivation
Comprehension
Silent Reading
PERCEPTION
Coding - Decoding
Fine Motor Control and Coordination
Spatial Relations
Position in Space
Auditory Sequencing
Visual Memory

I. Physical Environment

A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
1 package	Paper	
1	Typewriter eraser	
1	Typewriter brush	
1	Typewriter ribbon	

C. Equipment

No. Needed	Item Description	Where Available
1	Primary Typewriter	
1	Regular Typewriter	

D. Motivating Device

1. Typewriter itself.

II. Procedure

A. Introduction to Typewriter

1. Attach chart to board in front of room, or draw picture of typewriter and keys on board.
2. Have children copy onto tagboard and letter keys. Children use for practice.
3. Teach home key method (optional).

B. Language Arts

1. Creative Writing.
   a. Letter writing.
      1. Dictated to child by tea
      2. Child writes and types.
   b. Original stories
      1. Dictated to child by tea
      2. Child writes and types.
   c. Creative poetry.
2. Sentence Construction.
   a. Construct a sentence for a
   b. Construct sentences instru subject and an action word
   c. Construct sentences instruc subject, action word, descr
   d. The typewriter can serve as correcting grammatical erro
   e. Unscramble sentences.
3. Punctuation.
   a. Copy story and punctuate
   b. Child types corrected story
   c. Use tab to reinforce paragr
4. Vocabulary and Spelling.
   a. Correct spelling errors.
   b. Practice spelling words thro
   c. Unscramble words.
   d. For children with fine mot typewriter to spell weekly
5. Dictation.
   a. Strengthening auditory rec
6. Reporting (motivating device f

C. Reading

1. Alphabet Recognition.
   a. Teacher tells child what let
   b. Teacher strikes letter — chi
2. Motivation.
   a. Reading compiled booklets class.
3. Comprehension.
   a. Child answers questions to
   b. When proofreading typed r concentrate more and read
4. Silent Reading.

al Environment

oom

dable Materials

Item Description	Where Available
Paper	
Typewriter eraser	
Typewriter brush	
Typewriter ribbon	

ment

Item Description	Where Available
Primary Typewriter	
Regular Typewriter	

ting Device

ter itself.

dure

uction to Typewriter

art to board in front of room, or draw picture
iter and keys on board.
dren copy onto tagboard and letter keys.
use for practice.
nethod (optional).

B. Language Arts

1. Creative Writing.
   a. Letter writing.
      1. Dictated to child by teacher.
      2. Child writes and types.
   b. Original stories
      1. Dictated to child by teacher.
      2. Child writes and types.
   c. Creative poetry.
2. Sentence Construction.
   a. Construct a sentence for a specific word.
   b. Construct sentences instructing children to use a subject and an action word in each.
   c. Construct sentences instructing children to use subject, action word, descriptive word etc.
   d. The typewriter can serve as a motivating device for correcting grammatical errors.
   e. Unscramble sentences.
3. Punctuation.
   a. Copy story and punctuate properly.
   b. Child types corrected story.
   c. Use tab to reinforce paragraph form, indentation.
4. Vocabulary and Spelling.
   a. Correct spelling errors.
   b. Practice spelling words through typing.
   c. Unscramble words.
   d. For children with fine motor difficulties, use typewriter to spell weekly spelling words.
5. Dictation.
   a. Strengthening auditory recollection.
6. Reporting (motivating device for).

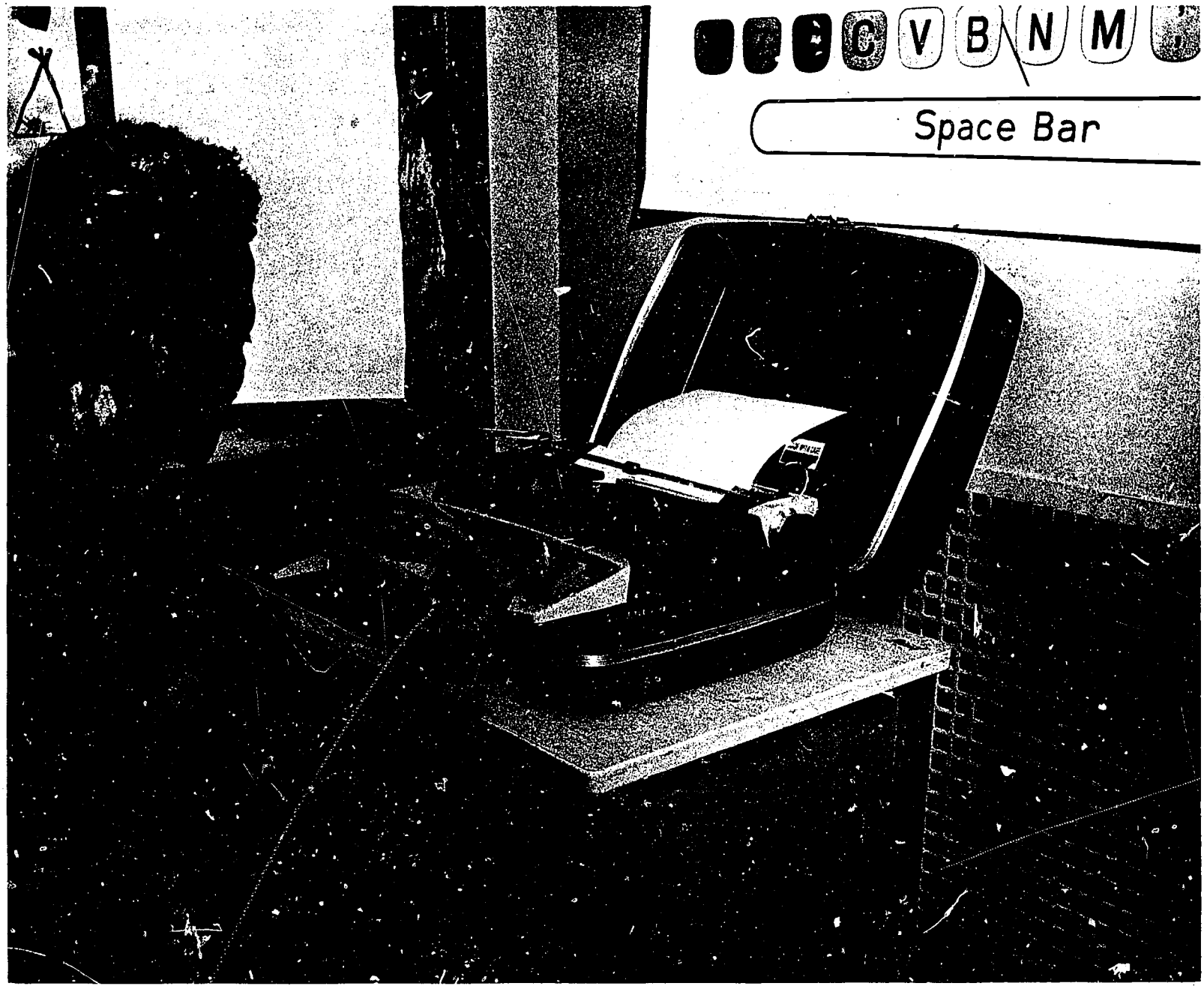
C. Reading

1. Alphabet Recognition.
   a. Teacher tells child what letter to press.
   b. Teacher strikes letter – child identifies.
2. Motivation.
   a. Reading compiled booklets typewritten by the class.
3. Comprehension.
   a. Child answers questions to story.
   b. When proofreading typed material, children must concentrate more and read at a slower pace.
4. Silent Reading.

D. Perception

1. Fine motor coordination and control.
2. Spatial relations – forces child to use proper spacing.
3. Position in space.
   a. Gives children who show reversals to have practice.
4. Auditory Sequencing – teacher dictates letter, phrases, and sentences.
5. Visual Memory – affords child another opportunity to concentrate on visual memory.

Teacher's Notes


C
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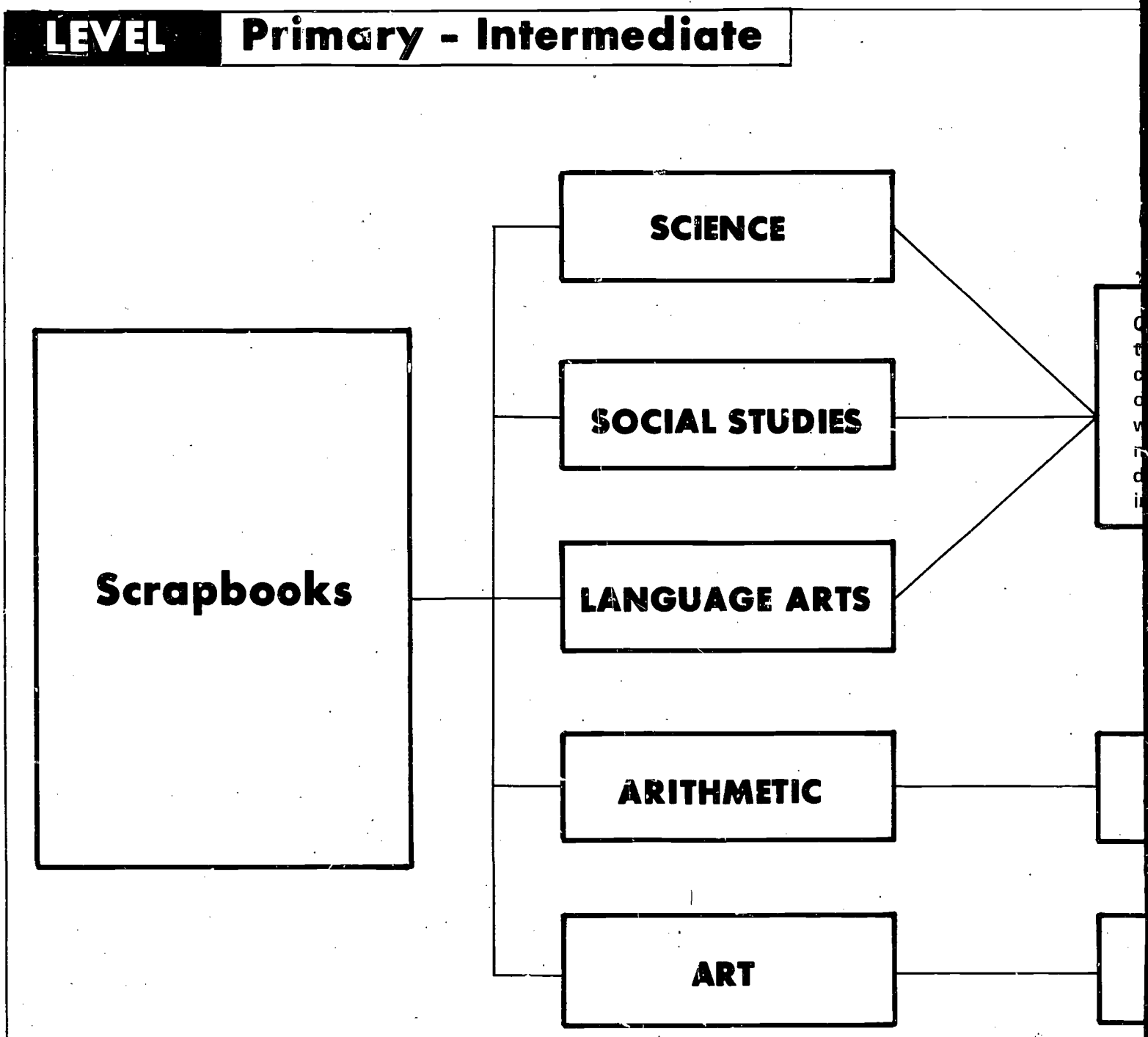
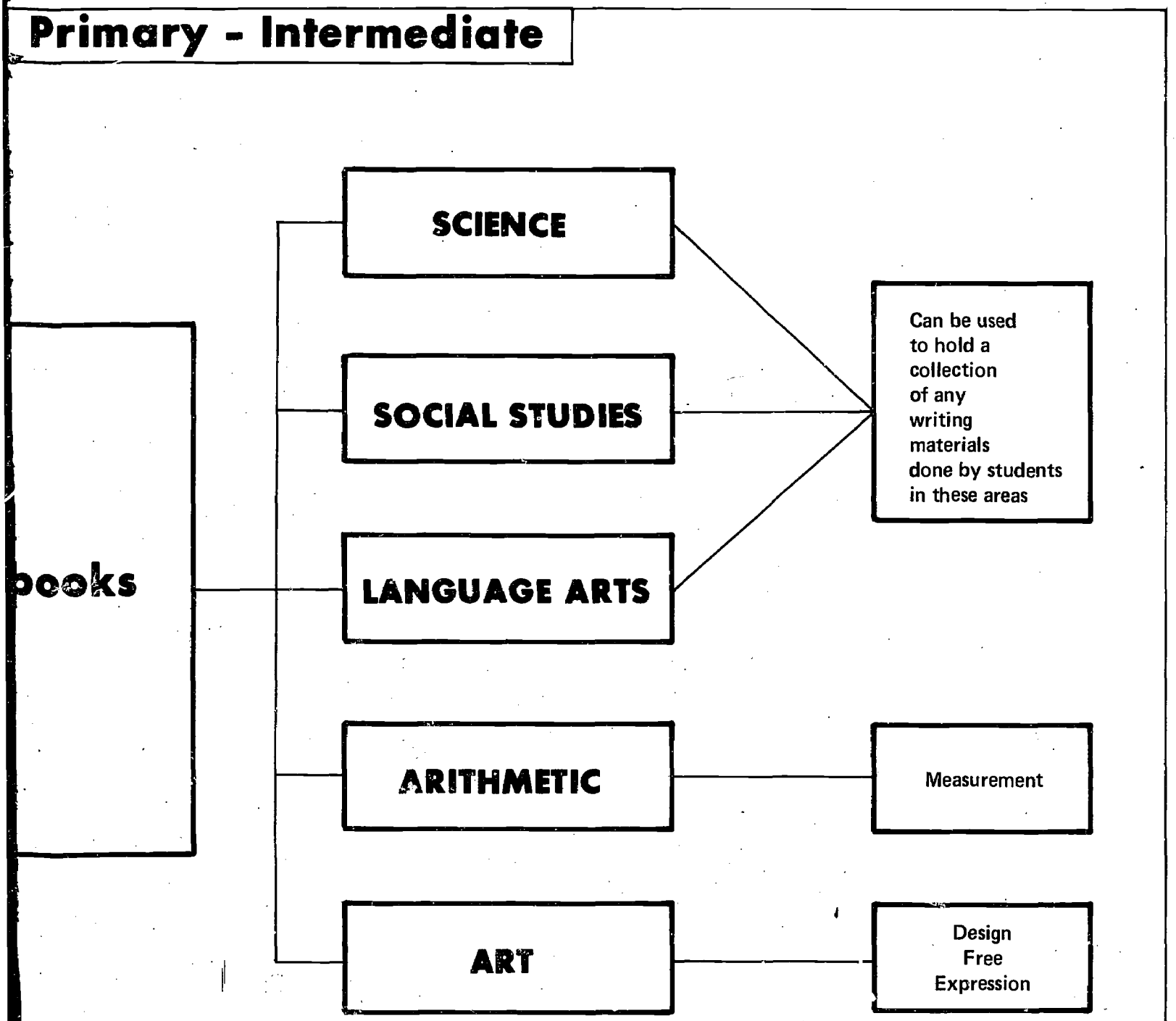

LEVEL
Primary - Intermediate
Scrapbooks
SCIENCE
SOCIAL STUDIES
LANGUAGE ARTS
ARITHMETIC
ART

Primary - Intermediate



I. Physical Environment

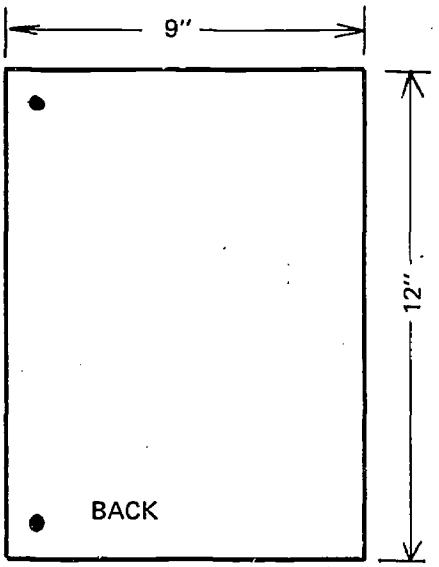
A. Classroom

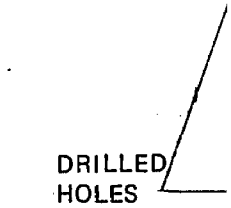
B. Expendable Materials

No. Needed	Item Description	Where Available
3	9"x12"x¼" plywood	Lumber yard
2	Hinges	Hardware store
1 bottle	Elmer's glue	Hardware store
2 cans	Varnish stain	Hardware store
1 piece	Sandpaper	Hardware store

C. Equipment

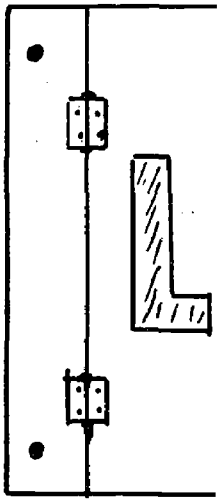
No. Needed	Item Description	Where Available
1	Square	
1	Sabre saw	
1	Screw driver	
1	Paintbrush	
1	Rag	
1	Dremel saw	
1	Drill	





II. Procedure

1. Cut two pieces plywood 9"x12".
2. Cut one 9"x12" piece so that you have two pieces; one being 1"x12" and the other 8"x12".
3. Sand edges.
4. Apply stain.
5. Attach hinges (see diagram).
6. From third piece of plywood cut design or initials on dremel saw.
7. Apply stain to cut-out pieces.
8. Glue design or initials to front of scrapbook.
9. Drill two holes through front and back.
10. Insert yarn and tie.



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endable Materials

Needed	Item Description	Where Available
3	9"x12"x¼" plywood	Lumber yard
2	Hinges	Hardware store
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Needed	Item Description	Where Available
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1	Sabre saw	
1	Screw driver	
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1	Rag	
1	Dremel saw	
1	Drill	

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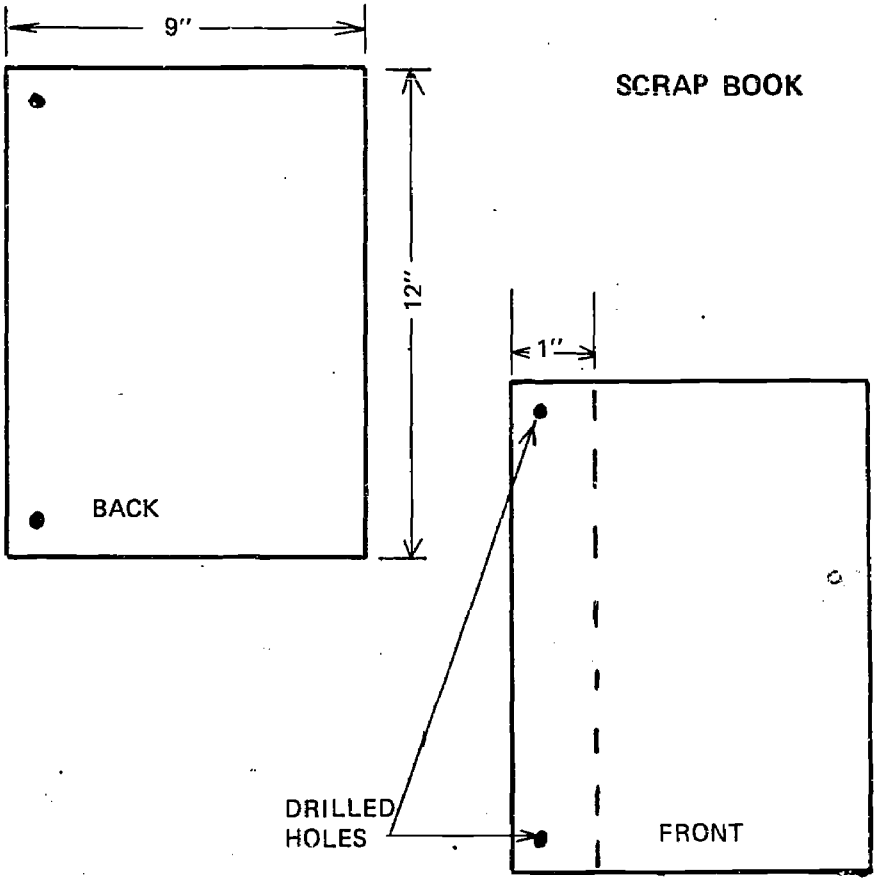
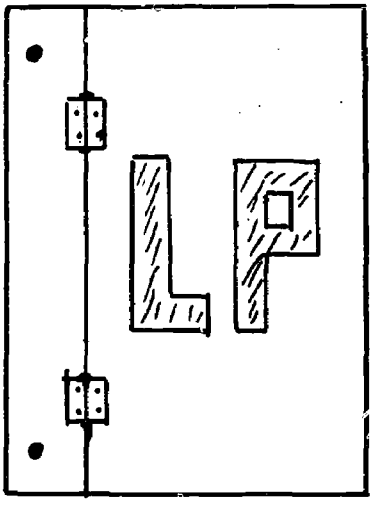
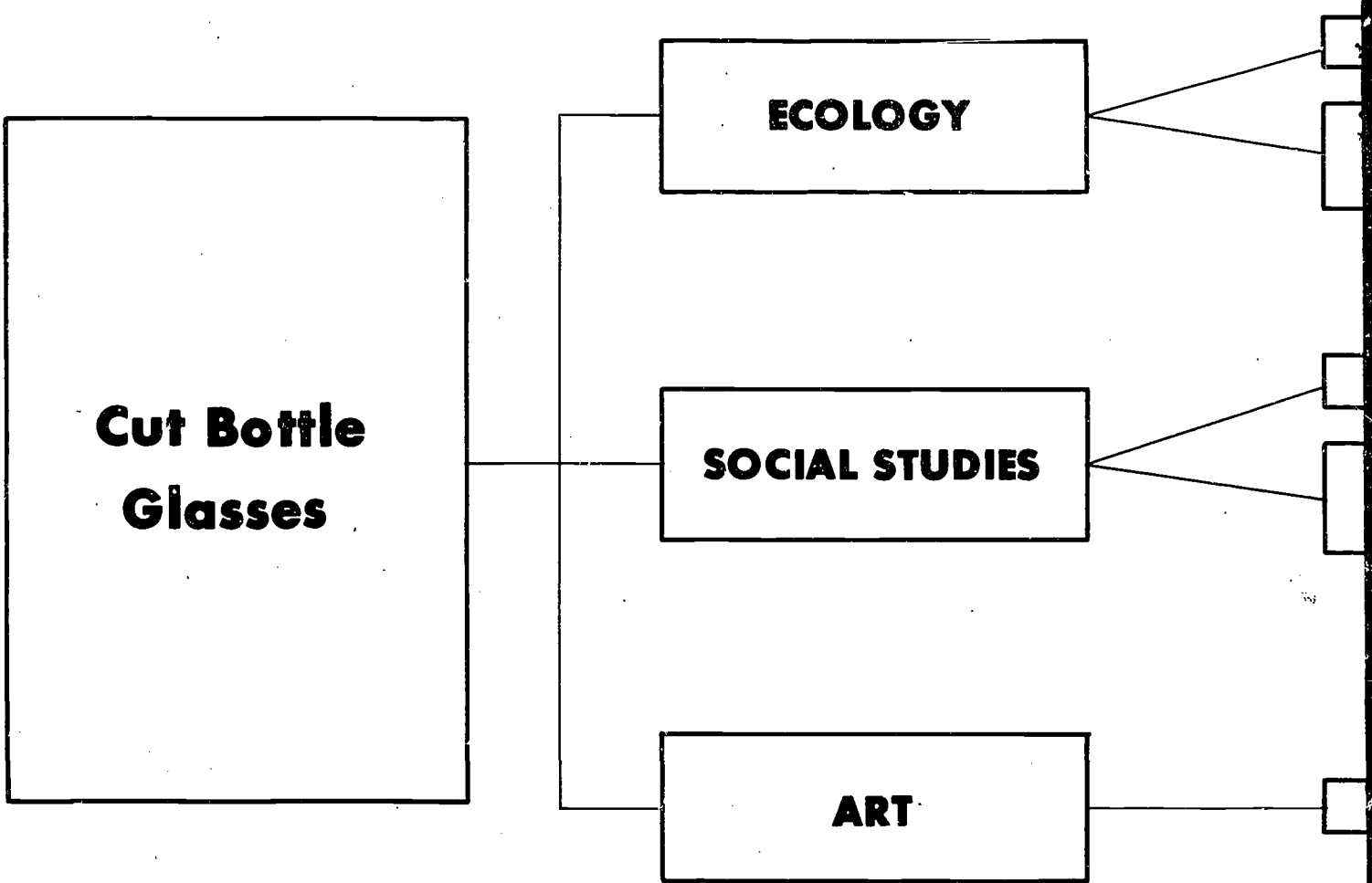
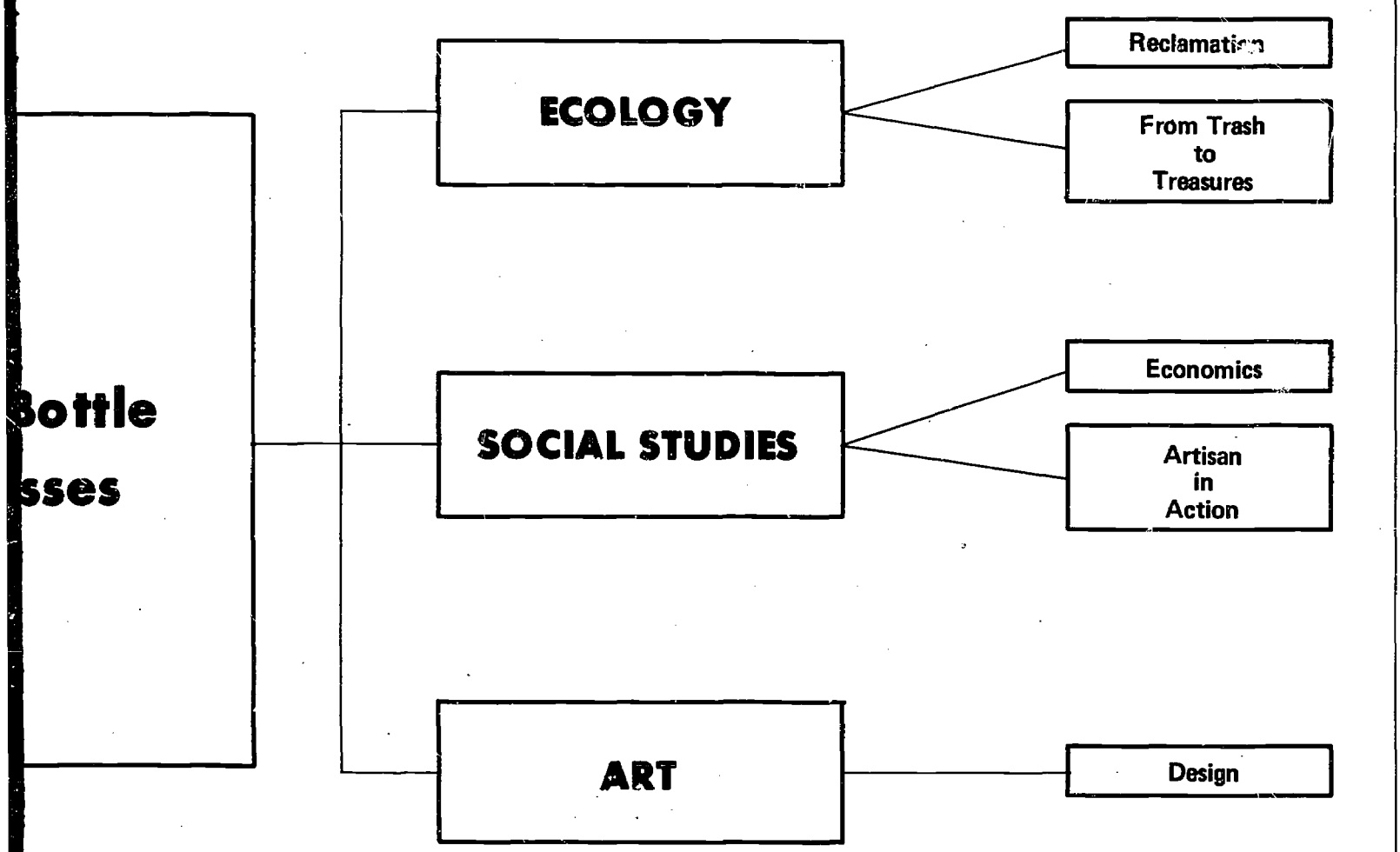




LEVEL **Primary - Intermediate**



imary - Intermediate



I. Physical Environment

Teacher's Notes

A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
1	Glass bottle 2" in diameter (1 gallon maximum)	Home
Variety	Glass pebbles (flat backs preferably)	Craft Supply Co.
1 tube	Silicone adhesive	Craft Supply Co.
1 tube	Craft steel, gold, silver, or lead	Craft Supply Co.
	Ice cubes	Freezer
	Sand paper	Hardware store

C. Equipment

No. Needed	Item Description	Where Available
1	4" x 7" Bottle Cutter and kit	Craft Supply Co.
1	Burner or heat source	Science supply

II. Procedure

1. Place bottle in cutter with bottom flat against holder to your right.
2. Rotate the bottle with slight pressure, long even strokes – scoring bottle once – stopping at single click sound.
3. Be certain glass is smooth in area of rotation – no bumps or raised glass printing.
4. Remove scored bottle. Rotate scored area over flame, heating evenly for one minute.

Procedure (continued)

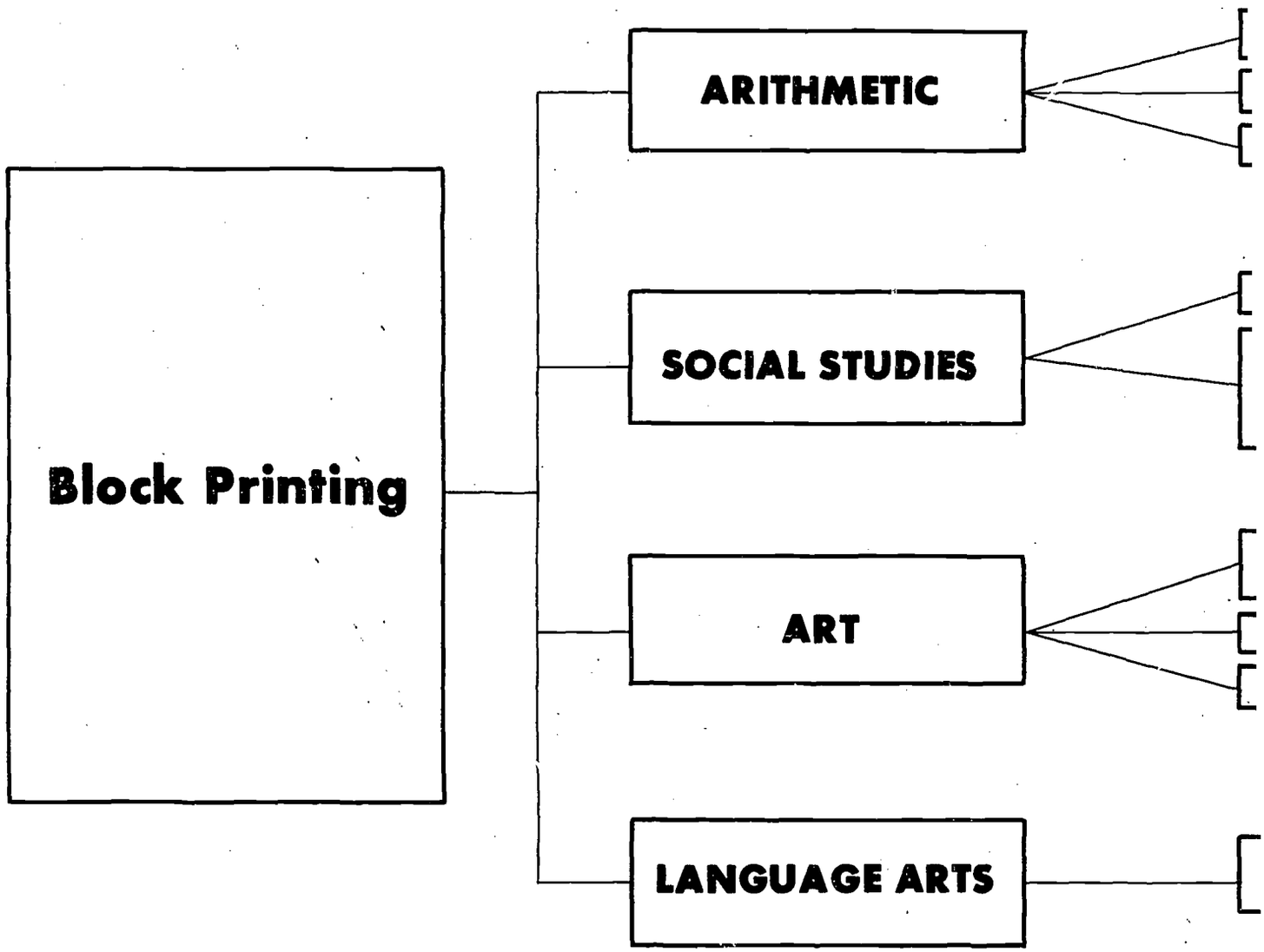
Teacher's Notes

5. Place bottle on its side, rubbing ice cube over heated, scored area for 30 seconds.
6. Remove portion to be discarded with equal pull on glass bottom and top. Do not "snap off".
7. If pieces do not separate, re-heat, and re-ice. Do not re-score.
8. Sand paper edges.
9. Decorate by first applying metal (craft steel, gold, silver, or lead) in design. Apply silicone to pebbles or other jewel additives and place in design on glass.
10. Suggestion — shape of bottles can determine use of glasses.

III. Suggested Uses

1. Vases.
2. Jewelry Container.
3. Candy Wells.
4. Knick-knack Holders.
5. Sugar Bowls.
6. Drinking Glasses.

LEVEL Primary - Intermediate



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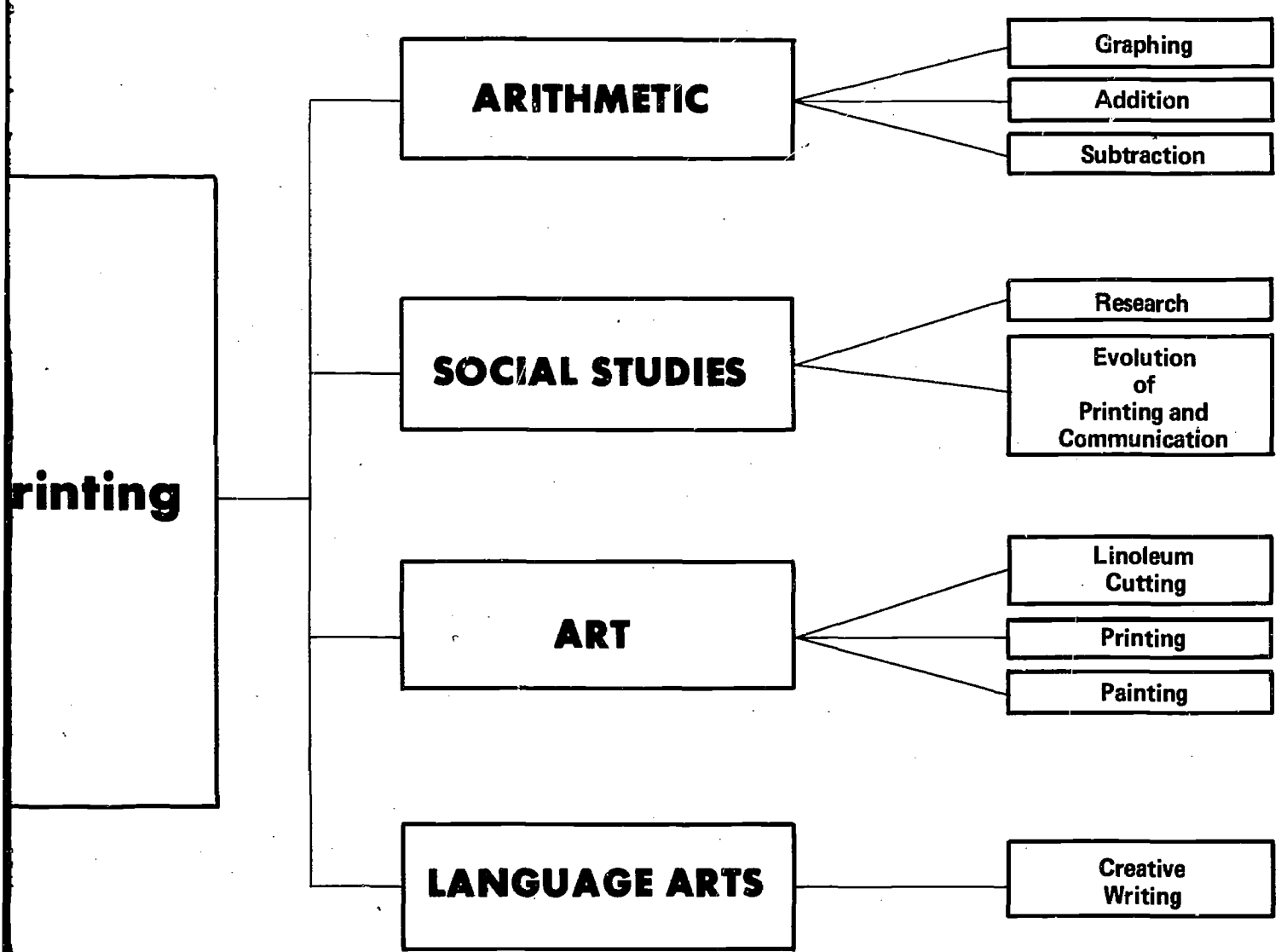


I. Physical Environment

Teacher's Notes

A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
3 (size optional)	Linoleum squares or 3M printing paper	Linoleum store or School supply
3	Blocks or pieces or cardboard	Lumber yard
3 tubes	Water soluble ink	Art store or School supply
1 sheet	Printing paper	Art store or School supply

C. Equipment

No. Needed	Item Description	Where Available
1	Guage	Art store or School supply
3	Brayers	Art store
1	Plate glass or piece of plastic	Auto-glass store
1	Ruler	
1	Pencil	School supply
1	Book press or wringer press	Art store

D. Motivating Device

1. Films.
2. Cards for holidays.

II. Procedure

Teacher's Notes

1. Cut linoleum and block to same size (or 3M printing paper and cardboard.
2. Adhere linoleum to block.
3. With ruler and pencil graph linoleum into 1/2" squares.
4. On each plate or block, draw one object of total picture. Use graph as guide to placement (see diagram).
5. Plate 1 — Gouge out all area around bird. Bird is raised.
   Plate 2 — Gouge out all area around limb. Limb is raised.
   Plate 3 — Leave background raised and gouge out limb, bird and cloud outline.
6. Apply a colored ink to plate glass. Don't mix colors.
7. Roll ink with brayer until brayer is completely covered.
8. Roll ink on Plate 1 making sure bird is completely covered with ink.
9. Print on printing paper with press.
10. Use above procedure for plate 2 with a different color ink then overlay on print 1 and press.
11. Use above procedure for plate 3 with a different color ink and overlay on the combined print 1 and 2 and press.

NOTE: For children who have difficulty with perception and coordination, use only one plate printing.

PLATE 1

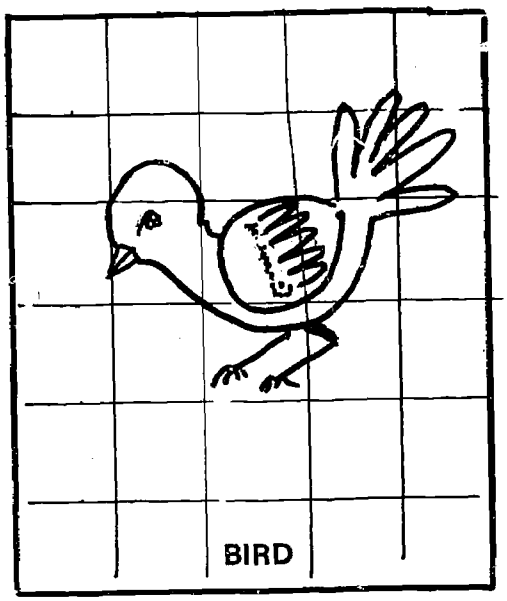


PLATE 2

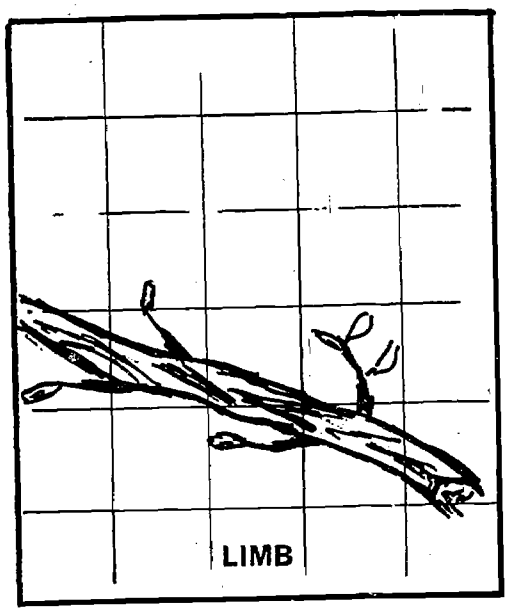
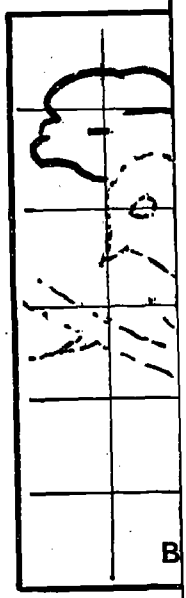


PLATE 3



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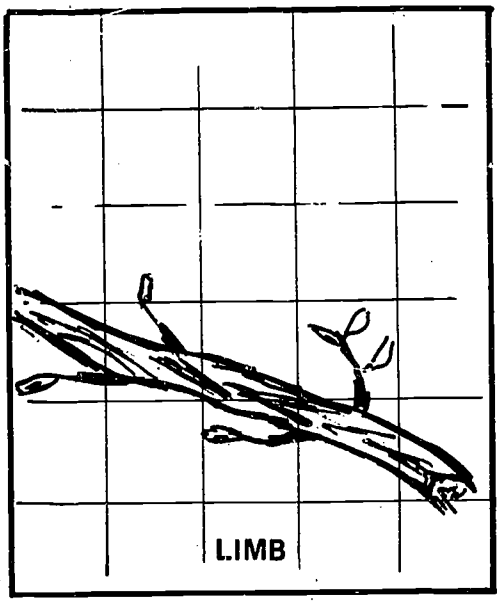
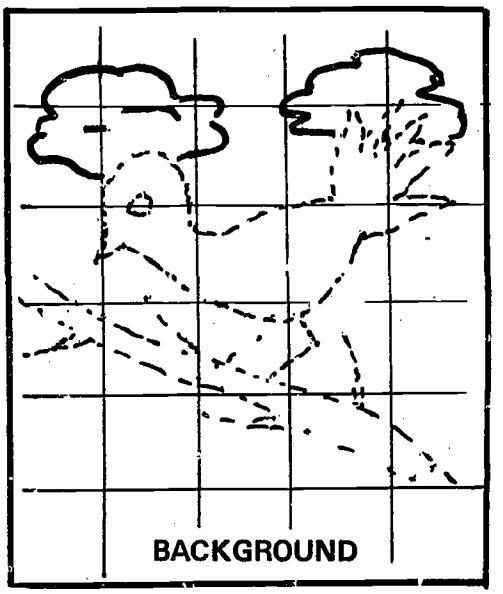
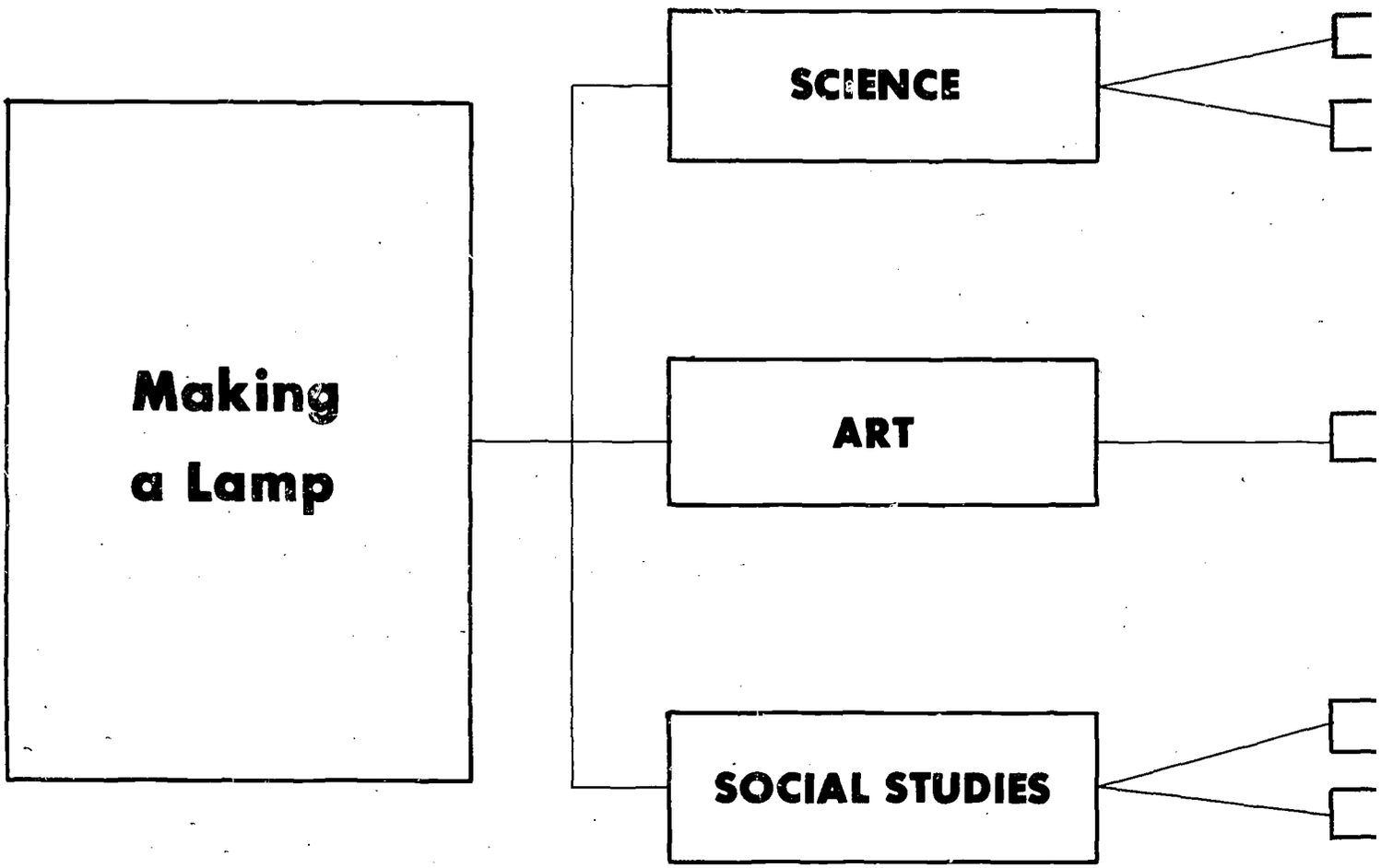


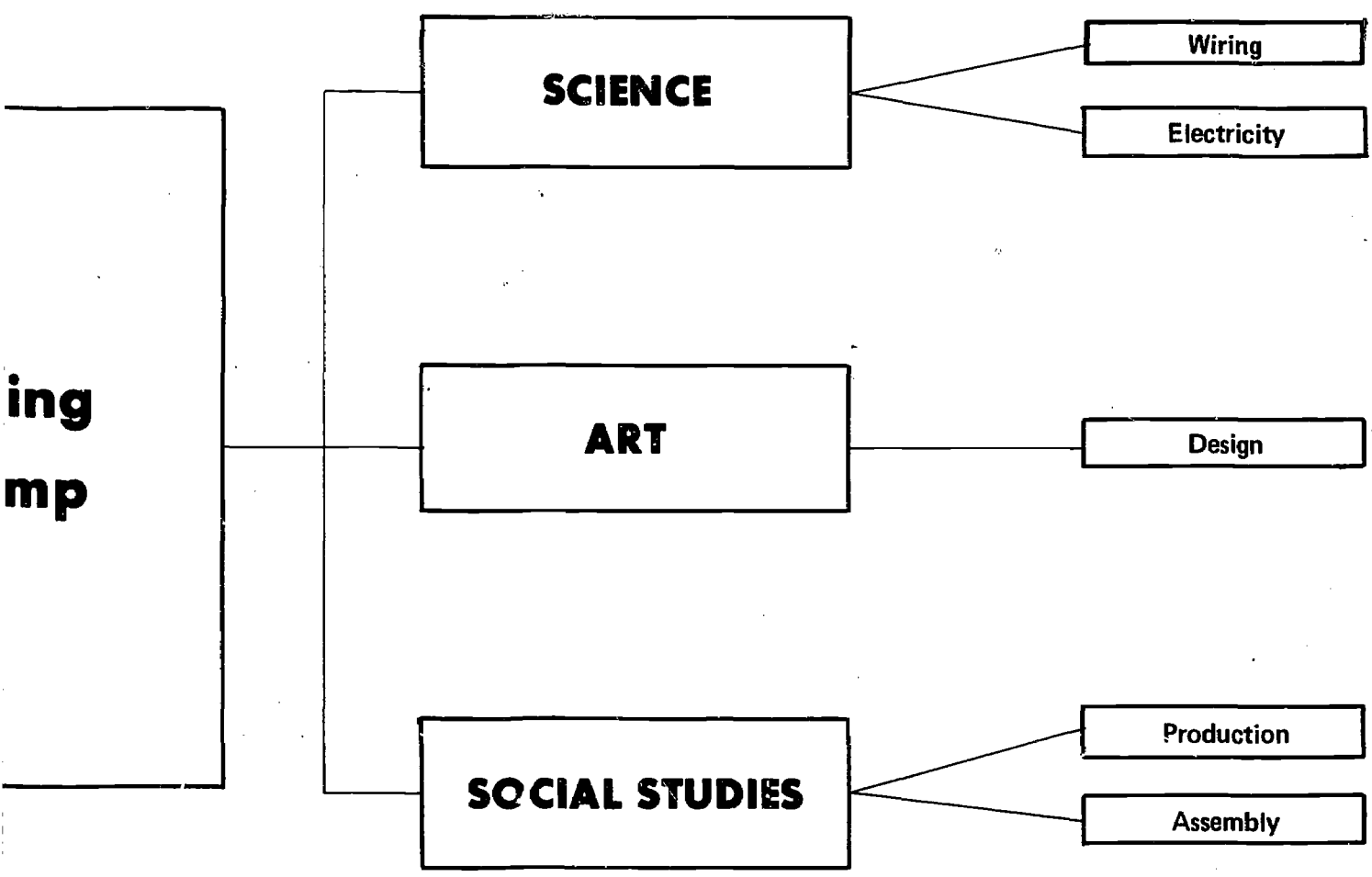
PLATE 3



LEVEL Primary - Intermediate



nary - Intermediate



I. Physical Environment

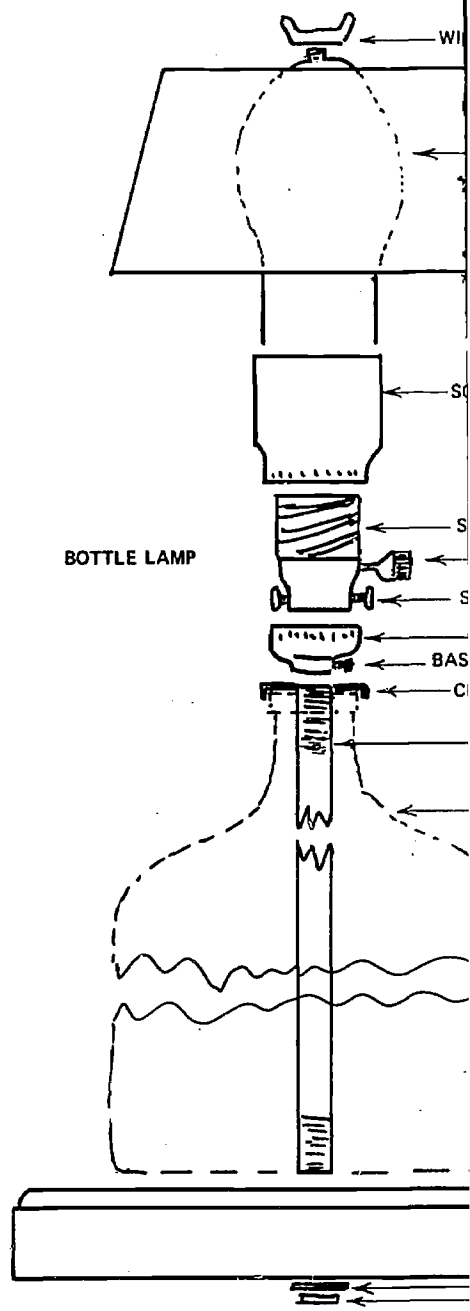
A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
1 piece	1/2" plywood or pine	Lumber yard
1	Wine or liquor bottle (optional)	Home
1 length*	Wire with plug	Hardware store
2	Washers	Hardware store
1 length	Piping	Hardware store
1	Socket base	Hardware store
1	Socket	Hardware store
1	Socket cover	Hardware store
1	Bulb	Hardware store
1	Harp	Hardware store
1	Shade	Department store
1	Wing nut	Hardware store

II. Procedure

1. Make base for lamp. This can be any shape and 1/2" plywood can easily be used.
2. Used wine and liquor bottles can be used as decorative additions by simply drilling a hole through the bottom.
3. Insert piping into base. Anchor underneath with washer and nut.
4. Thread wire through base and pipe.†
5. Put base of socket over wire and fasten to top of pipe.
6. Split wire 3" and tie two pieces together into knot.
7. Strip about 1/2" - 3/4" of wire from end.
8. Fasten to 2 screws on socket.
9. Pull wire back through base until it is tight.
10. Put socket cover over socket, into socket base.
11. Screw light bulb.
12. Attach harp. Attach shade to harp.



*Complete kits can be purchased in lots of 25 inexpensively from:

Modern Lightcraft, Inc.
320 Elizabeth Avenue
Newark, N.J. 07112
(201) 242-4646

†you may place lamp (bottle, etc.) over pipe.

gl Environment

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dable Materials

Item Description	Where Available
1/2" plywood or pine	Lumber yard
Wine or liquor bottle (optional)	Home
Wire with plug	Hardware store
Washers	Hardware store
Piping	Hardware store
Socket base	Hardware store
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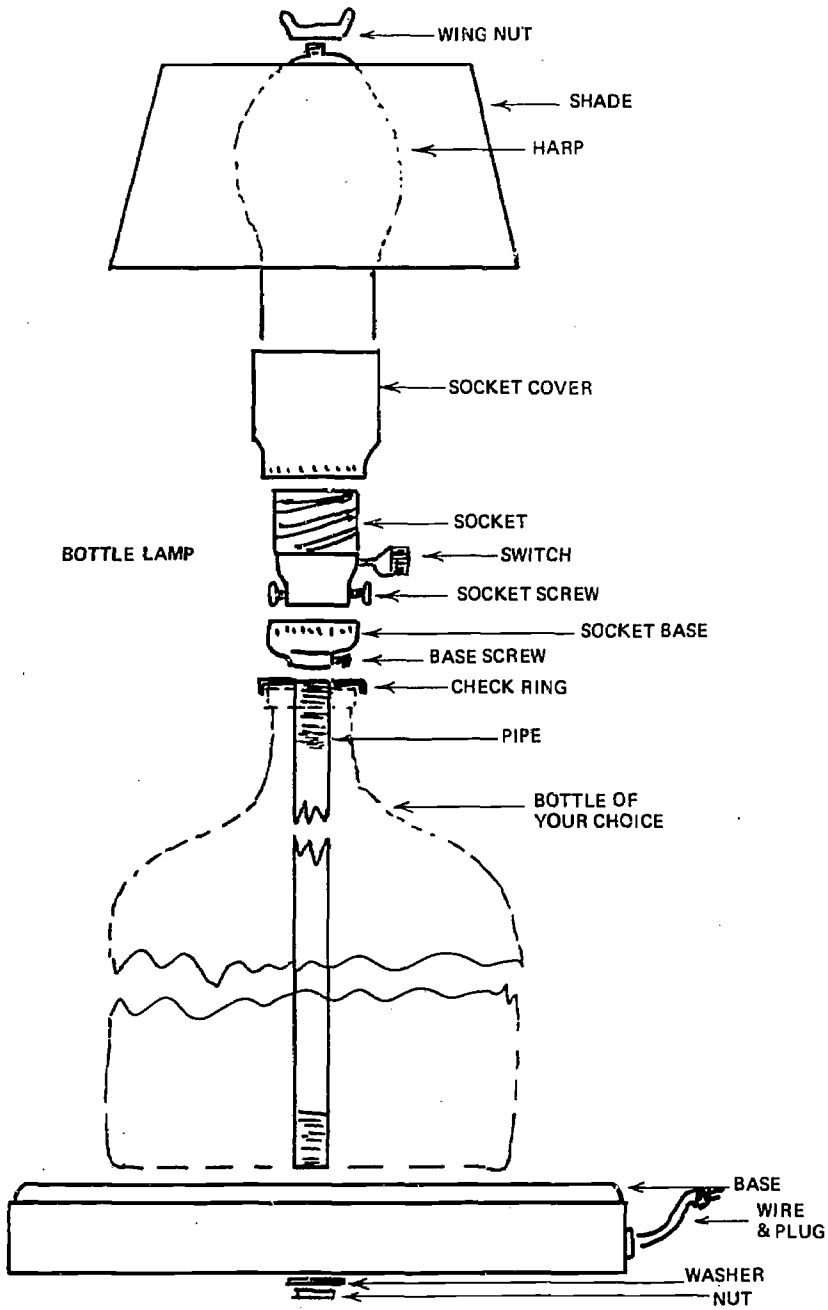
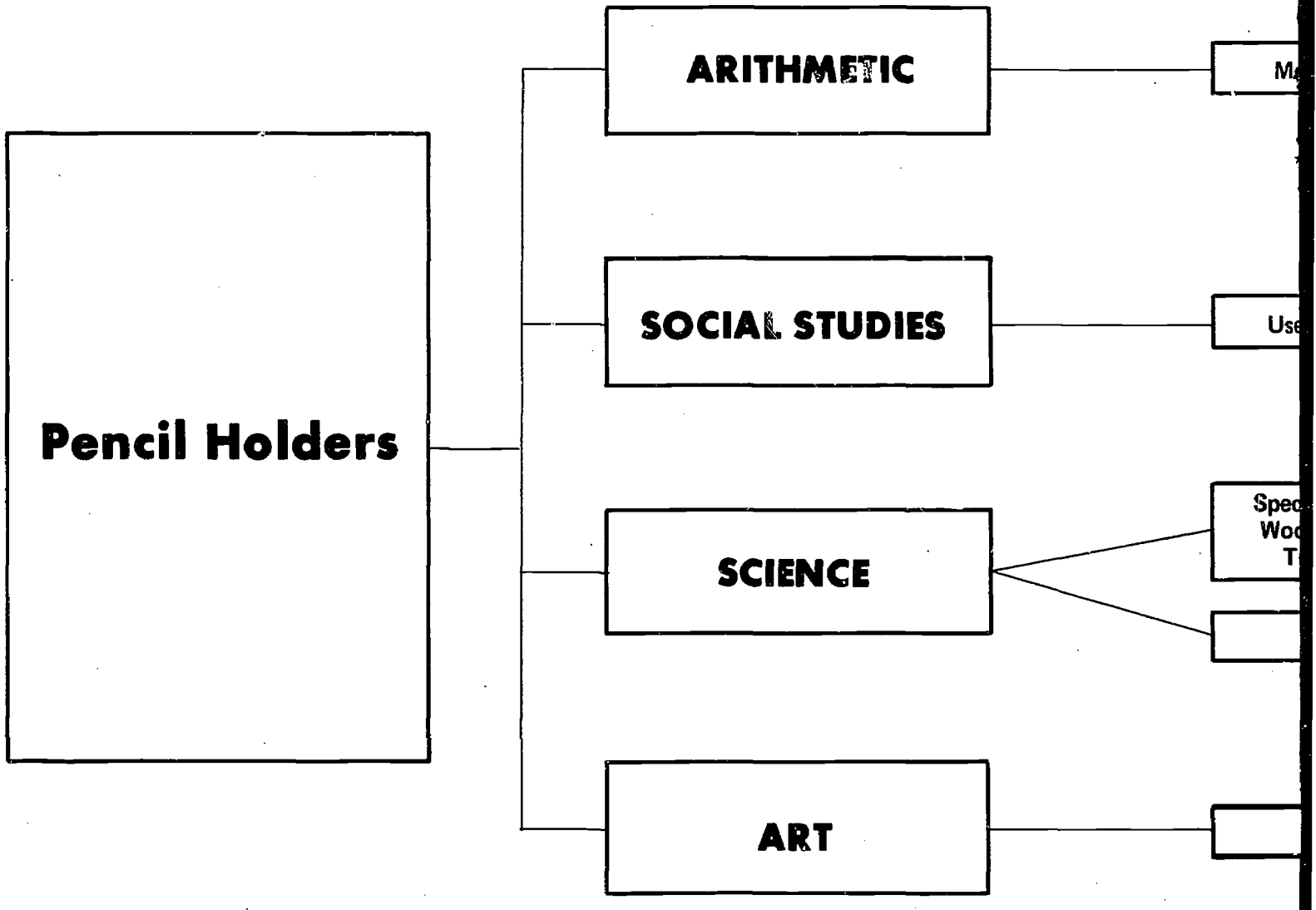
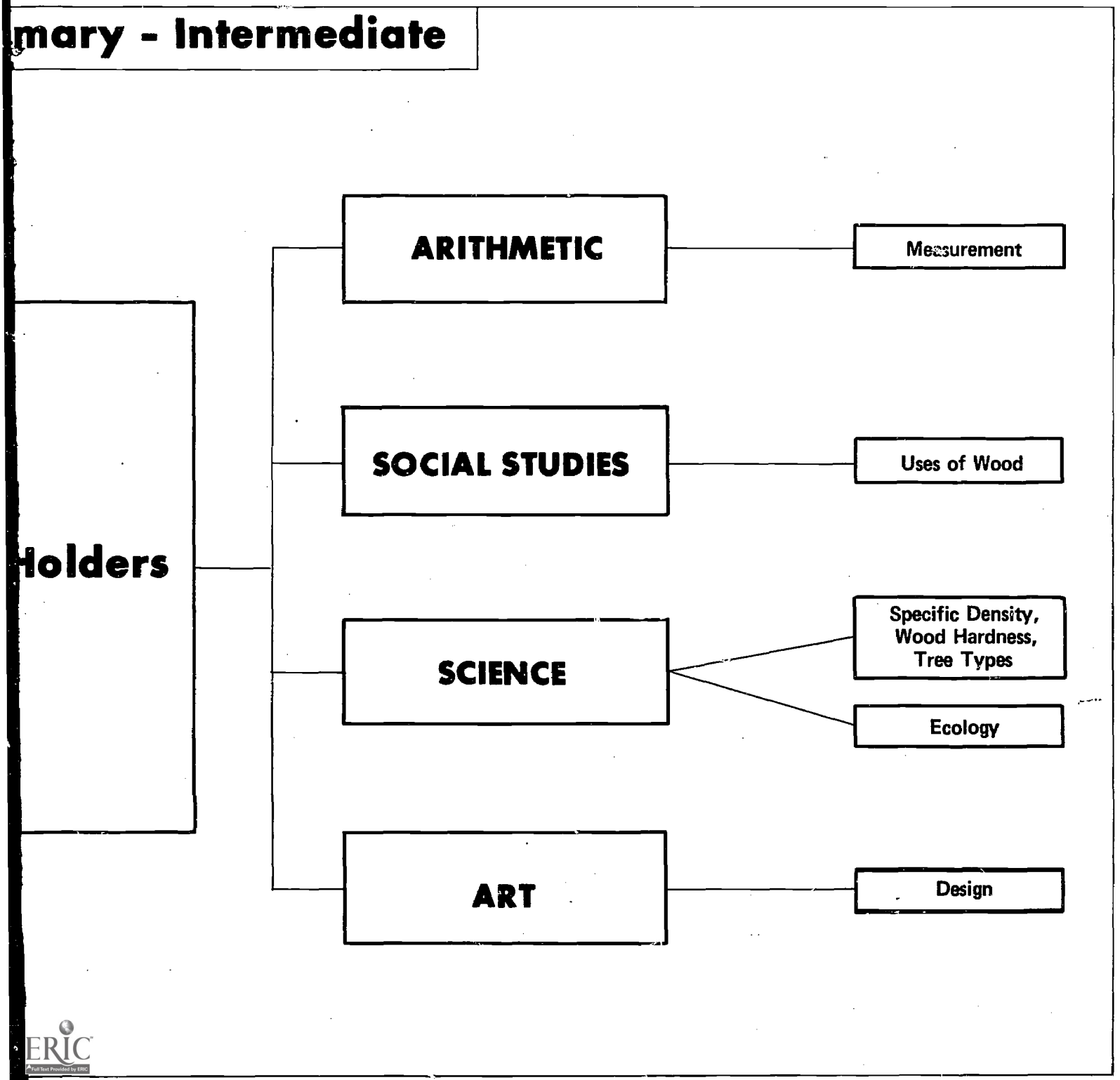


LEVEL **Primary - Intermediate**




mary - Intermediate
Holders
ARITHMETIC
Measurement
SOCIAL STUDIES
Uses of Wood
SCIENCE
Specific Density, Wood Hardness, Tree Types
Ecology
ART
Design

I. Physical Environment

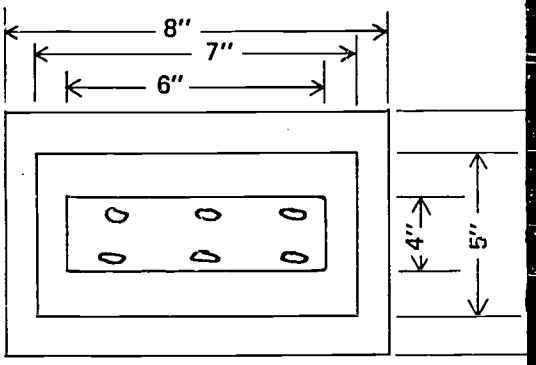
A. Classroom

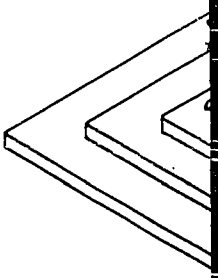
B. Expendable Materials

No. Needed	Item Description	Where Available
1 sheet	3/4" thick plywood	Lumber yard
Variety	Tempera paints	Art supply
	Nails	Hardware store

C. Equipment

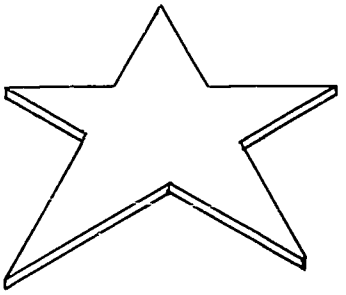
No. Needed	Item Description	Where Available
	Drill bits (5/16" or diameter of pencils)	
1	Hand or electric drill	
1	Hammer	
1	Vise	

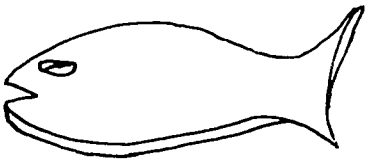




II. Procedure

1. Measure and cut three rectangles of plywood to form a pyramid. Suggested measurements: Bottom 6" x 8"; middle 5" x 7"; top 4" x 6".
2. Nail 3 pieces together, step each other to form triple layer (see diagram).
3. Drill holes into top layer, sizing holes to diameter of pencils to be placed therein. Space holes with imagination.
4. Paint pencil holders or decorate as child desires.
5. For extension, allow shaping of layers in varied patterns (see diagram).





cal Environment

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ndable Materials

ed	Item Description	Where Available
	3/4" thick plywood	Lumber yard
	Tempera paints	Art supply
	Nails	Hardware store

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	Drill bits (5/16" or diameter of pencils)	
	Hand or electric drill	
	Hammer	
	Vise	

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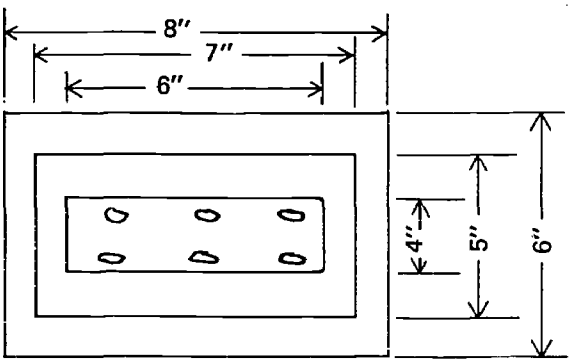
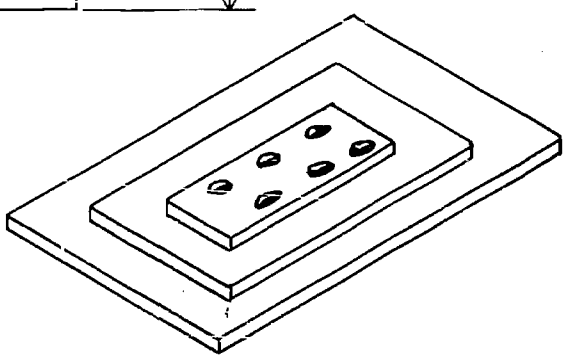
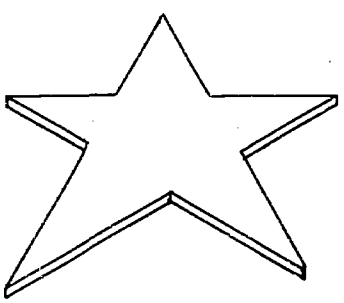
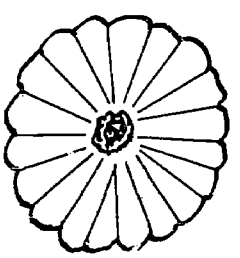
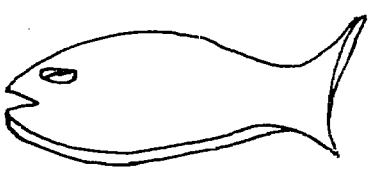
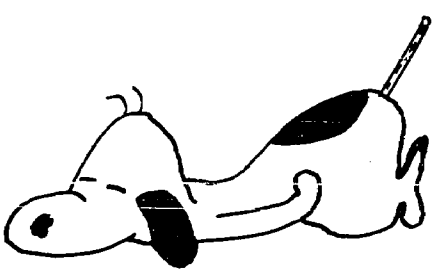




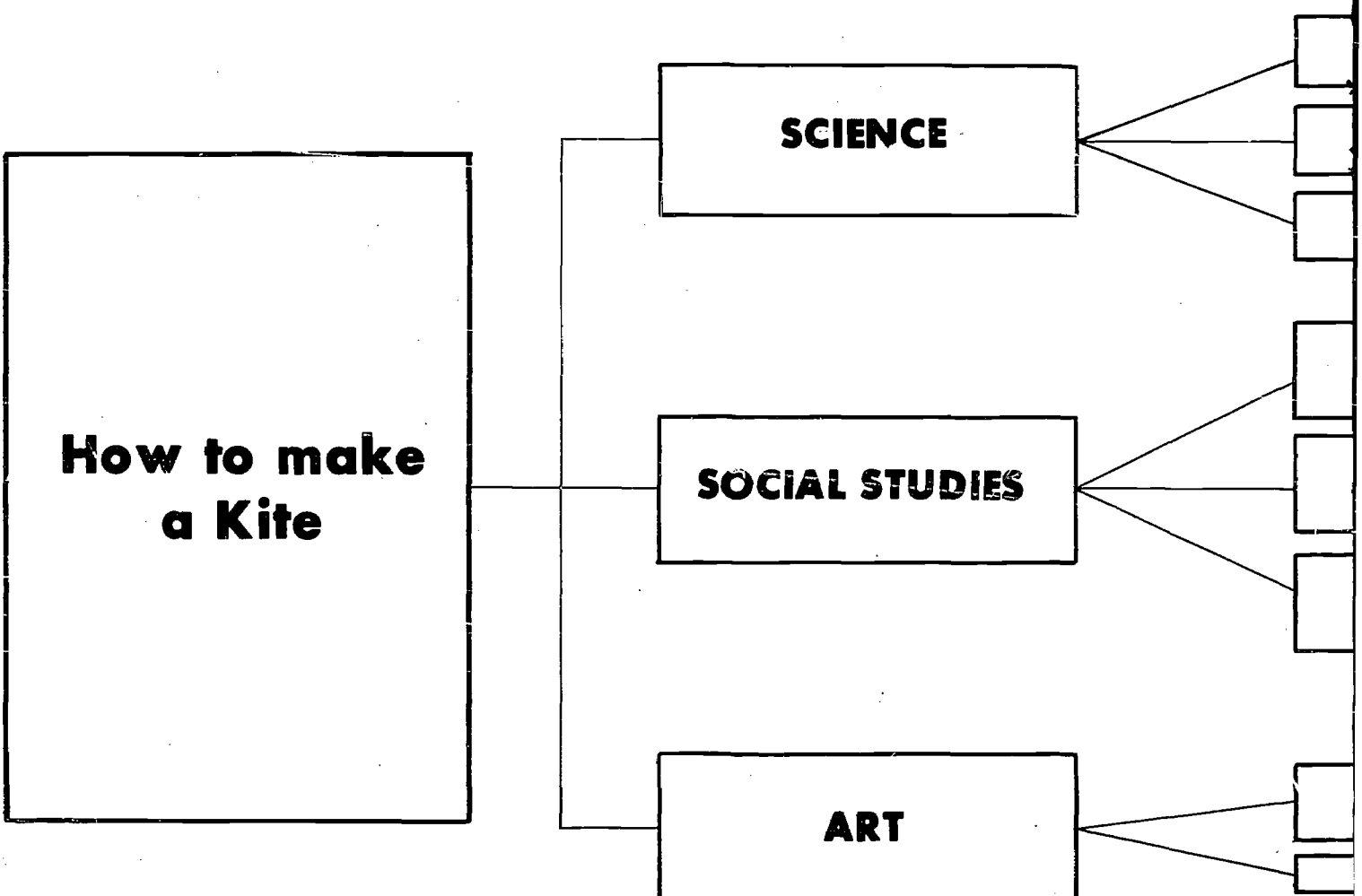




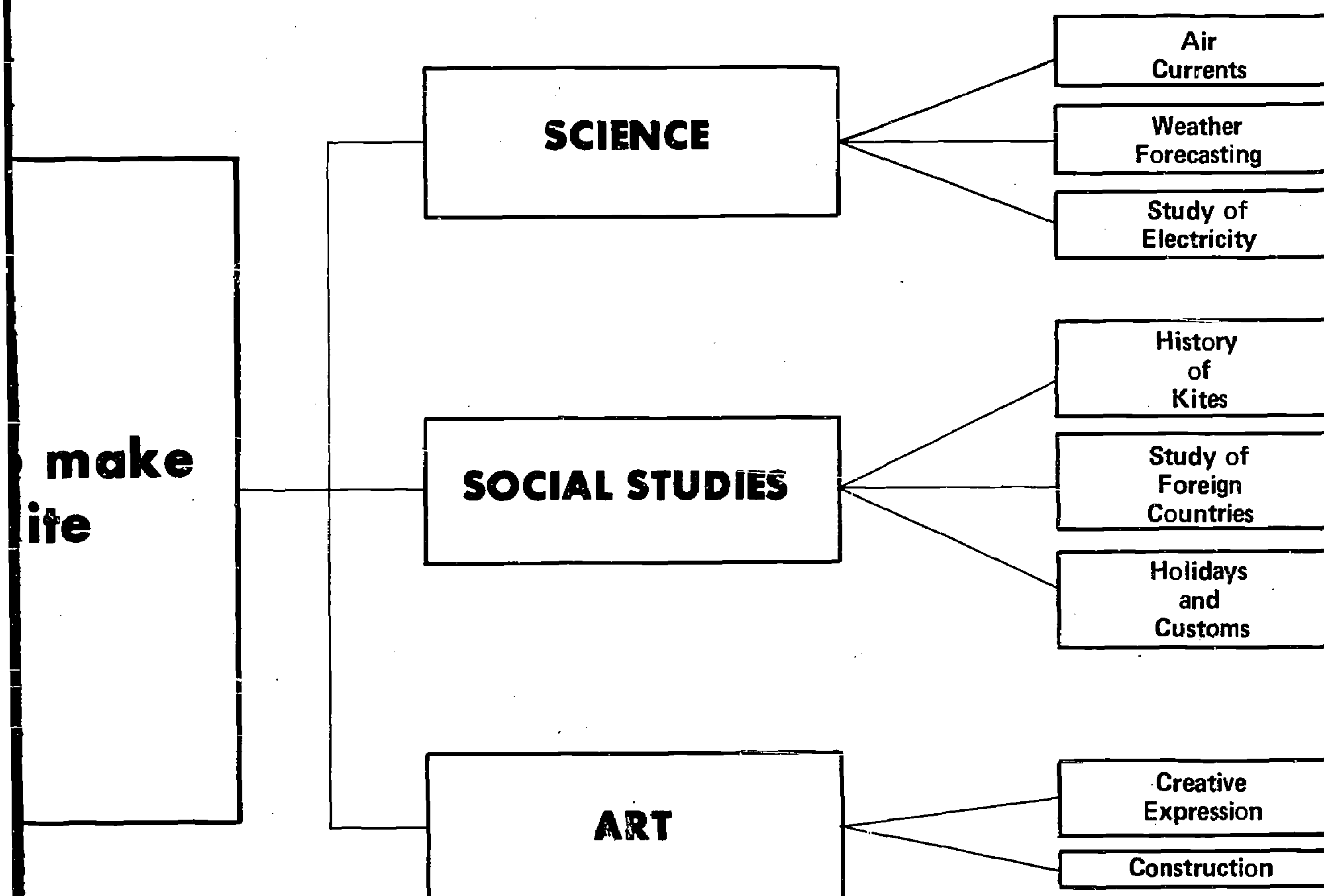




LEVEL **Primary - Intermediate**



mary - Intermediate



I. Physical Environment

A. Classroom

B. Expendable Materials

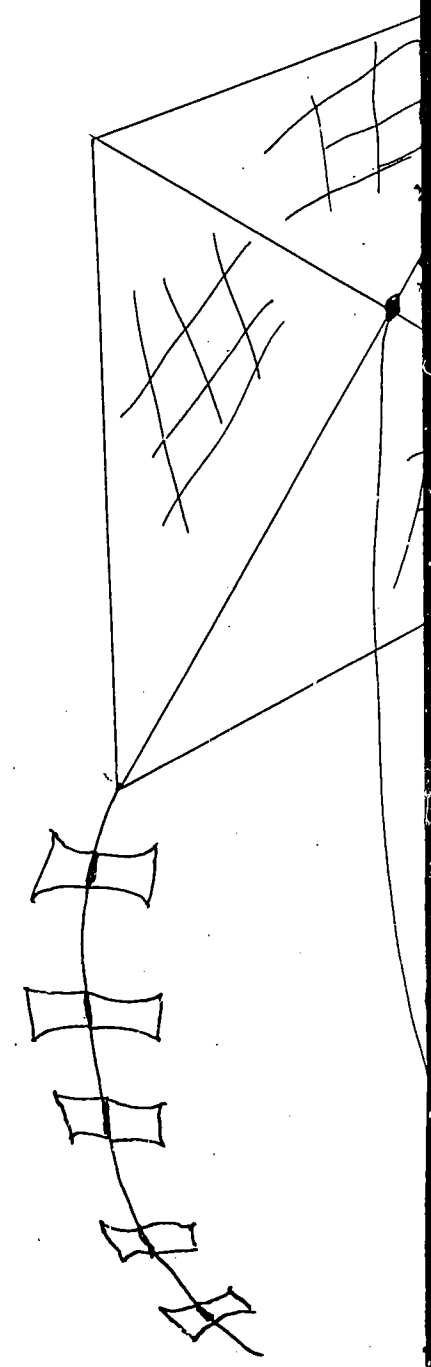
No. Needed	Item Description	Where Available
	Soft pine wood 1/2" x 1/4" or 3/4" x 3/8" length 24" to 42"	Lumber yard
	Wrapping paper, tissue, or light but strong paper	
	Cord	
	String	

C. Equipment

No. Needed	Item Description	Where Available
1	Tape measure	
1	Sabre saw	

D. Motivating Device

1. Films.
2. Discussions.
3. Kite flying contest.



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Item Description	Where Available
Soft pine wood 1/2" x 1/4" or 3/4" x 3/8" length 24" to 42"	Lumber yard
Wrapping paper, tissue, or light but strong paper	
Cord	
String	

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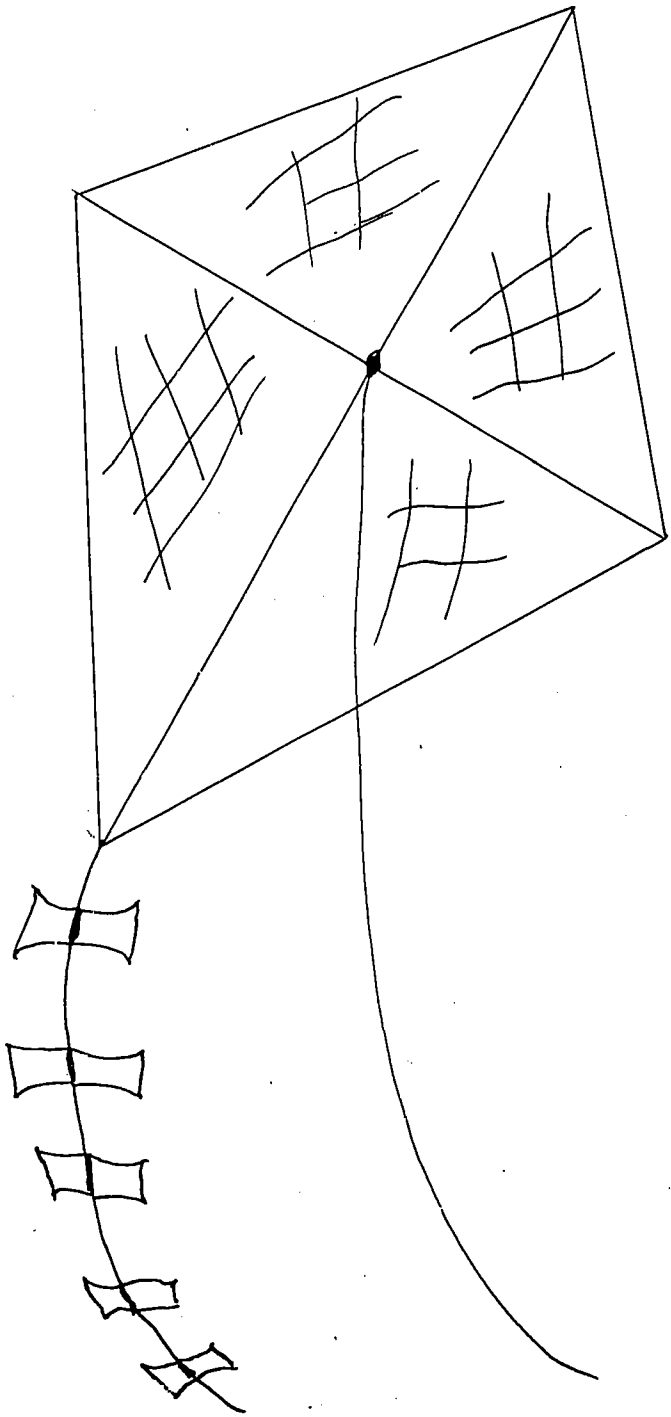
Item Description	Where Available
Tape measure	
Sabre saw	

ting Device

contest.



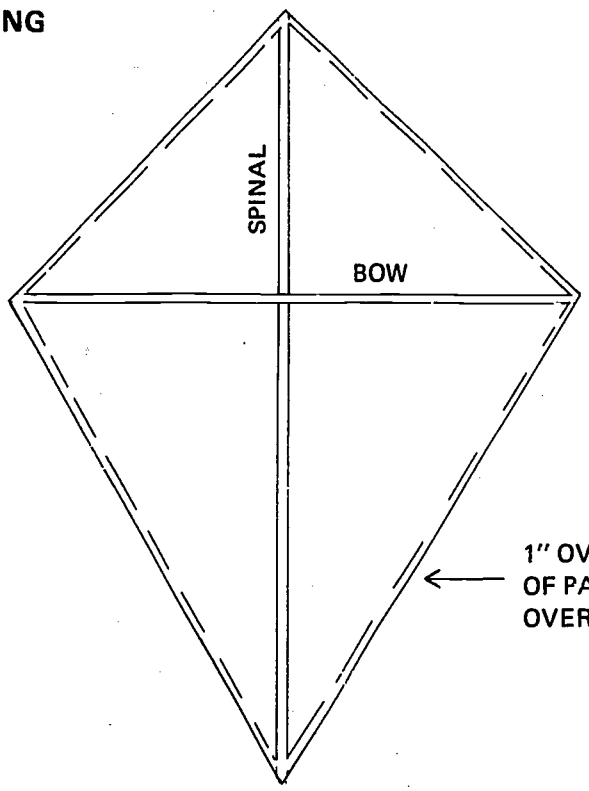
II. Procedure

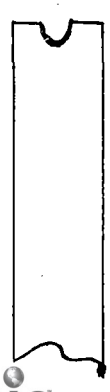
Teacher's Notes

1. Both the bow stick and spine stick should be of equal length 24" to 42".
2. Notch each end of both bow and spine sticks.
3. Place the bow across spine about 1/4 of the way down or about 11" on a 42" spine.
4. Lash the two sticks carefully using plastic glue.
5. Wrap the stong, tightly twisted string or fishing line all the way around the frame of the kite using the notches on the end of the sticks as guides.
6. Tie the string near the bottom of the kite.
7. Lay the frame down on wrapping paper or tissue or light but strong paper and indicate with a pencil a cutting line 2" outside the kite frame.
8. Glue the paper to the frame around the string with a 1" overlap.
9. Attach another length of cord to each end of the bow stick to draw the bow. The center of the bow should measure about 5-1/2" (on a 42" bow) or (3" on a 24" bow) between the bow stick and the cord.
10. Arrange a piece of string which is the bridle, or attachment of the line. This string should be attached at the bottom of the spine or at the point where the back crosses spine.
11. Attach line with a long loop; when the kite is thoroughly dry, you are ready to fly.

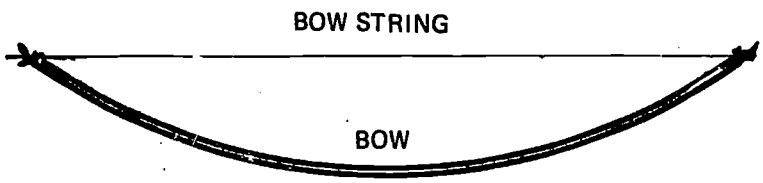
Adopted from **Teaching Children About Technology**
by Mary Margaret Scobey

KITE MAKING





END OF
BOW AND
SPINAL



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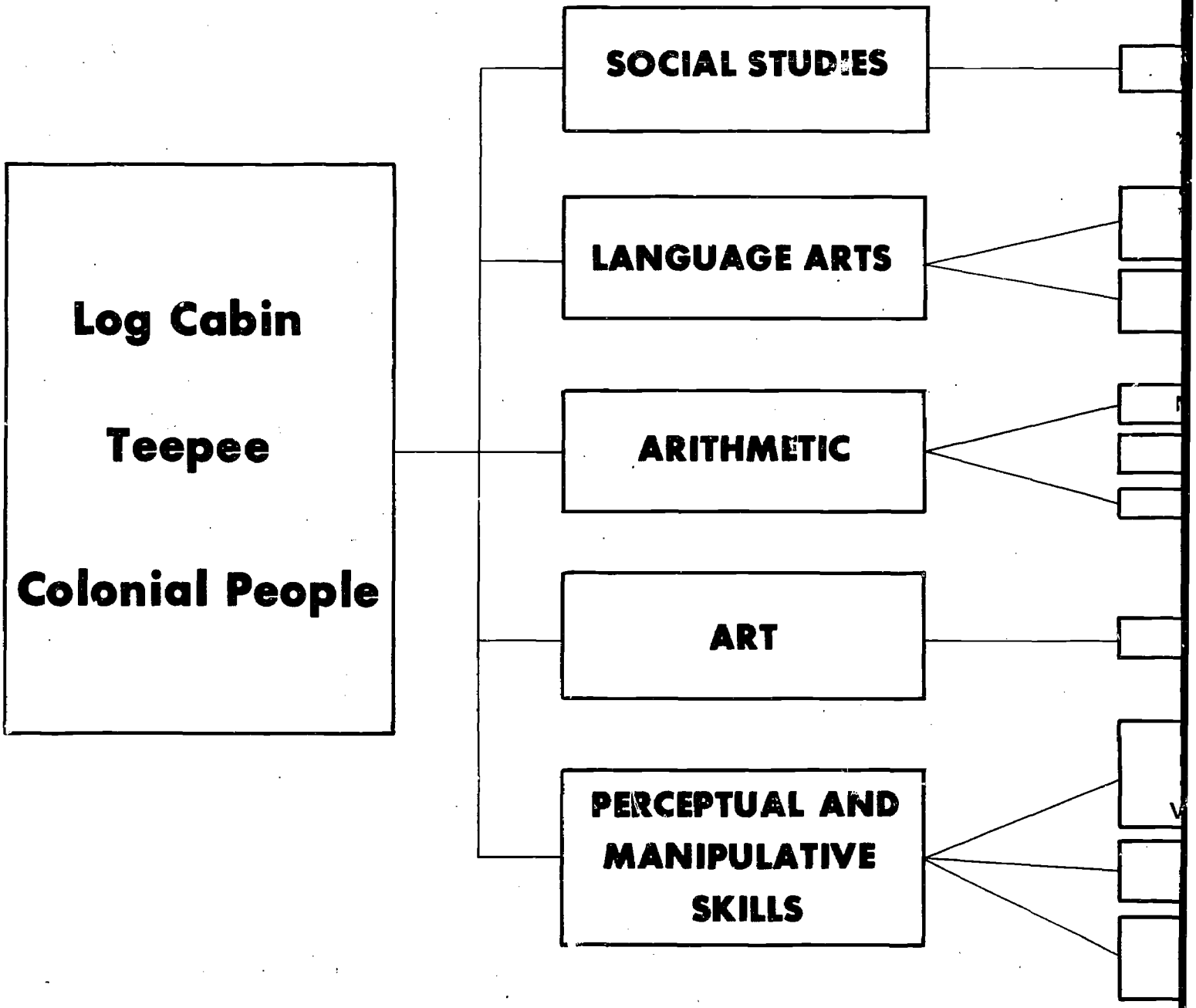

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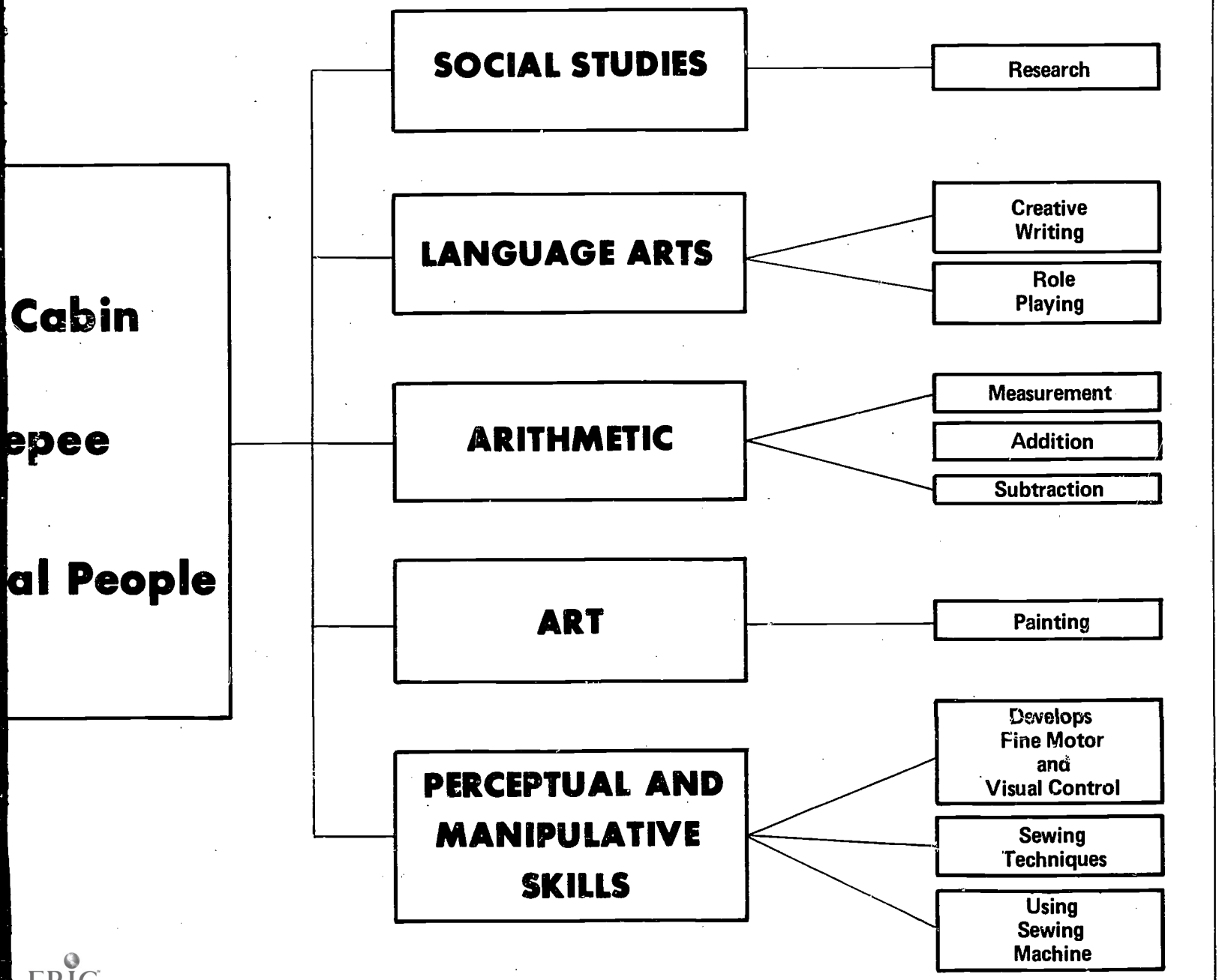


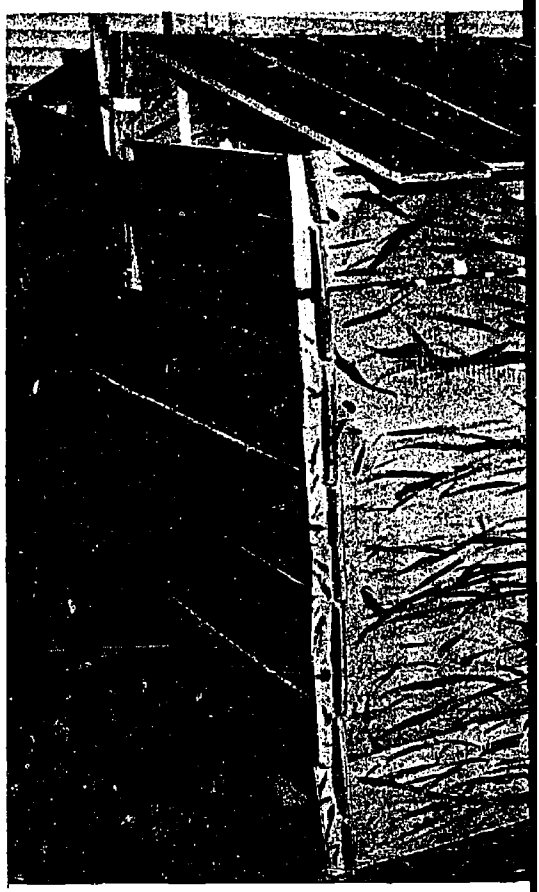
PHASE I
Log Cabin

I. Physical Environment

A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
7	3-1/2' x 4-1/2' Tri-Wall	Tri-Wall Containers, Inc. Plainview, L.I. New York
1 roll	Masking tape	School supply
1 jar	Tempera paint	Art room



C. Equipment

No. Needed	Item Description	Where Available
1	Sabre saw	
1	Measuring tape	
1	Square	

D. Motivating Device

1. Films
2. Stories about colonial times

II. Procedure

1. Cut logs for walls to desired length.
2. Slot all wall pieces (see diagram).
3. Make center ridge (see diagram).
4. Cut roof slats.
5. Assemble according to diagram.
6. If desired, curtains can be sewn for the windows.

PHASE I
Log Cabin

l Environment

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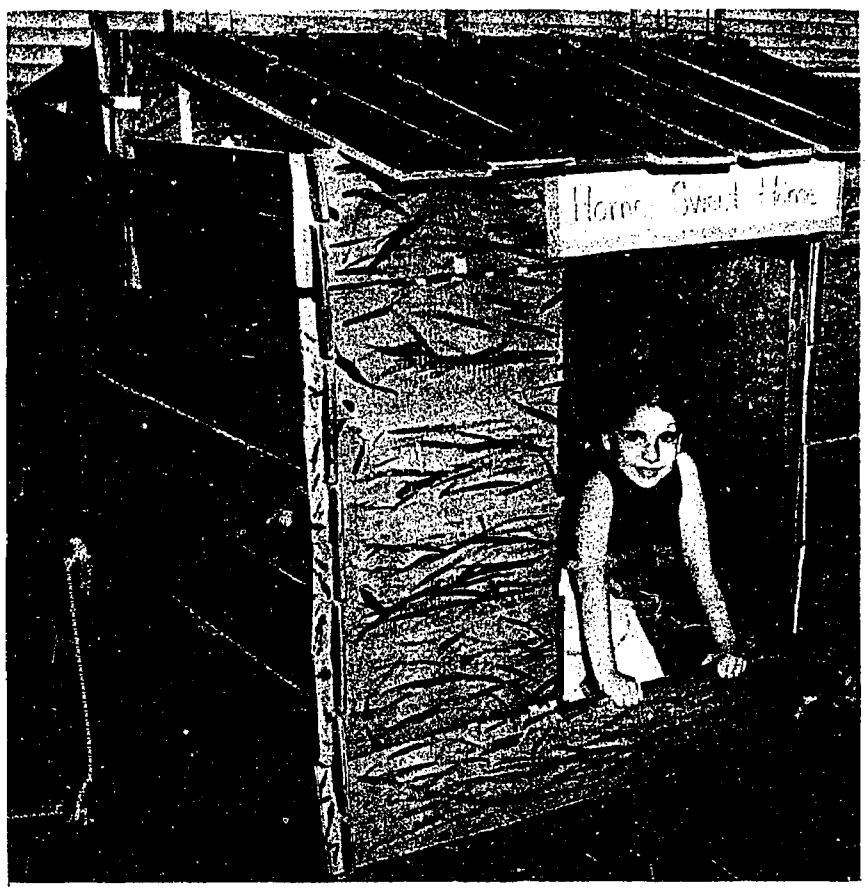
able Materials

Item Description	Where Available
3-1/2' x 4-1/2' Tri-Wall	Tri-Wall Containers, Inc. Plainview, L.I. New York
Masking tape	School supply
Tempera paint	Art room



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Item Description	Where Available
Sabre saw	
Measuring tape	
Square	

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t colonial times

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alls to desired length.
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r diagram.
e sewn for the windows.

PHASE II
Indian Teepee

I. Physical Environment

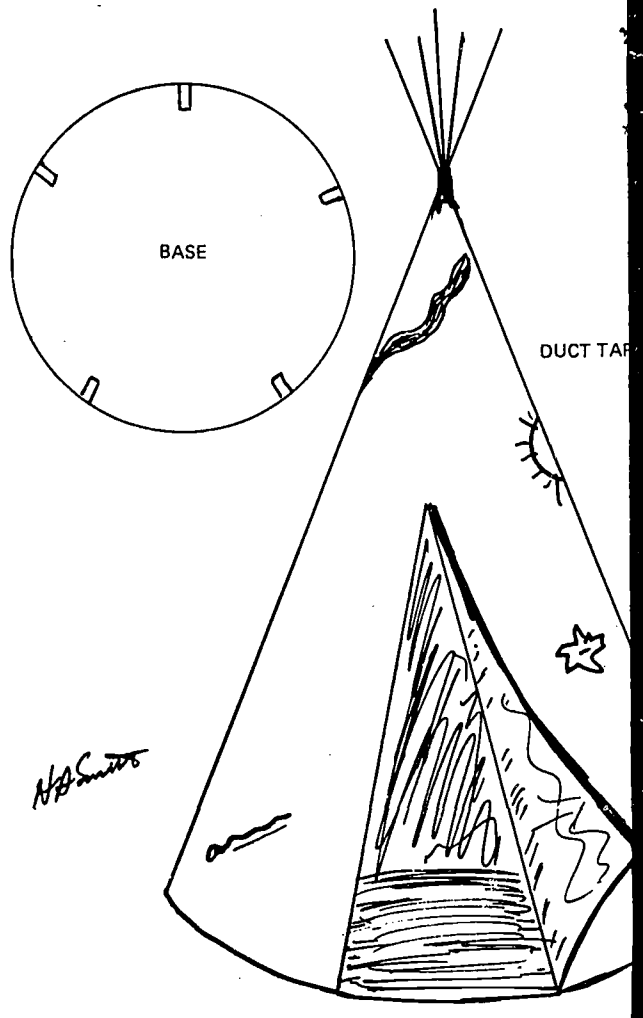
A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
3	3-1/2' x 4-1/2' Tri-wall	Tri-Wall Containers, Inc. Plainview, L.I. New York
1 roll	Duct tape	Hardware store
1 jar	Tempera paint	Art supply
1	Bed sheet	Department store
1	Elmer's glue	School supply
1	Dowel	Hardware store
1 piece	String	Art supply

C. Equipment

No. Needed	Item Description	Where Available
1	Square	
1	Ruler	
1	Sabre saw	
1	Art paintbrush	Art supply



II. Procedure

1. Measure one sheet of Tri-Wall to find center. Place dowel in center point. Attach one end of string to dowel and other end to pencil.
2. Trace circular base.
3. Cut circular base with sabre saw.
4. Cut 20-3" x 3' pieces.
5. Using 15 pieces, assemble as shown with Elmer's glue and duct tape.
6. Cut remaining 5 pieces in half and attach each piece above and below 3' piece, using duct tape.
7. Slot the base and insert the large slats into the slots.
8. Lean slats so that they meet over the center of the base. Tie pieces together.
9. On sheet, paint various Indian symbols and designs with tempera paints.
10. Drape sheet around teepee form and anchor in place.

PHASE II
Indian Teepee

l Environment

om

lable Materials

Item Description	Where Available
3-1/2' x 4-1/2' Tri-wall	Tri-Wall Containers, Inc. Plainview, L.I. New York
Duct tape	Hardware store
Tempera paint	Art supply
Bed sheet	Department store
Elmer's glue	School supply
Dowel	Hardware store
String	Art supply

ent

Item Description	Where Available
Square	
Ruler	
Sabre saw	
Art paintbrush	Art supply

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heet of Tri-Wall to find center. Place
r point. Attach one end of string to
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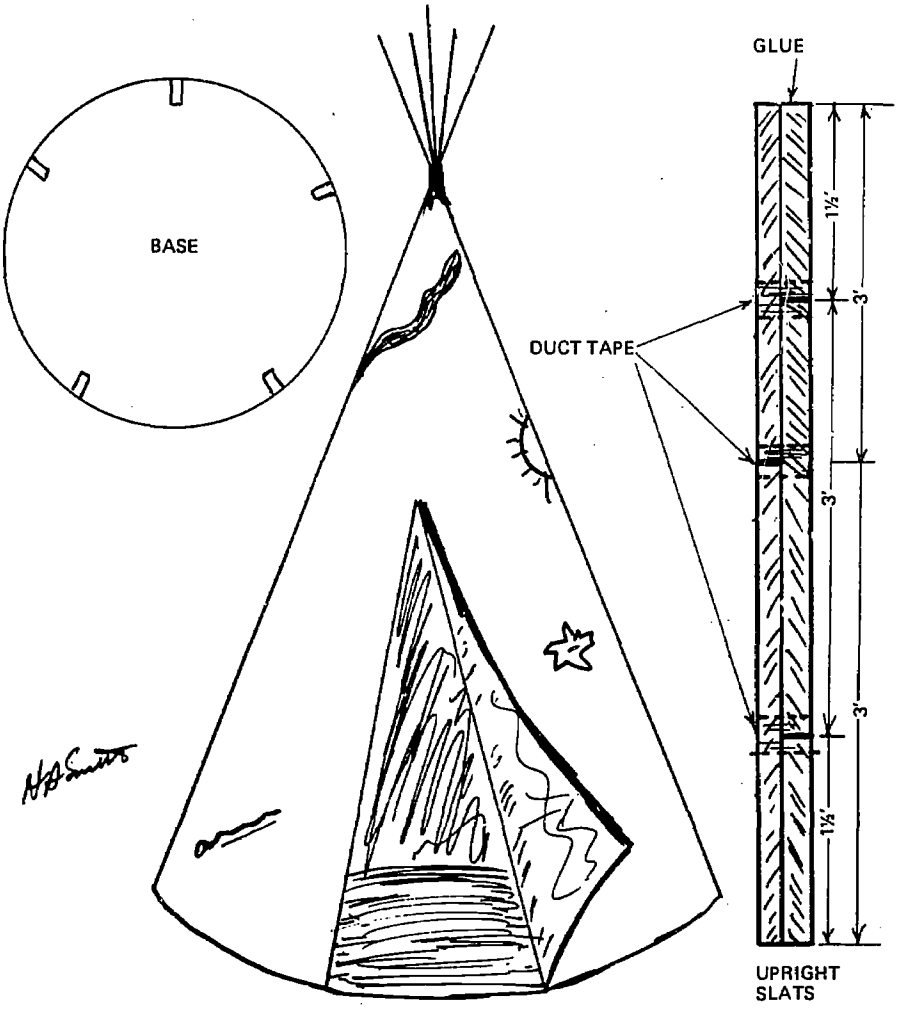

PHASE III
Colonial Figures

I. Physical Environment

A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
1 sheet (each child	brown wrapping paper	Art Supply
1 box	Crayons	Art Supply
Variety	Material	Student
Variety	Yarns	Art Supply
Variety	Construction paper	Art Supply
1	Glue	Art Supply

C. Equipment

No. Needed	Item Description	Where Available
1	Scissors	Classroom

II. Procedure

1. Have child lay on sheet of brown paper.
2. Another child traces outline.
3. Outline is then cut out.
4. Cut outline is then drawn on and decorated with materials and yarn.
5. Finished product is life size model of colonial person or Indian.

PHASE III
Colonial Figures

Environment

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ible Materials

Item Description	Where Available
brown wrapping paper	Art Supply
Crayons	Art Supply
Material	Student
Yarns	Art Supply
Construction paper	Art Supply
Glue	Art Supply

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Item Description	Where Available
Scissors	Classroom

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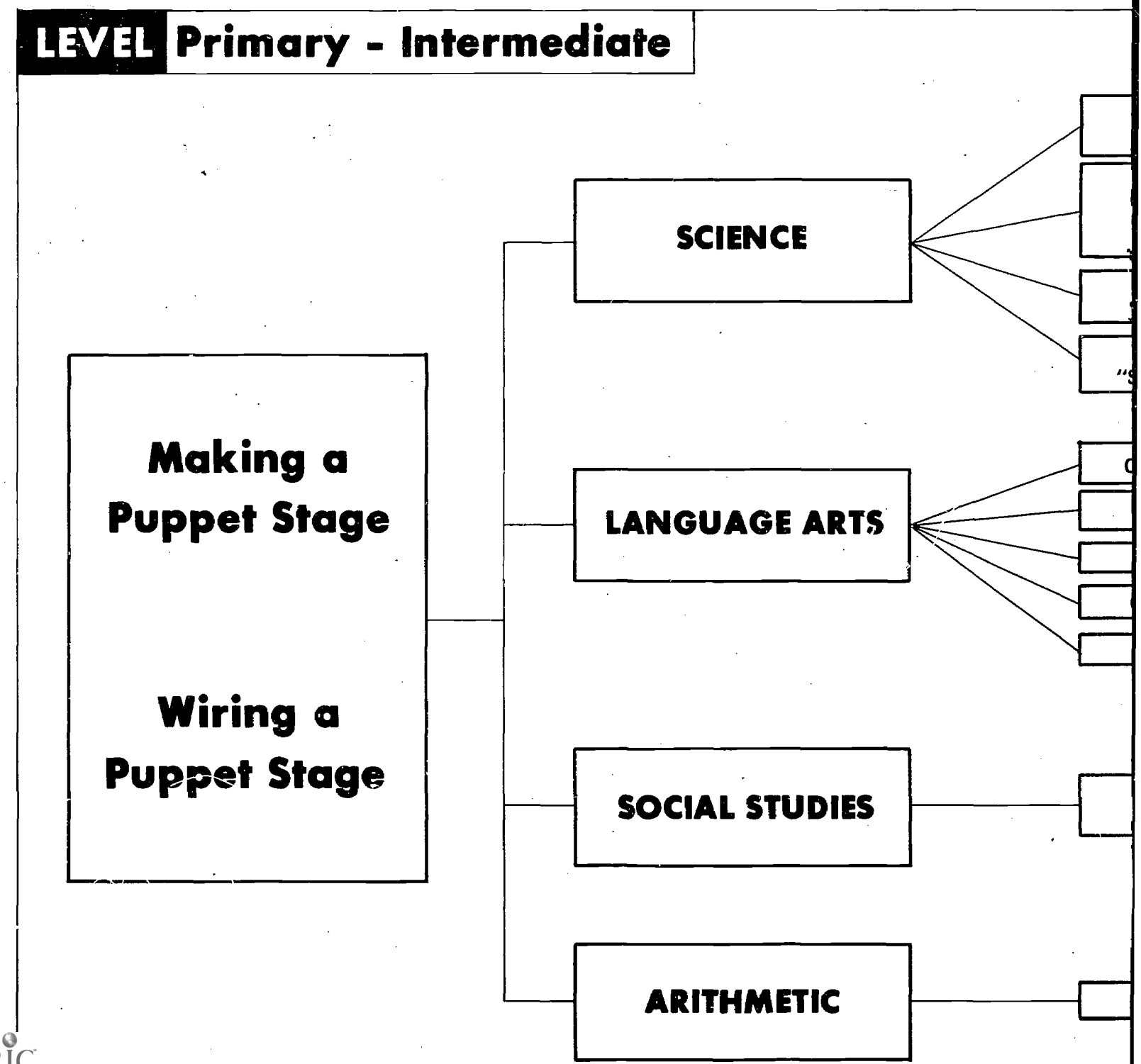
LEVEL Primary - Intermediate



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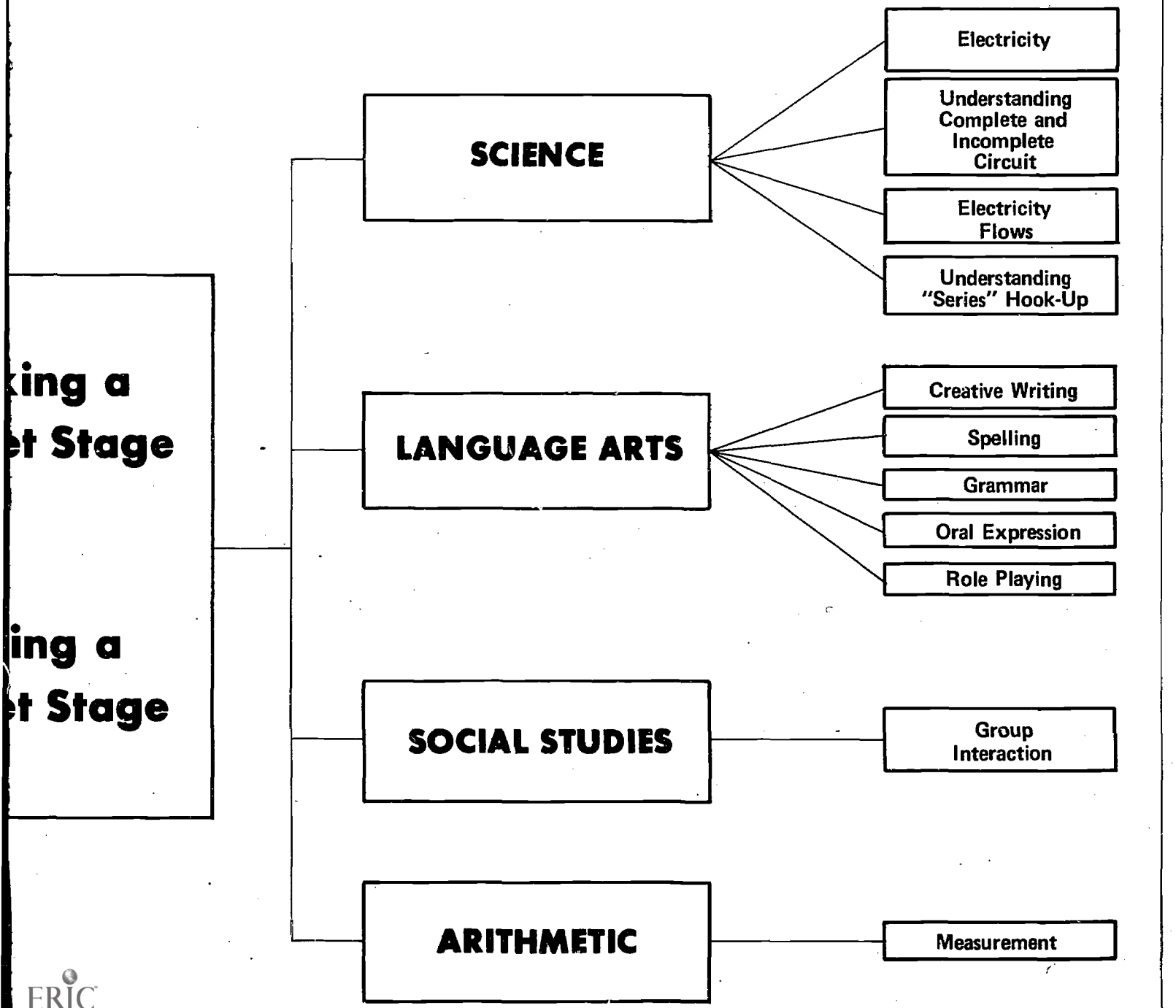


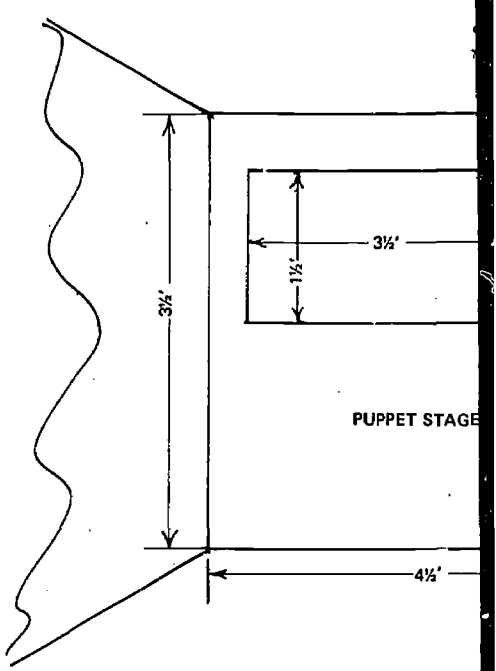
PHASE I
Making a Puppet Stage

I. Physical Environment

A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
3	Tri-Wall cardboard	Tri-Wall Containers, Inc. Plainview, L. I. New York
1 roll	2" wide cloth tape	Hardware store
1	Curtain rod (4-1/2')	5&10
4-1/2'	Material	Department store
1 spool	Thread	Department store



C. Equipment

No. Needed	Item Description	Where Available
1	Sabre saw	
1	Scissors	
1	Sewing machine	
1	Yardstick	

II. Procedure

1. Cut opening in center cardboard 1-1/2' x 3-1/2' (see diagram).
2. Scallop top with sabre saw.
3. Tape 3 panels together.
4. Cut material in half and hem.
5. Insert rod and attach.

PHASE I
Making a Puppet Stage

l Environment

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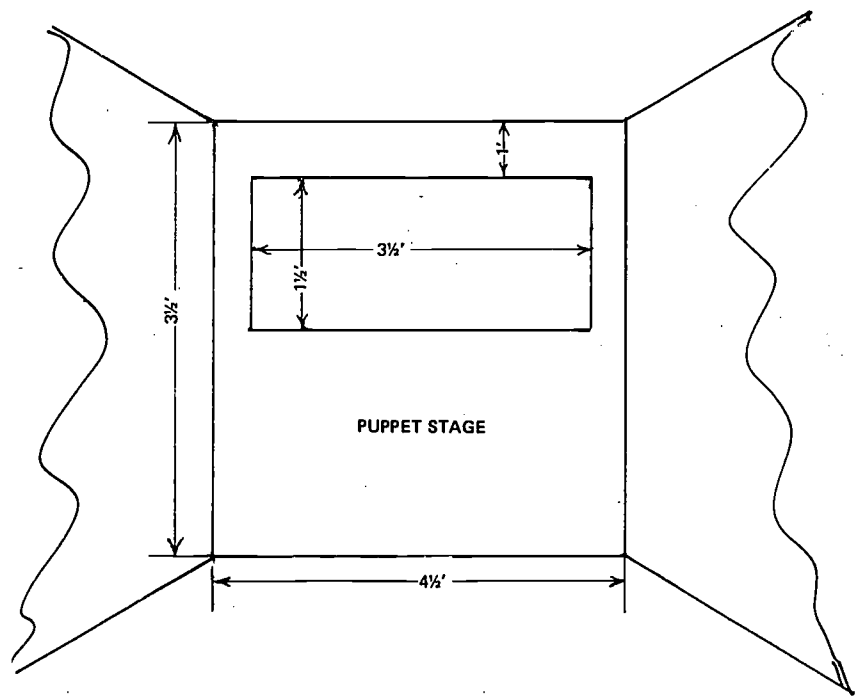
able Materials

Item Description	Where Available
Tri-Wall cardboard	Tri-Wall Containers, Inc. Plainview, L. I. New York
2" wide cloth tape	Hardware store
Curtain rod (4-1/2')	5&10
Material	Department store
Thread	Department store



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Item Description	Where Available
Sabre saw	
Scissors	
Sewing machine	
Yardstick	

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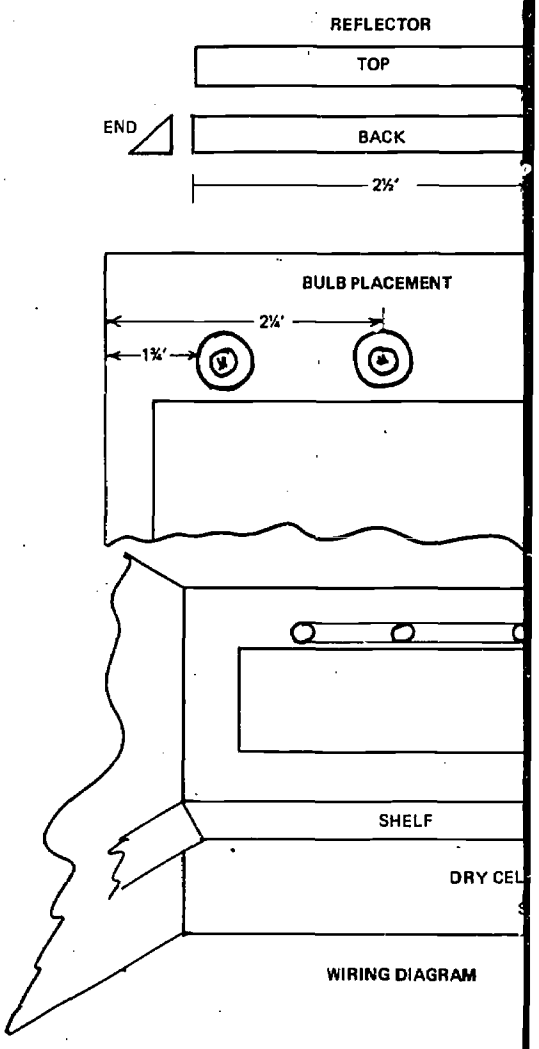
PHASE II
Wiring a Puppet Stage

I. Physical Environment

A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
1 spool	Bell wire	Hardware store
3	Receptacles	Hardware store
3	Bulbs — 7-1/2 amp	Hardware store
1	Dry cell battery	Hardware store
1	Switch	Hardware store
1	Tri-Wall cardboard 2-1/2' x 1-3/4'	Tri-Wall Containers, Inc. Plainview, L. I. New York
1 roll	Aluminum foil	Home
1	Stapler	



C. Equipment

No. Needed	Item Description	Where Available
1	Hammer	
1	Screw driver	
1	Scissor or wire cutter	

D. Motivating Device

1. Films.
2. Classroom display of materials.

PHASE II
Wiring a Puppet Stage

Environment

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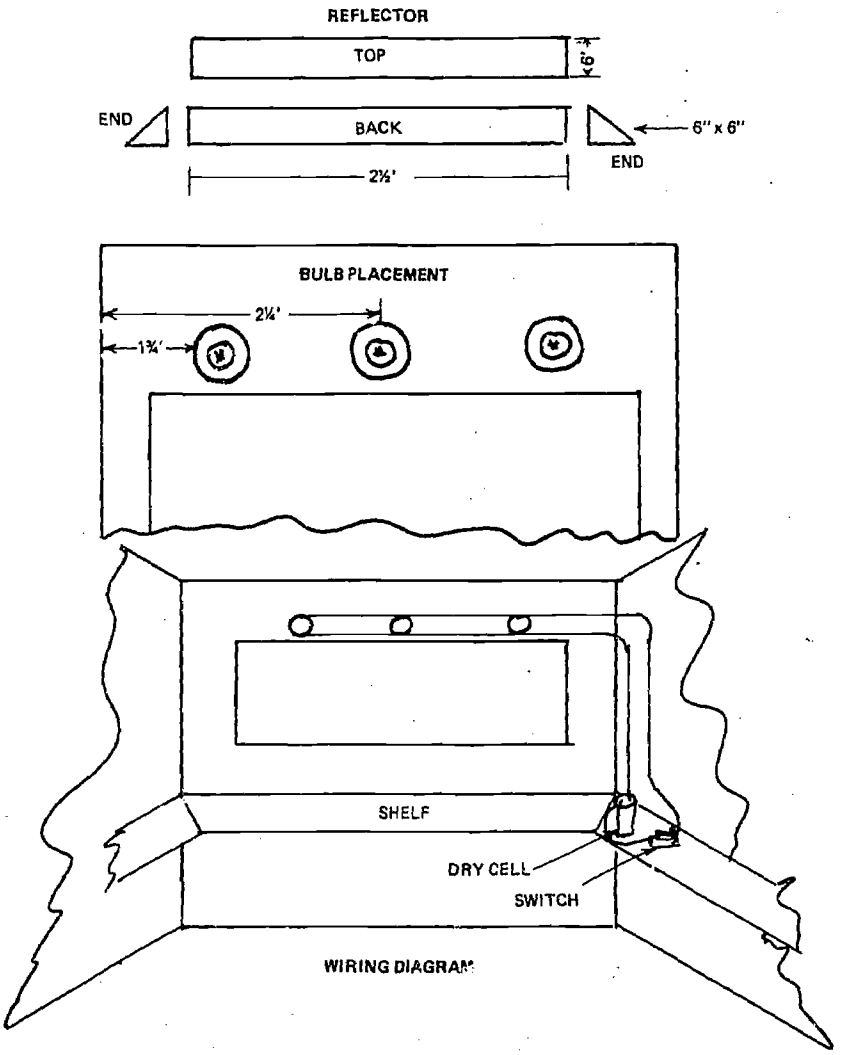
ble Materials

em Description	Where Available
ell wire	Hardware store
eceptacles	Hardware store
ulbs — 7-1/2 amp	Hardware store
ry cell battery	Hardware store
witch	Hardware store
ri-Wall cardboard -1/2' x 1-3/4'	Tri-Wall Containers, Inc. Plainview, L. I. New York
luminum foil	Home
tapler	



WIRING DIAGRAM

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Item Description	Where Available
Hammer	
Screw driver	
Scissor or wire cutter	

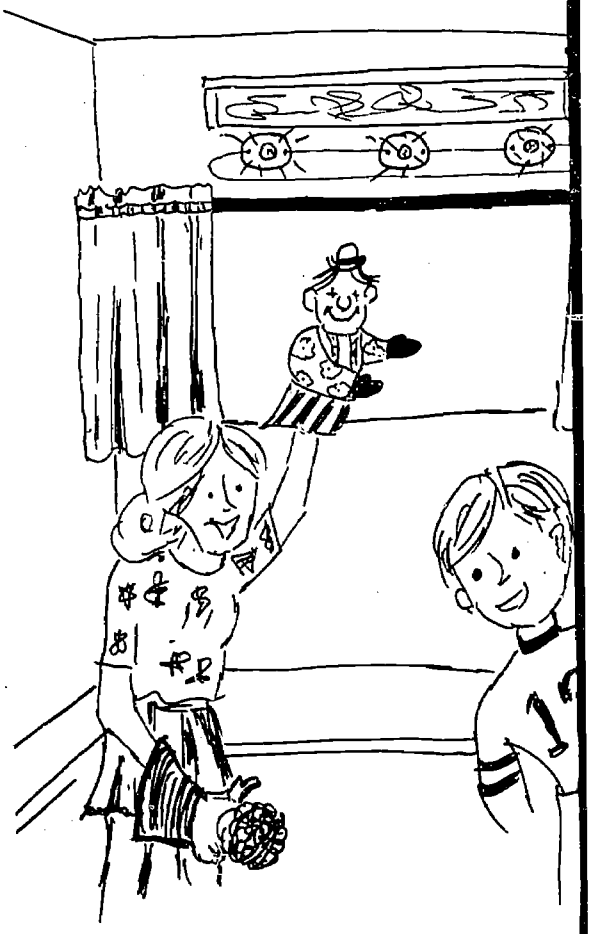
ing Device

display of materials.

II. Procedures

1. Measure for receptacles.
2. Screw to cardboard.
3. Cut bell wire
   - 4 – 6" pieces
   - 2 – 5-1/4' pieces
   - 1 – 1' piece
4. Attach 6" pieces between receptacles; attach 5-1/4' piece from top of third receptacle to switch; attach other 5-1/4' piece from bottom of third receptacle to battery; attach 1' piece of wire from battery to switch (staple in place).
5. Assemble reflector.
6. Cover with aluminum foil.
7. Mount over receptacles.

Teacher's Notes



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between receptacles; attach 5-1/4'
third receptacle to switch; attach
from bottom of third receptacle to
piece of wire from battery to switch

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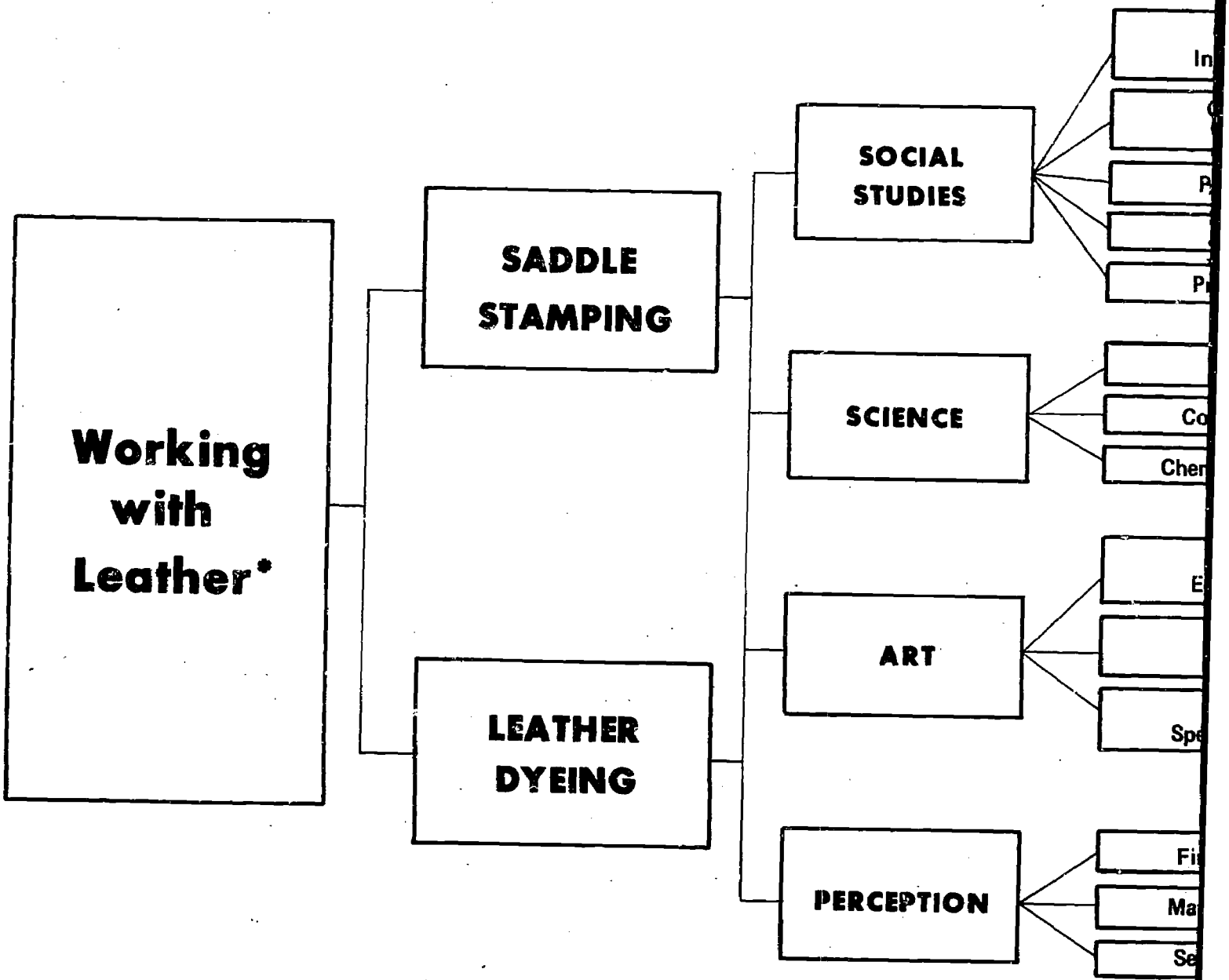
Teacher's Notes

LEVEL Primary - Intermediate



*For project ideas, consult Tandy Leather.

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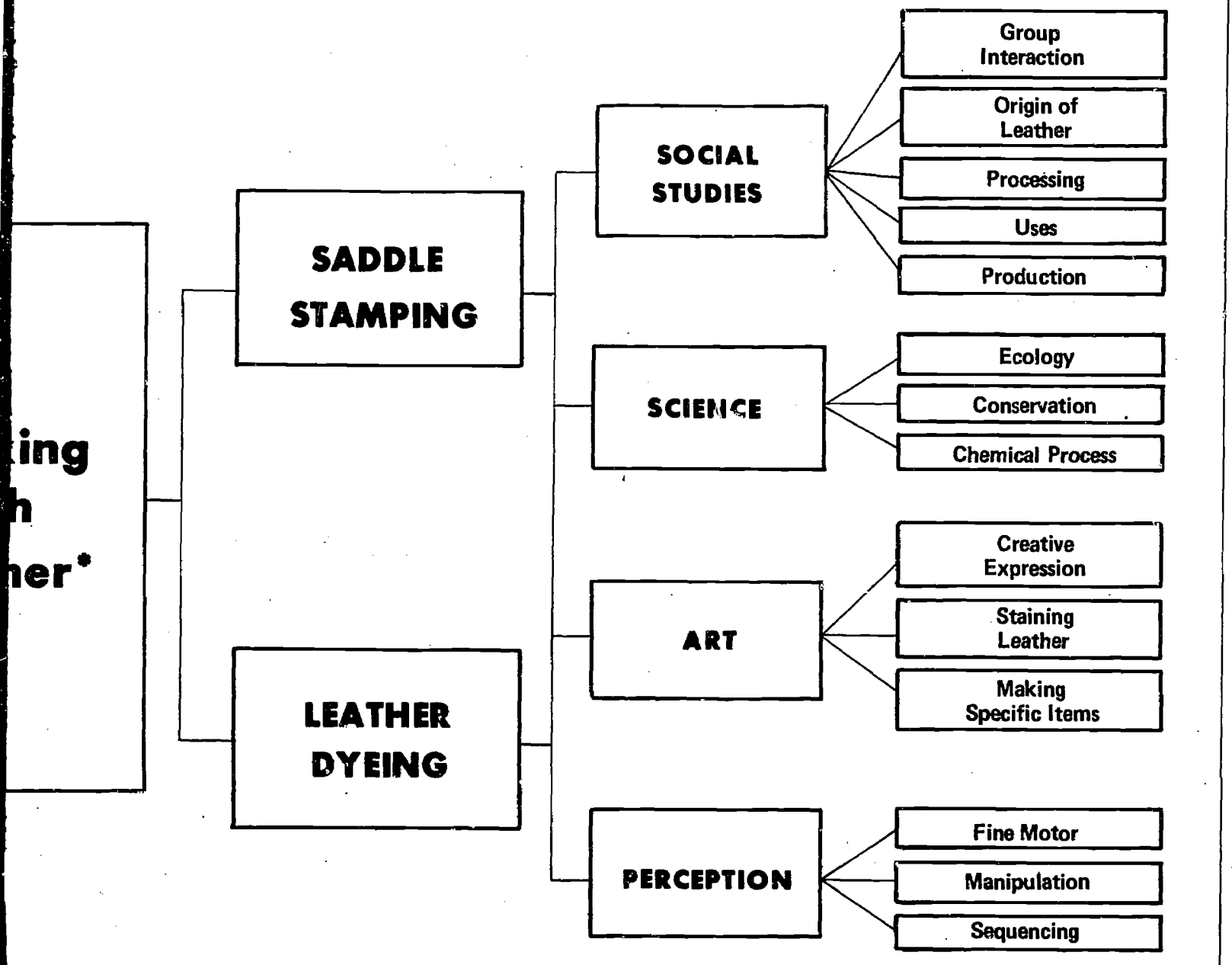


Tandy Leather.

PHASE I
Saddle Stamping

I. Physical Environment

A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
1	Plastic glass bowl*	Home
1	Sponge	Home

C. Equipment

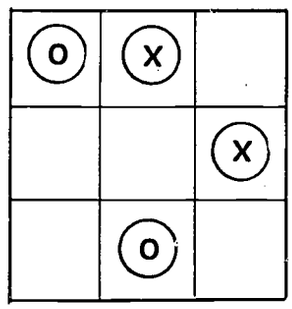
No. Needed	Item Description	Where Available
1	Mark-lite board	
1	Mallet	
Various	Stamps	

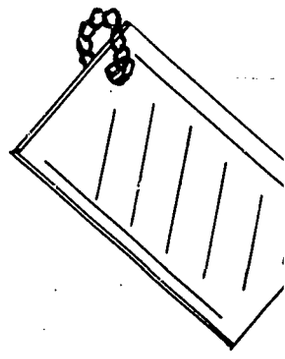
II. Procedure

1. Put water in bowl.
2. Before you stamp the leather take a sponge and dip it in the water.
3. Squeeze most of the water out of the sponge and moisten the leather on the back, then turn it over and do the front. Let it stand for about a minute before you start stamping.
4. Using mallet, hold the stamp tightly and hit it with the mallet. You should hit it hard enough to drive the stamp about 1/3 of the way through the leather.
   NOTE: Large stamps will have to be struck several times. To do that, hit the stamp straight up and down. Lean the stamp slightly to each side, hitting it on each side. This seats the stamp evenly. Be sure to do this with the alphabet stamps. (Term used for this procedure "Rocking" the stamp).

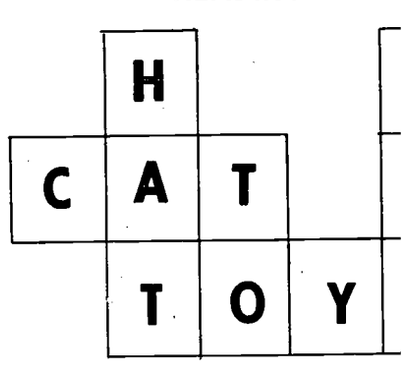
*Metal bowls will stain leather.

TIC - TAC - TOE & C





READING GAMES



PHASE I
Saddle Stamping

l Environment

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able Materials

Item Description	Where Available
Plastic glass bowl*	Home
Sponge	Home

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Item Description	Where Available
Mark-lite board	
Mallet	
Stamps	

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p the leather take a sponge and dip it

the water out of the sponge and
her on the back, then turn it over and
t it stand for about a minute before
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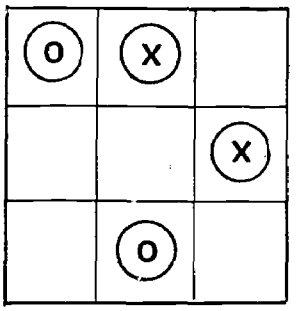
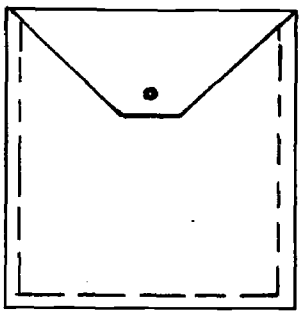
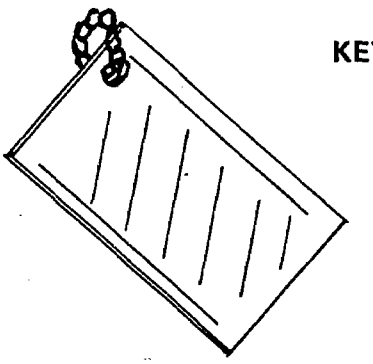
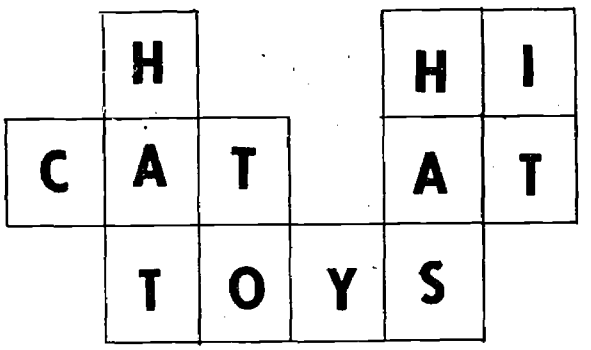






KEY CHAIN

READING GAMES



PHASE II
Dyeing Instructions

I. Physical Environment

A. Classroom

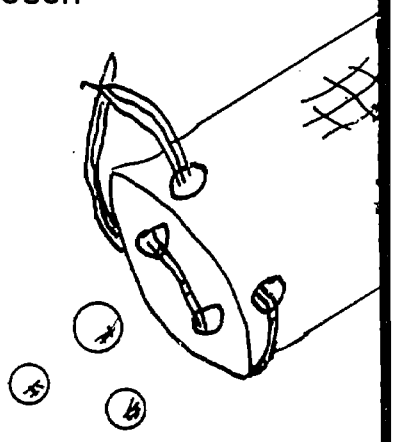
B. Expendable Materials

No. Needed	Item Description	Where Available
1 pair	Plastic gloves*	Home
1	Rag	Home
1 bottle	Dark color (Omega dye)	
1 bottle	Light color (Omega dye)	
1 bottle	Neat Lac	

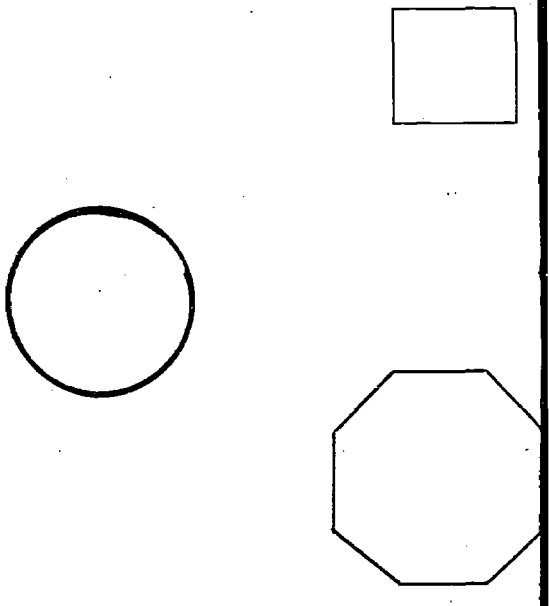
C. Equipment

None needed.

POUCH



GEOMETRIC SHAPES



II. Procedure

1. Using light color dye, dye the entire front of the item to be dyed.
2. Take a clean rag. Fold it into a fairly compact square measuring approximately 1-1/2" x 1-1/2". Put some dark colored Omega dye on the cloth. Blot this square on another rag or paper towel. Using light, steady strokes, go over the top of the item only. This will dye the undecorated portion while leaving the tool prints with lighter colored dye.**
3. If you prefer, you may use only one color dye. If so, skip step 1.
4. After all dye is thoroughly dry, apply a thin coat of Neat Lac.

*Always wear plastic gloves when working with dye.
**It would be a good idea to practice this type of dyeing before using it on your project.

PHASE II
Dyeing Instructions

al Environment

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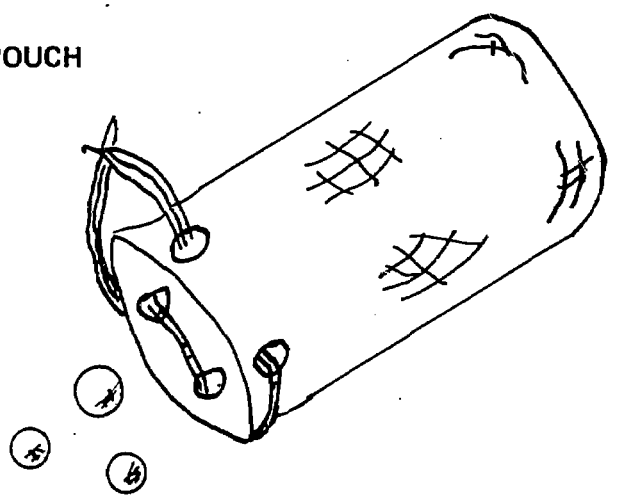
dable Materials

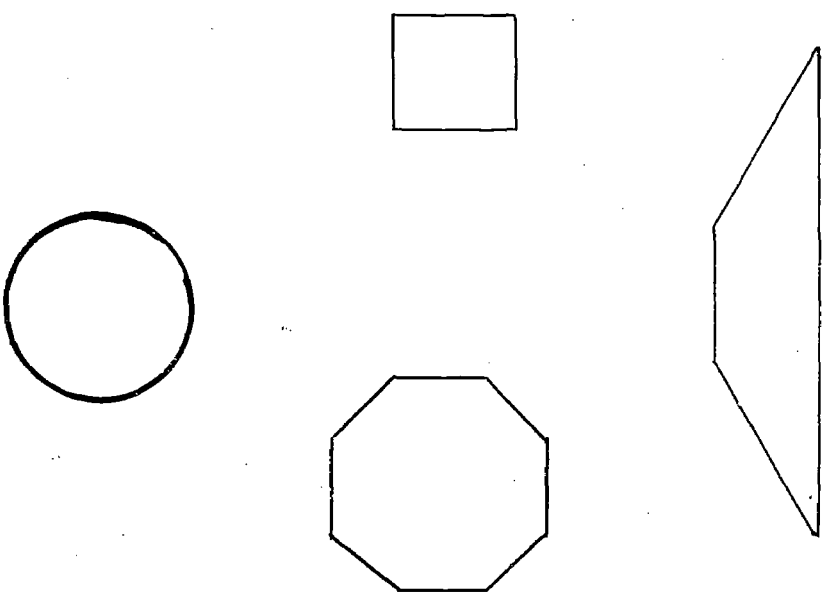
Item Description	Where Available
Plastic gloves*	Home
Rag	Home
Dark color (Omega dye)	
Light color (Omega dye)	
Neat Lac	

ent

POUCH



GEOMETRIC SHAPES



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d portion while leaving the tool prints
ored dye.**
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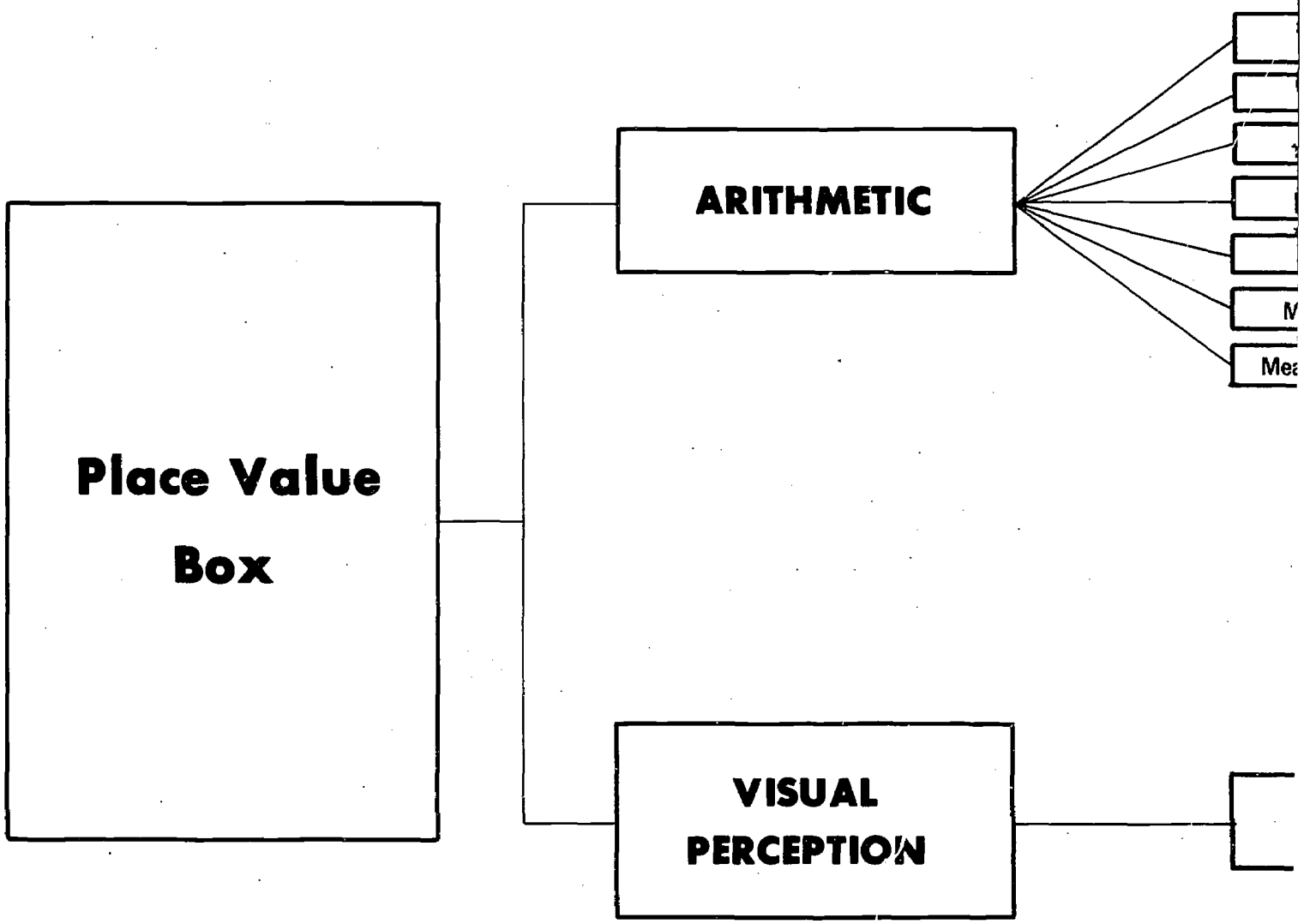
es when working with dye.
to practice this type of dyeing
roject.

LEVEL **Primary - Intermediate**



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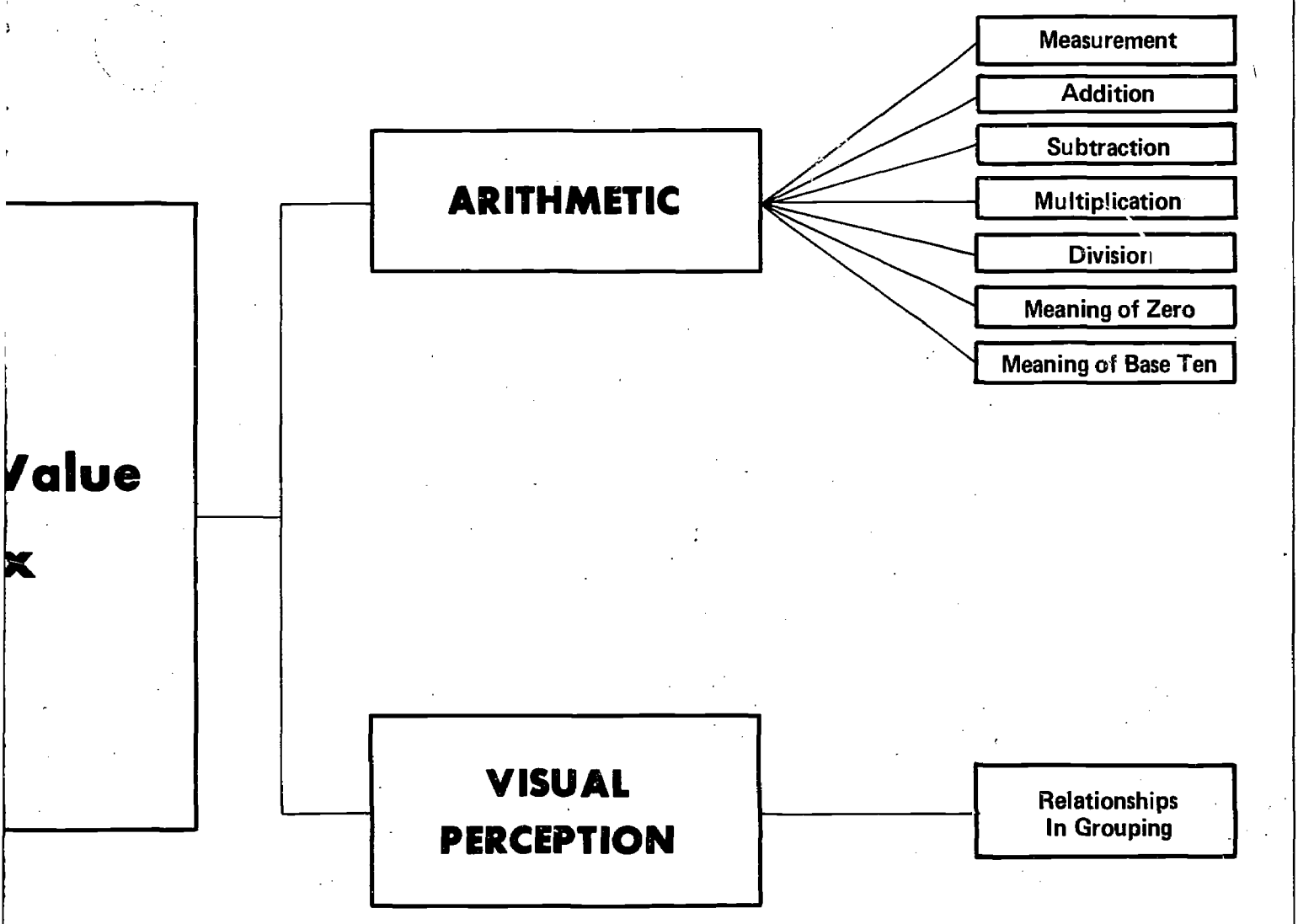


I. Physical Environment

Teacher's Notes

A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
1	8" x 24" x 1/4" plywood back	Lumber yard
1	2" x 24" x 1/4" plywood front	Lumber yard
5	1-3/4" x 3-1/2" x 1/4" plywood partition	Lumber yard
1 box	Tongue depressors	School supply
1	2-1/2" x 24" x 1/4" plywood bottom	Lumber yard
1 bottle	Elmer's glue	School supply
1 sheet	Sandpaper	Hardware store

C. Equipment

No. Needed	Item Description	Where Available
1	Sabre saw	
1	Hammer	
1	Yardstick	
1	Pencil	
1 box	Wire brads	Hardware store

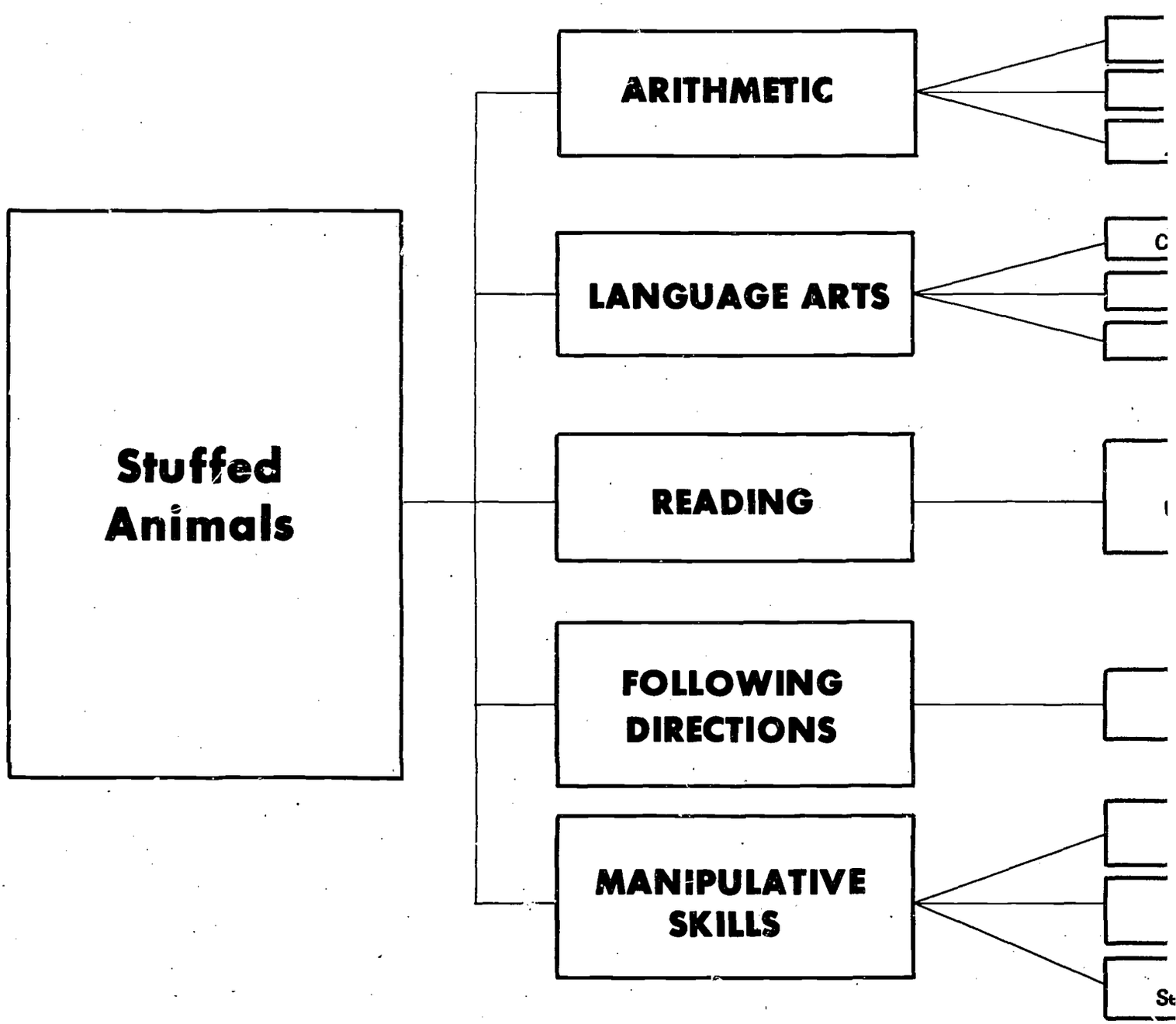
D. Motivating Device

1. Films.
2. Pictures.

II. Procedure

1. Cut out all pieces of wood from a standard piece of plywood.
2. Sand all parts.
3. Nail and glue the back piece to the bottom piece.
4. Nail and glue the front piece to the bottom piece.
5. Nail and glue the two end pieces in place.
6. Install the box partitions.
7. Can be finished natural, stained and coated with varnish or painted with any colored paint.

LEVEL Primary - Intermediate



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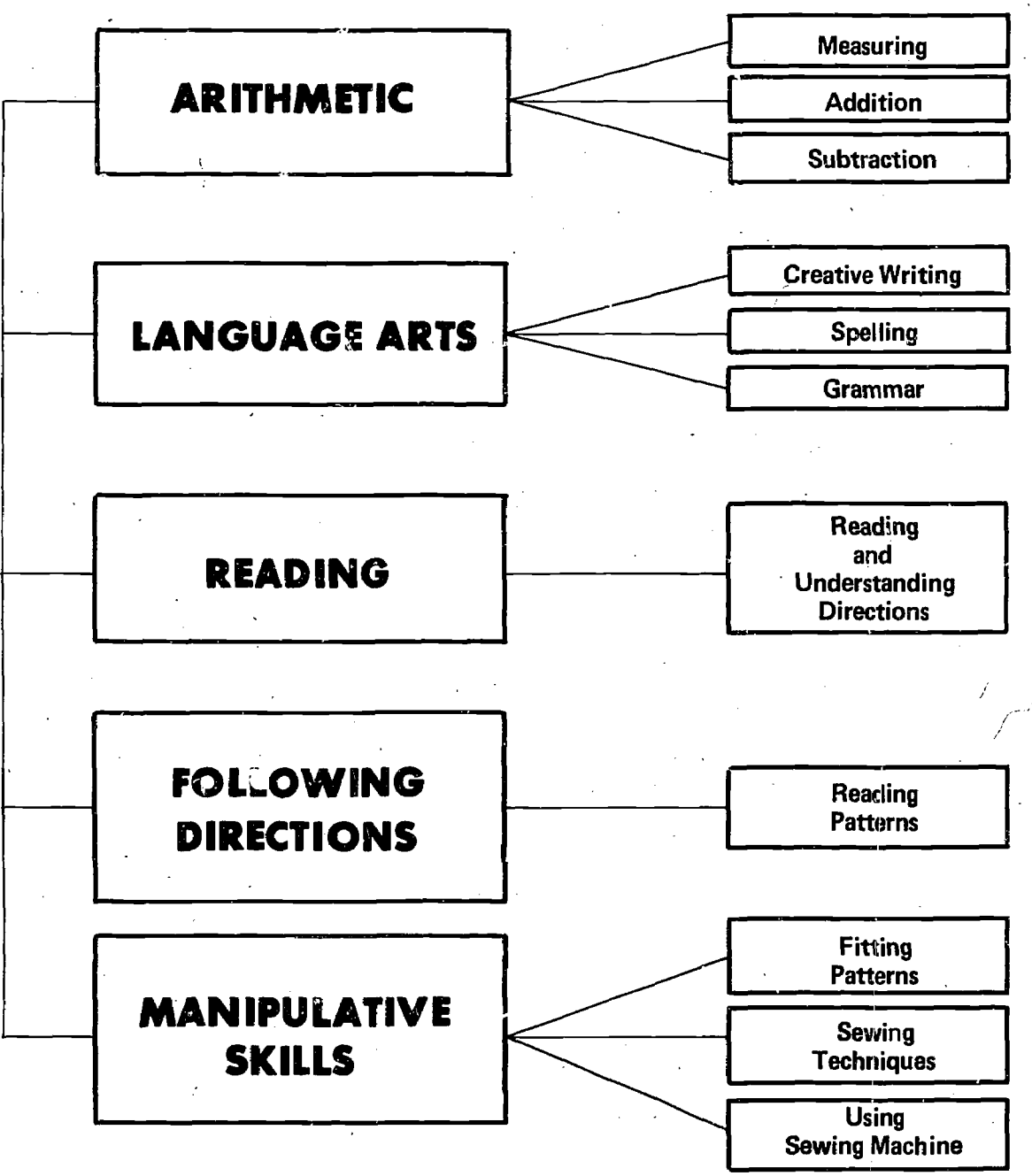

I. Physical Environment

A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
1 package	Animal patterns	Sewing store
1 package	Straight pins	Student
1	Measuring tape	Student
1 piece	Material (specified size)	Sewing store
1 spool	Thread	Sewing store
2	Buttons	Sewing store
1 bag	Polyester cotton Stuffing	Sewing store

C. Equipment

No. Needed	Item Description	Where Available
1	Scissors	
1	Sewing machine	

II. Procedure

1. Cut pattern.
2. Pin pattern onto material.
3. Stitch tailor tacks.
4. Remove pattern and sew leaving about 3" open.
5. Stuff animal with polyester cotton.
6. Stitch remaining 3".
7. Sew on buttons for eyes.

Environment

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ble Materials

em Description	Where Available
imal patterns	Sewing store
raight pins	Student
easuring tape	Student
aterial (specified e)	Sewing store
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em Description	Where Available
issors	
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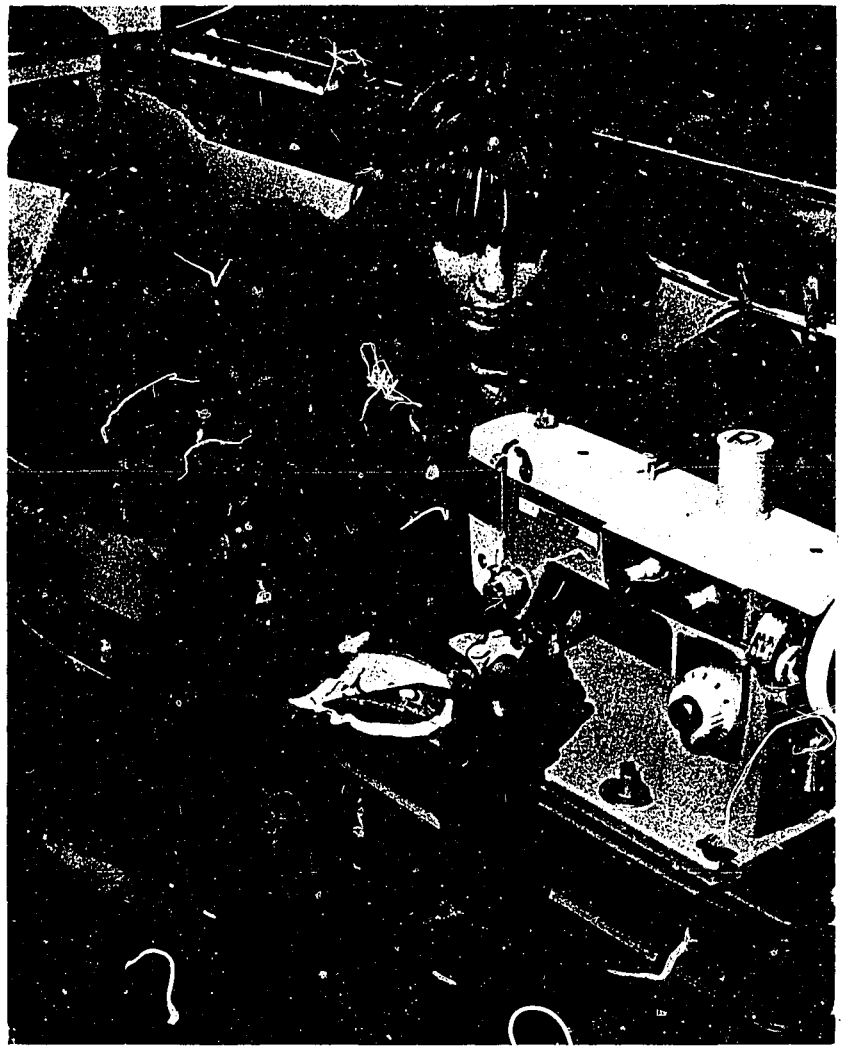

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material.
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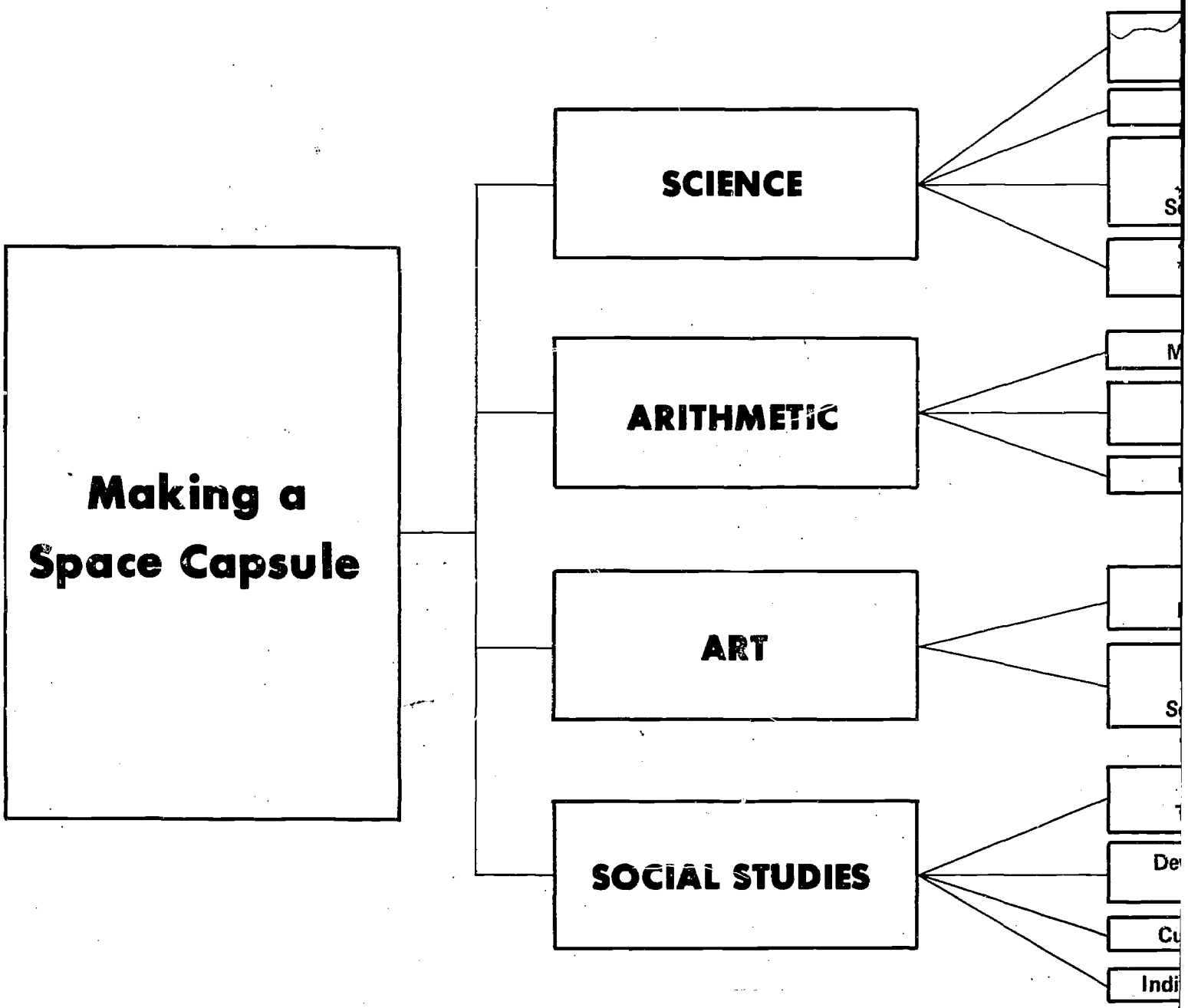
LEVEL Intermediate



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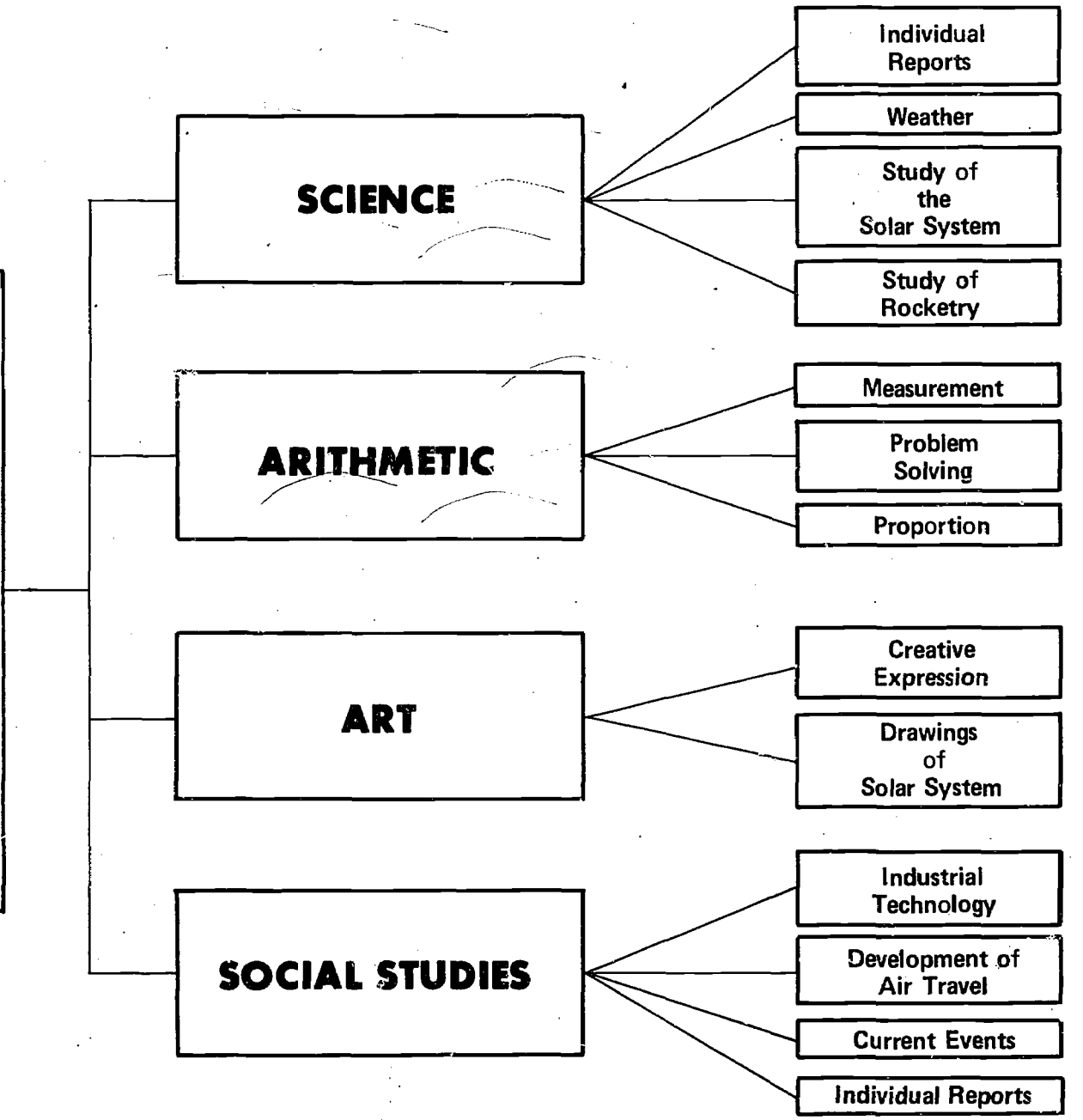


I. Physical Environment

A. Classroom

B. Expendable Materials

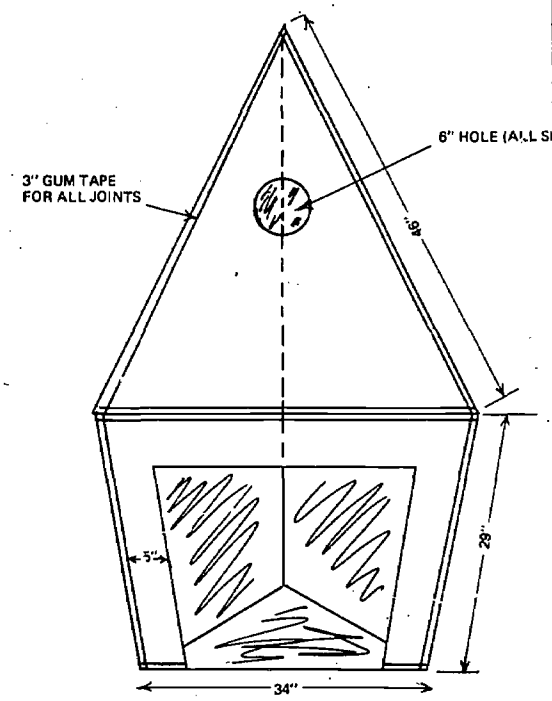
No. Needed	Item Description	Where Available
1 roll	Gummed tape	School supply
7 pieces	3-1/2' x 4-1/2' Tri-Wall	Tri-Wall Container, Inc. Plainview, L. I. New York
1 pint	Paint	Hardware store

C. Equipment

No. Needed	Item Description	Where Available
1	Sabre saw	
1	Tape measure	

D. Motivating Device

1. Films.
2. Filmstrips.



II. Procedure

1. Cut cardboard according to diagram.
2. Fit together and tape.
3. Paint.

cal Environment

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ndable Materials

d	Item Description	Where Available
	Gummed tape 3-1/2' x 4-1/2' Tri-Wall	School supply Tri-Wall Container, Inc. Plainview, L. I. New York
	Paint	Hardware store

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Item Description	Where Available
Sabre saw	
Tape measure	

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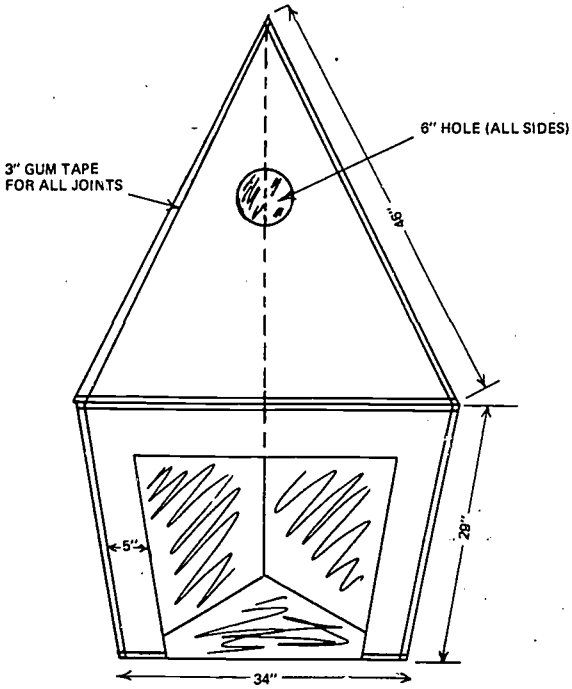

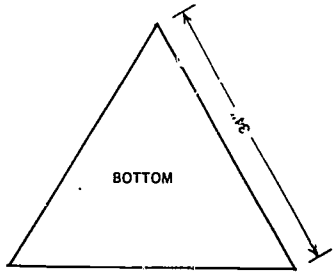

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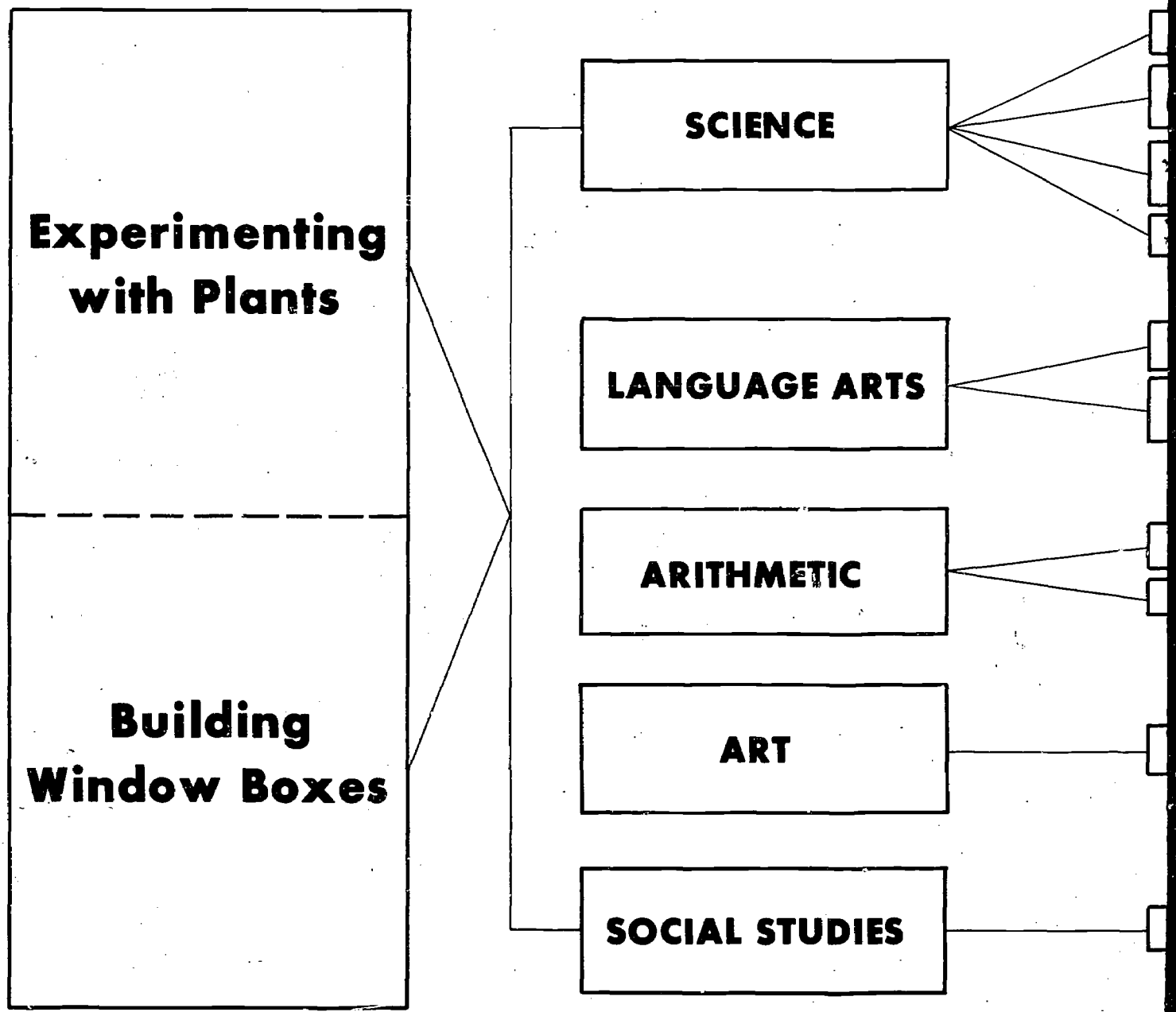

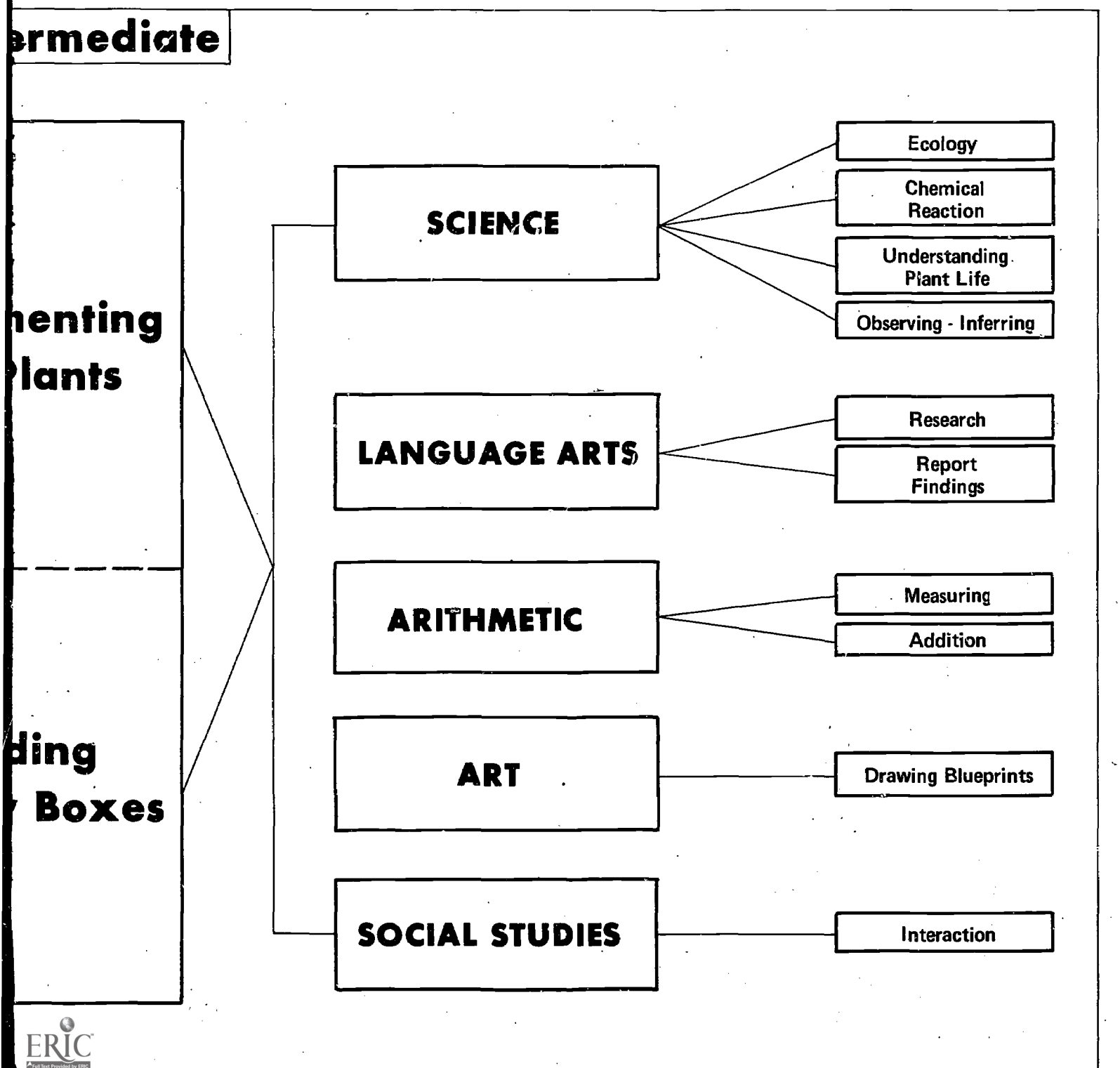
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Boxes
SCIENCE
Ecology
Chemical Reaction
Understanding Plant Life
Observing - Inferring
LANGUAGE ARTS
Research
Report Findings
ARITHMETIC
Measuring
Addition
ART
Drawing Blueprints
SOCIAL STUDIES
Interaction

PHASE I
Experimenting with Plants

I. Physical Environment

A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
1	Large plant (geranium)	Florist
Variety	Soils for planting	Student
Variety	Plastic containers	Student
4	Glasses or glass jars	Student
1	Soil test kit	Hardware store
1	Sweet potato	Student
2	Toothpicks	Home
	Water	School
Variety Cuttings	Mock orange, forsythia, roses, apple tree	
1 bag	Commercial potting soil	Hardware store

C. Equipment

No. Needed	Item Description	Where Available
1	Knife	School

II. Procedure

1. Fill plastic containers with various soils brought from home.
2. Take various cuttings from large geranium and plant in soil. Any type cuttings can be made (straight, slanted, etc.). These may be taken from any part of the plant.

PHASE I
Experimenting with Plants

l Environment

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able Materials

Item Description	Where Available
Large plant (geranium)	Florist
Soils for planting	Student
Plastic containers	Student
Glasses or glass jars	Student
Soil test kit	Hardware store
Sweet potato	Student
Toothpicks	Home
Water	School
Mock orange, forsythia, roses, apple tree	
Commercial potting soil	Hardware store

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Item Description	Where Available
Knife	School

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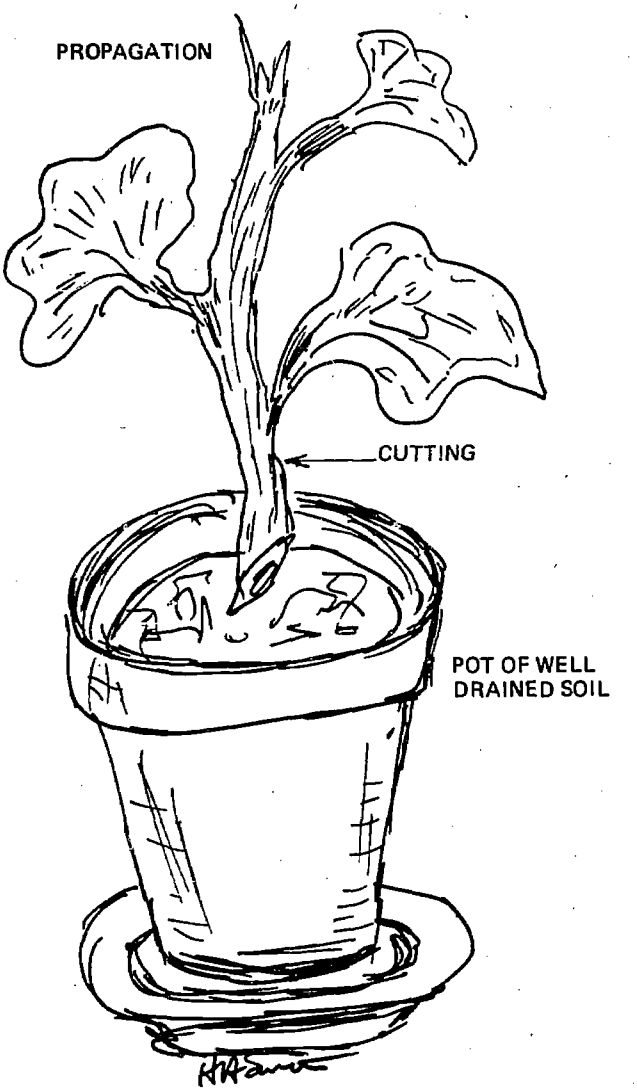
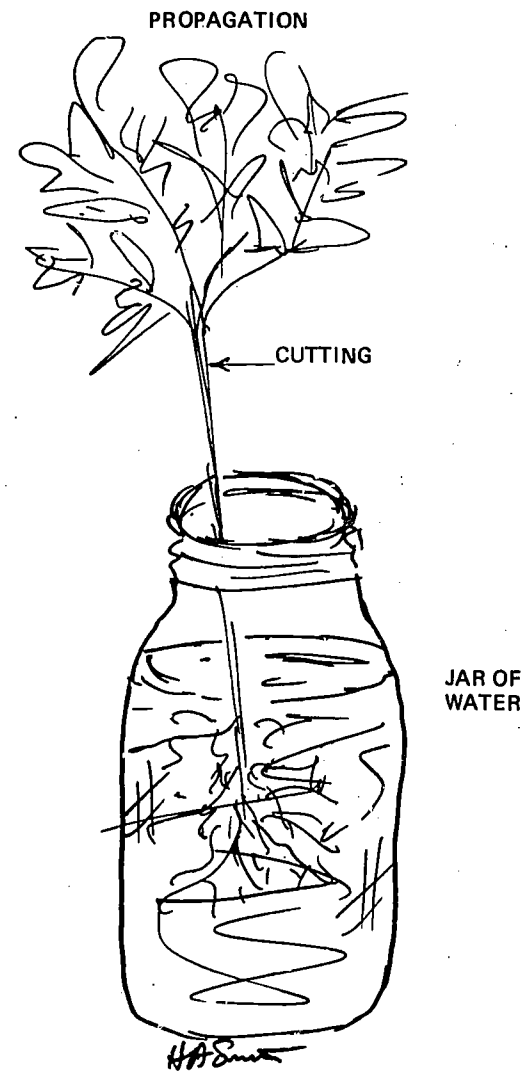


(Procedures continued)

3. Record type of cuttings made; begin recording observations in booklet.
4. Care for plants on daily basis.
5. Hypothesize as to what conditions may cause some plants to thrive better than others.
6. Experiments can be conducted by varying conditions for some plants, controlling conditions for others.
7. Using the soil test kit, test for the presence or lack of various minerals and nutrients in the different soils.
8. Other cuttings (mock orange, forsythia, rose bush, apple tree, etc.) can be rooted and forced to bloom, even in water.
9. Research reports, written on oral, can be done to correlate class findings on needs and growth of plants.



Rooting Sweet Potatoes

Procedure

1. Scrub sweet potato well to remove any chemical substances.
2. Insert a toothpick in each side of potato and place (pointed end down) in glass of water.
3. Roots will appear in the water and leaves will grow from the top of the plant.
4. Potato may then be planted in potting soil. Cuttings may be taken and rooted as above.
5. Children can compare the growth of plants in soil brought from home and those planted in commercial potting soil.

PHASE II
Building Window Boxes

I. Physical Environment

Teacher's Notes

A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
1 sheet	4' x 8' – 3/8" exterior plywood	Lumber yard
1 box	Nails	Hardware store
1 sheet	Sandpaper	Hardware store
1 pt.	Latex paint	Hardware store
1 sheet	Plastic or foil (enough to line box)	Home

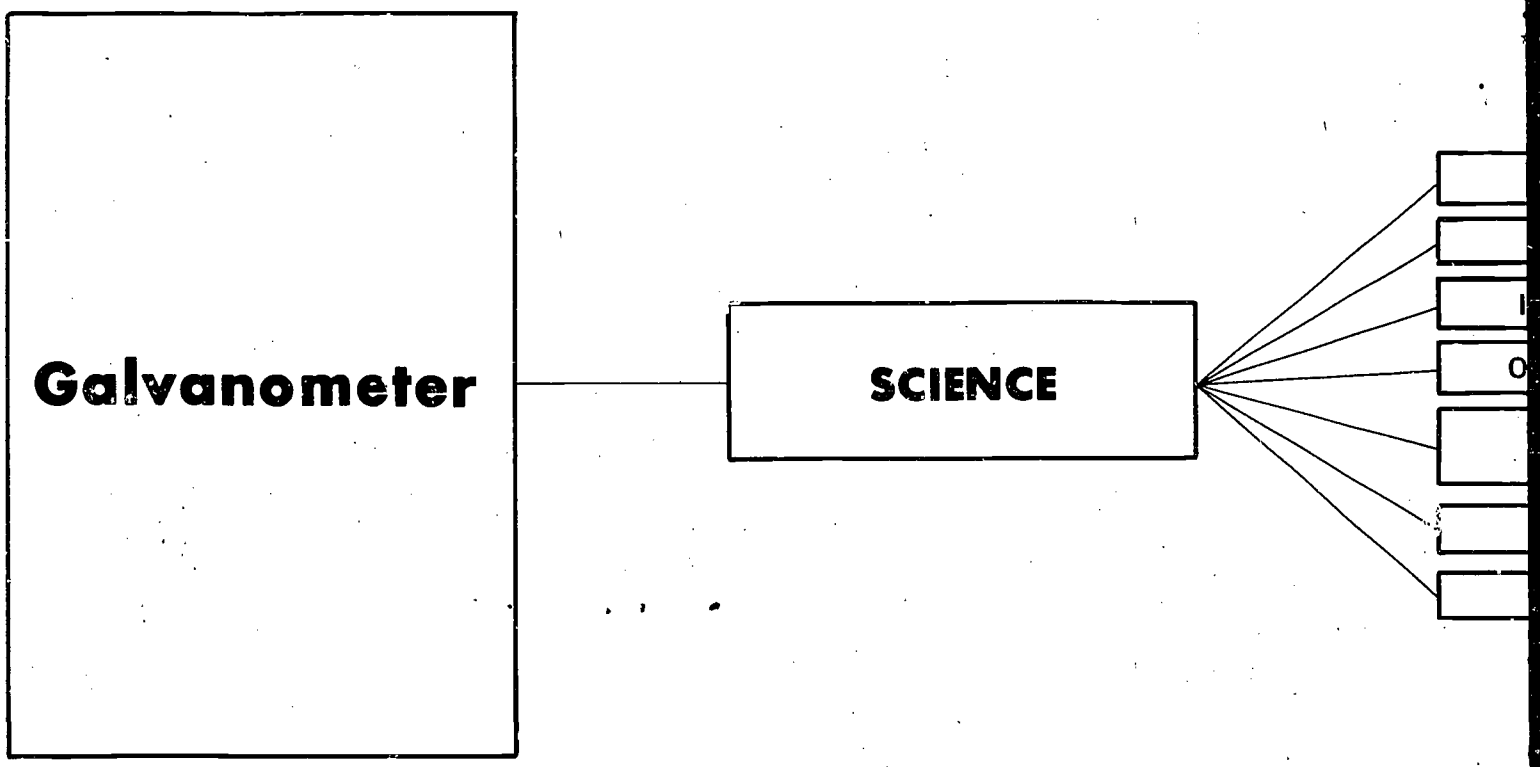
C. Equipment

No. Needed	Item Description	Where Available
1	Square	
1	Ruler	
1	Sabre saw	
1	File	
1	Paintbrush	
1	Pencil	

II. Procedure

1. Determine size of window box suitable to needs.
2. Draw blueprints showing dimensions of pieces to be cut.
3. Using square and ruler, draw lines on plywood.
4. Cut to specified size with sabre saw.
5. Using file, smooth edges.
6. Using sandpaper, sand flat surfaces.
7. Nail pieces together.
8. Paint.
9. Line with plastic or foil.
10. Fill with soil and plant.

LEVEL Intermediate



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SCIENCE

- Electricity
- Currents
- Input Energy
- Output Energy
- Mechanical
  Electrical
- Magnets
- Batteries

I. Physical Environment

A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
25 feet	Insulated wire	Hardware store
1	8" x 12" x 1/2" piece of plywood	Lumber yard
2	3" x 12" x 1/2" pieces of plywood	Lumber yard
2	3" x 8" x 1/2" pieces of plywood	Lumber yard
1	Dry cell	Home supply or Auto supply shop

C. Equipment

No. Needed	Item Description	Where Available
1	Magnetic compass	Science supply
1	Bar magnet	Science supply
1	Sabre saw	

II. Procedure

Constructing Galvanometer

1. Measure and cut receptacle from plywood using suggested measures or varied to availability. Apply 3" x 12" and 3" x 8" to corresponding sides to form 5 sided box or receptacle.
2. Cut slot in 12" x 8" base to house magnetic compass with twenty turns of wire around it leaving 2 ends of wire hanging at some place.

(Procedures continued)

3. Drill 2 holes in one of the 3" of the wire extending from co through (see diagram).
4. Place galvanometer (magnetic in slot.
5. Remove insulation from ends through holes.

Constructing Devi

Galvanometer

1. Wind a coil of wire twenty-fiv ends about 3 feet long.
2. Connect these ends to the gal
3. Turn galvanometer so that the line with galvanometer coil.
4. Move magnet in and out of co
5. Compare current produced by current by attaching one end terminal of dry cell. Tap othe terminal.

Teacher's No

al Environment

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dable Materials

Item Description	Where Available
Insulated wire	Hardware store
8" x 12" x 1/2" piece of plywood	Lumber yard
3" x 12" x 1/2" pieces of plywood	Lumber yard
3" x 8" x 1/2" pieces of plywood	Lumber yard
Dry cell	Home supply or Auto supply shop

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Item Description	Where Available
Magnetic compass	Science supply
Bar magnet	Science supply
Sabre saw	

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ng Galvanometer

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s or varied to availability. Apply 3" x
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ceptacle.
x 8" base to house magnetic compass
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s ice.

(Procedures continued)

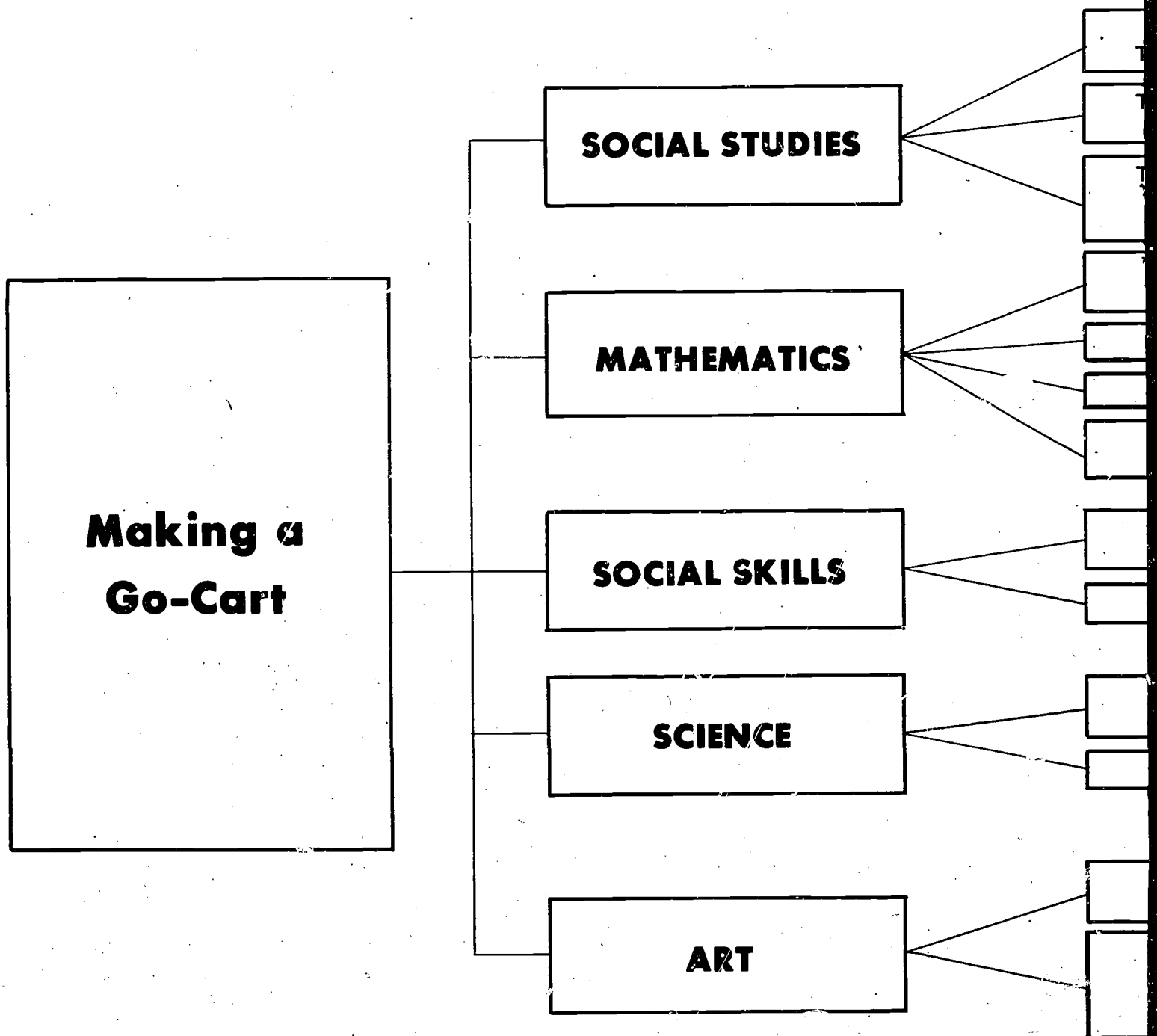
3. Drill 2 holes in one of the 3" x 8" ends allowing 2 ends of the wire extending from compass coil to come through (see diagram).
4. Place galvanometer (magnetic compass with coiled wire) in slot.
5. Remove insulation from ends of 2 wires extruding through holes.

Constructing Device To Test Galvanometer

1. Wind a coil of wire twenty-five turns or more. Leave ends about 3 feet long.
2. Connect these ends to the galvanometer wires.
3. Turn galvanometer so that the compass needle is in line with galvanometer coil.
4. Move magnet in and out of coil quickly.
5. Compare current produced by magnet to battery current by attaching one end of galvanometer to one terminal of dry cell. Tap other end of wire to other terminal.

Teacher's Notes

LEVEL Intermediate



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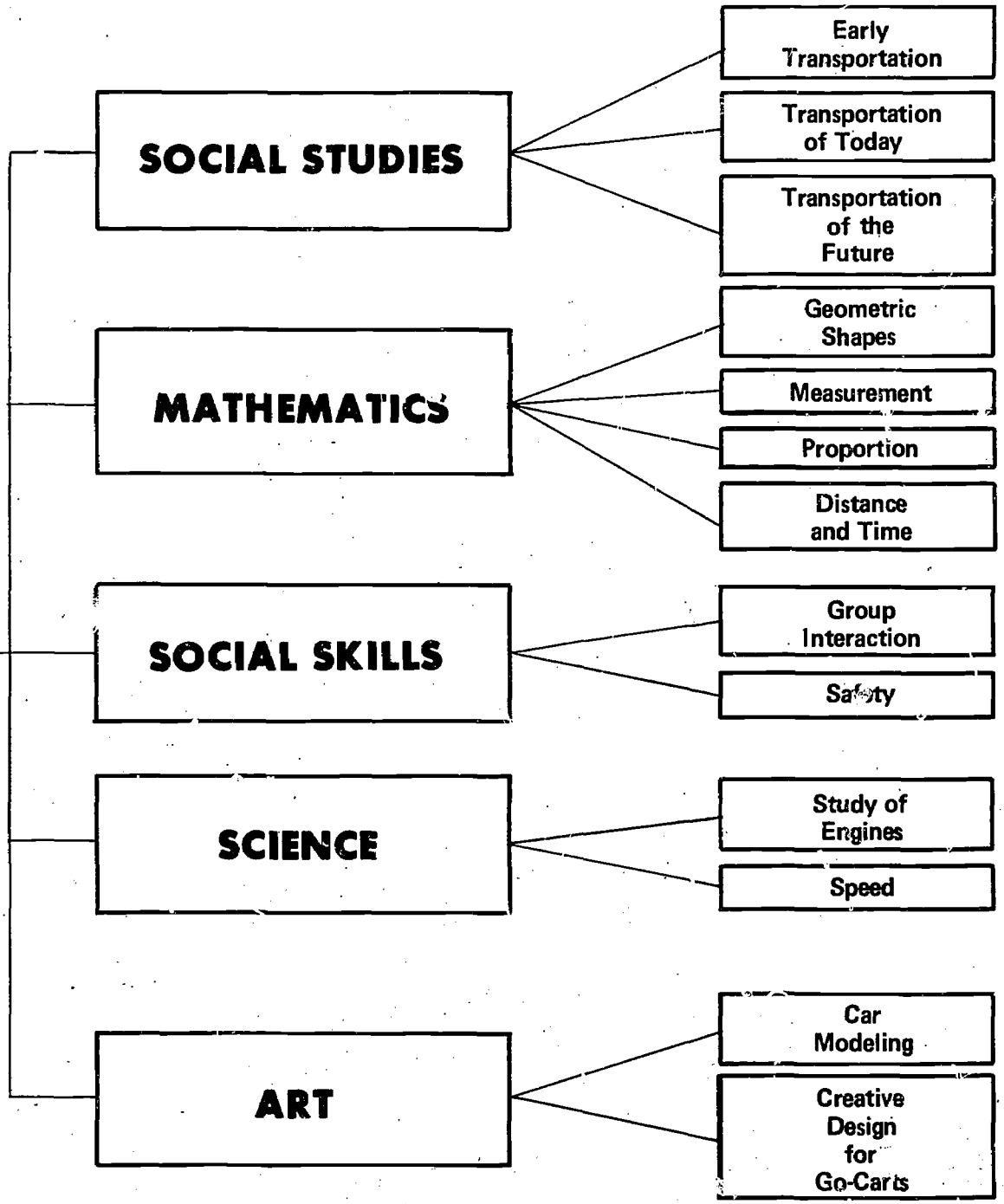


I. Physical Environment

A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
3	3-1/2' x 4-1/2' Tri-Wall	Tri-Wall Containers, Inc. Plainview, L.I. New York
4	Carriage Wheels	
8	Washers	Hardware store
4	20d nails	Hardware store
1	1/2" bolt (5" long) (with two washers to fit)	Hardware store
1 pint	Latex paint	Hardware store
1 sheet	Sandpaper	Hardware store

C. Equipment

No. Needed	Item Description	Where Available
1	Sabre saw	
1	Tape measure	
1	Pencil	

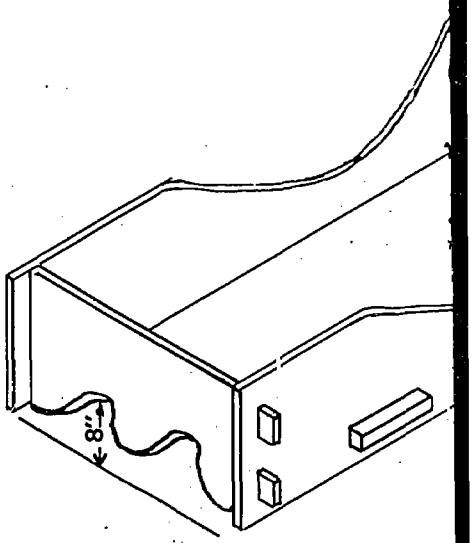
D. Motivating Devices

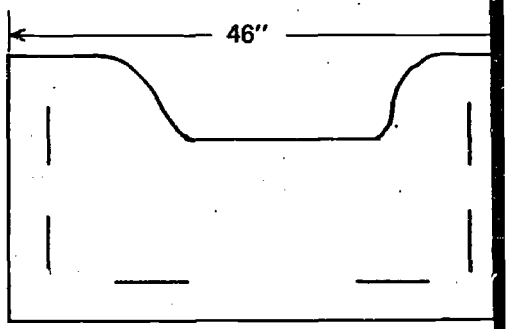
1. Visit a car museum.
2. Visit an assembly plant.
3. Visit car races.
4. Films, filmstrips.

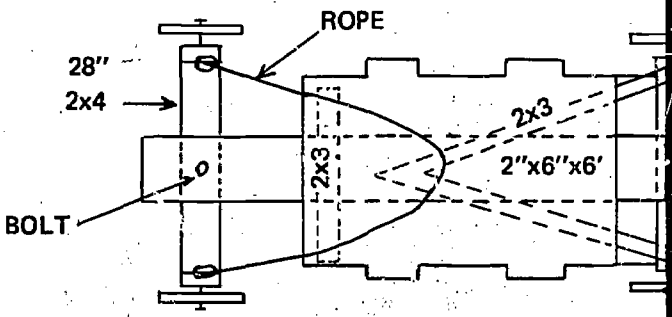
II. Procedure

1. Cut Tri-Wall according to specifications (see diagram).
2. Slot cardboard and fit pieces together as shown.
3. Construct base using a 2 x 4 board for the front and rear axle.
4. Attach chassis to axle boards using a 2 x 6 board.
5. Support main body with 3 1 x 3 boards (see diagram).
6. Bolt through center chassis to front axle.
7. With a 20d (penny) common nail and a washer on each side of the wheel, nail wheels to front and rear axles.
8. Attach rope for steering.
9. Paint.

GO CART







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Item Description	Where Available
3-1/2' x 4-1/2' Tri-Wall	Tri-Wall Containers, Inc. Plainview, L.I. New York
Carriage Wheels	
Washers	Hardware store
20d nails	Hardware store
1/2" bolt (5" long) (with two washers to fit)	Hardware store
Latex paint	Hardware store
Sandpaper	Hardware store

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Item Description	Where Available
Sabre saw	
Tape measure	
Pencil	

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- nstrips.

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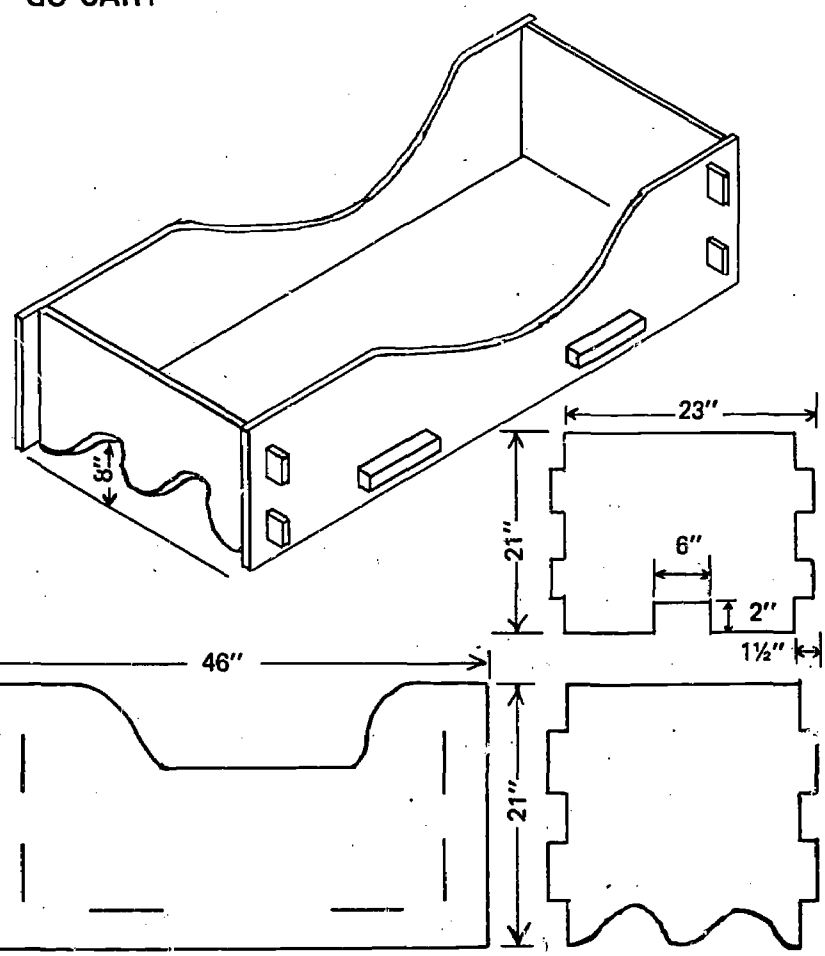
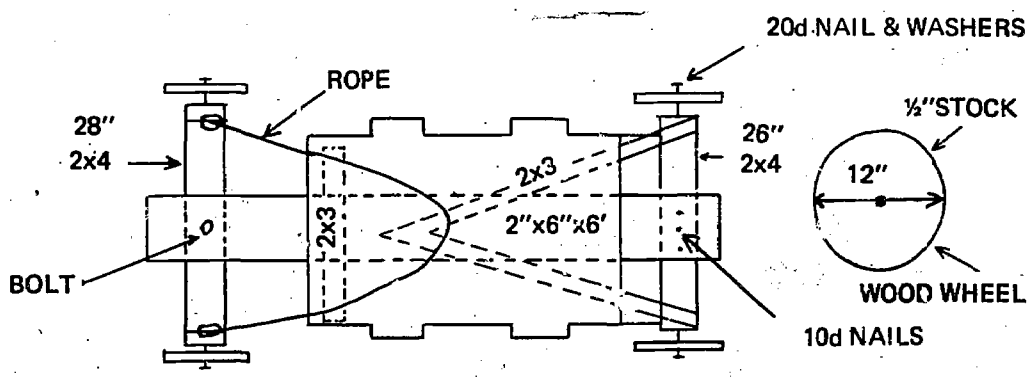
GO CART





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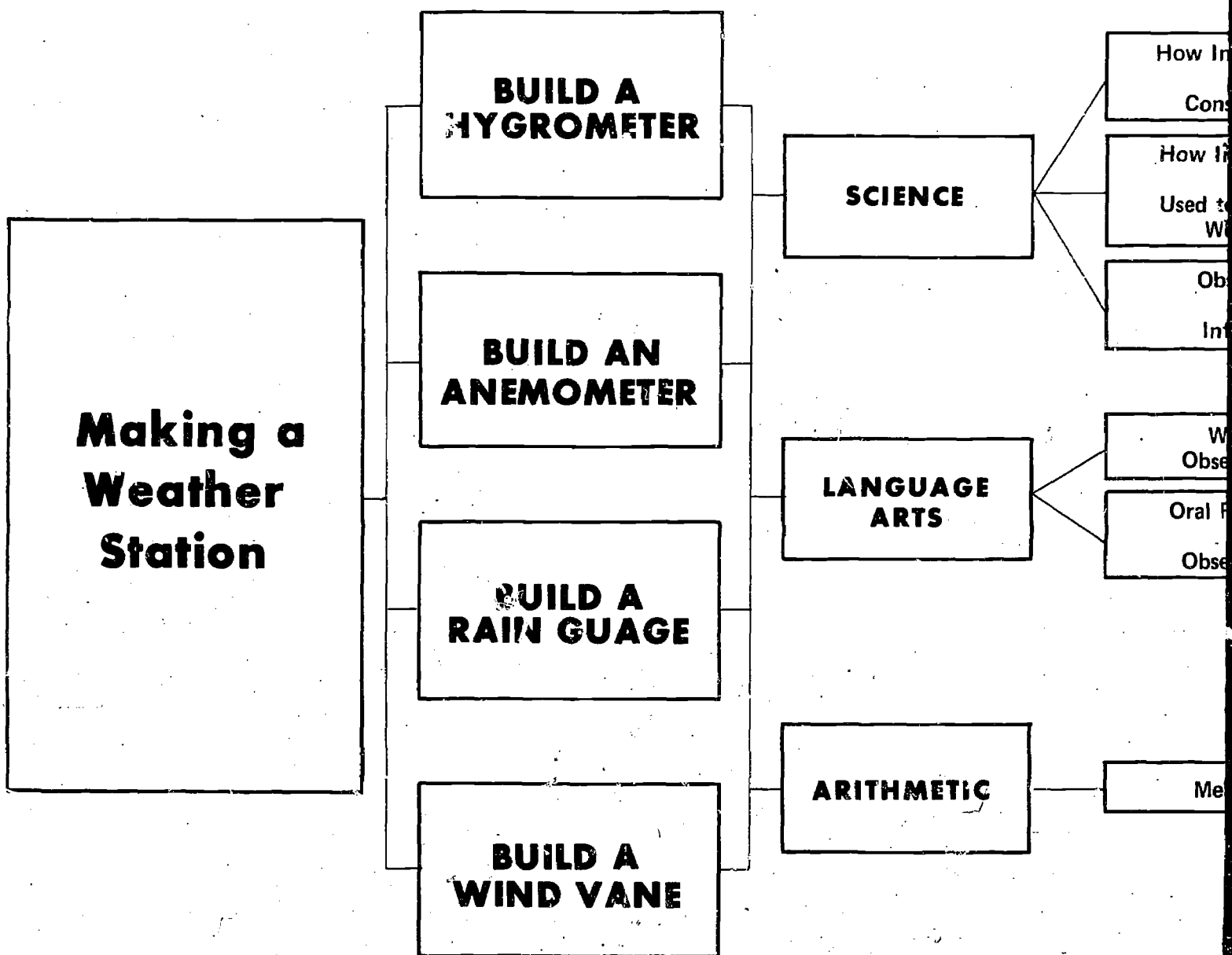

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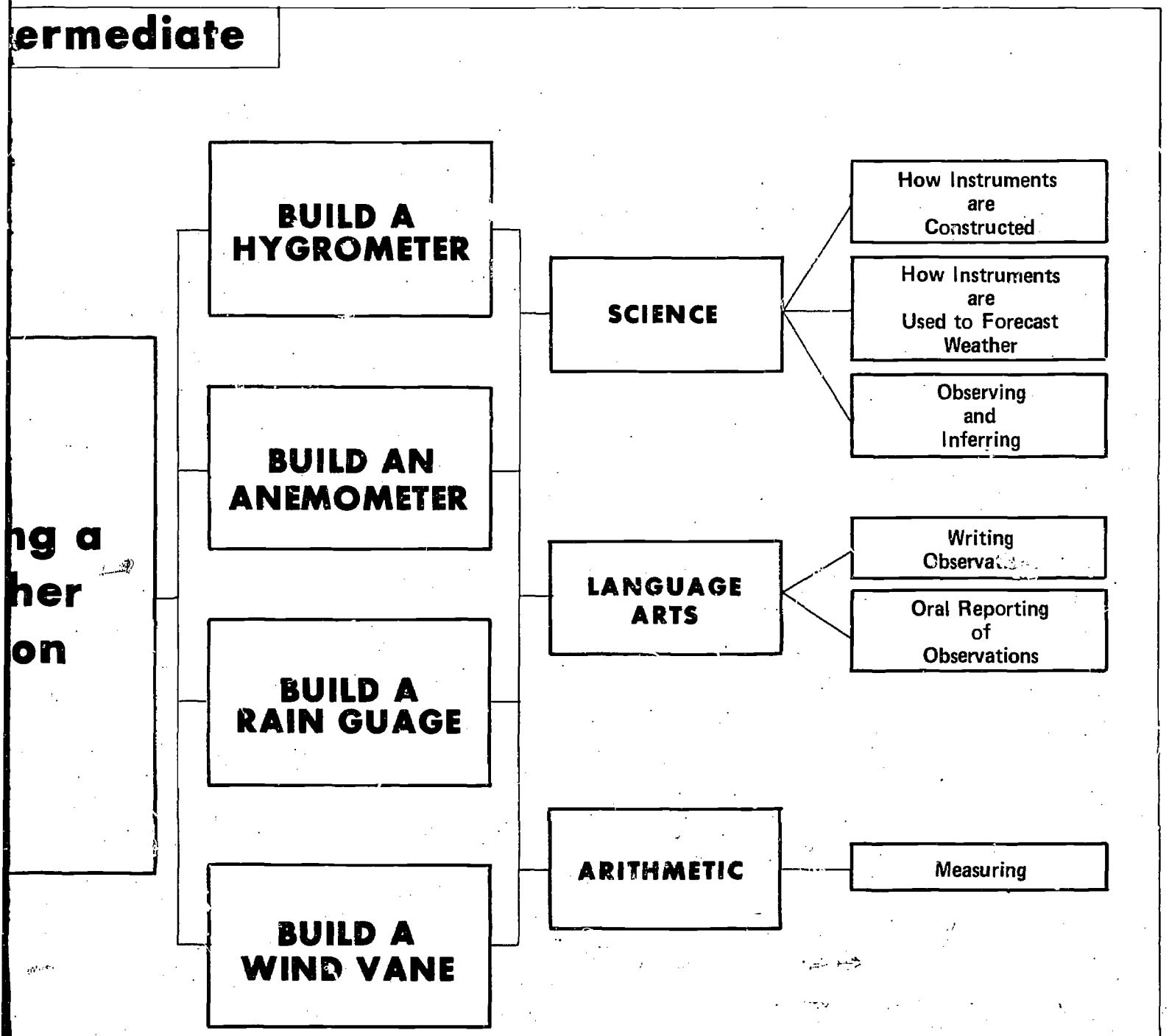

BUILD A HYGROMETER
BUILD AN ANEMOMETER
BUILD A RAIN GUAGE
BUILD A WIND VANE
SCIENCE
LANGUAGE ARTS
ARITHMETIC
How Instruments are Constructed
How Instruments are Used to Forecast Weather
Observing and Inferring
Writing
Oral Reporting of Observations
Measuring

PHASE I
Building a Hygrometer

I. Physical Environment

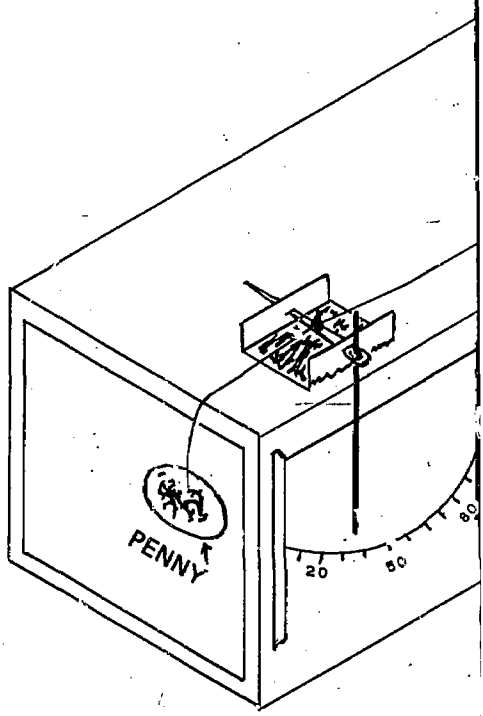
A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
1	Milk carton (pint, quart, half gallon)	School
1	Human hair (10" long)	School
1 roll	Scotch tape	School
1	Sewing needle	Sewing store
1	Toothpick	Home
1 piece	Sandpaper	School
1	Blank card 3"x6"	School
1	Thumbtack	School
1	Nickel or penny	
1	Bottle of nail polish	Department store
1	Drinking glass	Home

C. Equipment

No. Needed	Item Description	Where Available
1	Scissor	
1	Pencil	



II. Procedure

1. Wash the hair in soapy water or alcohol. Rinse and put aside to dry.
2. Cut an "H" at one side of the milk carton.
3. Bend up the two tabs in the"H". Punch a hole in each tab with the needle, twisting the needle around so the needle turns freely and easily in the tab holes when you finish.

PHASE I
Building a Hygrometer

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dable Materials

Item Description	Where Available
Milk carton (pint, quart, half gallon)	School
Human hair (10" long)	School
Scotch tape	School
Sewing needle	Sewing store
Toothpick	Home
Sandpaper	School
Blank card 3"x6"	School
Thumbtack	School
Nickel or penny	
Bottle of nail polish	Department store
Drinking glass	Home

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Item Description	Where Available
Scissor	
Pencil	

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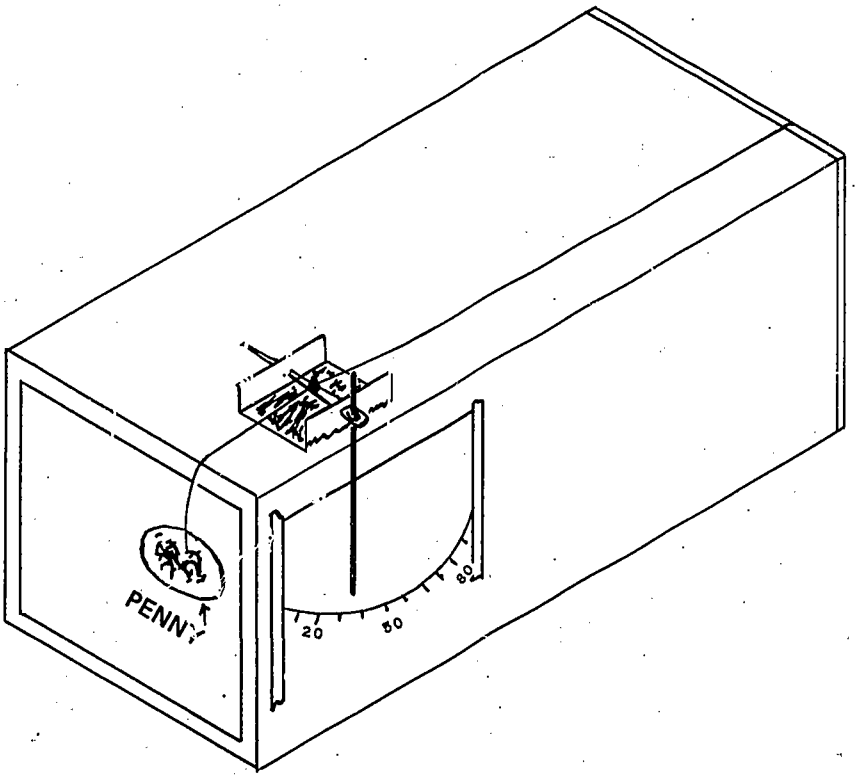
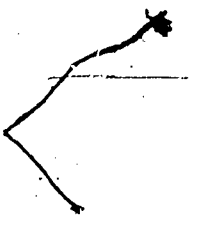


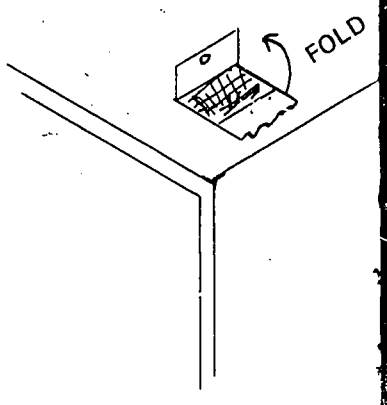
HYGROMETER

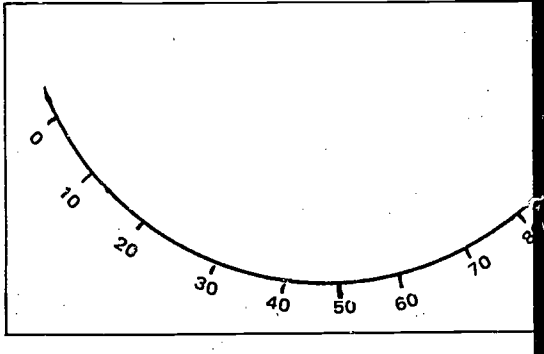


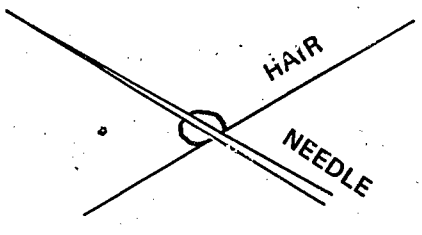
Procedure (continued)

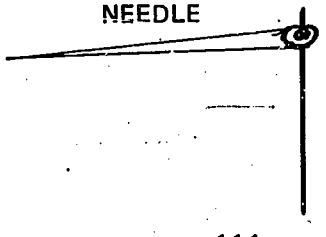
4. Push a toothpick through the eye of the needle (you may need to sand one end) and secure with a dab of nail polish. Put aside to dry.
5. With drinking glass, draw half circle on the card. At the end of the half-circle print "DRY" and the number "0". At the other end of the half-circle, print "WET" or "MOIST" and the number "100". Divide the half-circle into 10 equal parts and number 10,20,30,40,50, 60,70,80,90. You now have a scale of humidity from 0 to 100. Consider this to be percent.
6. With tape fasten the card to the sides of carton so the center of the half-circle falls beneath the needle holes in the tabs.
7. With tape, fasten one end of the hair to the coin. Be careful not to handle the hair too much, because oils from your skin will prevent the hair from absorbing moisture.
8. Place needle and toothpick pointer into holes in the H tab.
9. Let coin and attached hair hang over the near end of carton.
10. Wind one turn of hair around the needle (from underneath, then up-over-and-around) so that free end of hair is toward end of carton opposite the end with coin.
11. Wind several turns of hair around thumbtack near end of carton. Stick thumbtack into carton and fasten hair and tack to carton with a dab of nail polish or some tape.
12. Set the toothpick pointer to mid-scale by gently twisting the needle.

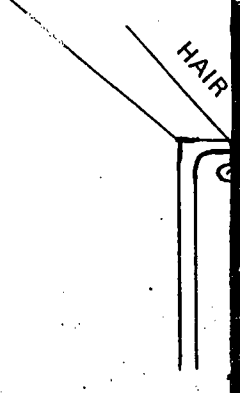
Now your hygrometer is finished. To properly set the hygrometer, put it into a large pan covered with a wet towel. Let it stay for about 15 minutes. When time is up, gently set pointer to "100" on the scale.











hrough the eye of the needle (you
one end) and secure with a dab of
de to dry.
, draw half circle on the card. At
-circle print "DRY" and the number
end of the half-circle, print "WET"
he number "100". Divide the half-
parts and number 10,20,30,40,50,
now have a scale of humidity from
this to be percent.
e card to the sides of carton so the
ircle falls beneath the needle holes

ne end of the hair to the coin. Be
le the hair too much, because oils
prevent the hair from absorbing

othpick pointer into holes in the

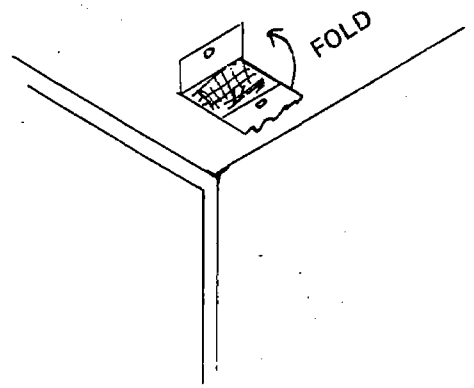
ed hair hang over the near end of

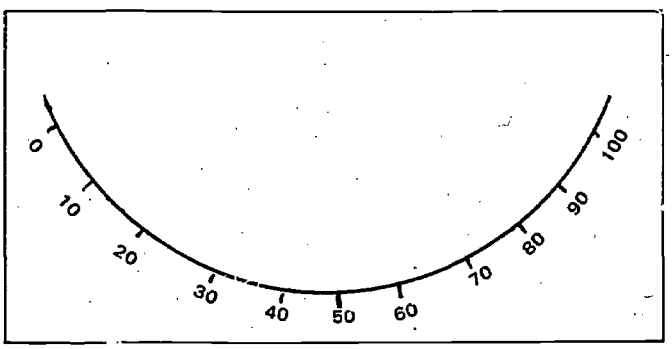
air around the needle (from under-
-and-around) so that free end of
f carton opposite the end with

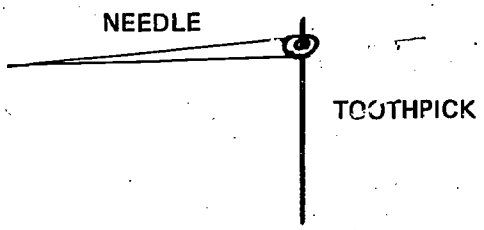
f hair around thumbtack near
thumbtack into carton and fas-
carton with a dab of nail polish

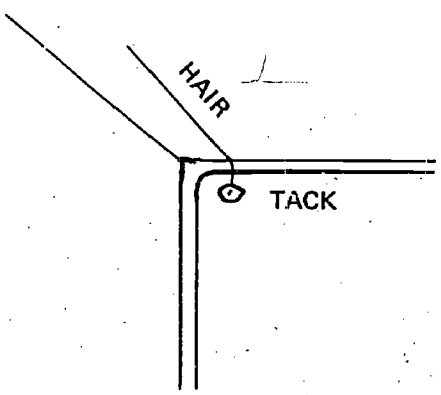
pinter to mid-scale by gently

s finished. To properly set the
a large pan covered with a wet
out 15 minutes. When time is
"100" on the scale.









PHASE II
The Anemometer

I. Physical Environment

Teacher's Notes

A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
4	Cone shaped paper or plastic cups	Grocery store
1	Piece cardboard (4" x 16")	Lumber yard
1	Wooden stick (1" x 1" x 4")	Lumber yard
1	Nail	Hardware store
4	Washers	Hardware store
1 set	Crayons or paints	Art supply
1 roll	Scotch tape	School supply

C. Equipment

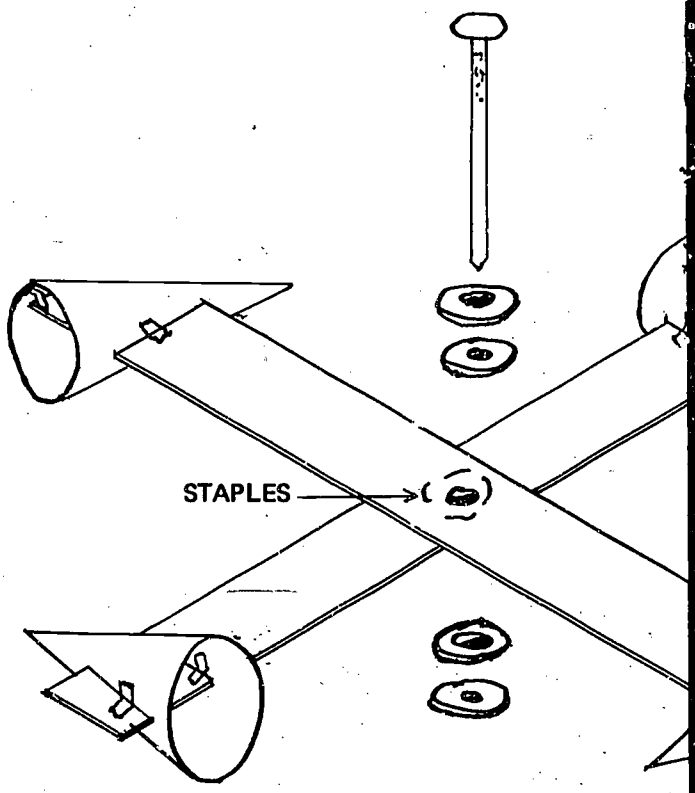
No. Needed	Item Description	Where Available
1	Scissor	
1	Stapler	
1	Paint brush	

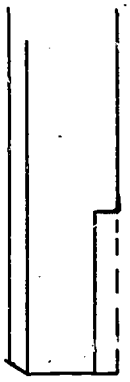
II. Procedure

1. Cut the cardboard to two strips 2" x 16".
2. Staple the strips together, at their centers to form a cross. This is the arm assembly.
3. Notch the ends of each of the arms as illustrated.
4. Paint or mark with crayon one of the four cups.
5. Cut two slots 1-1/2" long in each of the paper cups.
6. Push the notched ends of the arms through the slits in the cups and secure them with scotch tape.
7. With the nails, make a hole in the center of the cross. Be sure that the hole is large enough to let the arm assembly rotate freely around the nail.
8. Place two washers on the nail and insert it into the hole in the arm assembly. Place two more washers on the nail beneath the arm assembly and drive the nail into the top of the stick. Make certain that the arm assembly can rotate freely as the wind blows into the cups.

To determine the speed of the wind, use the colored or painted cup as your starting point. Count the number of turns made by the colored cup in one-half minute. Divide the number of turns by five to get the wind speed in miles per hour. This is a rough approximation.

ANEMOMETER





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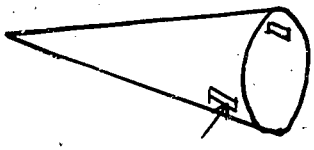
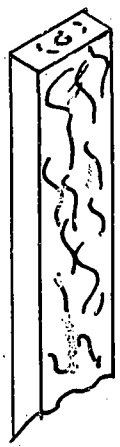


SLITS



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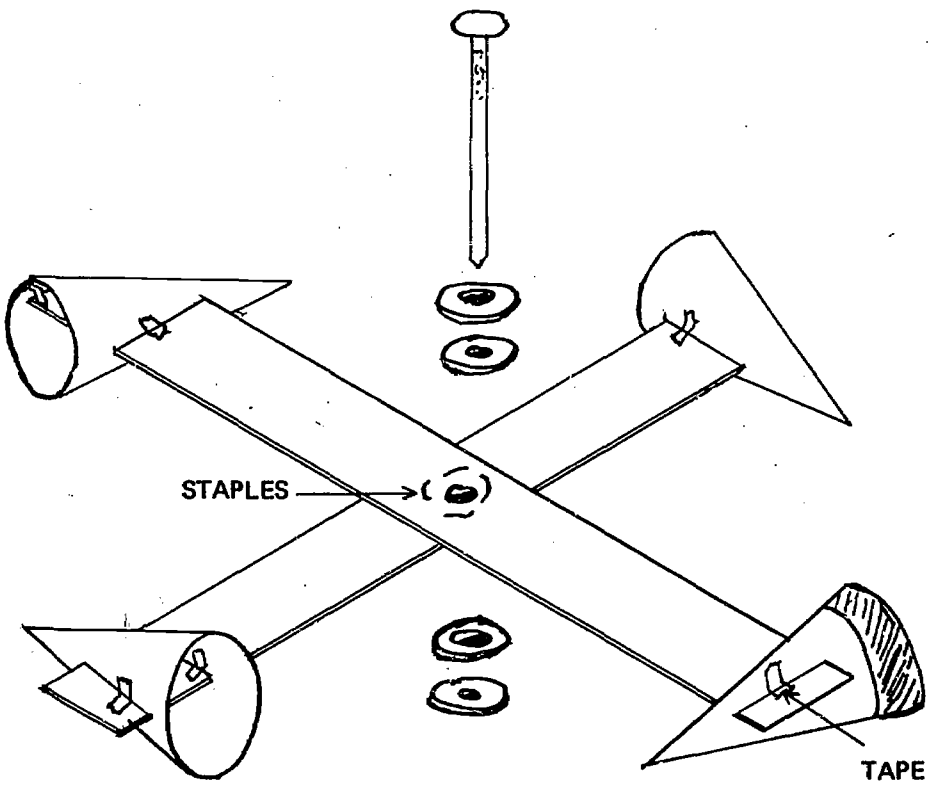
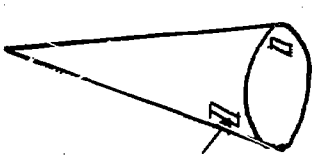
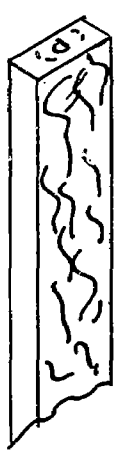






NOTCH ENDS

PHASE III
Rain Guage

I. Physical Environment

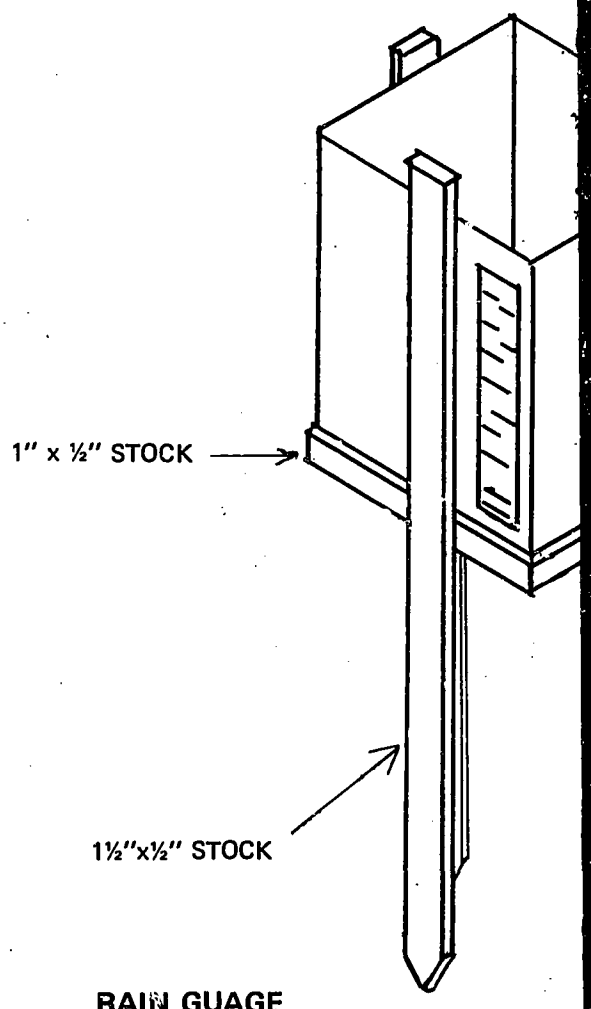
A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
4	Long sticks 1x1x3 or 4	Lumber yard
1	Piece of wood 6" sq. x 1/2" thick	Lumber yard
1	1/2 gallon milk carton (plastic or waxed; plastic preferred)	Home
6	Small nails	Hardware store
1	Scotch tape (one on which you can write)	
1	Tall, slender glass jar (olive jar)	

C. Equipment

No. Needed	Item Description	Where Available
1	Hammer	
1	Ruler	
1	Scissor	



RAIN GUAGE

PHASE III
Rain Guage

cal Environment

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	Long sticks 1x1x3 or 4	Lumber yard
	Piece of wood 6" sq. x 1/2" thick	Lumber yard
	1/2 gallon milk carton (plastic or waxed; plastic preferred)	Home
	Small nails	Hardware store
	Scotch tape (one on which you can write)	
	Tall, slender glass jar (olive jar)	

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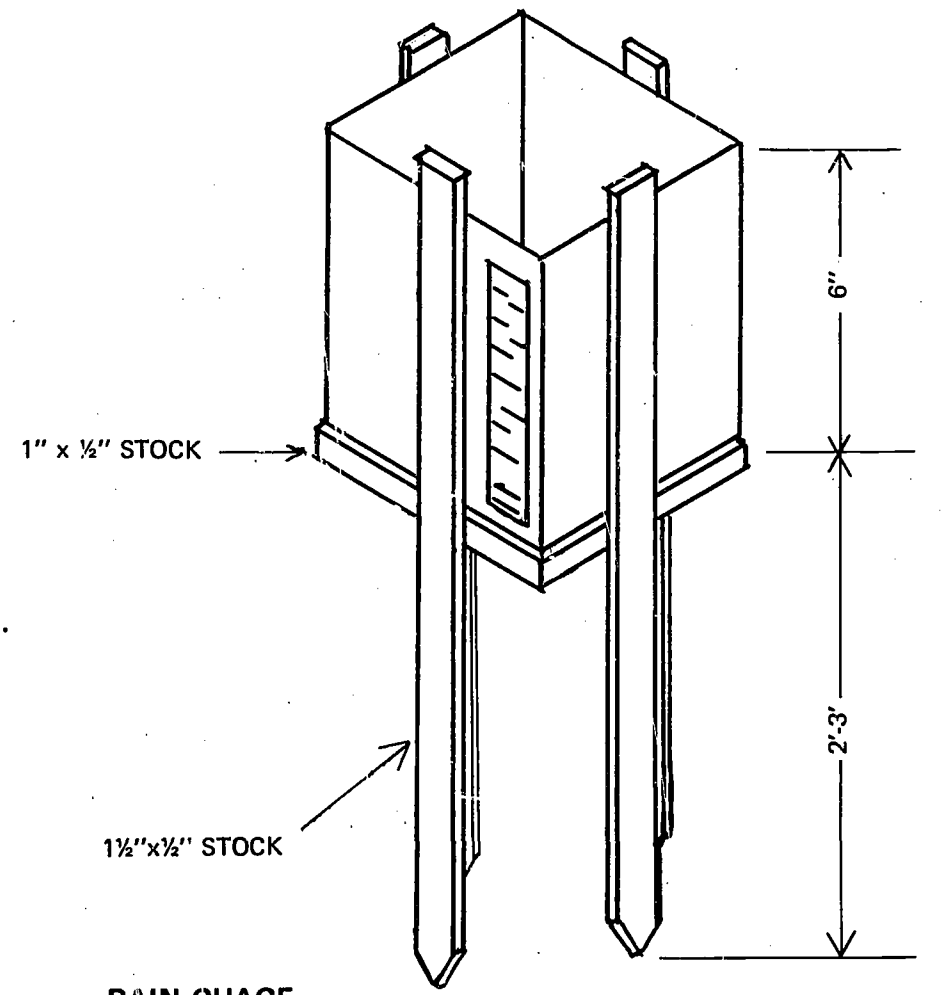
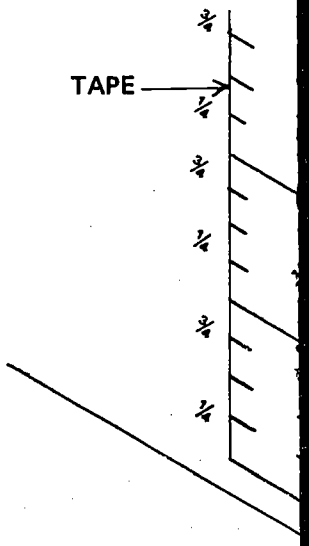
	Hammer	
	Ruler	
	Scissor	



RAIN GUAGE

II. Procedure

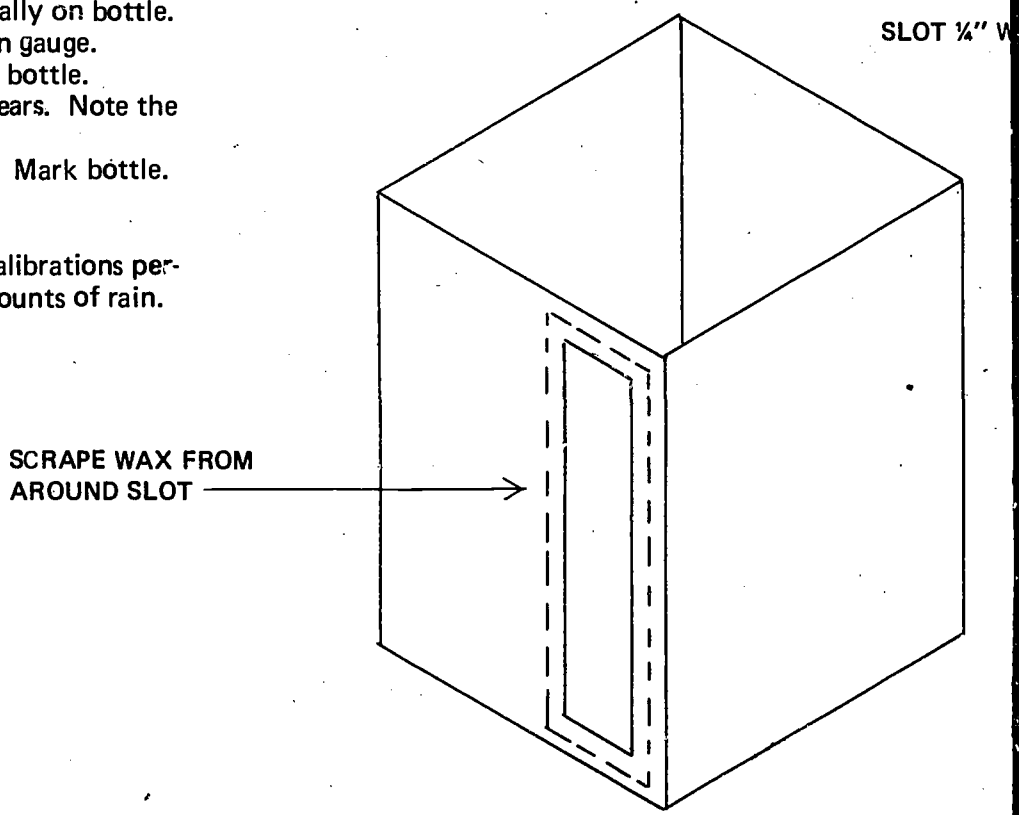
1. Cut off top half of milk carton.
2. Cut a 1/4" to 1/2" wide slot several inches long in the side of milk carton.
3. Cover slot with transparent tape (make sure edges are sealed). If a waxed carton is used, the wax will have to be scraped off before tape will stick.
4. Use the ruler to measure from bottom of carton. Mark off inches, half inches and quarter inches on tape. Label the inch and half inch marks.
5. Make your rain gauge wooden platform as illustrated. Firmly press the four wood sticks into the ground a few inches. This anchors the gauge to prevent it from being blown over. Be sure the platform is fairly level.
6. For use, place the milk carton on platform as illustrated.



CALIBRATING THE SMALL BOTTLE:

1. Put a strip of transparent tape vertically on bottle.
2. Pour 1" of water into completed rain gauge.
3. Now pour from container into small bottle.
4. Mark on tape where "one inch" appears. Note the magnification you obtain.
5. Repeat for 2" of water in container. Mark bottle.
6. Repeat for 1/2" and 3" of water.

The use of this smaller bottle with its calibrations permits the measurement of very small amounts of rain.



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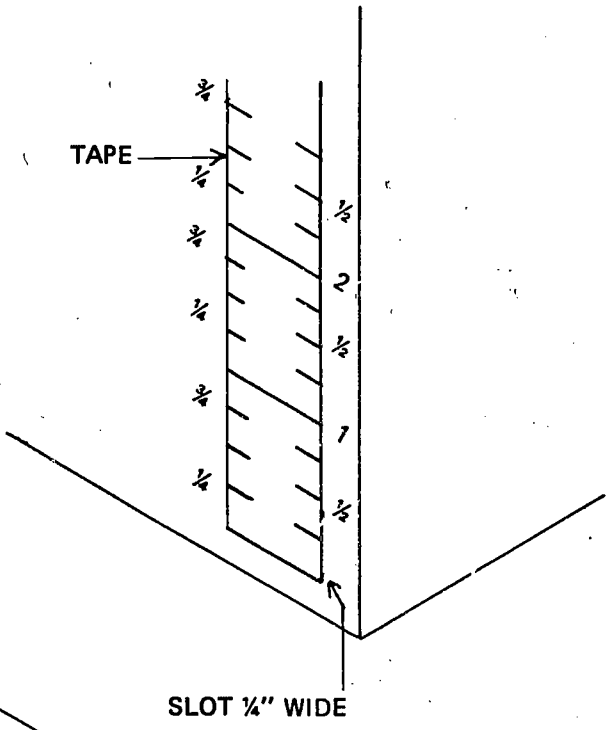

THE SMALL BOTTLE:

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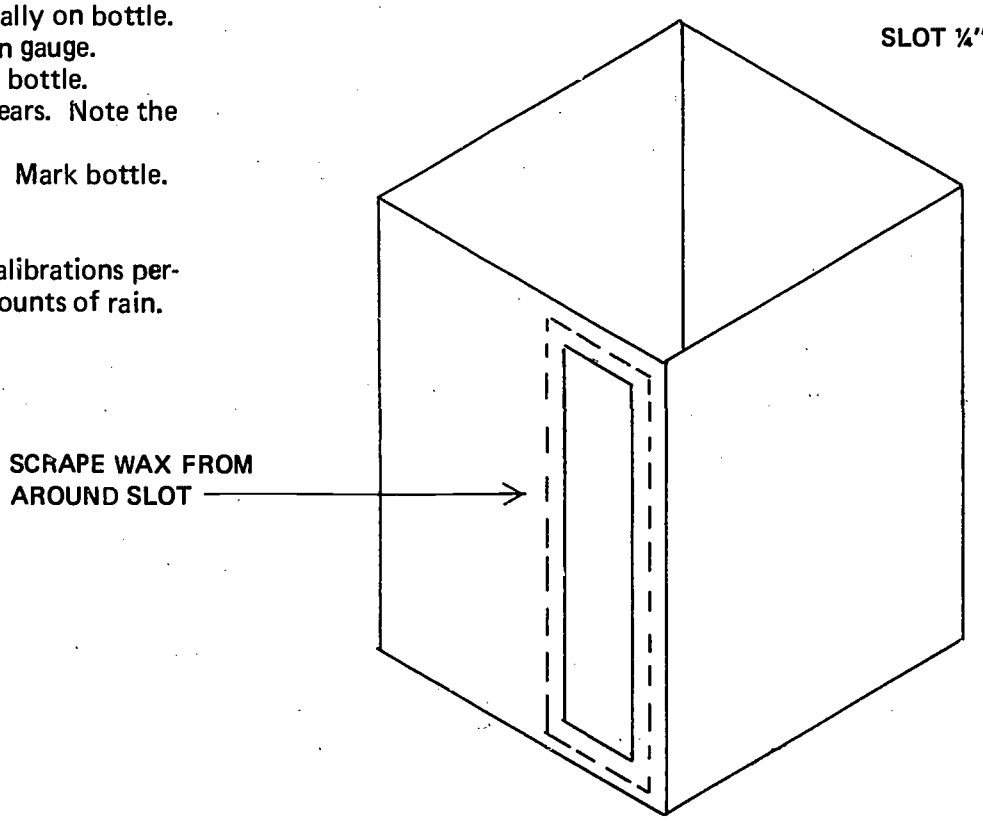


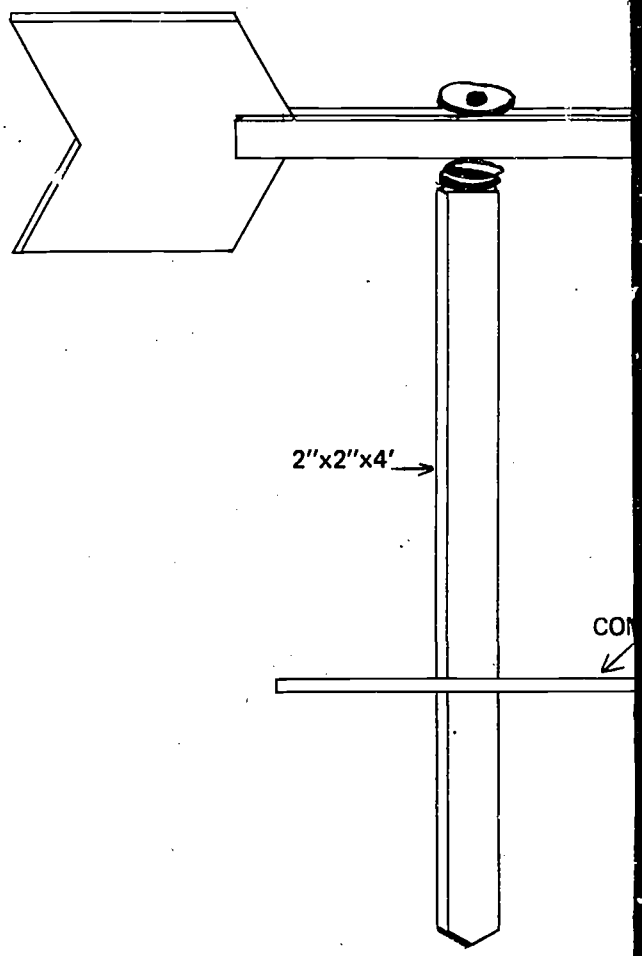
PHASE IV
Wind Vane

I. Physical Environment

A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
1	Stick (2" x 2" x 3')	Lumber yard
1	Paper plate 10"	Home
2 pieces	Cardboard (8" x 11")	
1	Nail	Hardware store
4 to 6	Washers (hole in washer should be just a bit larger than diameter of nail)	Hardware store
1 roll	Scotch tape	School supply



C. Equipment

No. Needed	Item Description	Where Available
1	Scissor	
1	Hammer	
1	Stapler	
1	Pencil	
1	Ruler	

PHASE IV
Wind Vane

ical Environment

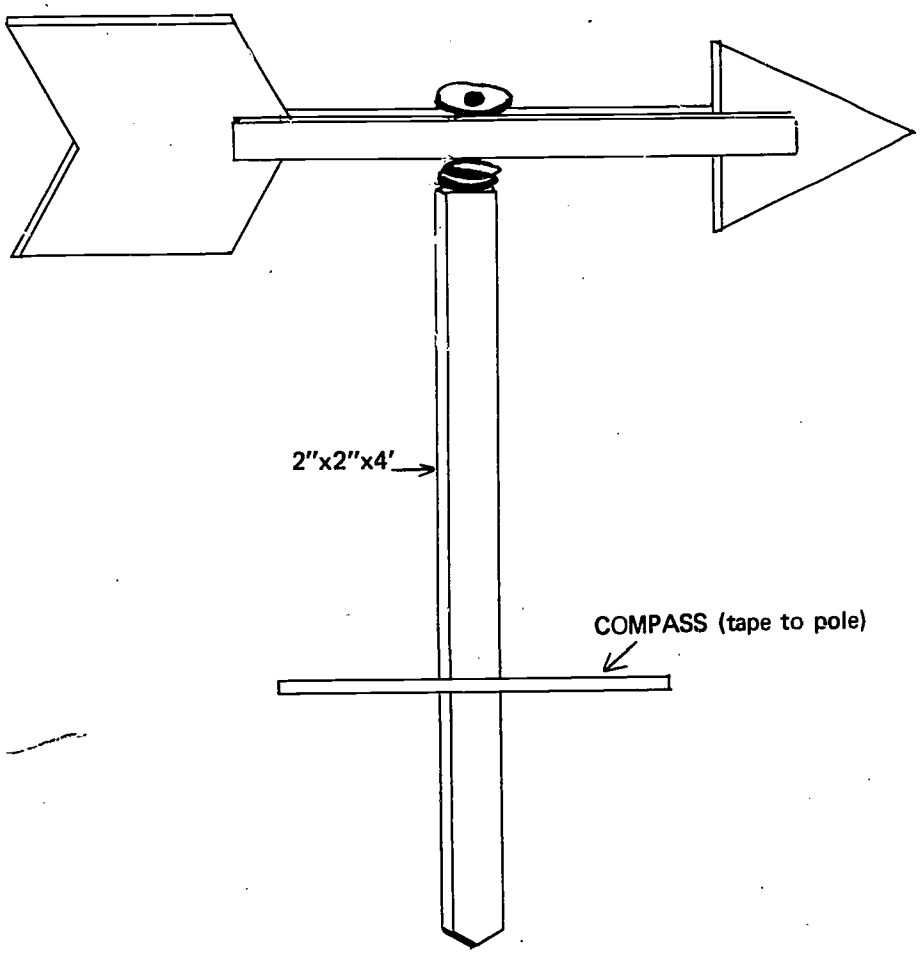
sroom

endable Materials

ded	Item Description	Where Available
	Stick (2" x 2" x 3')	Lumber yard
	Paper plate 10"	Home
	Cardboard (8" x 11")	
	Nail	Hardware store
	Washers (hole in washer should be just a bit larger than diameter of nail)	Hardware store
	Scotch tape	School supply

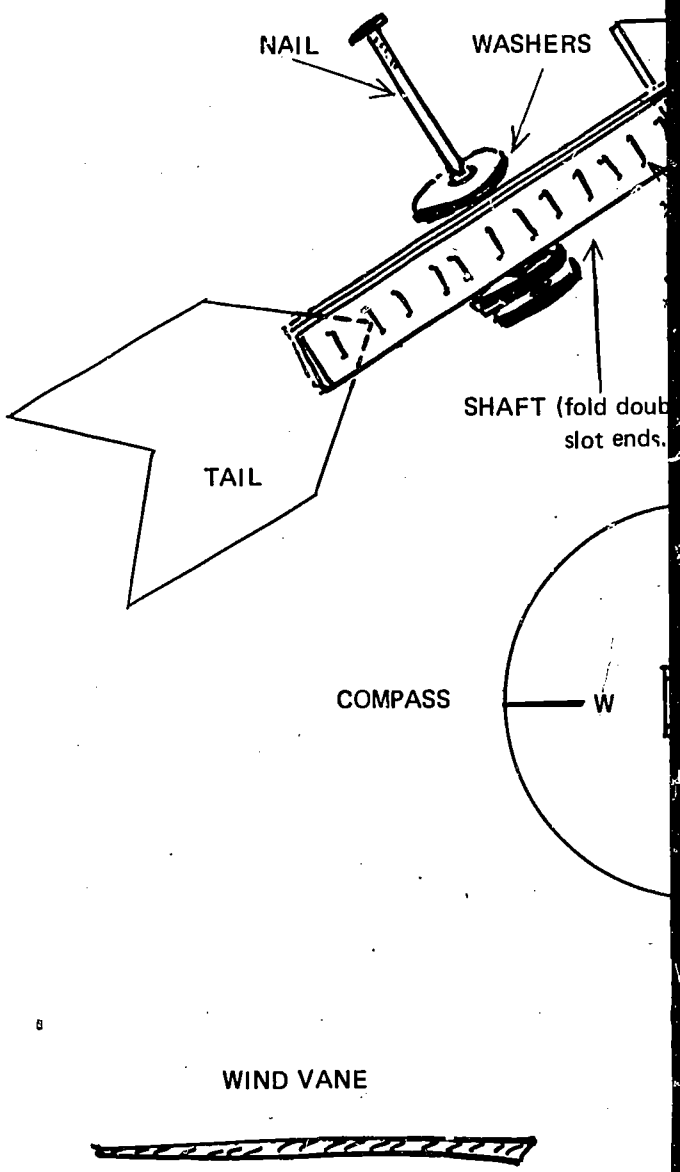
pment

ded	Item Description	Where Available
	Scissor	
	Hammer	
	Stapler	
	Pencil	
	Ruler	



II. Procedure

1. Cut a strip about 2" x 11" from the cardboard. Draw a line down the middle of this strip (the long way). Mark the center of this line and punch a small hole there for the nail.
2. Fold cardboard along this middle line.
3. Cut slots in each end of the folded cardboard to receive tail and pointer of vane.
4. Cut tail piece from cardboard (note that it is larger than pointer).
5. Cut pointer piece from cardboard.
6. Slip tail and pointer pieces into folded cardboard slots. Staple them in. This is the wind vane.
7. Staple bottom open edges of folded cardboard together (especially close around where nail will go through).
8. Place two or three washers on nail (under its head).
9. Insert nail through hole in folded cardboard of the wind vane.
10. Place two or three washers on nail under wind vane.
11. Drive nail into end of wood stick leaving plenty of clearance for wind vane to rotate freely.
12. Mark paper plate and label NORTH, SOUTH, EAST, WEST.
13. Cut hole in plate for wood stick.
14. Slide plate onto stick and tape it in place.



WIND VANE

For accurate use, it is necessary to find north and have the North arrow on your plate piece pointing to north. If you are familiar with the locale, north may be estimated.

If high accuracy is desired, north may be determined by measuring the shadow of a vertical stick, post or tree between 11:00 A.M. and 1:00 P.M. and marking on the ground where each shadow falls each half hour, noting where the shadow appears to be the shortest.

The shortest shadow between 11:30 A.M. and 12:30 P.M. will indicate north.

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out 2" x 11" from the cardboard. Draw
e middle of this strip (the long way).
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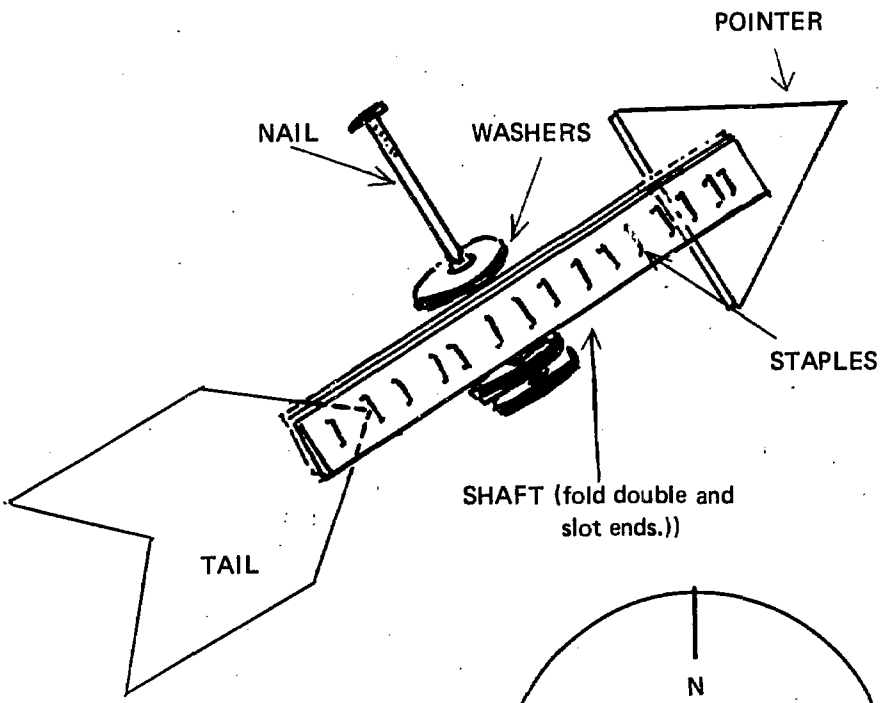
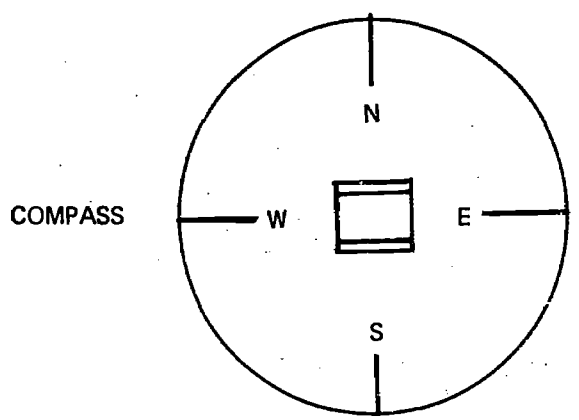
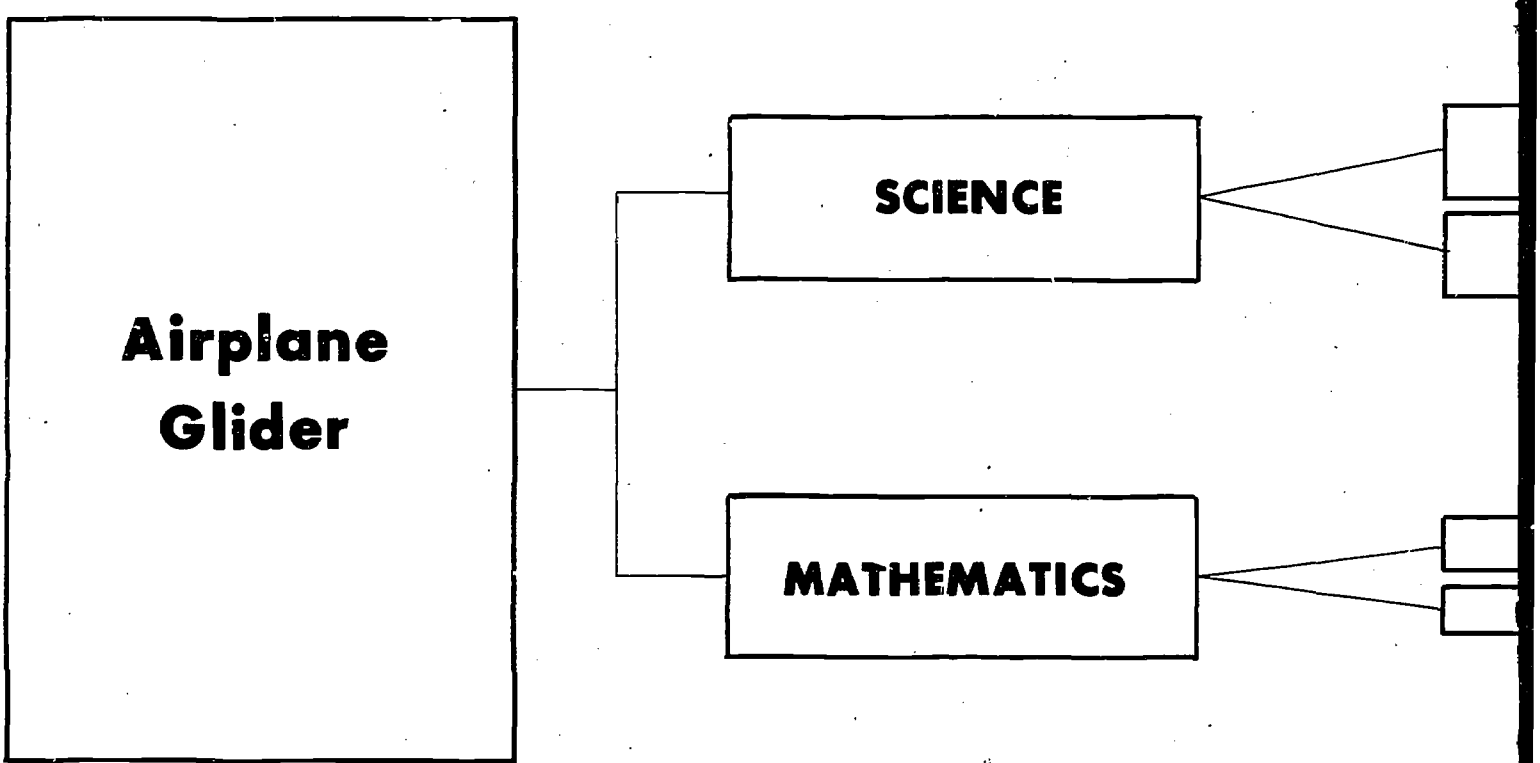




WIND VANE

Teacher's Notes

LEVEL **Intermediate**



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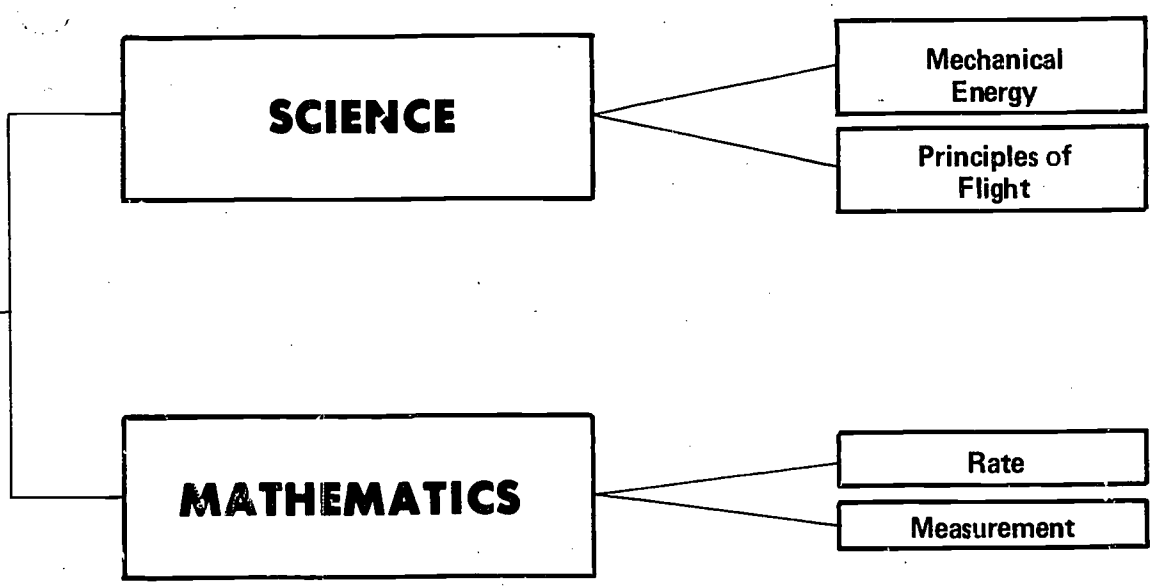


I. Physical Environment

A. Classroom

B. Open area for flight attempts

C. Expendable Materials

No. Needed	Item Description	Where Available
1 sheet	1/16" balsa wood	
1 sheet	Fine sandpaper	
1 daub	Clay for nose cone	Art supply

D. Equipment

No. Needed	Item Description	Where Available
1	Pencil	School supply
1	Ruler	School supply
1	X-Acto knife	

E. Motivating Device

1. Review dynamics of flight.
2. Bring pictures of airplanes — labeled.
3. "Model airplanes" magazine subscription.
4. Visit an airport.

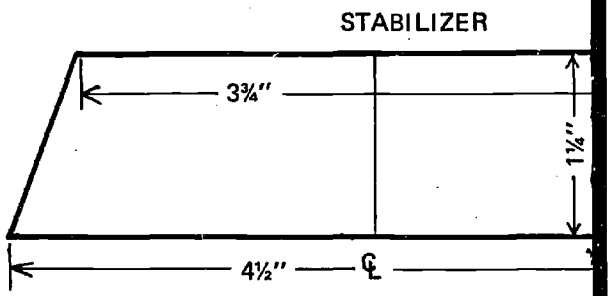
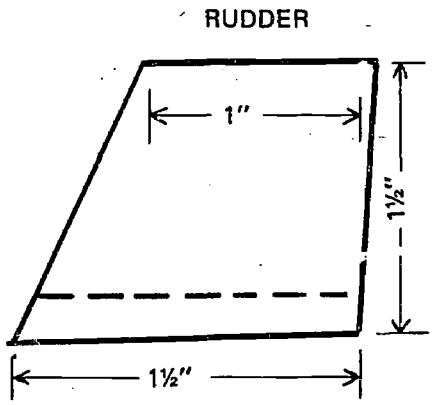
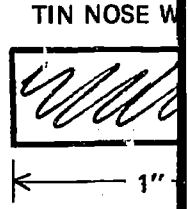


DIAGRAM 3



DIHEDRAL



Environment

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ea for flight attempts

ble Materials

tem Description	Where Available
/16" balsa wood	
Fine sandpaper	
Clay for nose cone	Art supply

nt

tem Description	Where Available
encil	School supply
uler	School supply
-Acto knife	

ng Device

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STABILIZER

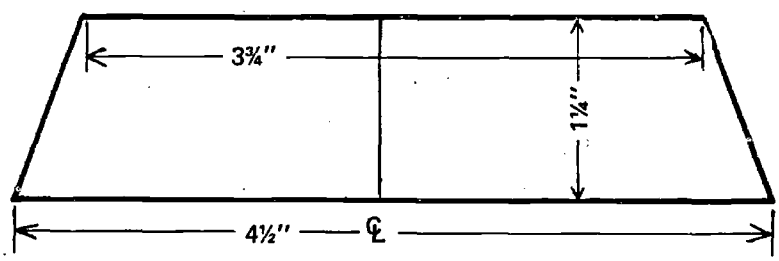


DIAGRAM 3

RUDDER

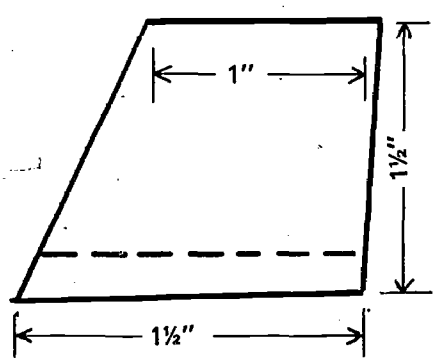
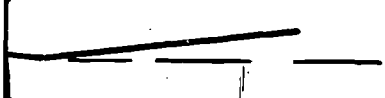
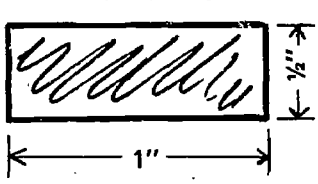


DIAGRAM 2

DIHEDRAL



TIN NOSE WEIGHT



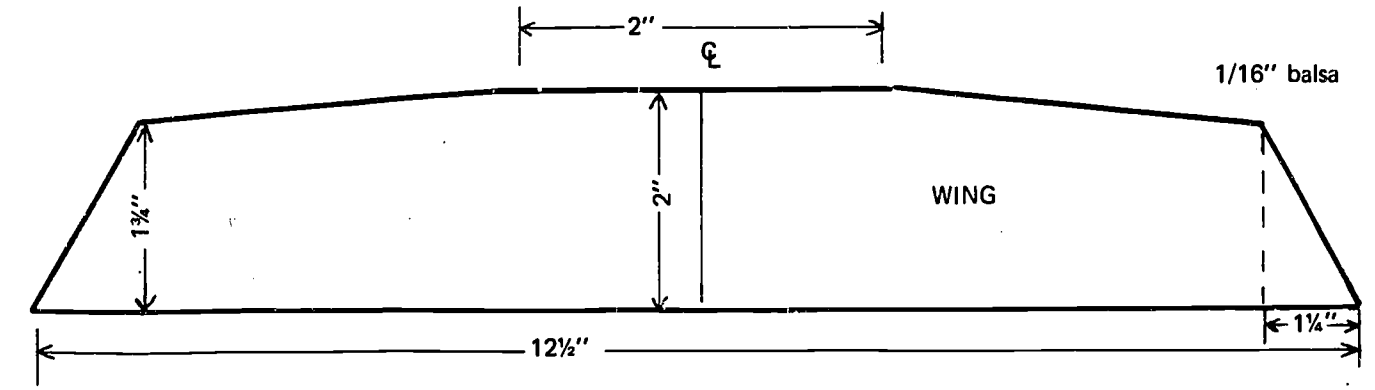
II. Procedure

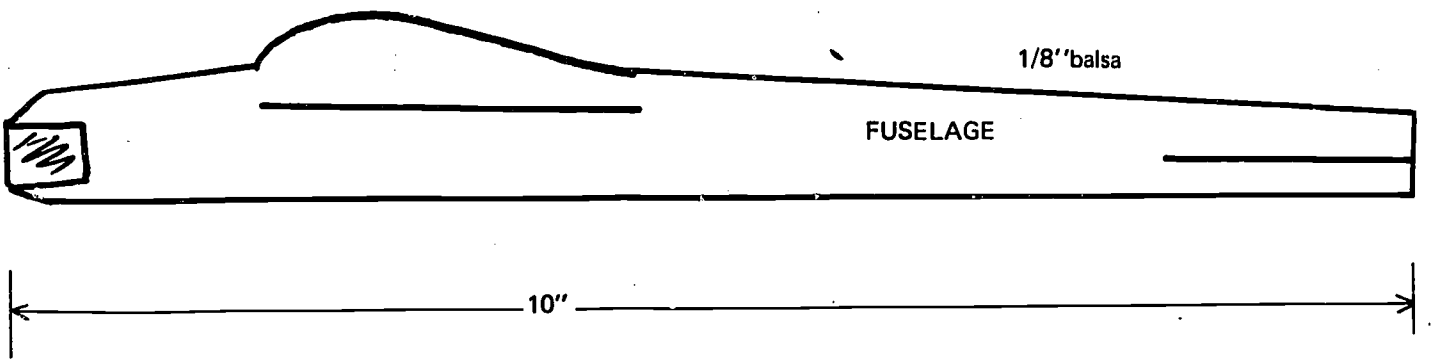
1. Draw 6 sided figure on balsa paper for wing (see diagram).
2. Cut rudder on paper (see diagram #2).
3. Cut stabilizer on paper (see diagram #3).
4. Pin to balsa and draw pattern.
5. Cut balsa in direction of the grain.
6. Decorate with magic markers. Do not use paint.
7. Bend wing up along center line using slight pressure and warm water.
8. Bend tin weight or put penny or 1/2" diameter daub of clay on "nose" of model.
9. Sand last 1/4" of rudder to 1/32" width.
10. Assemble.

III. Flight

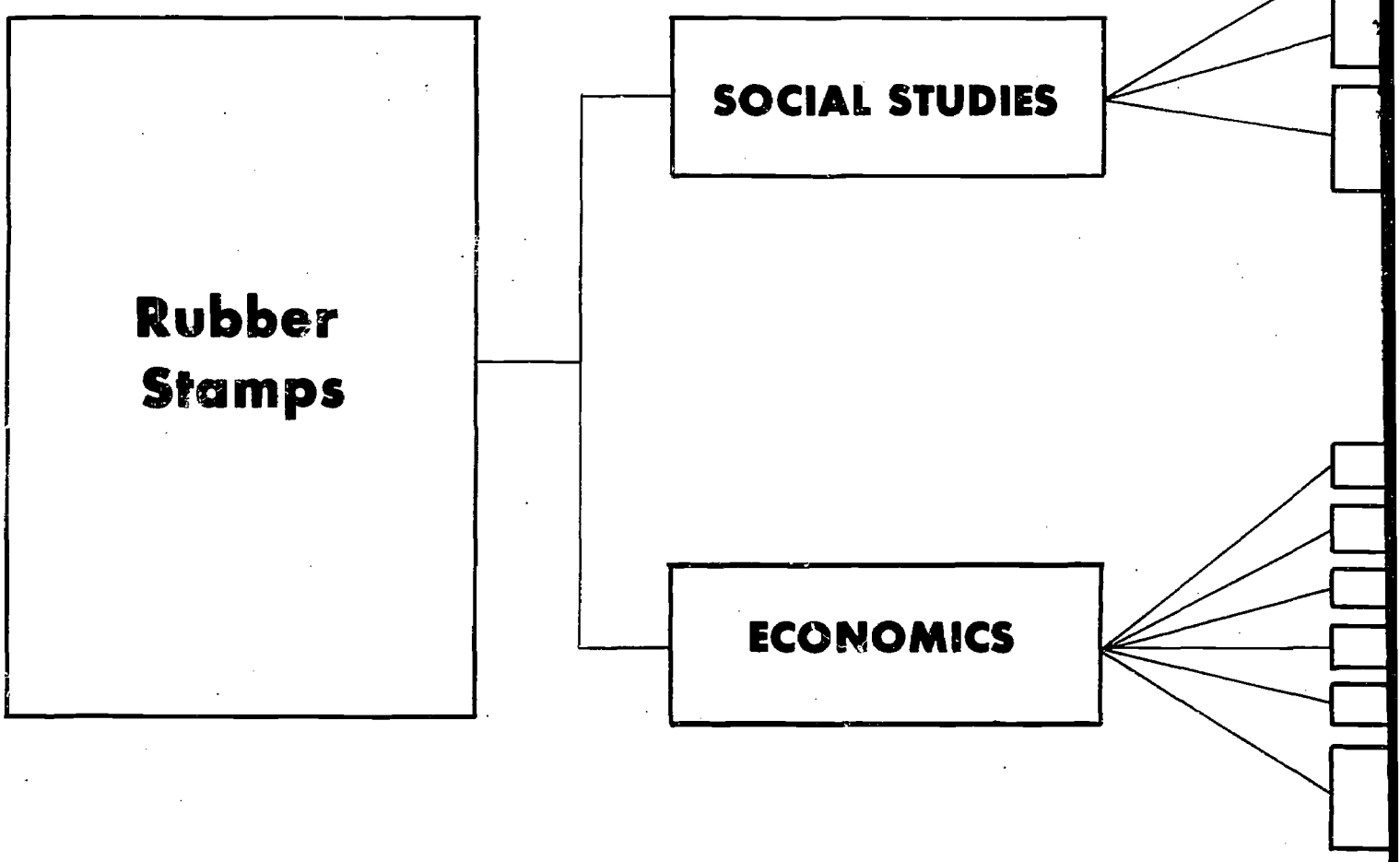
1. If model dives, slide wing forward.
2. If model dips, slide wing toward tail.
3. Launch at 45° angle.

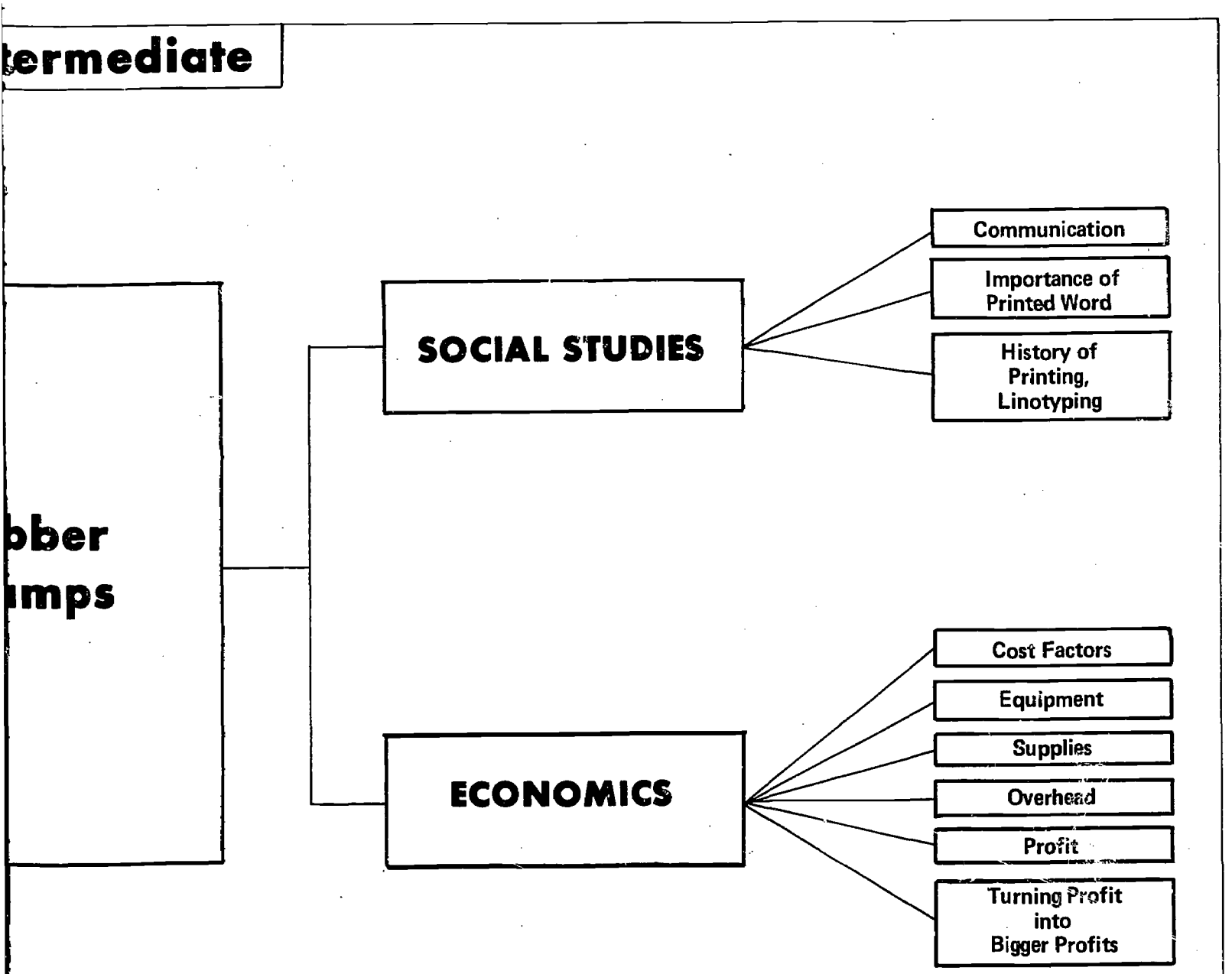
Teacher's Notes


2"
℄
1/16" balsa
1¾"
2"
WING
1¼"
12½"


1/8" balsa
FUSELAGE
10"

LEVEL **Intermediate**

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SOCIAL STUDIES
Communication
Importance of Printed Word
History of Printing, Linotyping
ECONOMICS
Cost Factors
Equipment
Supplies
Overhead
Profit
Turning Profit into Bigger Profits

I. Physical Environment

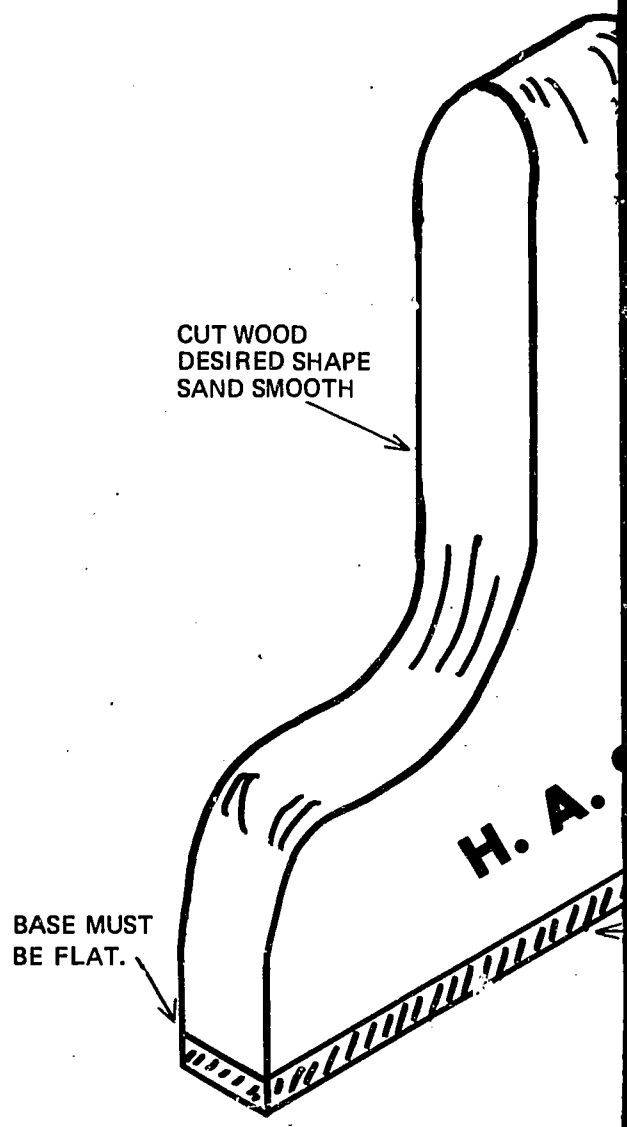
A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
Sheets	.200 to .210 thickness Matrix board	
Sheets	.095 gauge rubber	
	Ink	
	String	
1 sheet	Holland cloth (for curing rubber)	
	Rubber glue	

C. Equipment

No. Needed	Item Description	Where Available
	Molding press	
1 pair	Heat resistant gloves	
1 font	Regular type – capital letters	
1 font	Regular type – lower case letters	
1	California style type case	
2 pair	Printer's tweezers	
1	Small wood mallet	
1	"imposing stove" or small marble slab	
packet	Quoins	
2	Quoin keys	
Varied points	Leads	
	Slug rocks	
2	Galleys or chases	
12	Job composing sticks	
1	Wood planer	
1	Dremel saw	
2	Type gauges	
	Wood furniture	



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lable Materials

Item Description	Where Available
.200 to .210 thickness Matrix board	
.095 gauge rubber	
Ink	
String	
Holland cloth (for curing rubber)	
Rubber glue	

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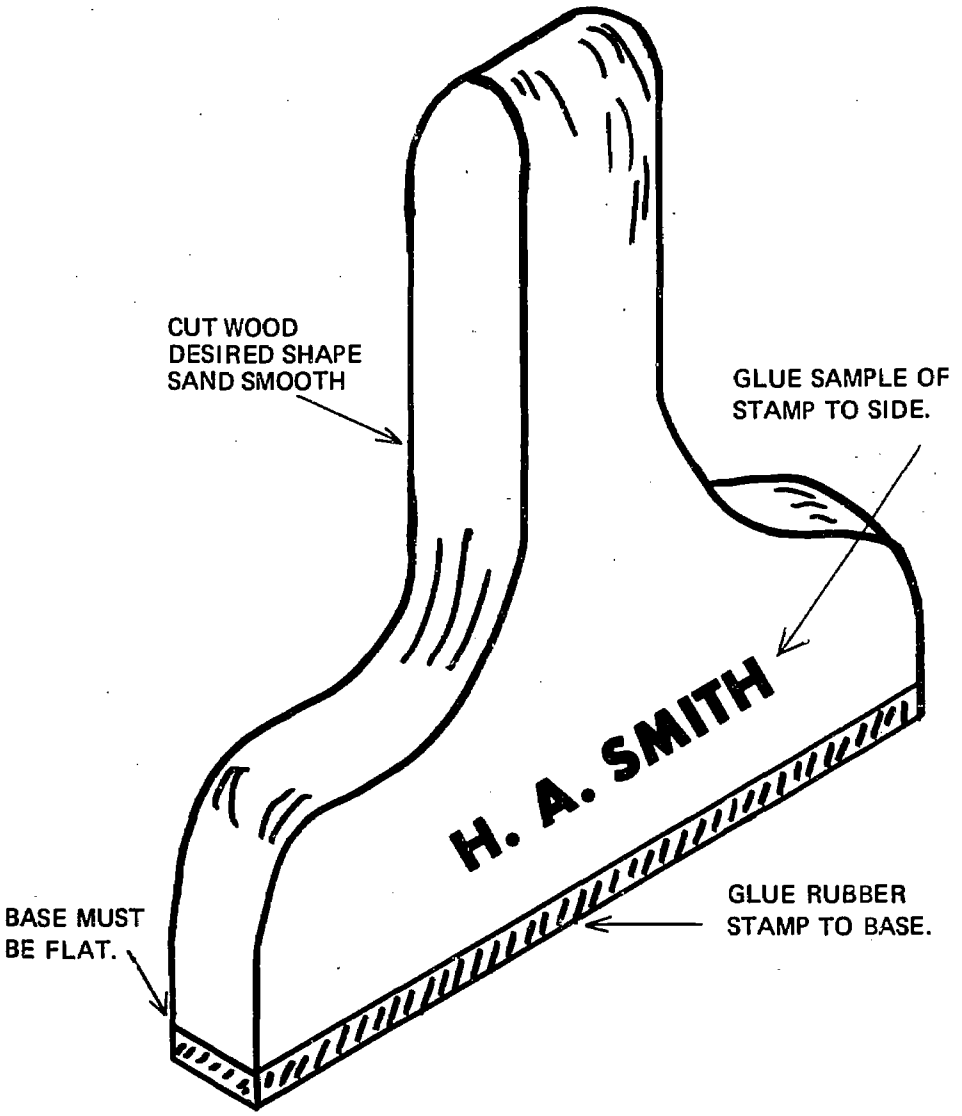
Item Description	Where Available
Molding press	
Heat resistant gloves	
Regular type — capital letters	
Regular type — lower case letters	
California style type case	
Printer's tweezers	
Small wood mallet	
"imposing stove" or small marble slab	
Quoins	
Quoin keys	
Leads	
Slug rocks	
Galleys or chases	
Job composing sticks	
Wood planer	
Dremel saw	
Type gauges	
Wood furniture	



D. Motivating Device

1. Visit a newsprint shop and watch type-set at work, preferably old linotype machines.
2. Discuss possibilities of setting up a business to market rubber stamps.
   a. Committee to take orders for stamps.
   b. Another group in charge of sales could work with a third group that notes costs.
3. Study history, technology of printing.

II. Procedure

Setting Type (e.g. name and address rubber stamp)

1. Get exact measurement for longest line you wish to make.
2. Adjust composing stick width to the longest line.
3. Place a 2 point lead or 6 point slug in composing stick.
4. Set type from left to right, with "nick" on the lower part of the type facing you.
5. When setting type for the name, place letters one by one in composing stick until you have the full name. Center it by putting same amount of "spaces" and "quads" on either side.
6. Set type and quads tight so type stands on "its feet".
7. Place another lead on top and set type for street address in the composing stick. Use quads on either side to center the line as in the name.
8. Repeat process for city and state remembering to place another lead on top of previous type (to separate lines).
9. Place a 6 point slug on the last line.
10. Take type out of composing stick and transfer it to the galley.
    a. Lay composing stick flat on work table or imposing stone.
    b. Grasp both ends, top and bottom, with both hands; thumbs at bottom, index fingers at top.
    c. As you slide the type form out of the stick allow middle finger of each hand to press hard on each end of the type form.

Procedure (continued)

11. After placing lines in the galle
    leads and slugs to the desired
12. When all is set and spaced, wi
    around the type, several turns
    block of type ready without

Locking Type in C

1. Place the chase on the imposin
   you have set into it (the chase
   later into the press).
2. After putting type form into i
   around the form; around them
   rule to make box around form
3. Fill in spaces with "wood furn
   bottom and one side for "quoi
   "quoin" key.
4. Place wood "planer" on top o
   with small mallet to even up t

Making the Matri

1. Heat vulcanizer (in molding pr
2. Place chase and imposing form
   place shims for desired depth
   end of lower platen or chase.
3. Close platens and allow chase
   same 308 degrees.
4. As soon as form is hot, place p
   matrix board on top of type f
   matrix to 1/4" to 1/2" over ty
5. Place metal sheet or piece of h
   matrix board and bring lower
   touches upper platen — for on
   matrix.
6. Now slowly apply pressure; br
   until shims are tight against up
   close tightly.
7. Cure for eight minutes.
8. Let off pressure, remove, chas

ting Device

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composing stick and transfer it to

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at bottom, index fingers at top.
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and to press hard on each

Procedure (continued)

11. After placing lines in the galley, separate them with leads and slugs to the desired distance apart.
12. When all is set and spaced, wind a piece of string around the type, several turns, tying tightly to keep block of type ready without falling apart.

Locking Type in Chase

1. Place the chase on the imposing stone and put the job you have set into it (the chase is the iron frame placed later into the press).
2. After putting type form into it, put two 6 point slugs around the form; around them put a piece of 6 point rule to make box around form.
3. Fill in spaces with "wood furniture", leaving room at bottom and one side for "quoins". Tighten with "quoin" key.
4. Place wood "planer" on top of form and tap lightly with small mallet to even up the type.

Making the Matrix

1. Heat vulcanizer (in molding press) to 308 degrees.
2. Place chase and imposing form on bottom platen, place shims for desired depth of impression on each end of lower platen or chase.
3. Close platens and allow chase and form to heat to same 308 degrees.
4. As soon as form is hot, place previously cut to size matrix board on top of type form. Extend size of matrix to 1/4" to 1/2" over type.
5. Place metal sheet or piece of holland cloth on top of matrix board and bring lower platen up until matrix touches upper platen — for one minute to soften matrix.
6. Now slowly apply pressure; bringing lower platen up until shims are tight against upper platen. Check to close tightly.
7. Cure for eight minutes.
8. Let off pressure, remove, chase, pry off matrix.

Curing the Rubber

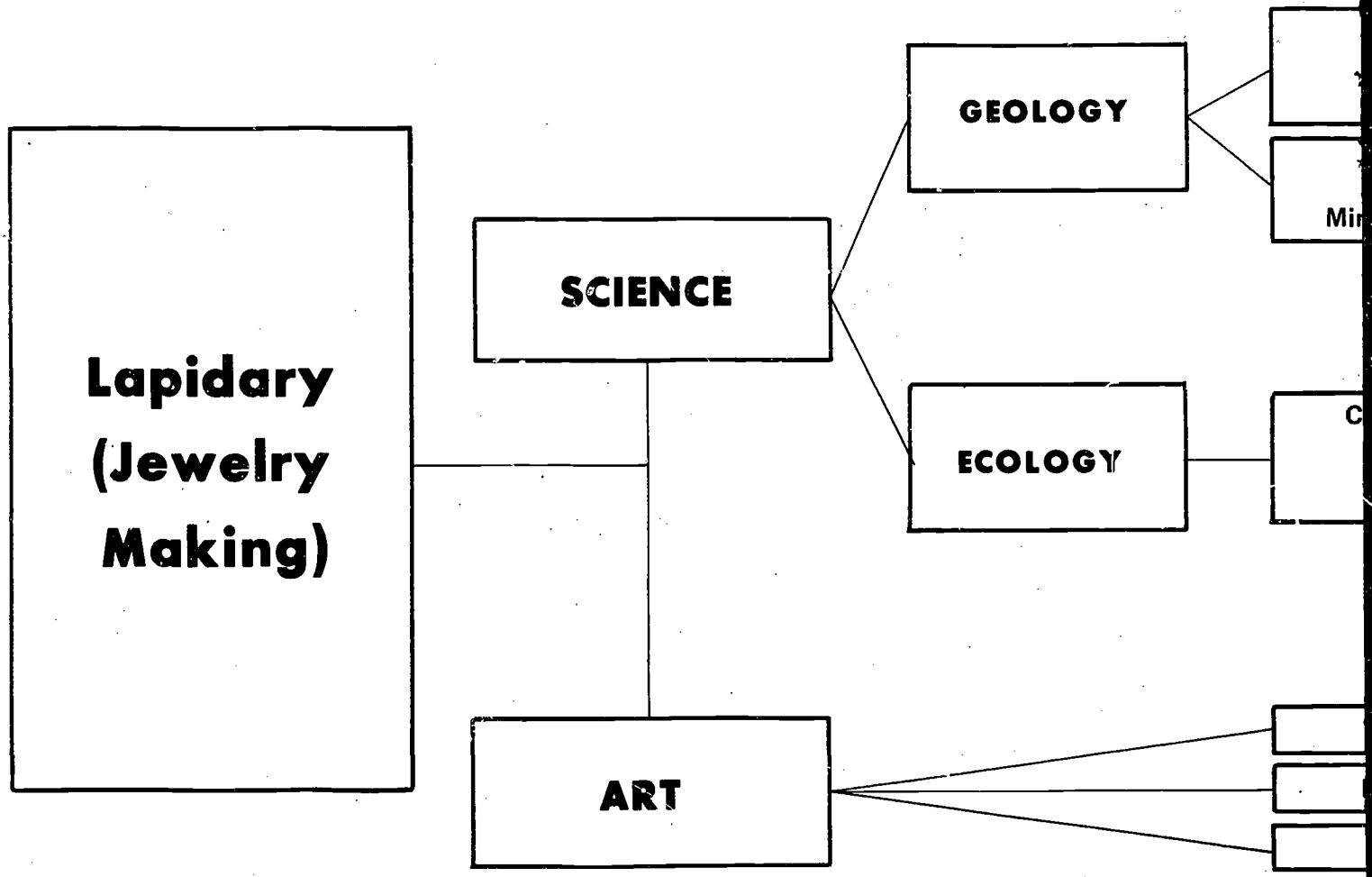
Teacher's Notes

1. Place the matrix on sheet of holland cloth. Cut rubber same size as matrix, powdered face down (very little dusting of powder prevents problems) leaving original holland cloth on rubber.
2. Place a sheet of holland cloth over the top.
3. Place low bearers and shims at each end of lower platen to obtain thickness of the rubber die desired. Place assembly (steps 1 and 2) in center of lower platen adjusting bearers and shims at each end. Close platens tightly.
4. At 308 degrees, cure for approximately 4 minutes or specified time on chart that appears with molding press.
5. Remove from vulcanizer and peel or roll rubber die from matrix. Do not pull.
6. Trim rubber die to exact size of rubber stamp mount and mount with rubber glue.

Making Rubber Stamp Mounts

1. Cut plywood to desired length and width, allowing one added inch each dimension for individual carving shape if desired. Sand all parts.
2. Paint all sides except area of rubber mount. Print or paint information, indicator, on handle to indicate correct vertical and horizontal placement of stamp for placement on ink pad and print results.
3. Glue on rubber mount.

LEVEL **Intermediate**



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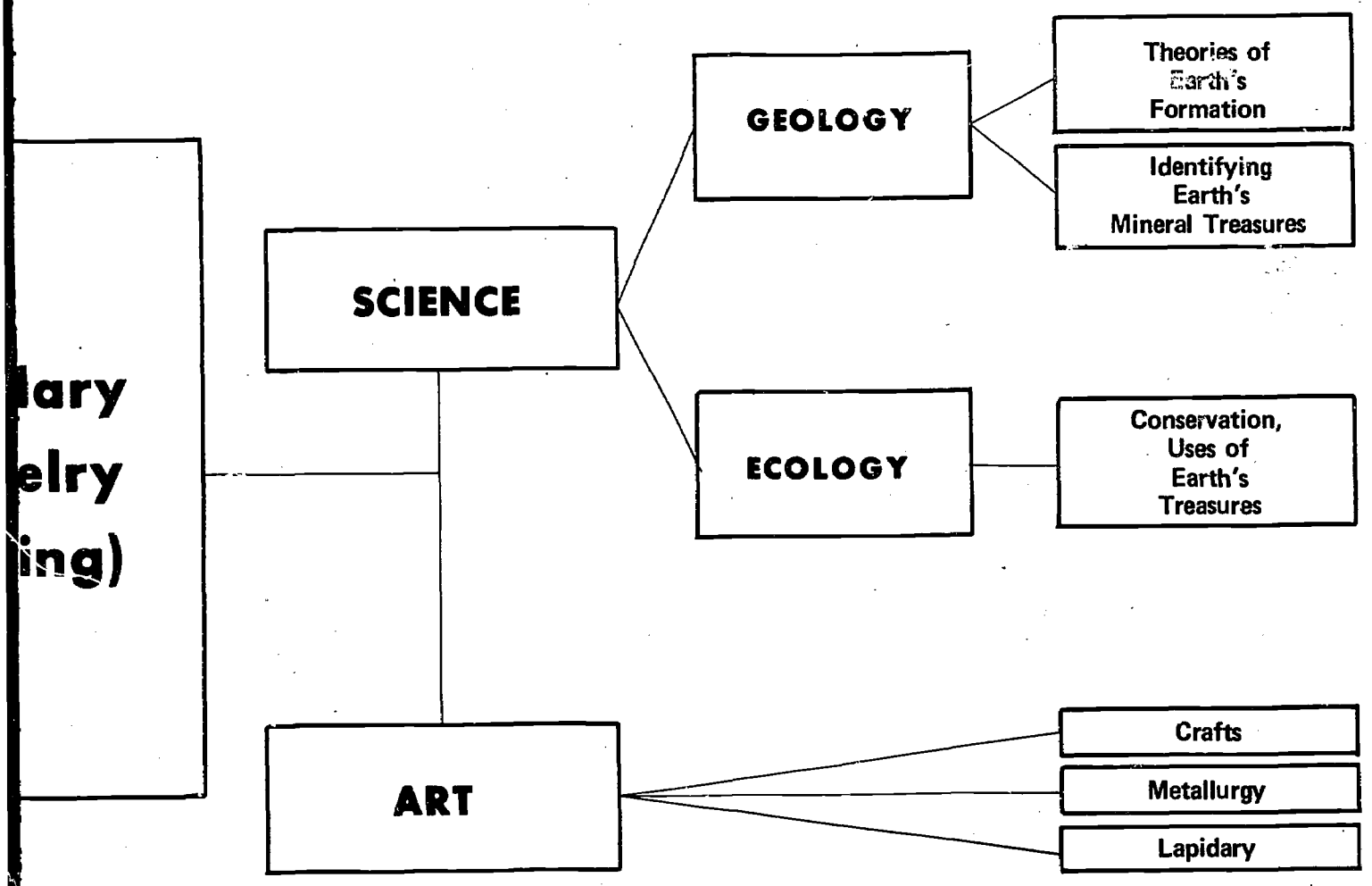
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SCIENCE
GEOLOGY
Theories of Earth's Formation
Identifying Earth's Mineral Treasures
ECOLOGY
Conservation, Uses of Earth's Treasures
ART
Crafts
Metallurgy
Lapidary

I. Physical Environment

A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
25	Stones – Quarry or other gem stones not tumbled – 3/4" - 1" diameter	Children or Rock supply shop
5	Ring bases	Jewelry supply or
10	Anchor hooks	Hobby shop or
10	Necklace Chains	Rock supply shop
1 lb. each of 3 grades of grain sizes	Carborundum	Rock supply shop
Small box	Toothpicks	Grocery
10	Key chains	Hobby shop
10	8" x 11" cardboard or oaktag work plates	Paper supply store
15	1/4" metal circles to attach jewelry to chains	Rock supply or Hobby shop

C. Equipment

No. Needed	Item Description	Where Available
1	Tumbler	Rock supply shop
1	Burner or heat source	

D. Motivating Device

1. Show films, filmstrips, slides, pictures of rocks and minerals.
2. Children should gather rocks or bring in own hobby collections.
3. Secure handbook for identifying rocks and minerals.
4. Display charts showing ways of identifying rocks and minerals.

II. Procedure

1. Tumble rocks night and day fo grain of carborundum. The th week acts as polishing agent.
2. Pour epoxy which comes in 2 combined with other on cardb size of a dime, 2 circles, 1 of e
3. With toothpick, combine 2 cir
4. Heat tumbled gem-stone at pla to anchor hook or ring base.
5. Apply epoxy to stone.
6. Set aside long enough to apply anchor hook or ring base.
7. Join stone and heated jewelry minutes pressing tightly (see di
8. Set aside to dry for 24 hours.
9. Insert metal 1/4" circle in anch and necklace.

Select prominent point of gemsto

METAL CIRCLE

Insert metal circle in anchor hook necklace, key chain or attaching t

l Environment

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able Materials

Item Description	Where Available
Stones — Quarry or other gem stones not tumbled — 3/4" - 1" diameter	Children or Rock supply shop
Ring bases	Jewelry supply or
Anchor hooks	Hobby shop or
Necklace Chains	Rock supply shop
Carborundum	Rock supply shop
Toothpicks	Grocery
Key chains	Hobby shop
8" x 11" cardboard or oaktag work plates	Paper supply store
1/4" metal circles to attach jewelry to chains	Rock supply or Hobby shop

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Item Description	Where Available
Tumbler	Rock supply shop
Burner or heat source	

ing Device

filmstrips, slides, pictures of rocks and

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book for identifying rocks and minerals.
ts showing ways of identifying rocks and

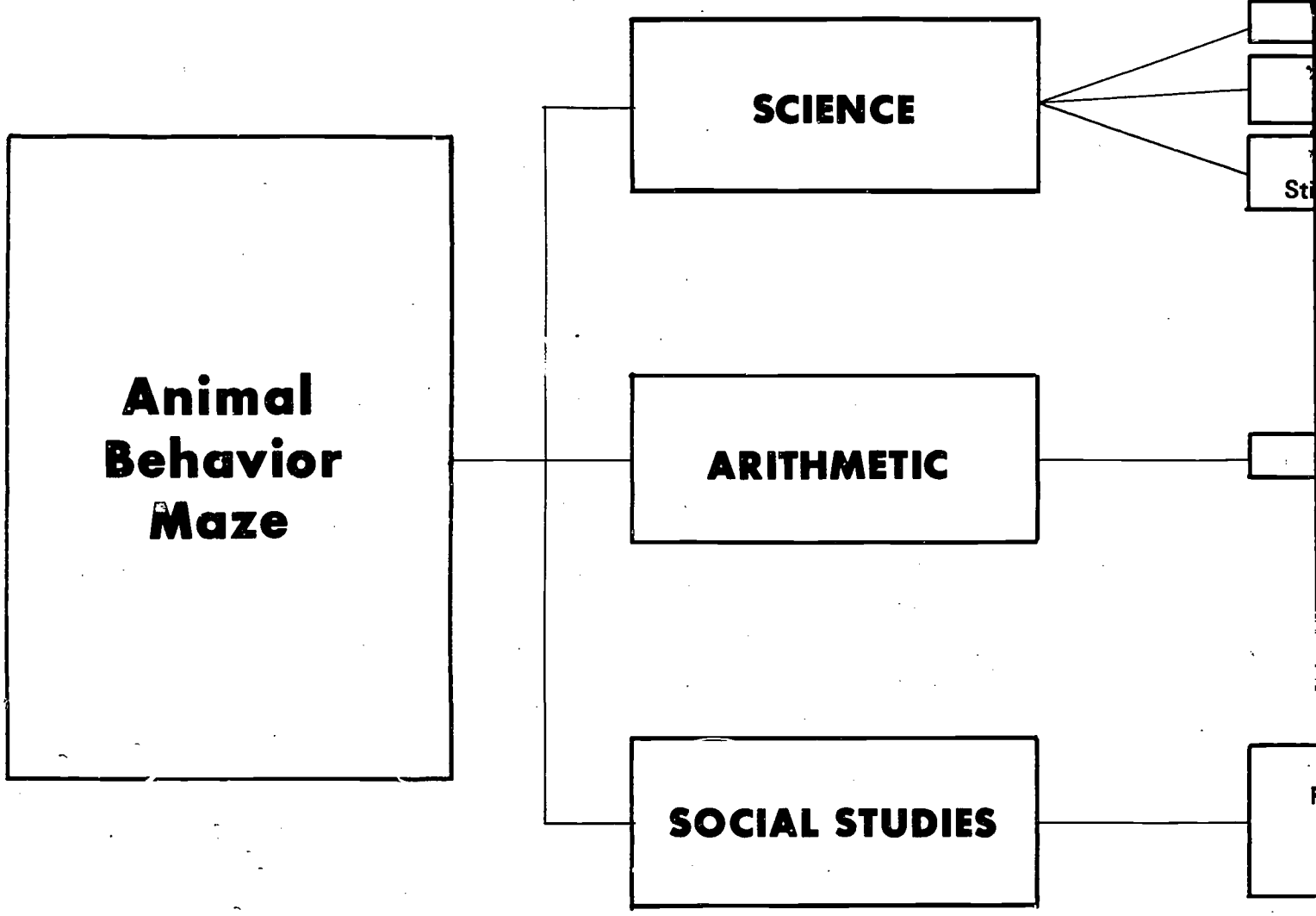
II. Procedure

1. Tumble rocks night and day for one week in each grade-grain of carborundum. The third grade done the third week acts as polishing agent.
2. Pour epoxy which comes in 2 tubes — each agent to be combined with other on cardboard sheet. Pour out size of a dime, 2 circles, 1 of each glue agent.
3. With toothpick, combine 2 circles of glue.
4. Heat tumbled gem-stone at place where you will attach to anchor hook or ring base.
5. Apply epoxy to stone.
6. Set aside long enough to apply heat and epoxy to anchor hook or ring base.
7. Join stone and heated jewelry anchors. Hold for 5 minutes pressing tightly (see diagram).
8. Set aside to dry for 24 hours.
9. Insert metal 1/4" circle in anchor hooks for key chain and necklace.

Select prominent point of gemstone to apply anchor hooks.

Insert metal circle in anchor hook to facilitate sliding on necklace, key chain or attaching to charm bracelet.

LEVEL Intermediate



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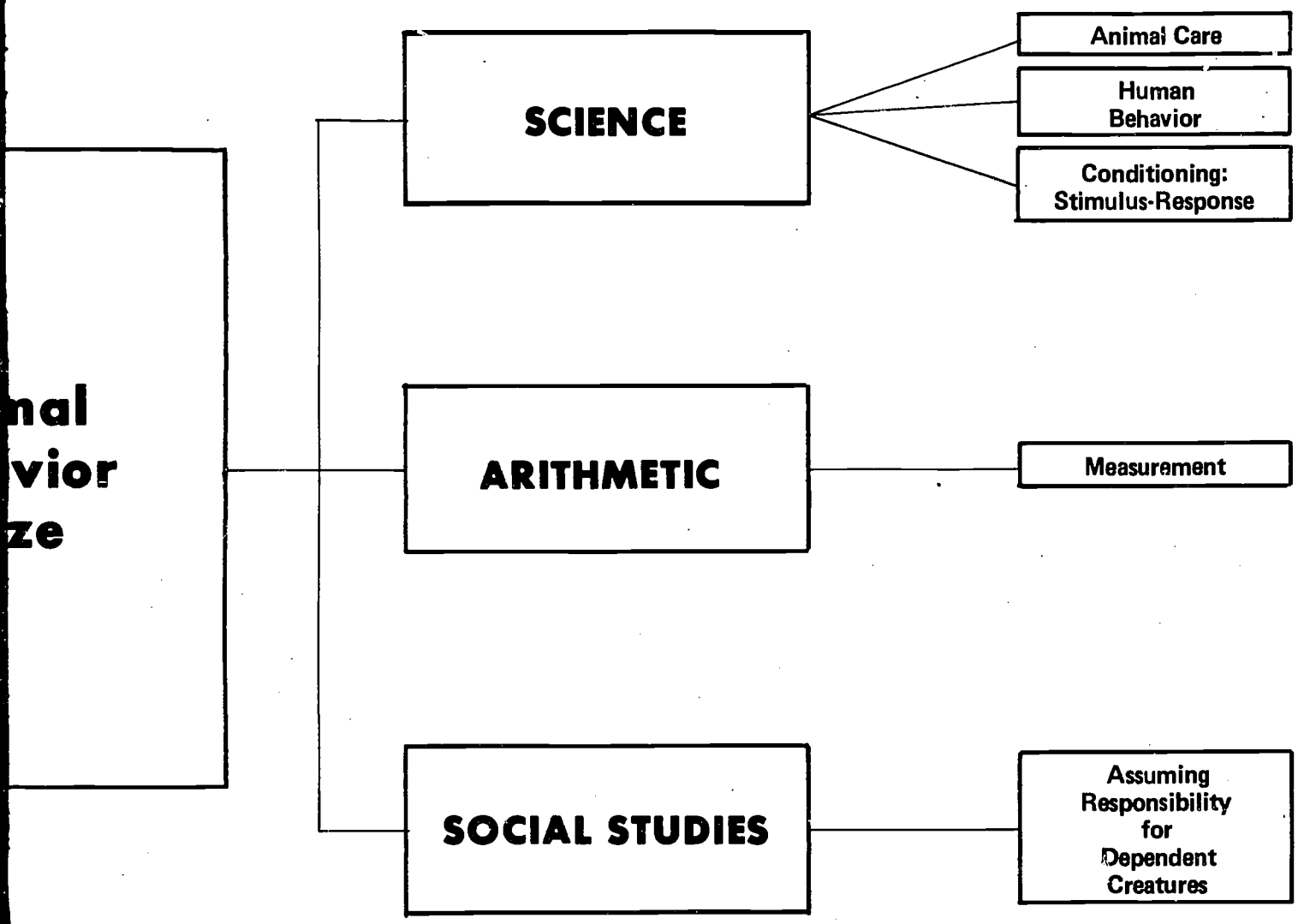
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SCIENCE
Animal Care
Human Behavior
Conditioning: Stimulus-Response
ARITHMETIC
Measurement
SOCIAL STUDIES
Assuming Responsibility for Dependent Creatures

I. Physical Environment

Teacher's Notes

A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
2 sheets	4-1/2' x 3-1/2' Tri-Wall	Tri-Wall Containers, Inc. Plainview, L.I. New York
	Elmer's glue	Art supply
	Pencils	School supply

C. Equipment

No. Needed	Item Description	Where Available
1	Dremel saw	
1	Sabre saw	
	Rulers	
	Razor knives or X-Acto Blades	

D. Motivating Device

1. Procure and observe small rodents: gerbils or hamsters suggested.
2. Note food habits. Keep a log for learned behavior — general and specific personality traits, e.g.

General Traits	Specific Personality Traits
Fills pouches with food and places it in special area for future needs.	Tips food cup over, spilling contents on cage floor before eating.

3. Rotate care of animals among members of class, e.g. litter change, daily food supply, water and vegetable supply, purchase of food, books on care of specific pets.

II. Procedure

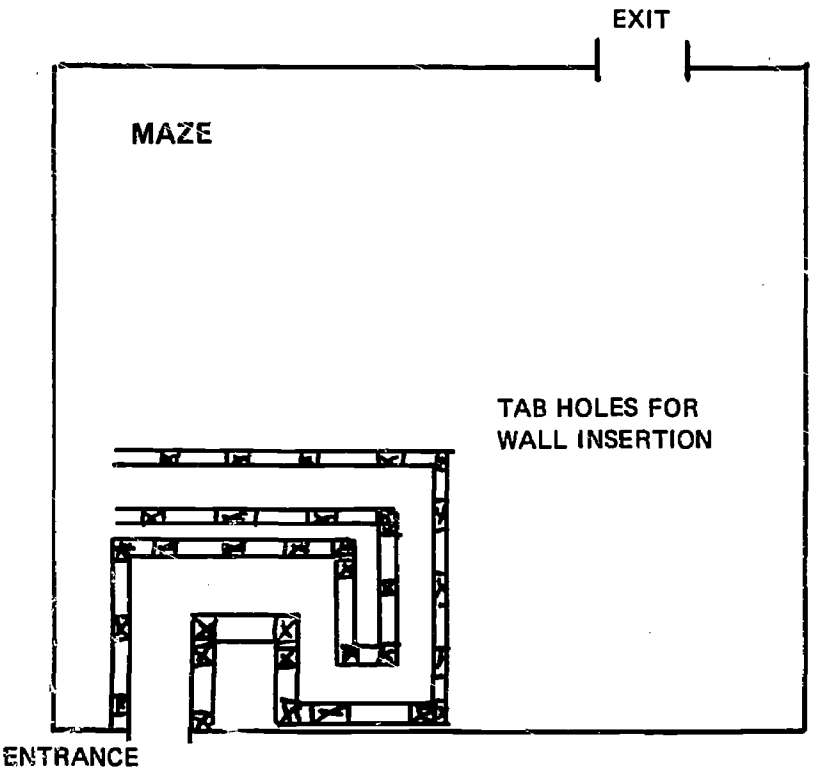
Teacher's Notes

1. After observing animals, determine height of walls of maze. Suggestion: gerbils and hamsters 14" to 16".
2. Measure and cut floor of maze; suggested size 3' square at least.
3. Draw design on floor of maze to determine alley-ways or maze paths, drawing sides of lanes to thickness of Tri-Wall (see diagram).
4. Transfer floor lane measurements to 15" or 17" tall, cut sheets of Tri-Wall for walls of maze. Note measurements of wall will be 14" to 16". The extra inch is to allow for cutting of tabs to insert into floor of maze. Use dremel and sabre saws.
5. In wall, cut tabs 1" by 1" (see diagram) and transfer to meet placement of holes to floor where tabs will be inserted. Use razor knives or X-Acto blades here.
6. Insert tabbed walls into floor, keeping two open areas for entrance and exit placement.

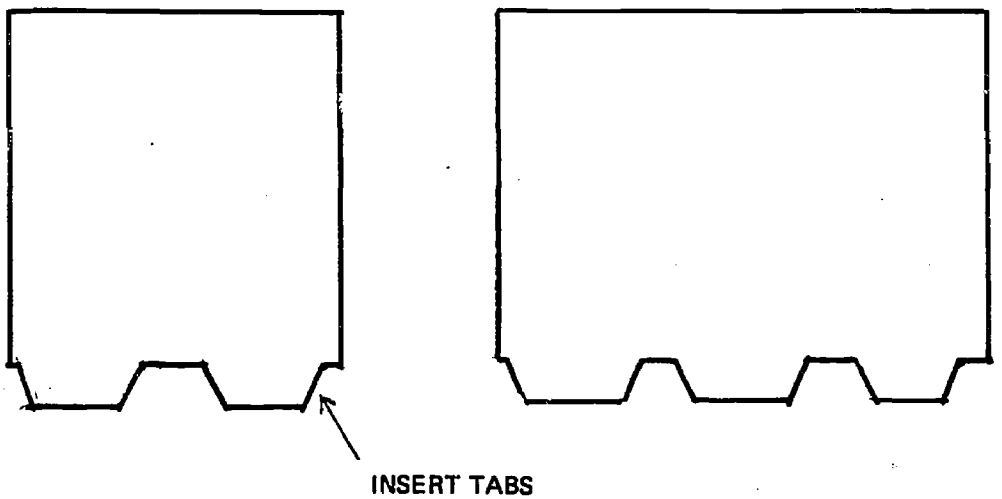
ANIMAL BEHAVIOR CONDITIONING

1. Place food at entrance to maze to draw animal. Allow for some nibbling.
2. Remove food and place at exit.
3. Observe and note animal responses.

CAUTION: Match spacing of tabs in walls to floor and then cut holes in floor.



EXAMPLE WALLS



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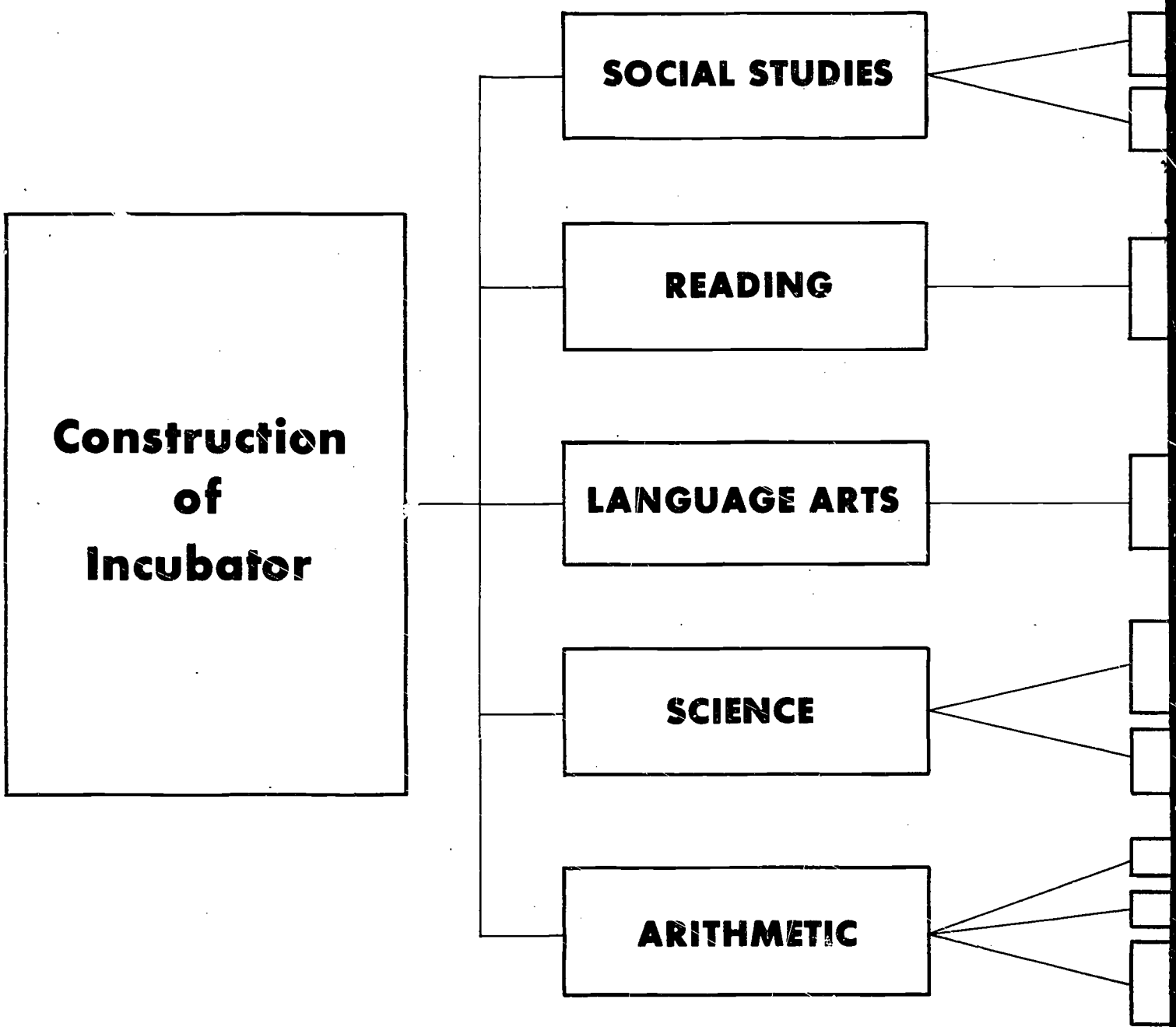

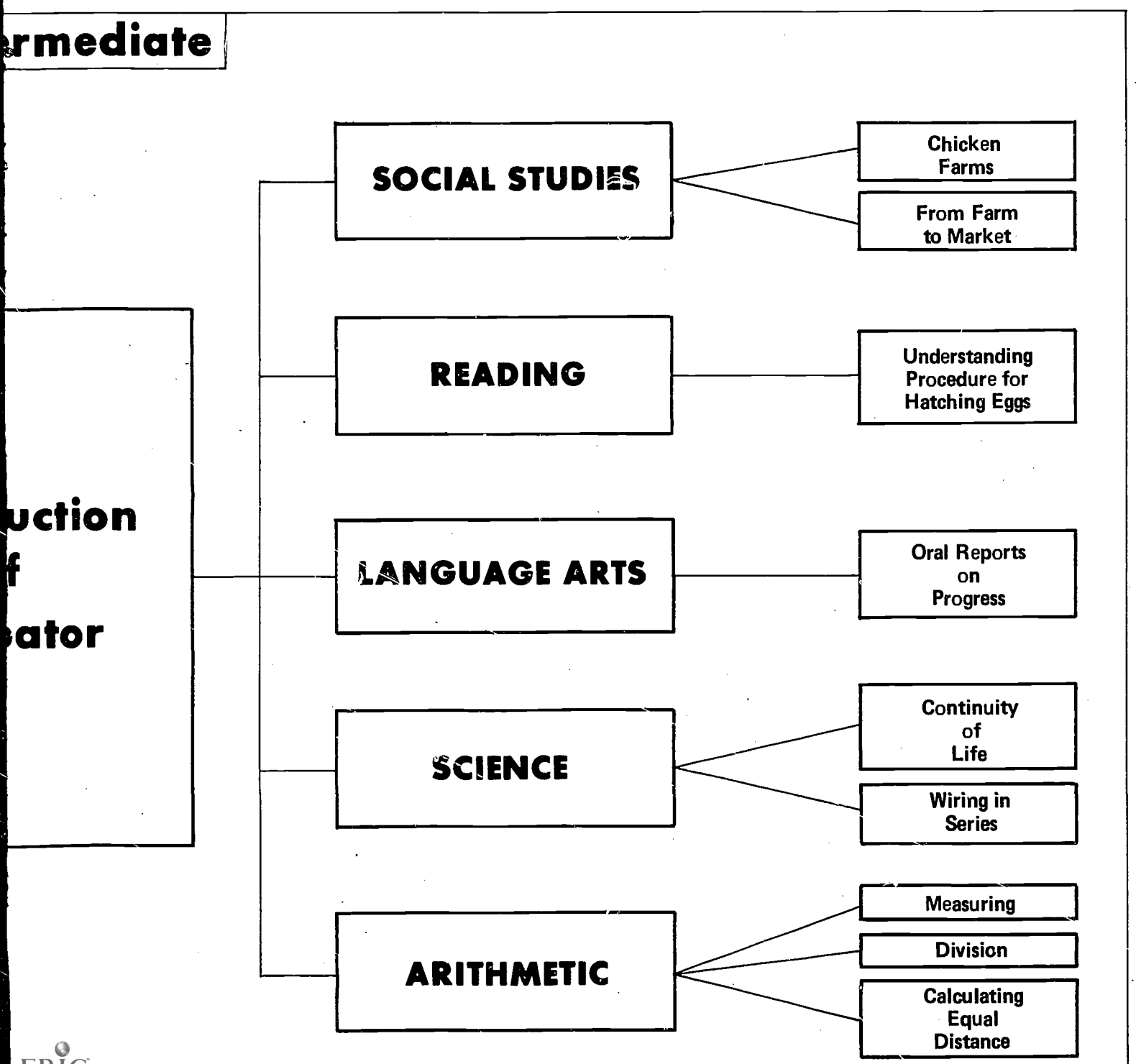
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SOCIAL STUDIES
Chicken Farms
From Farm to Market
READING
Understanding Procedure for Hatching Eggs
LANGUAGE ARTS
Oral Reports on Progress
SCIENCE
Continuity of Life
Wiring in Series
ARITHMETIC
Measuring
Division
Calculating Equal Distance

I. Physical Environment

Teacher's Notes

A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
1	Wooden box — 10" high and 15" long — open on one side	
1	Pane glass — 10"x15"	Auto glass
1	Thermostatic switch	Hardware store
1	Incubator thermometer	Hardware store
2	Bakelite porcelain receptacle sockets	Hardware store
2	Electric lightbulbs (15 watts)	Hardware store
2	Electric attachment plugs	Hardware store
1	Heavy wire screening (12"x14")	Hardware store
1	Cake pan — 11"x 12" wide and 13"x14" long	
Enough to line incubator	Celotex or insulation	Lumber yard
1 box	Brads	Hardware store
1 roll	1-1/2" wide adhesive tape	Hardware store
1 box	Tacks	Hardware store

C. Equipment

No. Needed	Item Description	Where Available
1	Hammer	
1	Hand drill	
1	Screwdriver	
1	Stapler	

D. Motivating Devices

1. Display of books and posters.
2. Films.

II. Procedure

1. Nail insulation inside the box.
2. Bore holes for ventilation and for thermostat (the thermostat may be placed on rear wall or on the roof.)
3. Screw the sockets and thermostat inside the box.
4. Wire the sockets to a plug for attachment to the thermostat.
5. Staple the wires out of the way along the top or back of box.
6. Attach thermometer to back
7. Bind the glass front with adhe strips 1-1/2" wide to form a d along top edge. Tack this flap box to hinge glass front.
8. Cover cake pan with wire scre incubator.

Teacher's Notes

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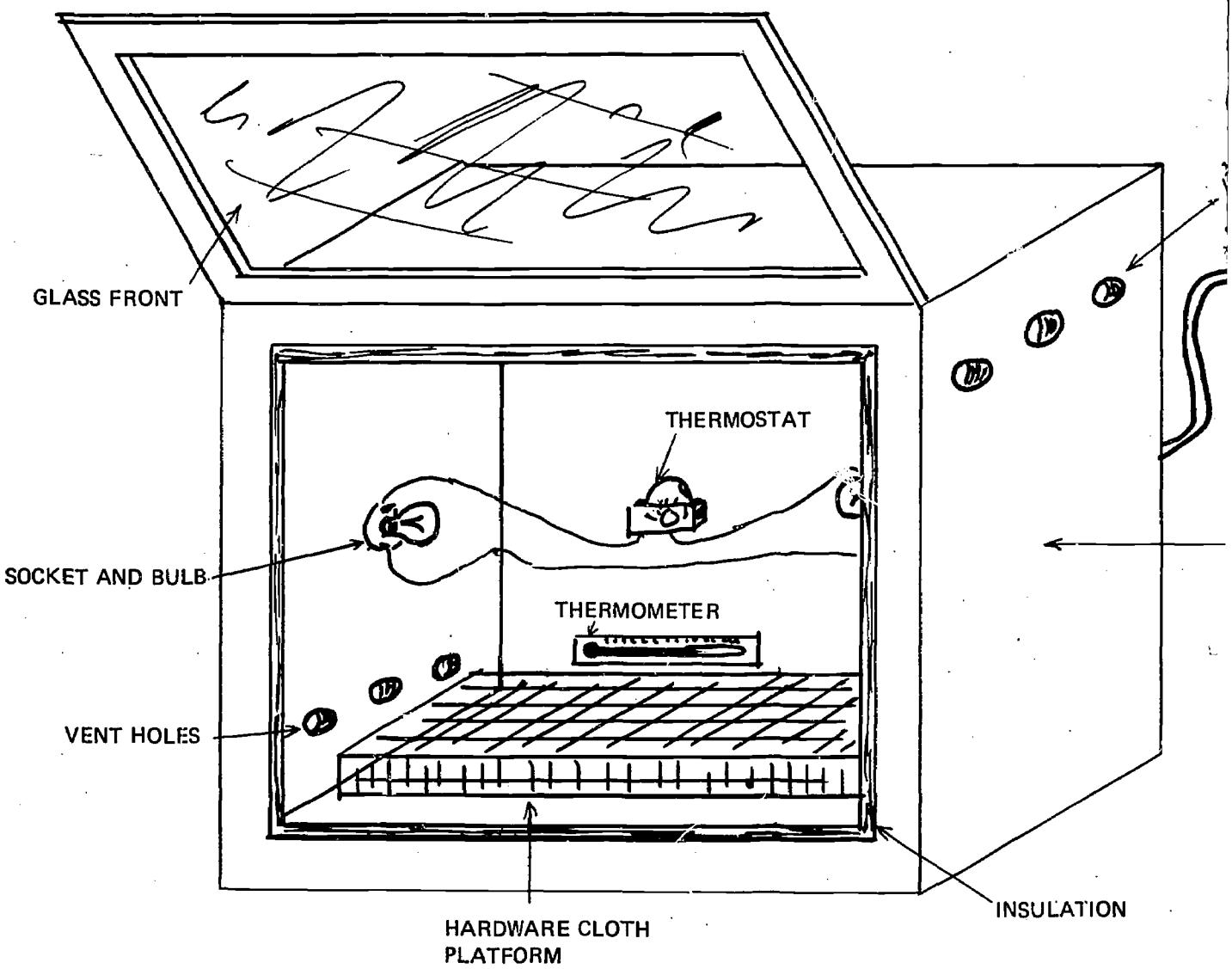
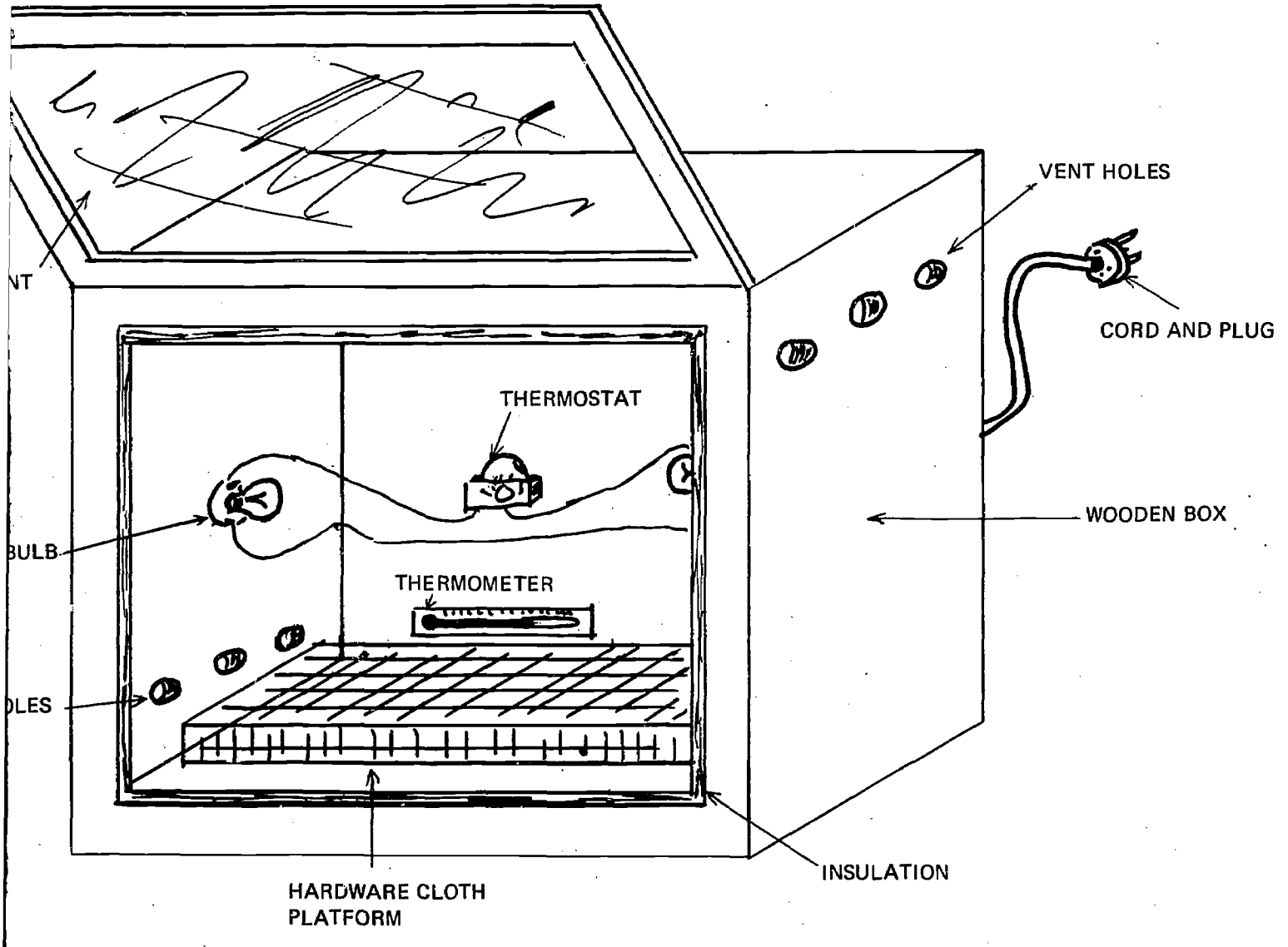
inside the box.
ventilation and for thermostat (the
y be placed on rear wall or on the roof.)
ets and thermostat inside the box.
ts to a plug for attachment to the

s out of the way along the top or back

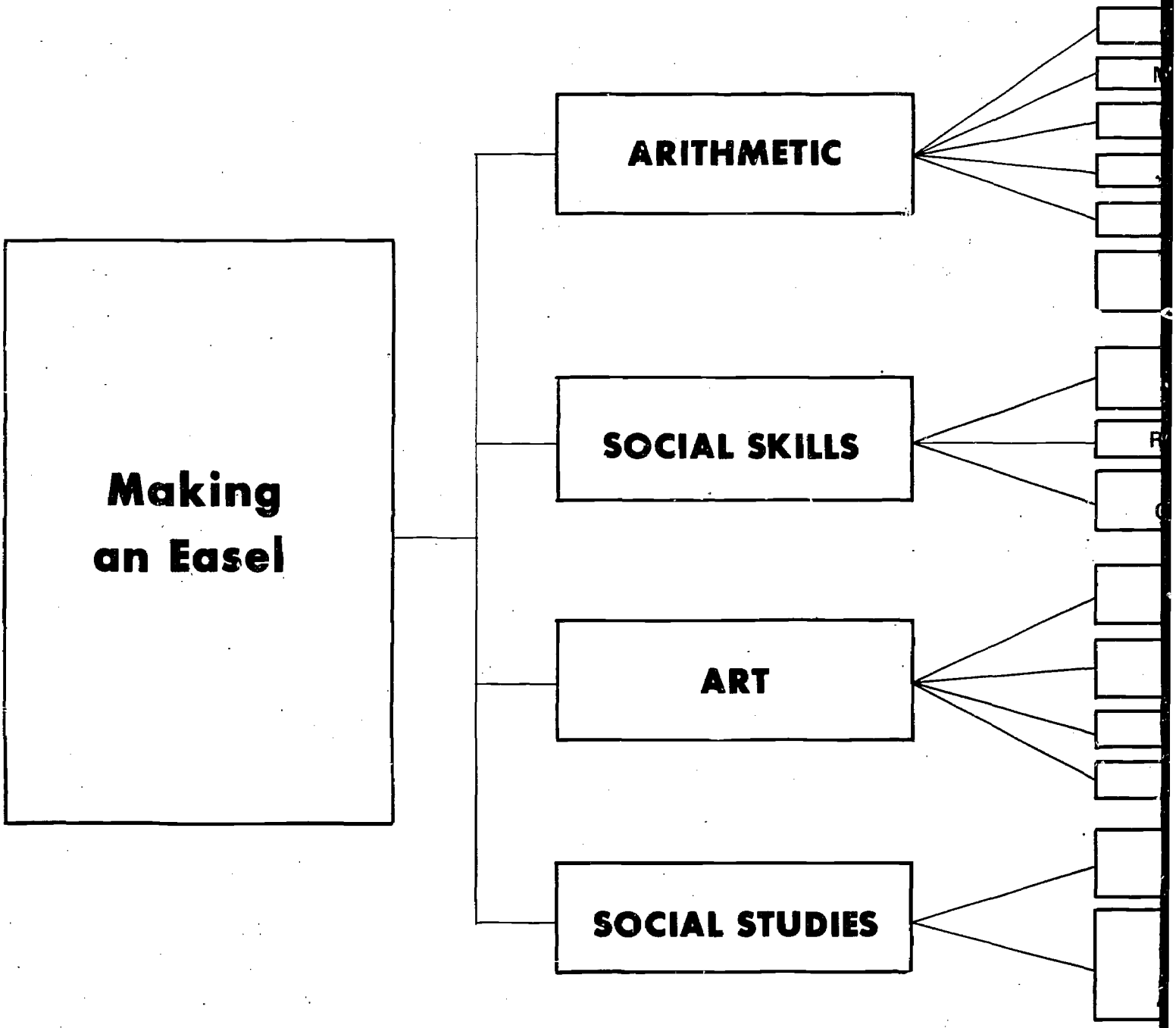
6. Attach thermometer to back wall of box.
7. Bind the glass front with adhesive tape. Use two strips 1-1/2" wide to form a double thickness flap along top edge. Tack this flap along top edge of the box to hinge glass front.
8. Cover cake pan with wire screening. Place inside incubator.

Teacher's Notes


GLASS FRONT
THERMOSTAT
SOCKET AND BULB
THERMOMETER
VENT HOLES
INSULATION
HARDWARE CLOTH
PLATFORM


VENT HOLES
CORD AND PLUG
THERMOSTAT
WOODEN BOX
THERMOMETER
INSULATION
HARDWARE CLOTH
PLATFORM

LEVEL Intermediate



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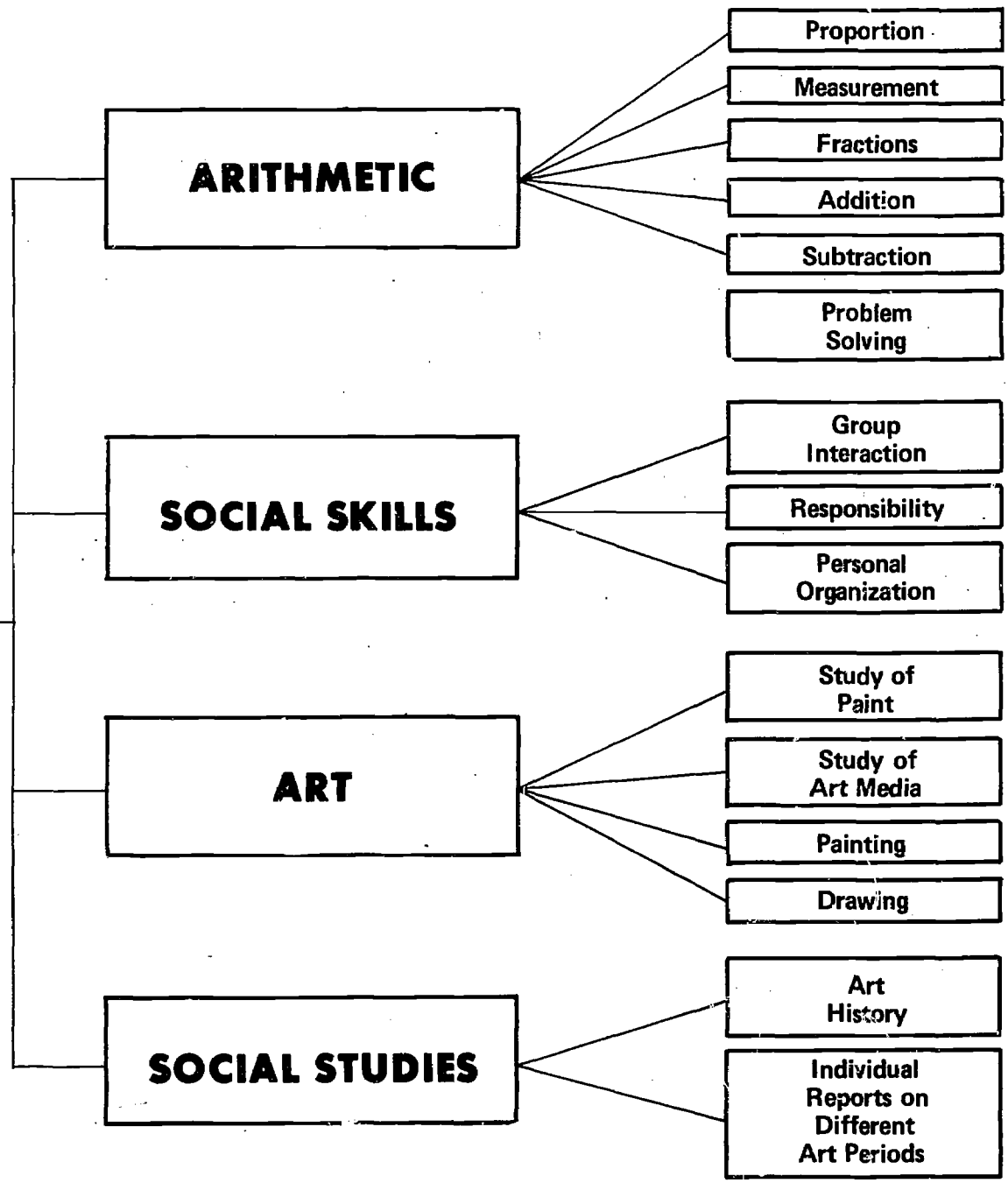


I. Physical Environment

A. Classroom

B. Expendable Materials

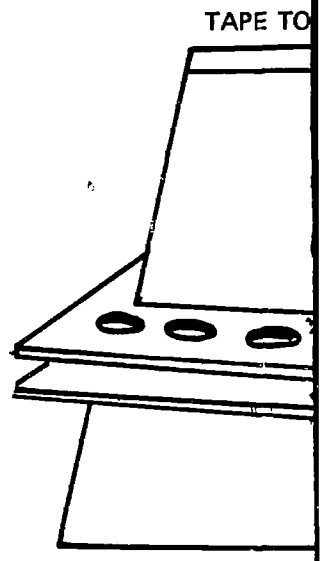
No. Needed	Item Description	Where Available
2 sheets	3-1/2'x4-1/2' cardboard Tri-Wall	Tri-Wall Container Inc. Plainview, L.I. New York
1 roll	Gummed tape	
1 can	Paint (optional)	

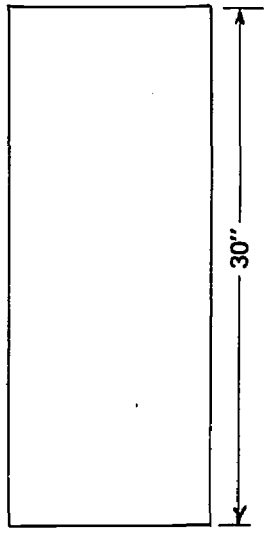
C. Equipment

No. Needed	Item Description	Where Available
1	Sabre saw	
1	Tape measure	

II. Procedure

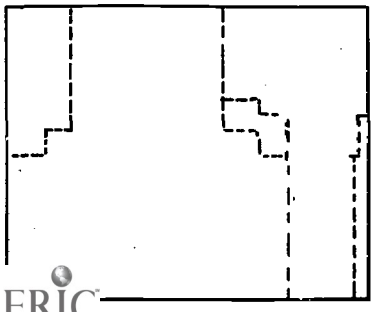
1. Cut cardboard according to diagram.
2. Fit together.
3. Paint (optional).

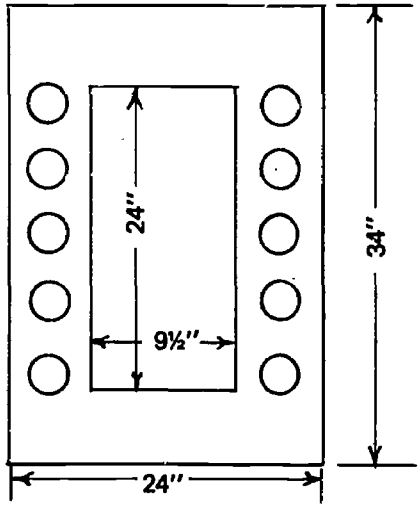


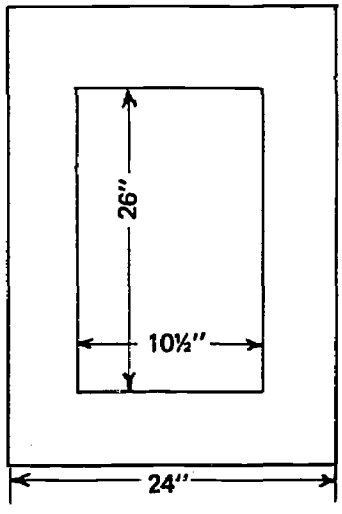


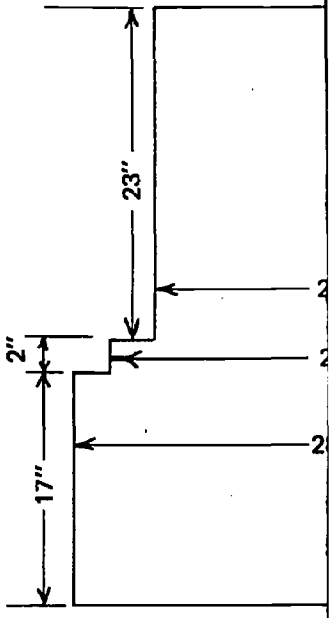
WIDTH TO FIT

CUT BOTH FROM ONE SHEET 42" x 54"









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dable Materials

Item Description	Where Available
3-1/2' x 4-1/2' cardboard Tri-Wall	Tri-Wall Container Inc. Plainview, L.I. New York
Gummed tape	
Paint (optional)	

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Item Description	Where Available
Sabre saw	
Tape measure	

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according to diagram.

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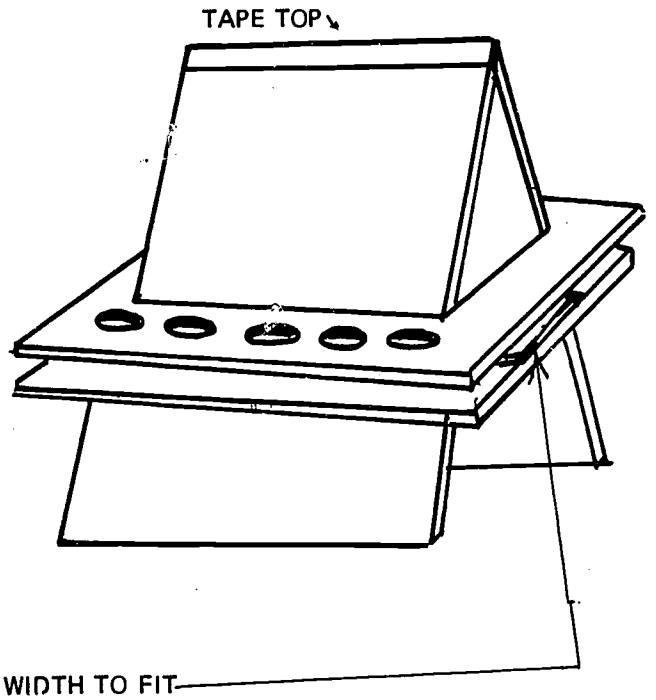

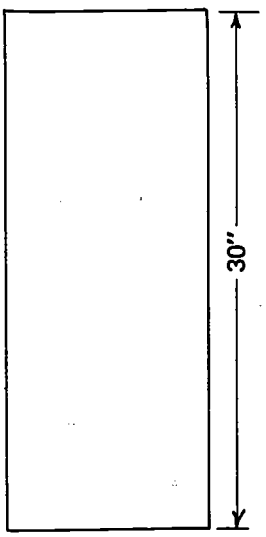

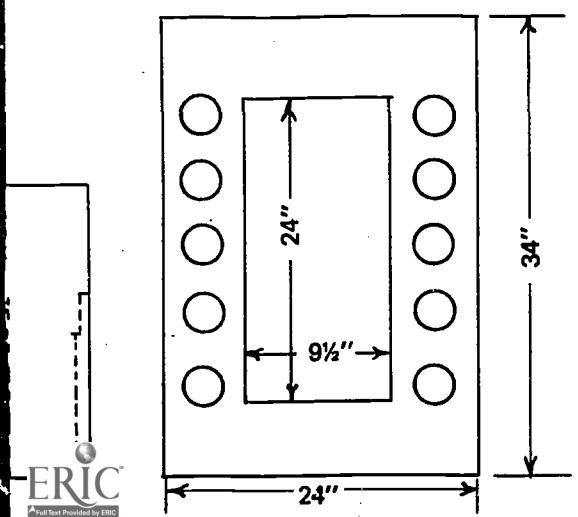

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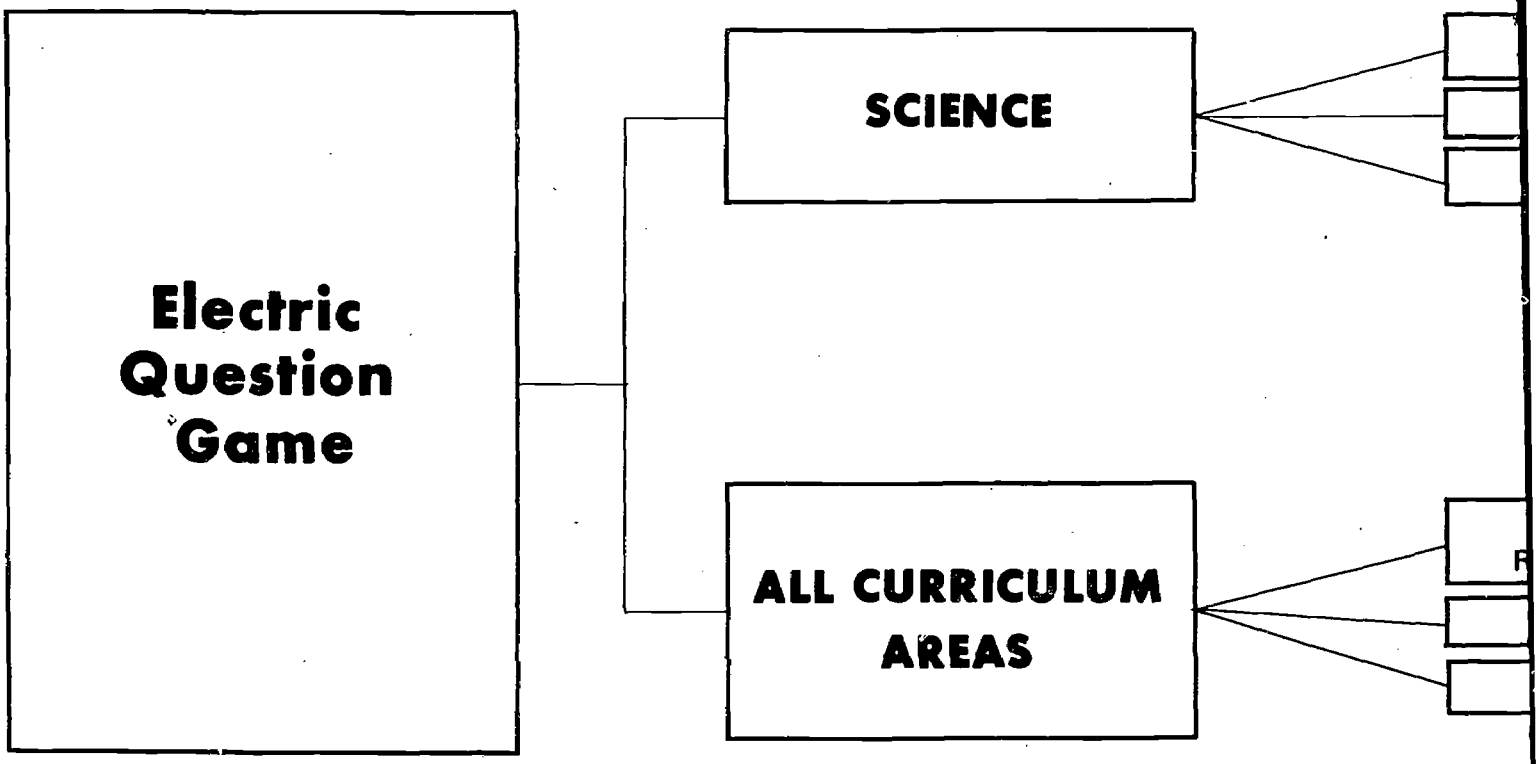

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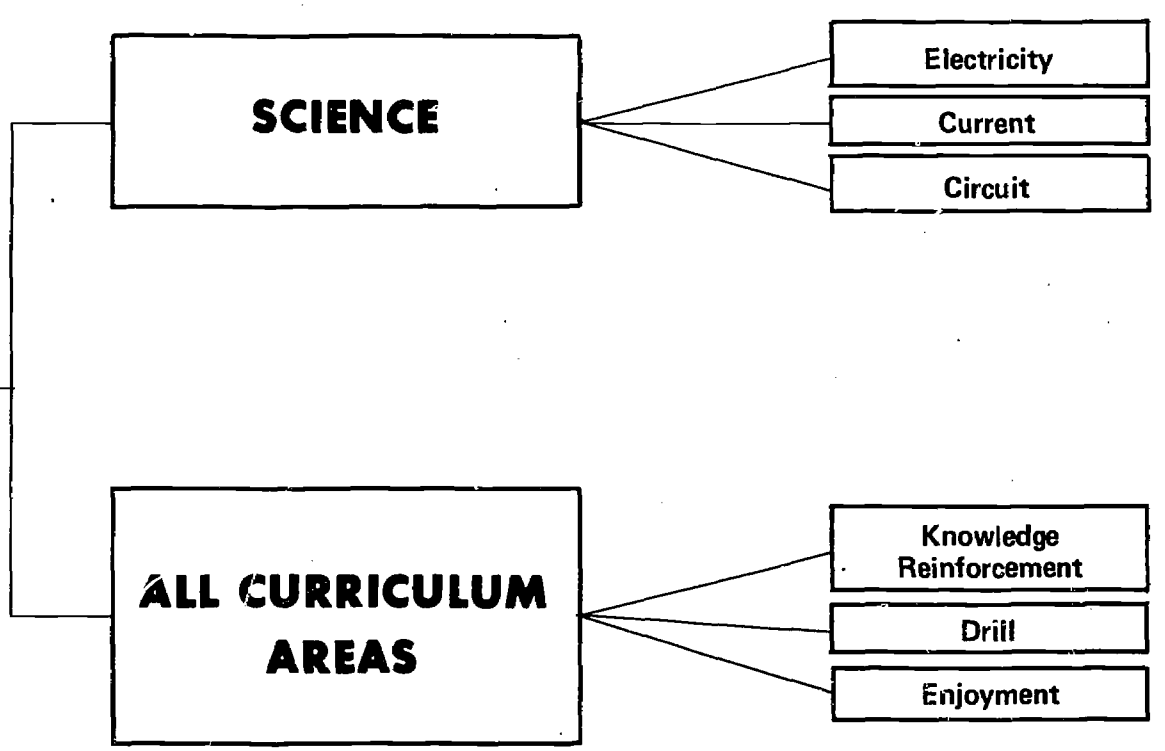


I. Physical Environment

Teacher's Notes

A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
1	12"x14"x1/2" plywood	Lumber yard
2	3"x12"x1/2" plywood	Lumber yard
2	3"x14"x1/2" plywood	Lumber yard
1 box	2 inch nails	Lumber yard
20 feet	Insulated wire	Hardware store
	Index cards	
	Sheet of plastic	
	Plastic tape	

C. Equipment

No. Needed	Item Description	Where Available
1	Dry cell	
1	Lamp socket	
1	Small bulb (2-1/2 watts)	
1	Sabre saw	
1	Hammer	

II. Procedure

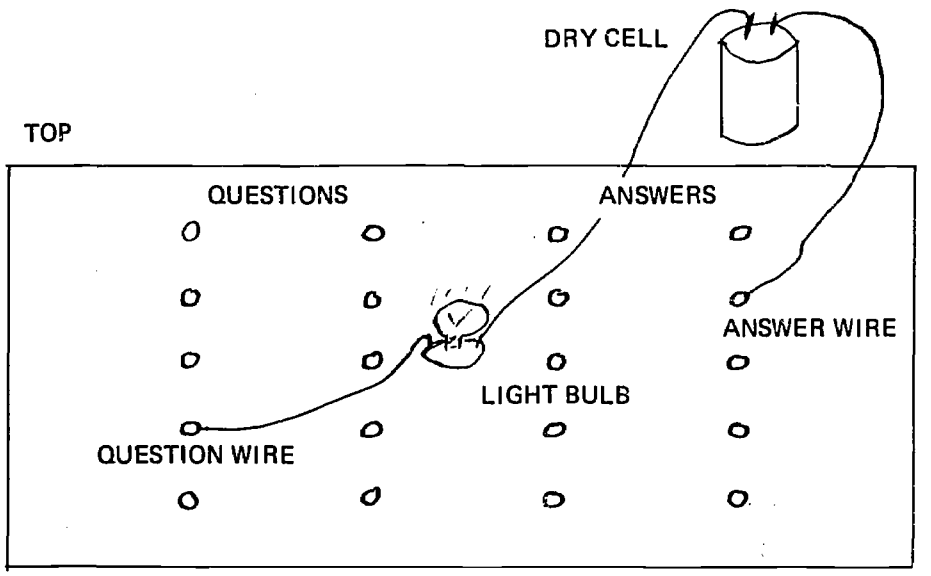
Teacher's Notes

Game Construction

1. Construct open box, matching sides to 12"x14" piece area.
2. Place nails in box with heads flat against box top — evenly spaced to allow 10 questions and answers — 5 rows — 4 nails each.
3. On underside of cover, attach one end of a piece of wire to the first nail in the first row (see diagram).
4. Wind the other end of the same wire around a nail in the third or fourth row. Wind ends tightly.
5. In the same way, attach a wire between the second nail in the first row and some other nail in the third or fourth row.
6. Make 20 strips of index cards or clear plastic on which an easily erased grease pencil can be used to facilitate changing questions and answers.
7. Fasten the lamp socket to the cover. Then connect 2 wires — one is the question wire and the other is the answer wire.
8. Prepare ten questions and ten answers on the index cards or plastic strips.
9. Wire answers on the strip nail head that matches the question.

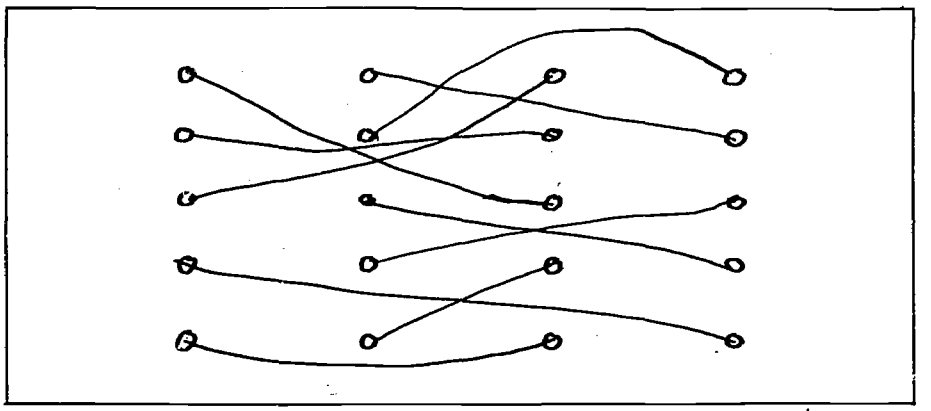
Playing

1. Ask someone to touch the end of a question wire to a nail head in one of the question rows. Have him touch the end of the answer wire to the correct answer.
2. If he has selected the correct answer, a circuit is completed and the lamp should light.
3. Change questions and answers to suit needs.



ELECTRIC QUESTION GAME

UNDERSIDE



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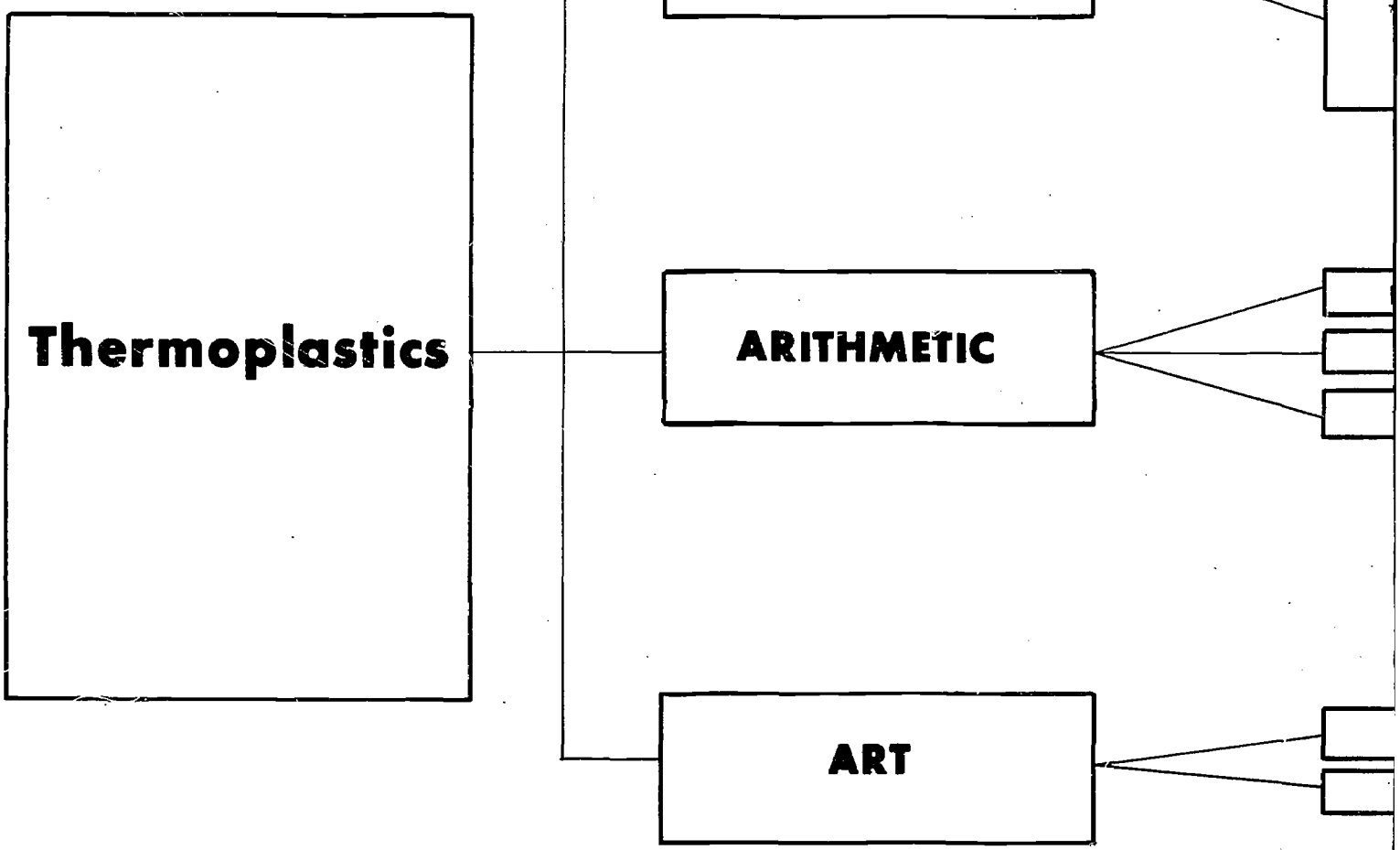

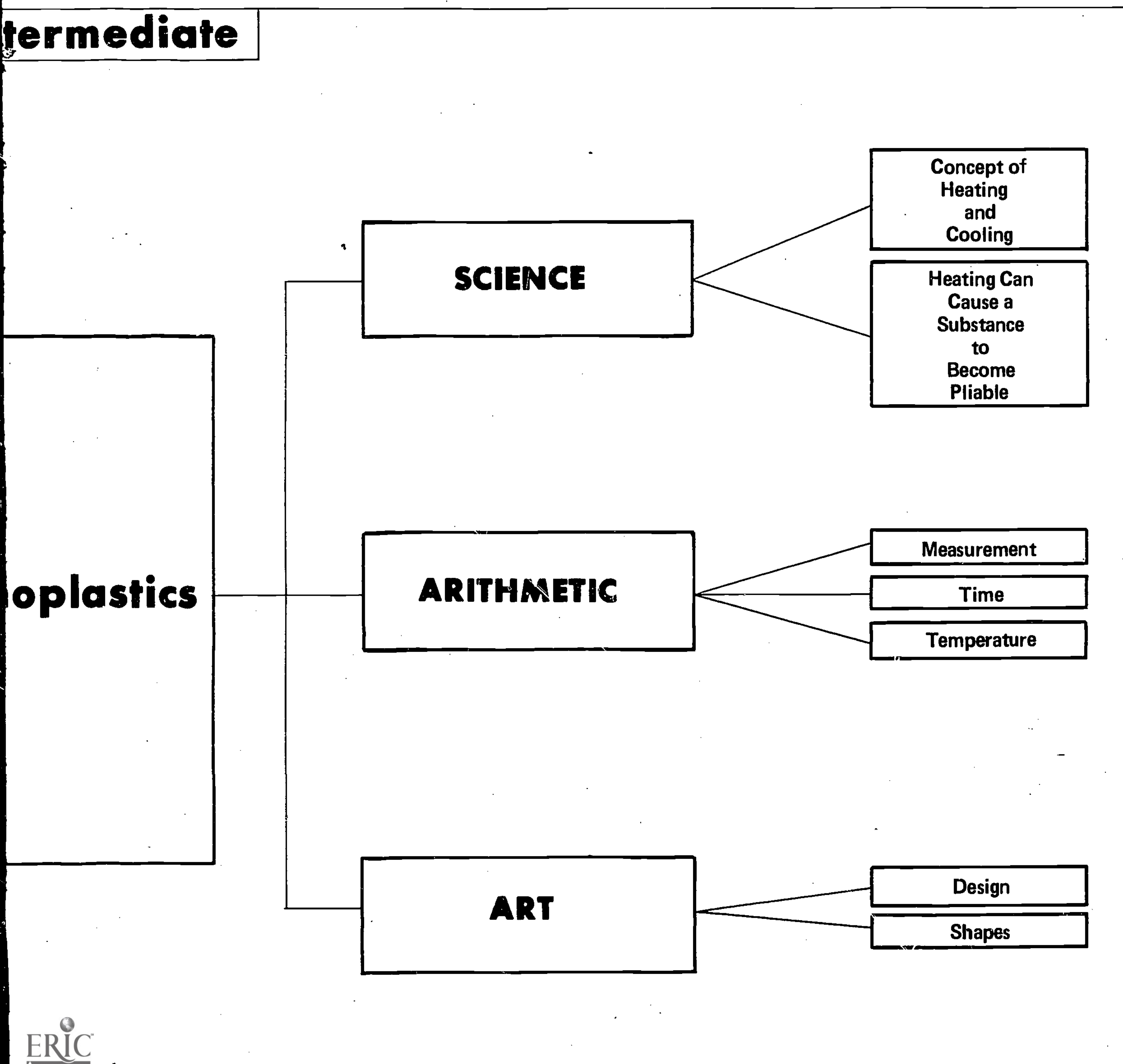
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oplastics
SCIENCE
Concept of Heating and Cooling
Heating Can Cause a Substance to Become Pliable
ARITHMETIC
Measurement
Time
Temperature
ART
Design
Shapes

I. Physical Environment

Teacher's Notes

A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
1 sheet	12"x24" Plexiglas (1/16"-1/8")	Lumber yard
1 pair	Asbestos gloves	Hardware store
1	Linoleum cutter	Art supply

C. Equipment

No. Needed	Item Description	Where Available
1	Plastic strip heater	
1	Tongs	
1	Mold (scrapwood) (optional)	Home-made

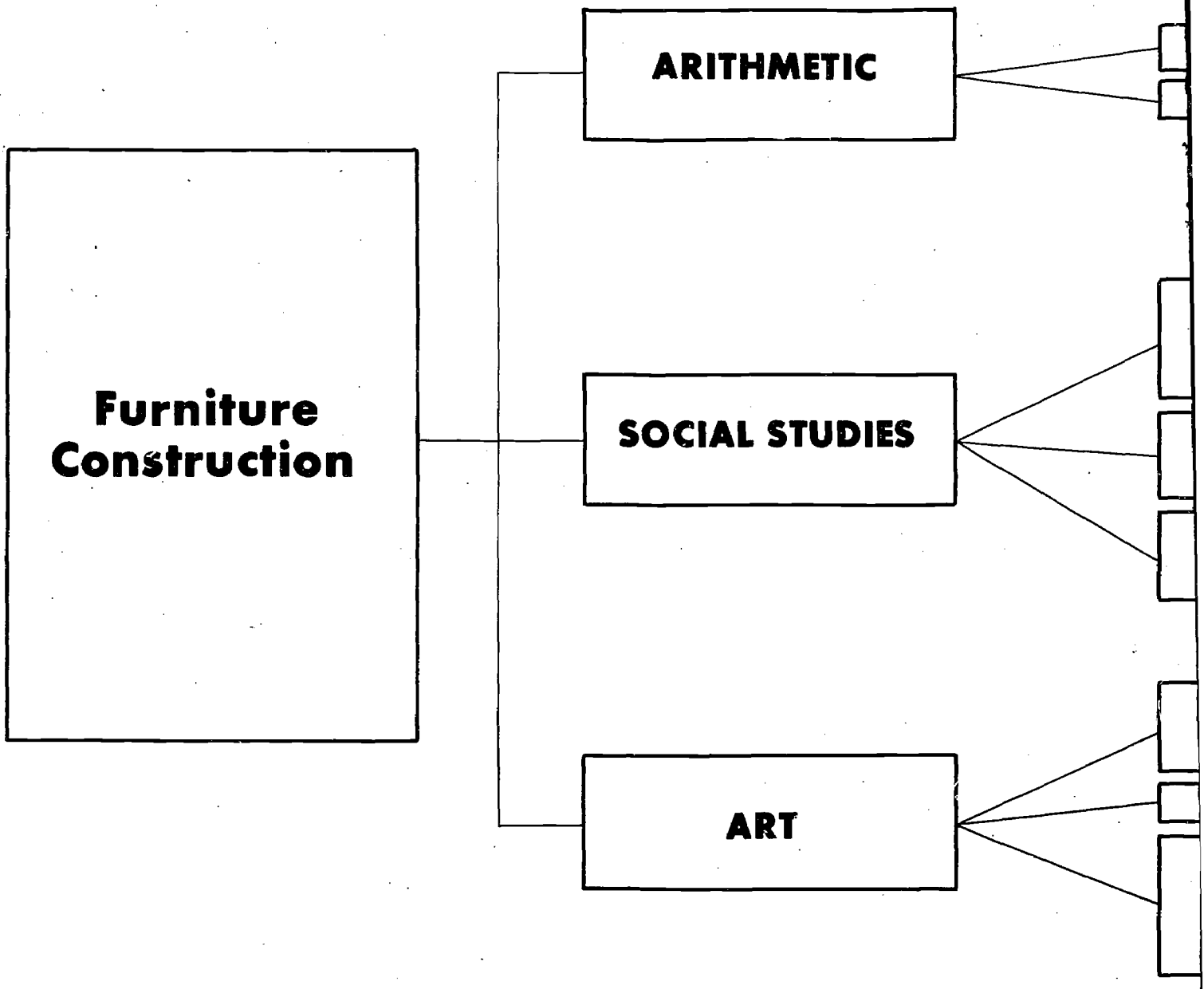
II. Procedure

1. With linoleum cutter, score plexiglas to desired size. After being scored, plexiglas should break along line.
2. Heat strip heater to 250-300 F.
3. Lay plastic on heater.
4. Plastic should, in a matter of seconds, become pliable enough to mold, or shape.*
5. The advantage to thermoplastics is that the plexiglas can be heated over again and reformed many times.

NOTE: If a mold is desired, one can be made from scrap wood blocks nailed together.

*Be sure asbestos gloves are worn, when handling plastics.

LEVEL Intermediate



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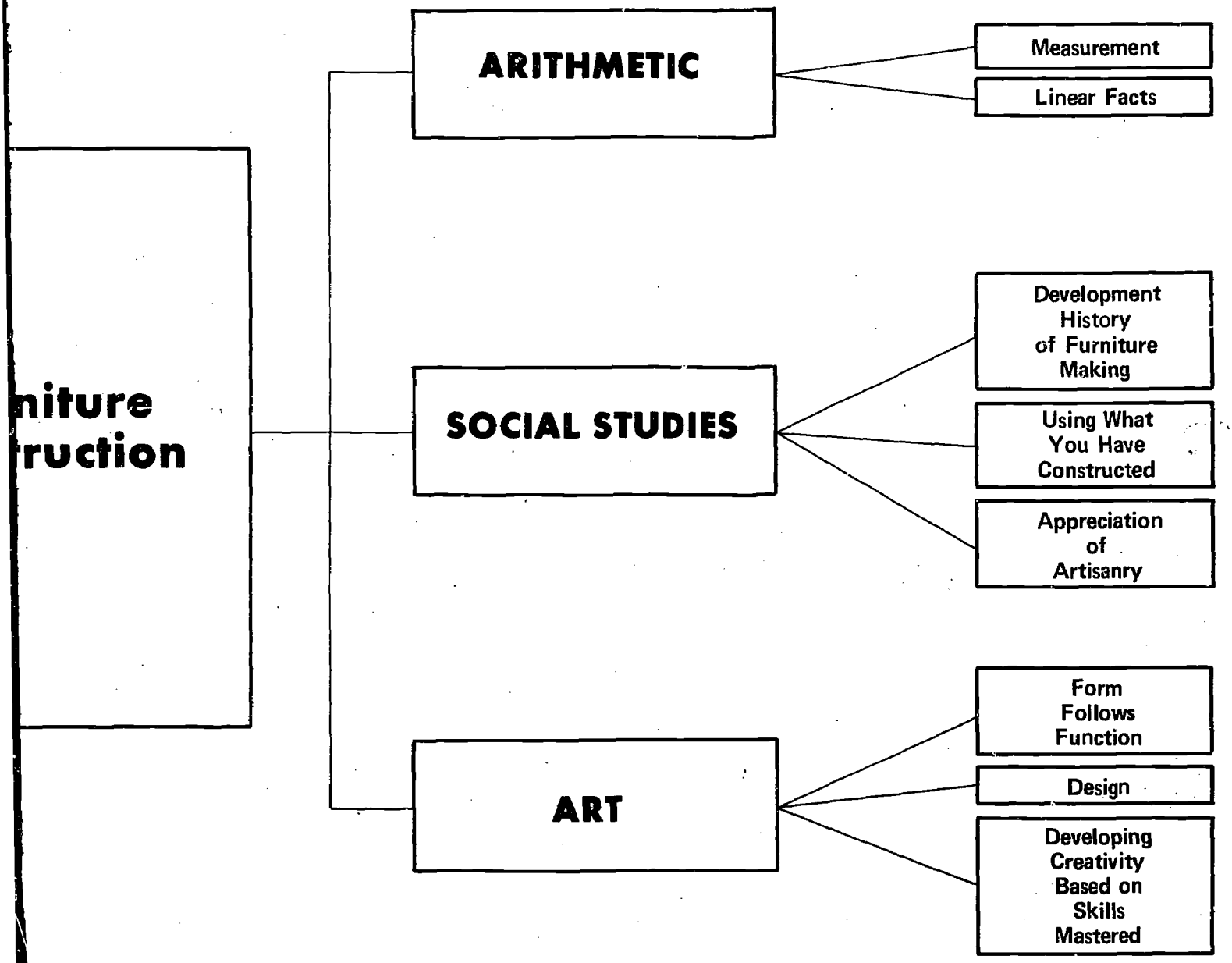
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Measurement
Linear Facts
SOCIAL STUDIES
Development History of Furniture Making
Using What You Have Constructed
Appreciation of Artisanry
ART
Form Follows Function
Design
Developing Creativity Based on Skills Mastered

PHASE I
Table

I. Physical Environment

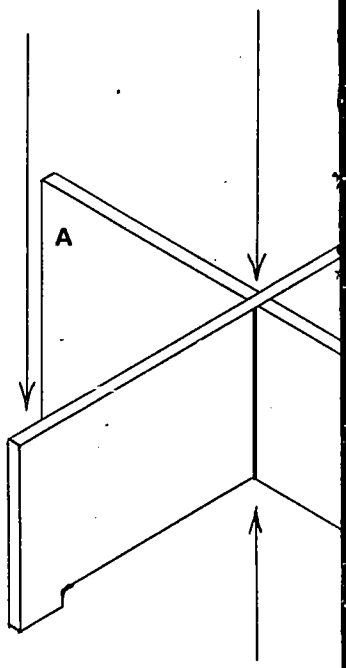
A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
2 sheets	Tri-Wall cardboard (3-1/2'x4-1/2')	Tri-Wall Container, Inc. Plainview, L.I. New York
1 bottle	Elmer's glue	School supply
Variety	Tempera paint	Art supply

C. Equipment

No. Needed	Item Description	Where Available
2 or 3	Pencils	
2	Yardsticks	
1	Sabre saw	
1	Large compass	
Optional	Paint brushes	



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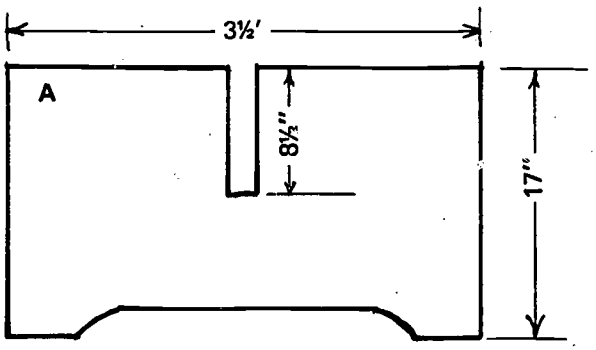

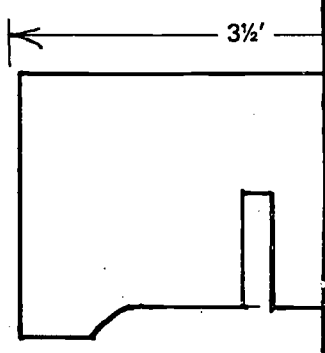

PHASE I
Table

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Item Description	Where Available
Tri-Wall cardboard (3-1/2' x 4-1/2')	Tri-Wall Container, Inc. Plainview, L.I. New York
Elmer's glue	School supply
Tempera paint	Art supply

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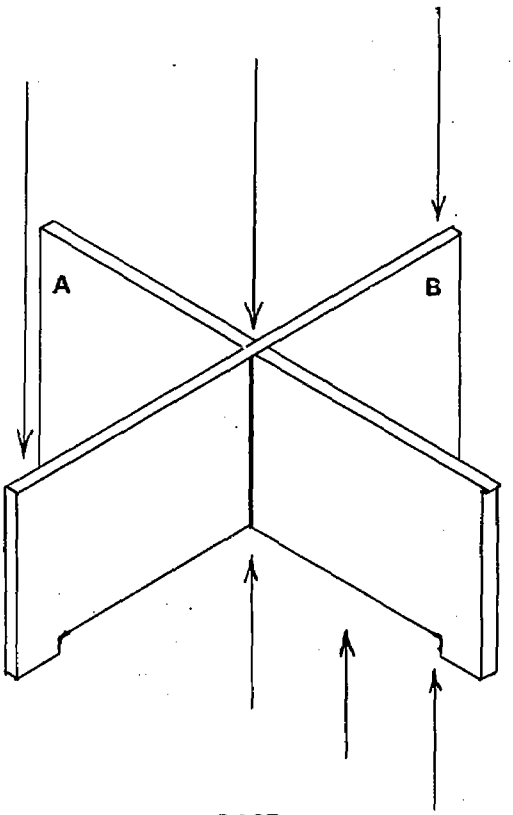
Item Description	Where Available
Pencils	
Yardsticks	
Sabre saw	
Large compass	
Paint brushes	



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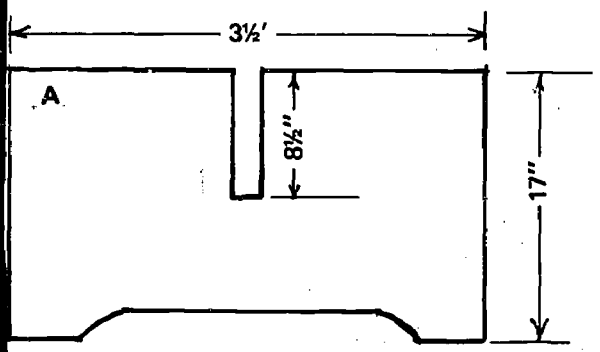
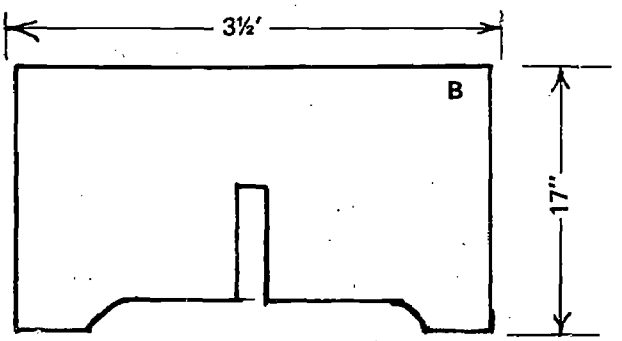




II. Procedure

Table Top

1. Using compass, draw circle measuring 3-1/2' on one sheet of cardboard.
2. Cut with sabre saw (can make scalloped edge.)

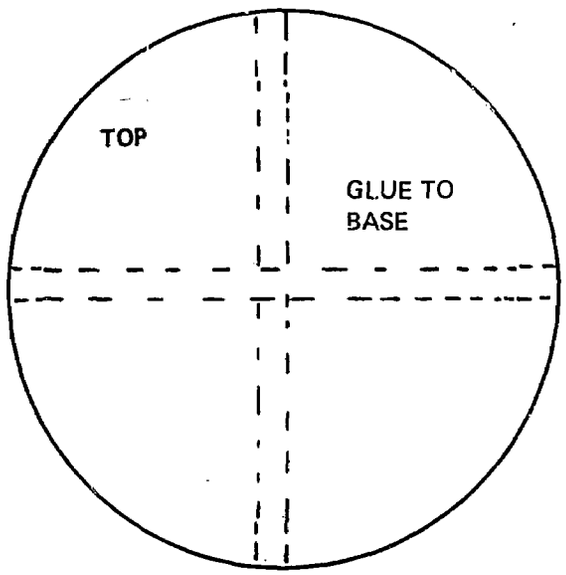
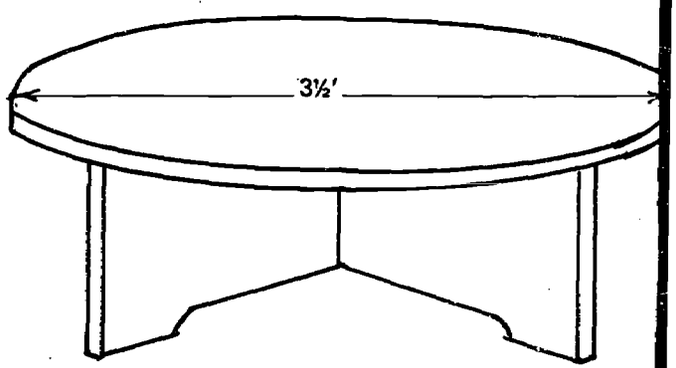


Table Bottom

1. Cut second sheet of Tri-Wall into 2 pieces, each measuring 3-1/2' long by 17" high (or height of child's chair from seat to floor).
2. In each piece, cut an 8-1/2" slit (length) equidistant from edges (approximately 1-3/4' from each side). Width of slit should measure to thickness of Tri-Wall (approximately 1") for easy insertion to form cross base as table bottom (see diagram).
3. Insert 2 pieces to form table bottom via slits.

Joining Top and Bottom

1. Pour glue on top of cross base formed by bottom pieces.
2. Place circular top on cross base.
3. Place heavy items on table, weighting glued areas especially. Let dry for 24 hours.
4. Decorate using solid color tempera paints as background or allow children to invent and use own designs.



PHASE II
Chairs

I. Physical Environment

Teacher's Notes

A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
1 sheet	3-1/2'x4-1/2' Tri-Wall cardboard	Tri-Wall Container, Inc. Plainview, L.I. New York
1 bottle	Elmer's glue	School supply
Variety	Tempera paints	Art supply

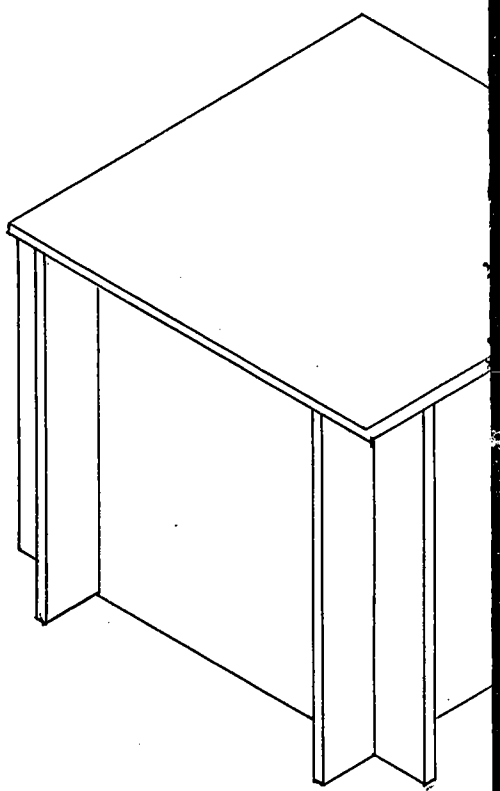
C. Equipment

No. Needed	Item Description	Where Available
2 or 3	Pencils	
1	Yardstick	
1	Sabre saw	
2 or 3	Paint brushes (optional)	

Teacher's Notes

II. Procedure

1. Measure and cut 4 pieces of cardboard to 17" height (or height of child's chair) by 17" width. These pieces will form chair underpinnings.
2. Measure 1 piece cardboard to 18" square for seat.
3. Make two 8-1/2" slits in each of the 4 pieces. Place slits 2" from edges. (See diagram). Make slits the width of the cardboard, approximately 1".
4. Insert pieces, using slits to form topless, bottomless, "box".
5. Pour glue on 4 edges of "box" top.
6. Place 18" by 18" seat on glued area carefully, equidistant so overhang is even.
7. Place heavy objects on seat for 24 hours to secure glued areas.
8. For "high back" chair, cut one of the 4 chair bottom pieces to measure 34" by 17".
   a. Repeat steps 2 through 5, pouring glue on 3 edges of box top. (High back forms the fourth side).
   b. Place seat on top of glued open box area, aligning one seat edge against high back piece.
9. Decorate as desired.



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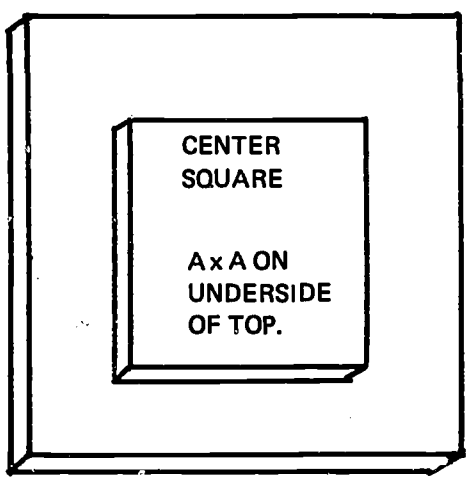

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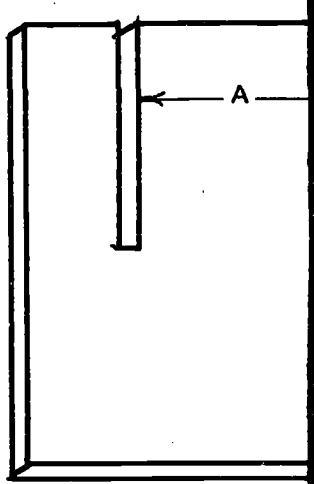

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cut 4 pieces of cardboard to 17" height
child's chair) by 17" width. These pieces
r underpinnings.
ece cardboard to 18" square for seat.
1/2" slits in each of the 4 pieces. Place
edges. (See diagram). Make slits the
cardboard, approximately 1".
, using slits to form topless, bottomless,

4 edges of "box" top.
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p. (High back forms the fourth side).
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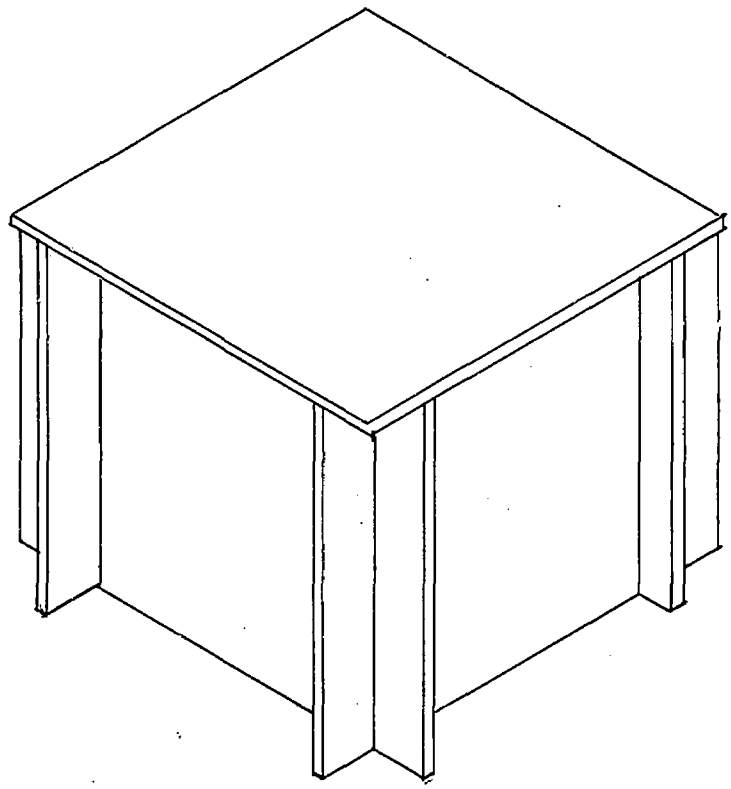
desired.



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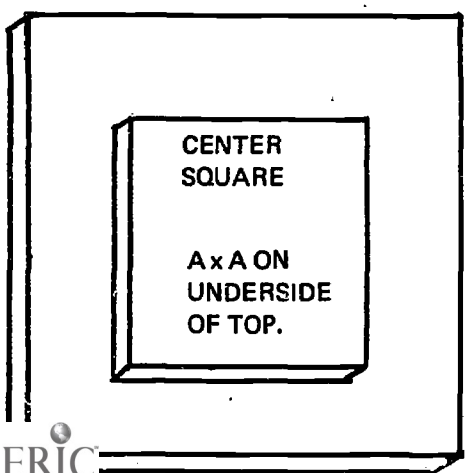

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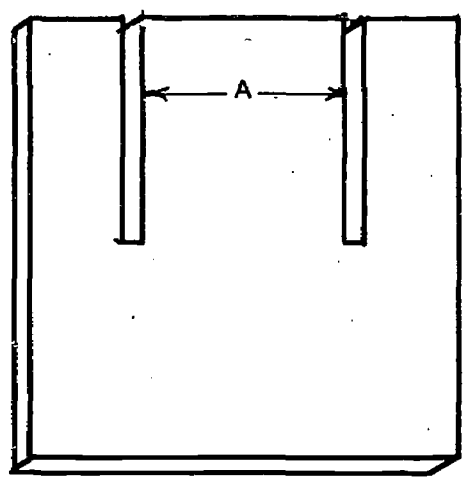

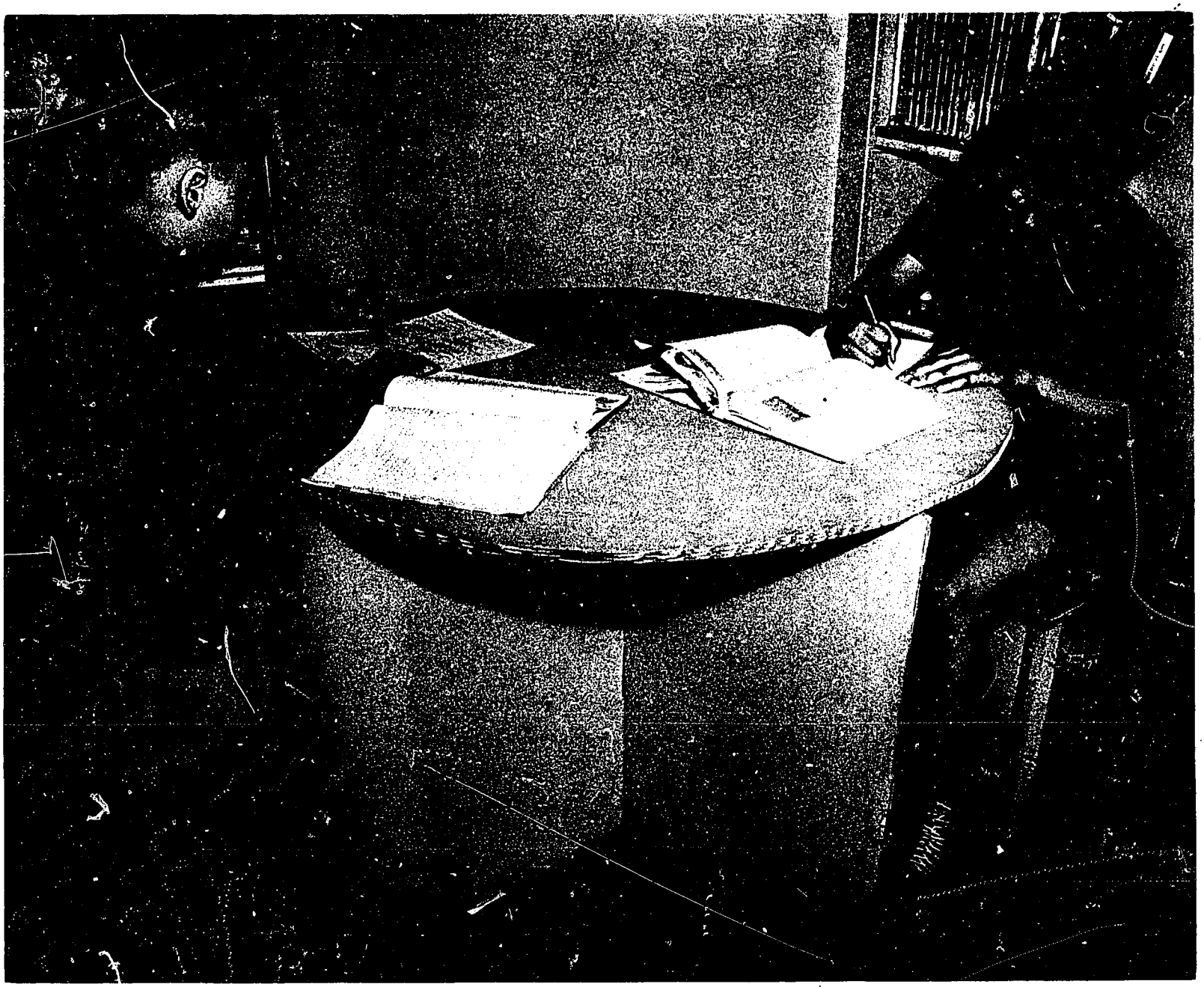

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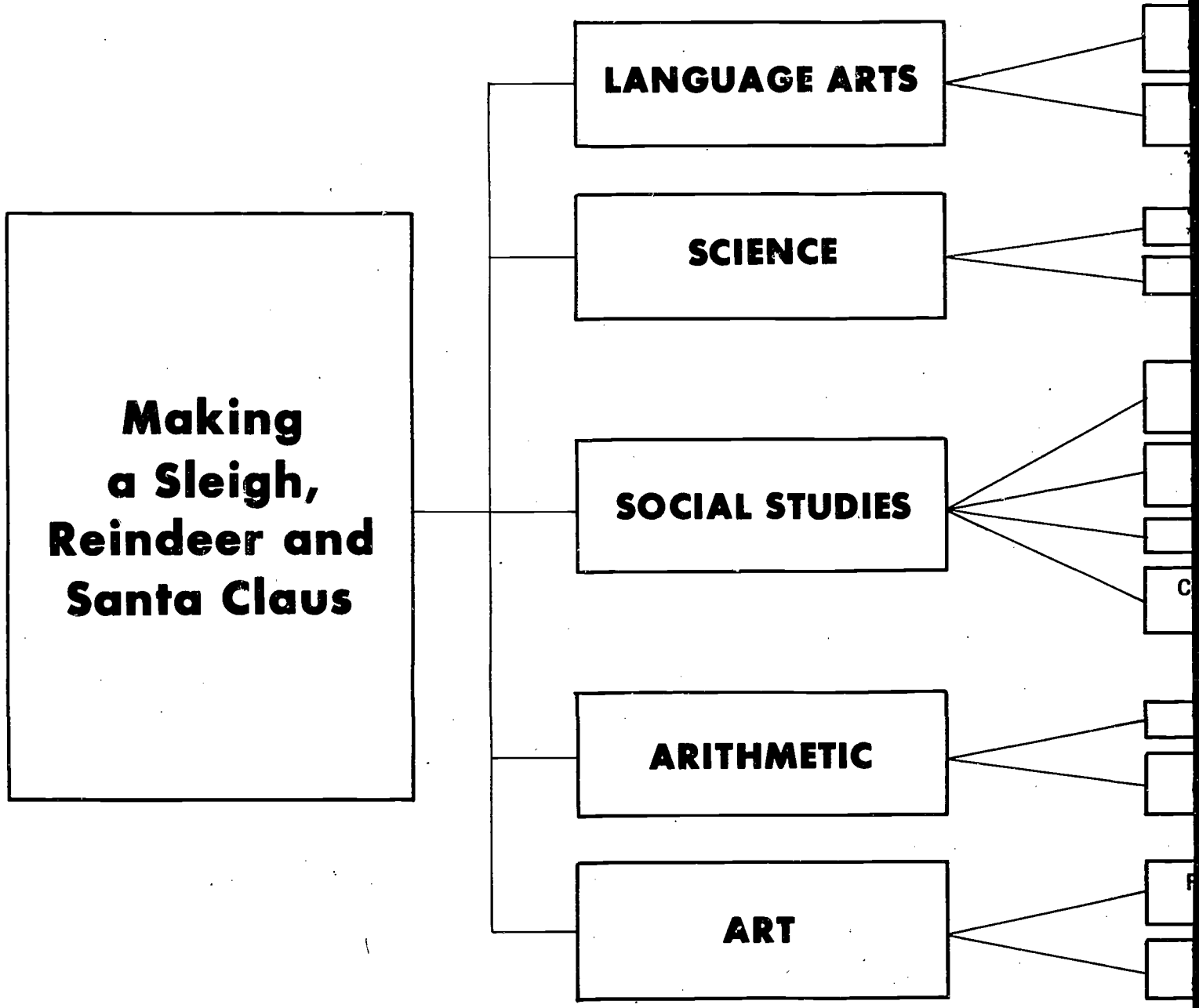

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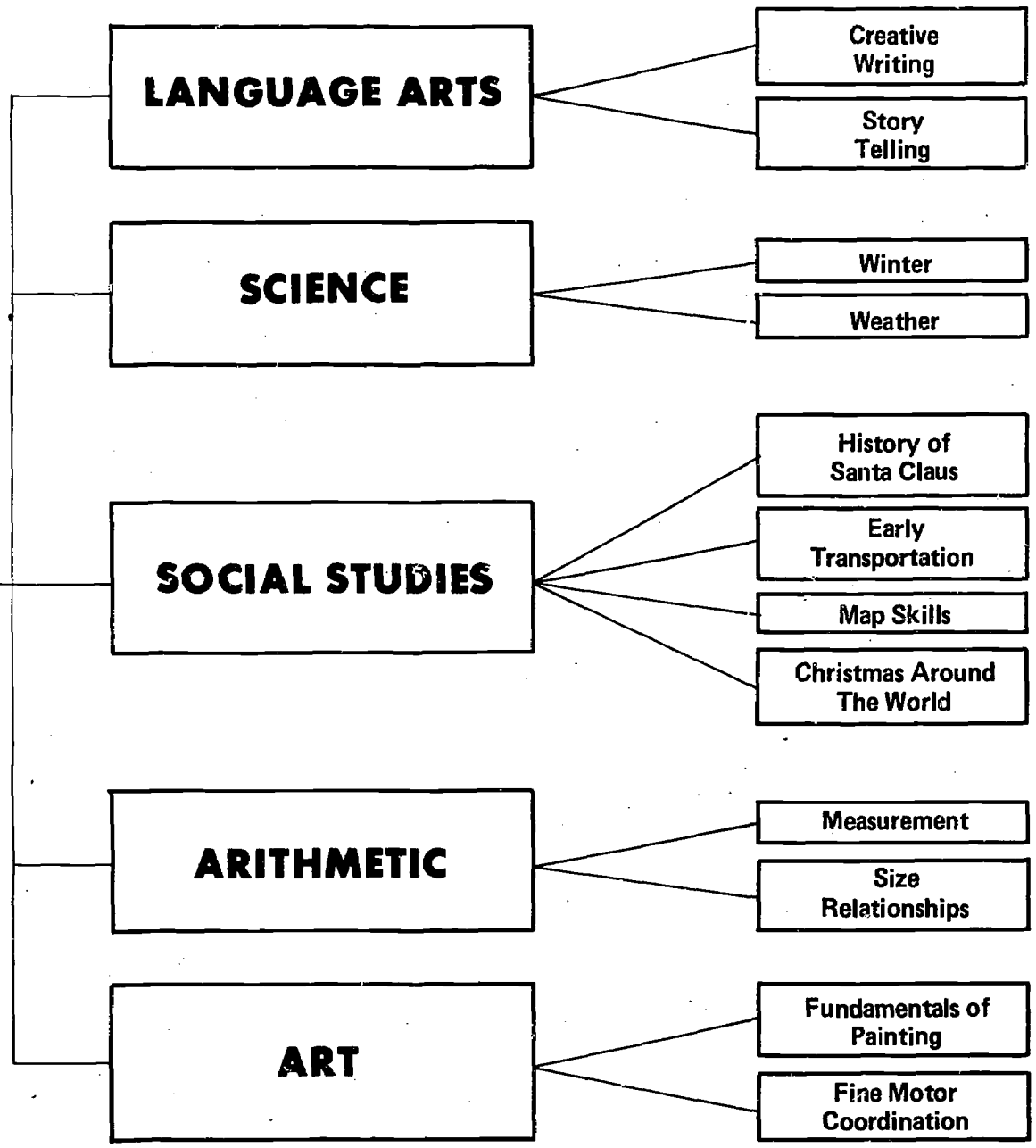


PHASE I
Sleigh and Reindeer

I. Physical Environment

A. Classroom

B. Expendable Materials

(6 REINDEER AND SLEIGH)

No. Needed	Item Description	Where Available
10 pieces	3-1/2'x4-1/2' cardboard	Tri-Wall Container Inc. Plainview, L.I. New York
1 gallon	Brown latex paint	Hardware store
1 gallon	Red latex paint	Hardware store
1 pint	White latex paint	Hardware store
6	Pencils	School supply
	Garland	Department store
	Branches from trees for reindeer antlers (optional)	
	Yarn	

C. Equipment

No. Needed	Item Description	Where Available
1	Sewing machine (optional)	

D. Motivating Device

1. Surprise to be presented to principal at Christmas.

FIG. A

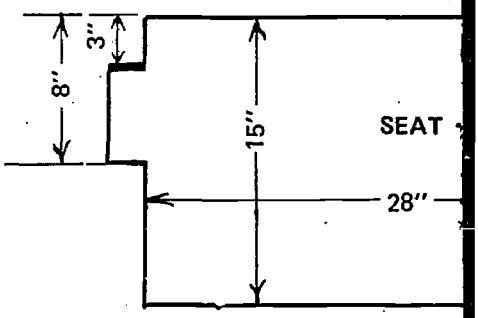
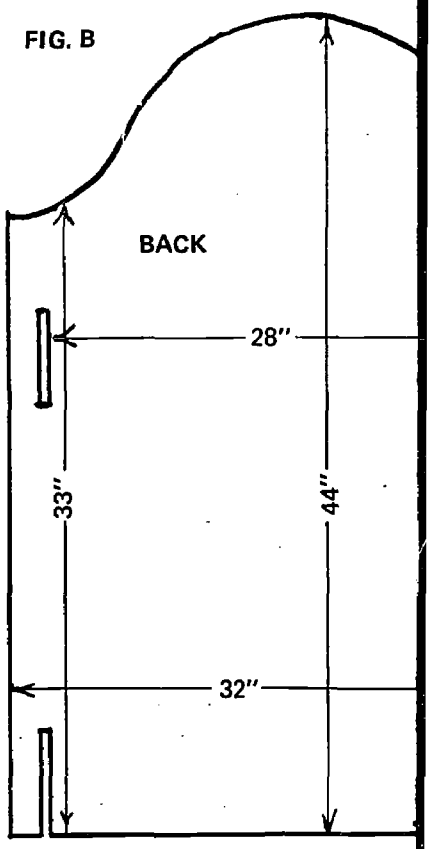


FIG. B



PHASE I
Sleigh and Reindeer

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ndable Materials

ER AND SLEIGH)

d	Item Description	Where Available
	3-1/2'x4-1/2' cardboard	Tri-Wall Container Inc. Plainview, L.I. New York
	Brown latex paint	Hardware store
	Red latex paint	Hardware store
	White latex paint	Hardware store
	Pencils	School supply
	Garland	Department store
	Branches from trees for reindeer antlers (optional)	
	Yarn	

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d	Item Description	Where Available
	Sewing machine (optional)	

ating Device

se to be presented to principal at Christmas.

FIG. A

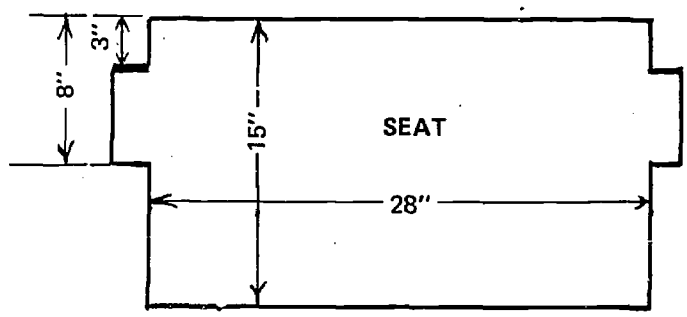
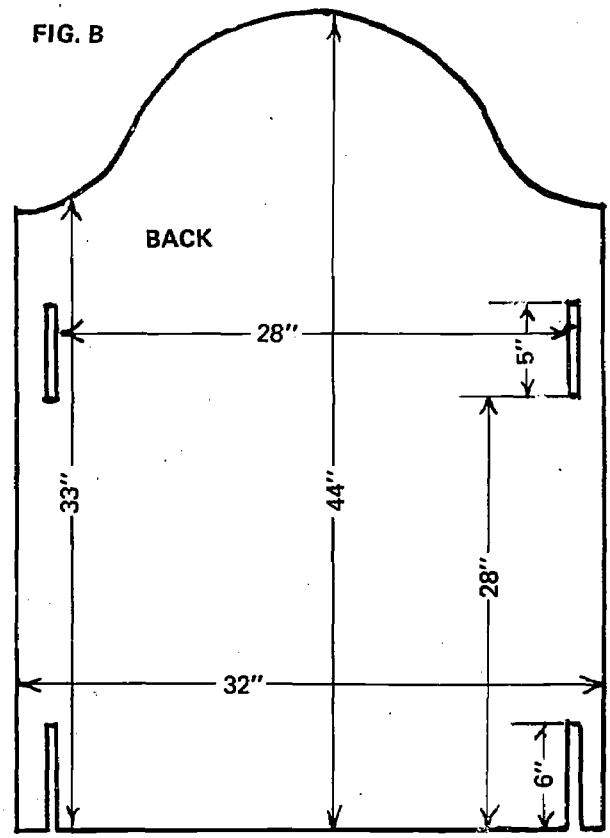


FIG. B



II. Procedure

A. Sleigh and Reindeer

1. Use 1 piece of cardboard 3-1/2' x 4-1/2' for each reindeer. Draw one reindeer for pattern and trace onto other cardboard sheets.

B. Sleigh

1. Use 1 sheet of cardboard to trace one side.
2. Trace on other piece of cardboard for other side and cut.
3. Make back of sleigh to size specifications on diagram.
4. Make bottom — specifications on diagram.
5. Make seat as on diagram.
6. Paint reindeer and sleigh.
7. Attach sleigh — see figure for tab slot construction.
8. Attach reindeer — see figure for construction.
9. Use yarn for reins.

FIG. C

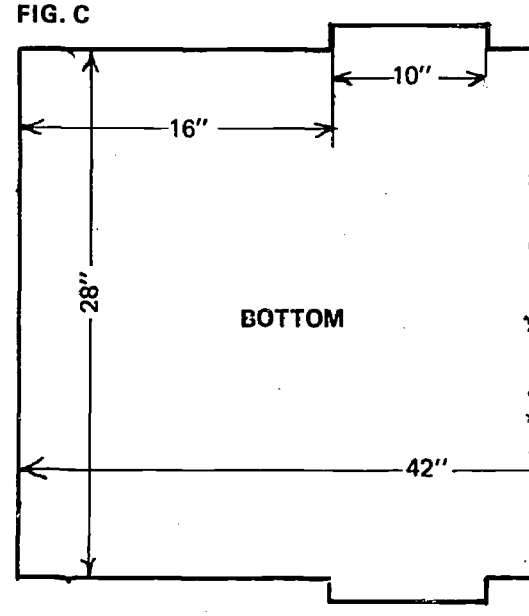
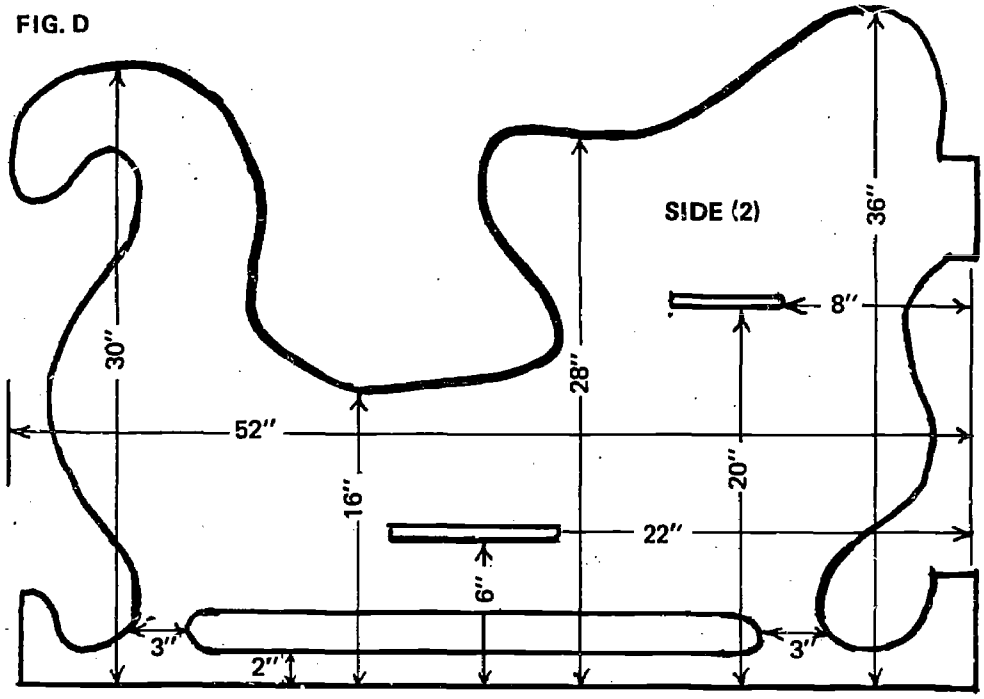


FIG. D



SCALE 3/

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and Reindeer

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one reindeer for pattern and trace onto
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FIG. C

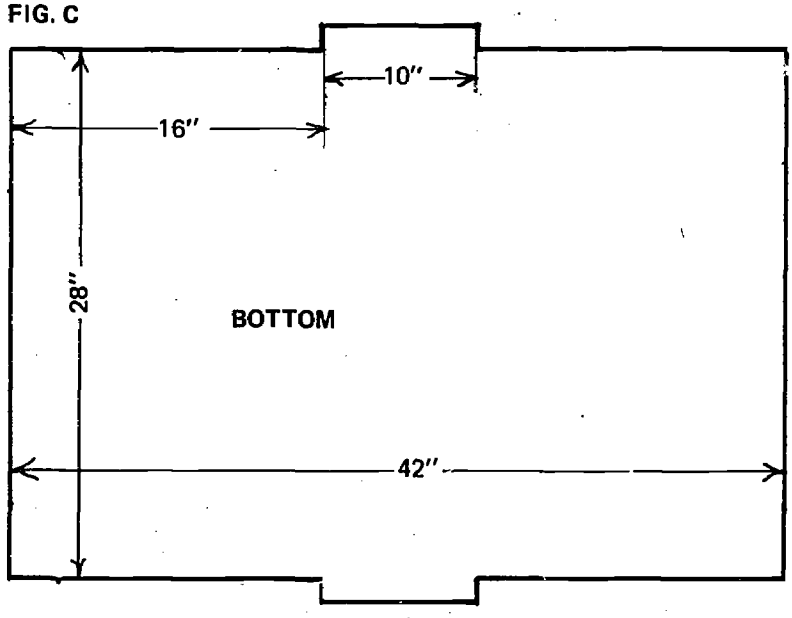
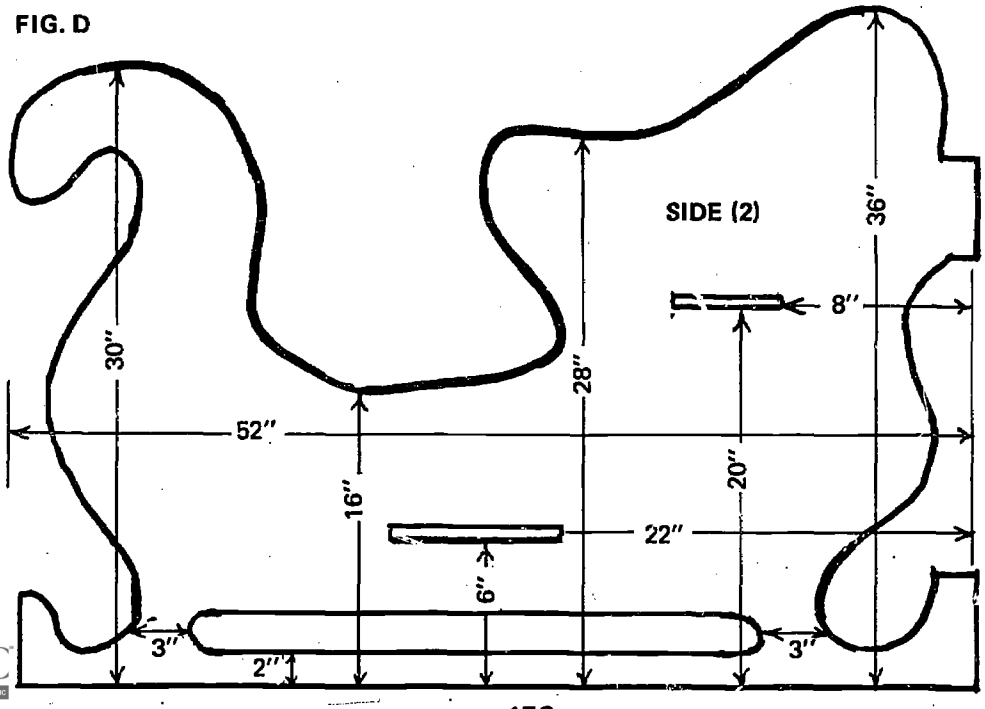


FIG. D



SCALE 3/32"=1"

PHASE II
Santa Claus

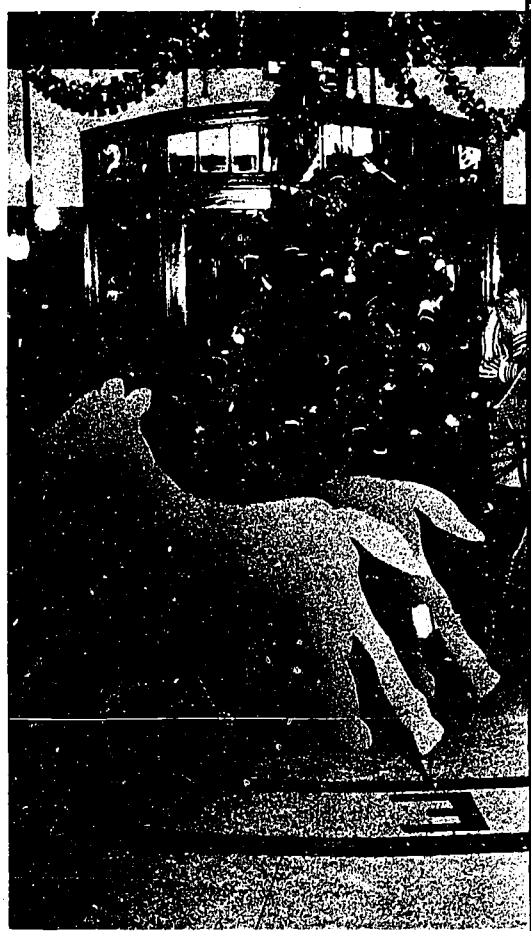
I. Physical Environment

A. Classroom

B. Expendable Materials

(SANTA CLAUS)

No. Needed	Item Description	Where Available
	Felt — red and white	Department store
	Thread and needle	Department store
	Polester cotton for stuffing	Department store
	Cotton for hat, sleeves and collar	Department store
	Papier mache	Art supply



C. Equipment

No. Needed	Item Description	Where Available
1	Sewing machine (optional)	

II. Procedure

1. Cut pattern to desired size.
2. Sew by hand or machine.
3. Insert stuffing.
4. Attach head made from papier mache.
5. Trim hat, sleeves, and collar with cotton.

PHASE II
Santa Claus

al Environment

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lable Materials

AUS)

Item Description	Where Available
Felt — red and white	Department store
Thread and needle	Department store
Polester cotton for stuffing	Department store
Cotton for hat, sleeves and collar	Department store
Papier mache	Art supply

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Item Description	Where Available
Sewing machine (optional)	

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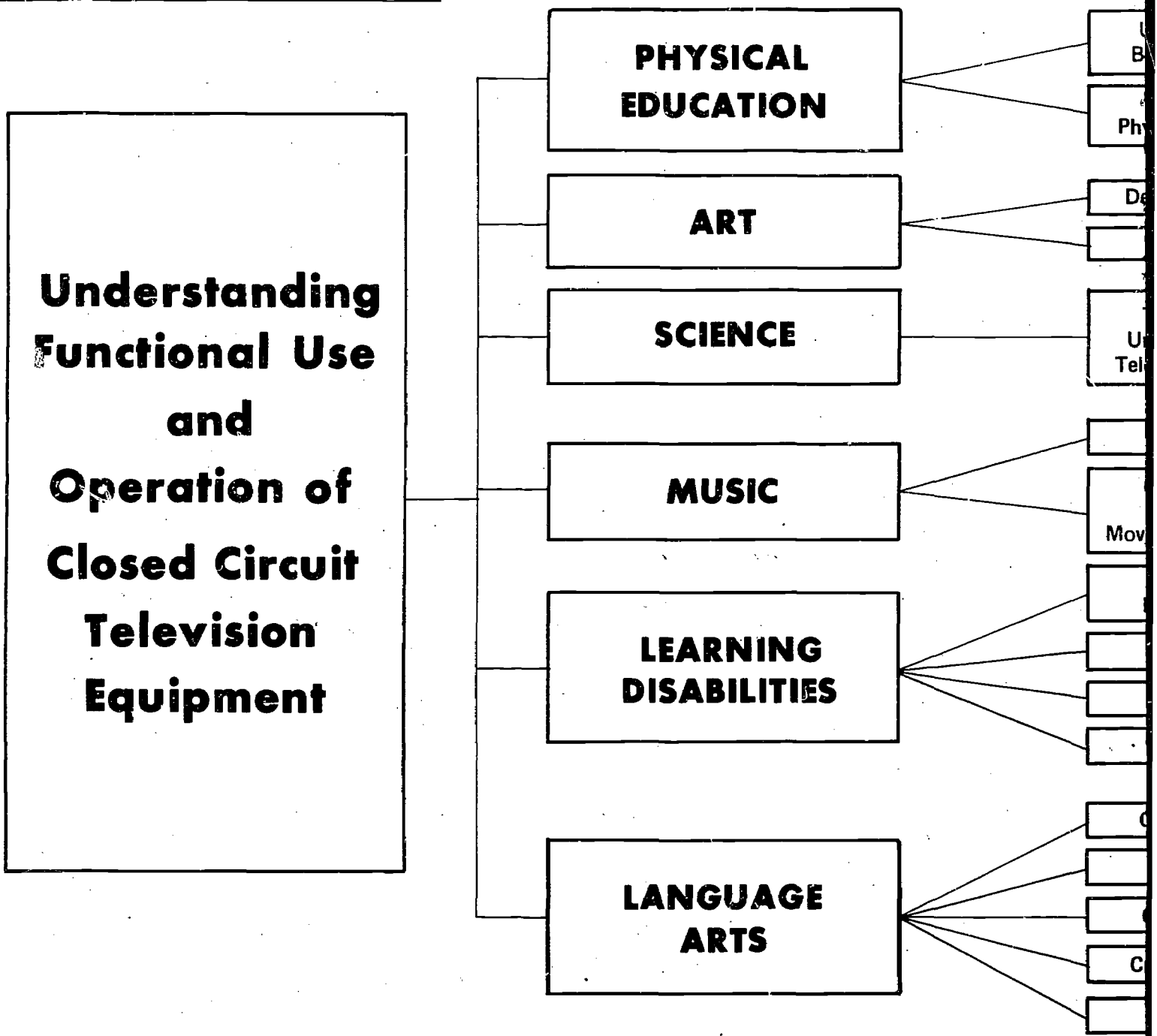

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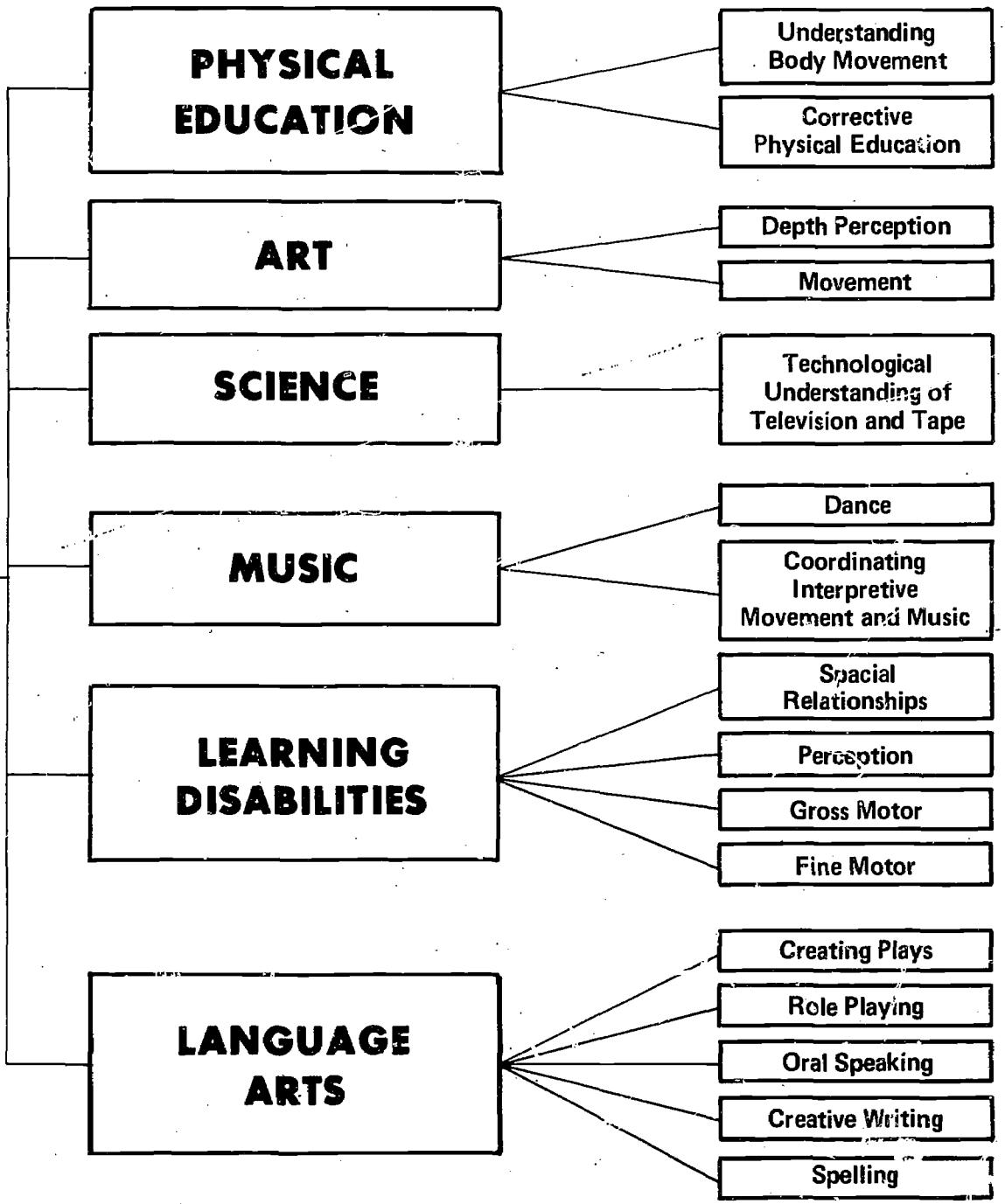

I. Physical Environment

A. Setting

1. Classroom
2. Gym.
3. Outdoors.
4. Field Trip.

B. Expendable Materials

No. Needed	Item Description	Where Available
Reels	1/2" video tape	Audio and Electronic Consulting Service 589 Green Hill Rd. Butler, N.J.
1 can	Video tape cleaner	
1 package	Q-tips	Drug store

C. Equipment

No. Needed	Item Description	Where Available
1	TV camera	Audio and Electronic Consulting Service 589 Green Hill Rd. Butler, N.J.
1	Tape machine	
1	Audio-pickup	
1	Monitor	
1	Color Tran Mini-Pro (optional)	

II. Preparing the Lesson

A. Types of Lessons

1. Lectures.
2. Demonstrations.
3. Panel Discussions.
4. Interviews.
5. Dramatizations.
6. Pupil Participation – Give and Take.

B. Programing Lesson

1. For primary grades, 15 to 30 min the limit.
2. "Dead air" or occasional silent ti with music.
3. Lessons could open with title car a teaser.
4. The entire lessons should be prep attention to opening and closing detail to prevent on stage nervou

C. Transmitting Audio

1. Pictures that can be seen clearly room with good contrast in black and gray tones are suggested. Th magazines, or in books, or photo tional or Polaroid Land cameras.
2. It is better to use multiple, simpl than one detailed, labeled drawin
3. Title cards can be white letters o One camera can focus on the per second camera is available, it can
4. Blackboards may have pre-drawn a color near that of the board. D entation, the teacher can find thi as he or she draws with the instru
5. Too many objects shown in rapid can be confusing. Use one objec focused on it and talk. E.G. Aft fossils, there can be a piece of an as the lesson is discussed.

D. Appearance

1. Dress in solid or simply patterned
2. Avoid pure white due to "bloom
3. Avoid shining jewelry. This elim of glare.
4. Don't overdo make-up. Men sho shadow-beards.

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	1/2" video tape	Audio and Electronic Consulting Service 589 Green Hill Rd. Butler, N.J.
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	TV camera Tape machine Audio-pickup Monitor	Audio and Electronic Consulting Service 589 Green Hill Rd. Butler, N.J.
	Color Tran Mini-Pro (optional)	

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ion — Give and Take.

B. Programing Lessons

1. For primary grades, 15 to 30 minute periods should be the limit.
2. "Dead air" or occasional silent times can be filled in with music.
3. Lessons could open with title card, slides, animation, or a teaser.
4. The entire lessons should be prepared with careful attention to opening and closing or summing up in detail to prevent on stage nervousness.

C. Transmitting Audio-Visual Items

1. Pictures that can be seen clearly at 5 feet in a well lit room with good contrast in black and white or black and gray tones are suggested. They can be cut from magazines, or in books, or photographed by conventional or Polaroid Land cameras.
2. It is better to use multiple, simple pictures of an item than one detailed, labeled drawing.
3. Title cards can be white letters on black background. One camera can focus on the person or objects. If a second camera is available, it can focus on the sign.
4. Blackboards may have pre-drawn graphs or pictures in a color near that of the board. During television presentation, the teacher can find this a useful technique as he or she draws with the instruction set up.
5. Too many objects shown in rapid succession on screen can be confusing. Use one object and keep camera focused on it and talk. E.G. After seeing a film on fossils, there can be a piece of amber or dinosaur cast as the lesson is discussed.

D. Appearance

1. Dress in solid or simply patterned clothing.
2. Avoid pure white due to "bloom" often produced.
3. Avoid shining jewelry. This eliminates the possibility of glare.
4. Don't overdo make-up. Men should powder heavy shadow-beards.

III. The Televised Lesson

A. Prepared Guide

1. Specific objectives – what the students should know at the end of the lesson.
2. Items such as maps, globes, models, charts, and pictures that should be in the receiving classrooms.
3. Ideas to motivate viewers before the broadcast.
4. Material to be covered in the broadcast in proper order.
5. Possible questions and answers.

B. The Run Down Sheet

1. A director should have a run down sheet, listing events generally in sequence to facilitate camera movements smoothly.
2. It should be an overall blueprint for director and teacher to follow. Pupils can assume responsibility and do run-through movements before telecasts.
3. A floorplan may also be helpful for camera movement direction.

C. Personnel

1. The teacher.
2. A director who may operate without a cameraman, using the camera in a fixed position.
3. A cameraman.
4. A technician or consultant engineer in a school system who has extensive background in electronics.
5. An artist who creates signs, posters, etc.
6. An audio man for sound control.
7. A boom operator or microphone assistant.
8. A film chain operator to load films and slides.
9. A floor manager who moves items on and off screen, such as tables, science equipment, etc.
10. A general production assistant or errand giant.

Televised Lesson

pared Guide

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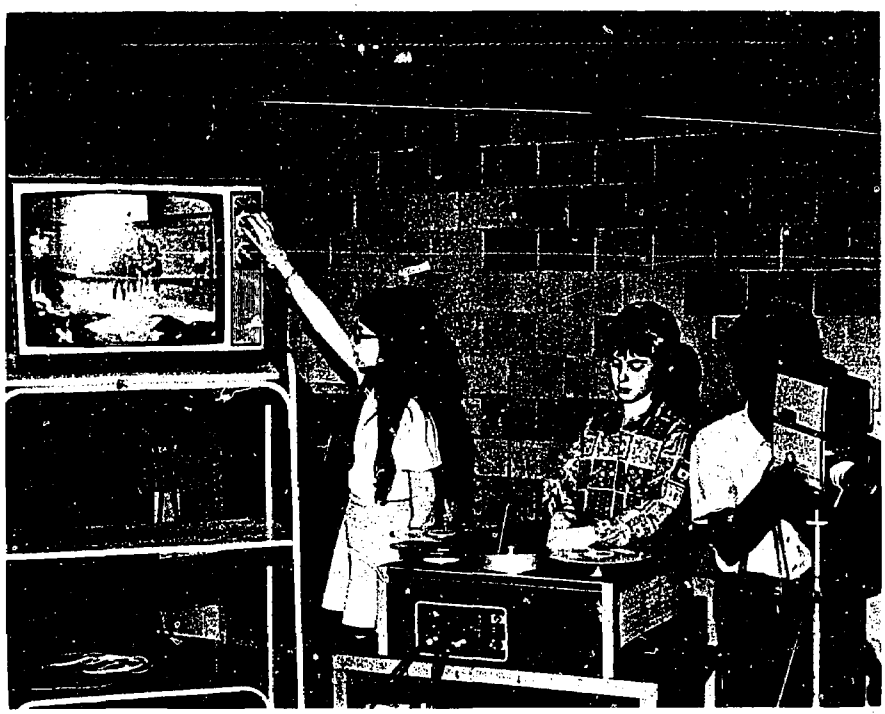

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D. Teaching Equipment

1. Films and slides.
2. Charts.
3. Properties (probably the most items needed will be in this category).
4. Furniture.
5. Personnel assignments.

IV. The T.V. Studio

A. Classroom

1. For some instructional purposes, one does not need a complex studio.

B. Soundproofing

1. Floors should not creak.
2. Burlap drapes can muffle wall sounds.

C. Lighting

1. Most cameras contain light meters to determine proper intensity.
2. The Color Tran Mini-Pro can be used to increase lighting.

V. Using the Lesson

A. Miscellaneous

1. Place television sets in front of the window wall to avoid glare.
2. Seat students in a triangular pattern.
3. Sets should be at eye level.
4. Room should be dim, not dark, during telecast.
5. Use receiver for no more than 35 children.
6. Use lesson as an adjunct rather than a total instruction session.

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V. Studio

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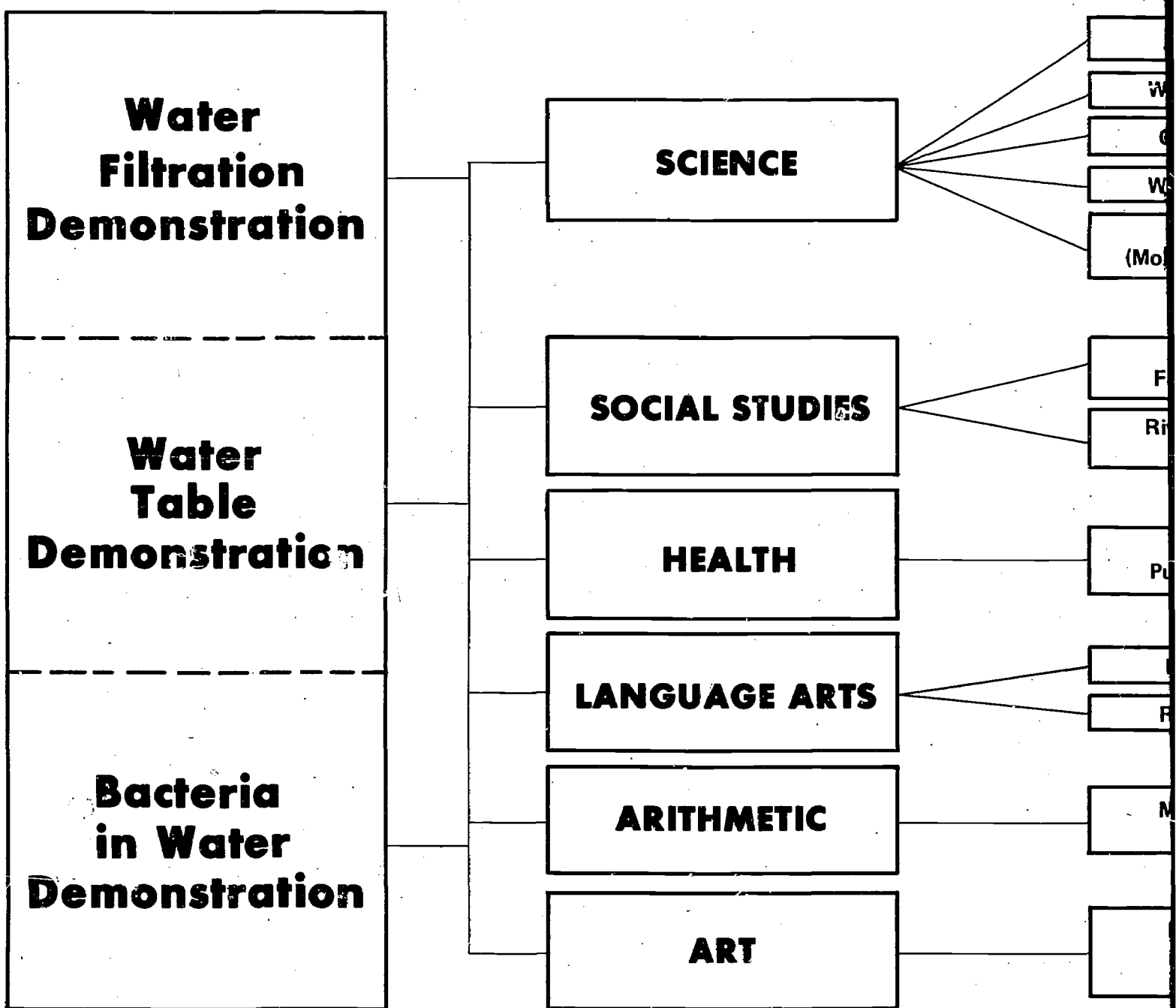
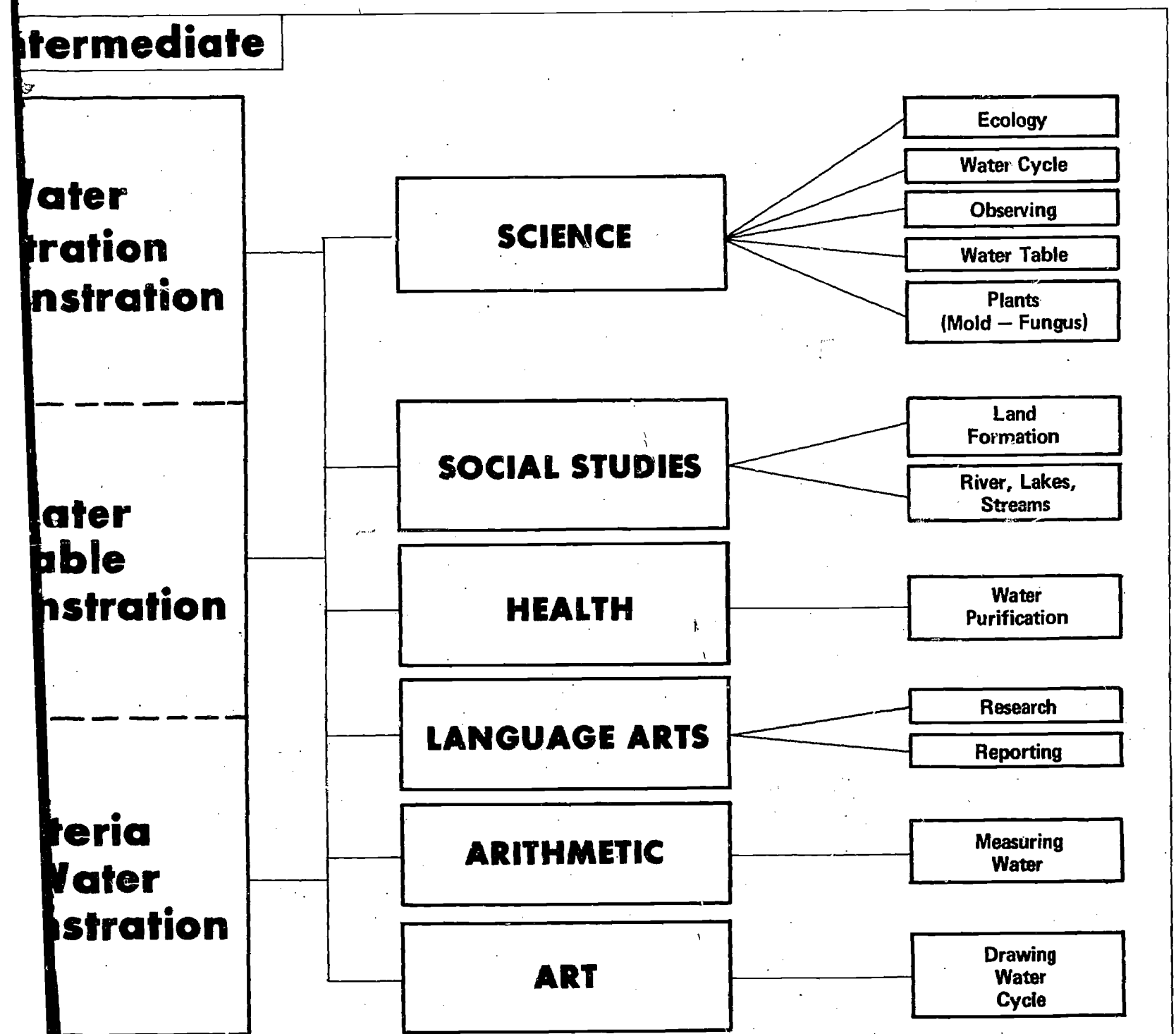
LEVEL Intermediate

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Water Cycle
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Water Table
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(Mold — Fungus)
Land
Formation
River, Lakes,
Streams
Water
Purification
Research
Reporting
Measuring
Water
Drawing
Water
Cycle

PHASE I
Water Filtration

I. Physical Environment

Teacher's Notes

A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
2	1/2 gallon milk cartons	Home
1 bag	Clean sand	Garden supply
2	Plastic drinking straws	Department store
2	Paper cups	Department store
2	Blocks of wood 1 tall – 1 short	Lumber yard
1/2 cup	Salt	Home
1 bag	Coarse gravel (optional)	Garden supply
1 container	Muddy water	
1 container	Clear tap water	

C. Equipment

No. Needed	Item Description	Where Available
1	Scissor	

II. Procedure

1. Cut the milk cartons down to about half their original height.
2. Cut a small x in one side of one carton, near the bottom.
3. Push a plastic drinking straw half-way into the carton through the x.
4. Fill that carton half full of clean sand.
5. Cut a small x fairly near the top of the second carton, and insert a straw as before.
6. Place cartons, blocks of wood, and one paper cup as shown in the diagram.
7. Slowly pour water (6-10 cupfuls) into carton containing sand. This will help purge the system of loose sand, etc.
8. Slowly pour muddy water through the filtration system.

As a result of the sand's filtering action and the settling action which occurs in the lower carton (settling in large sewage systems), the water which finally pours into the water product cup should be much clearer than the original water.

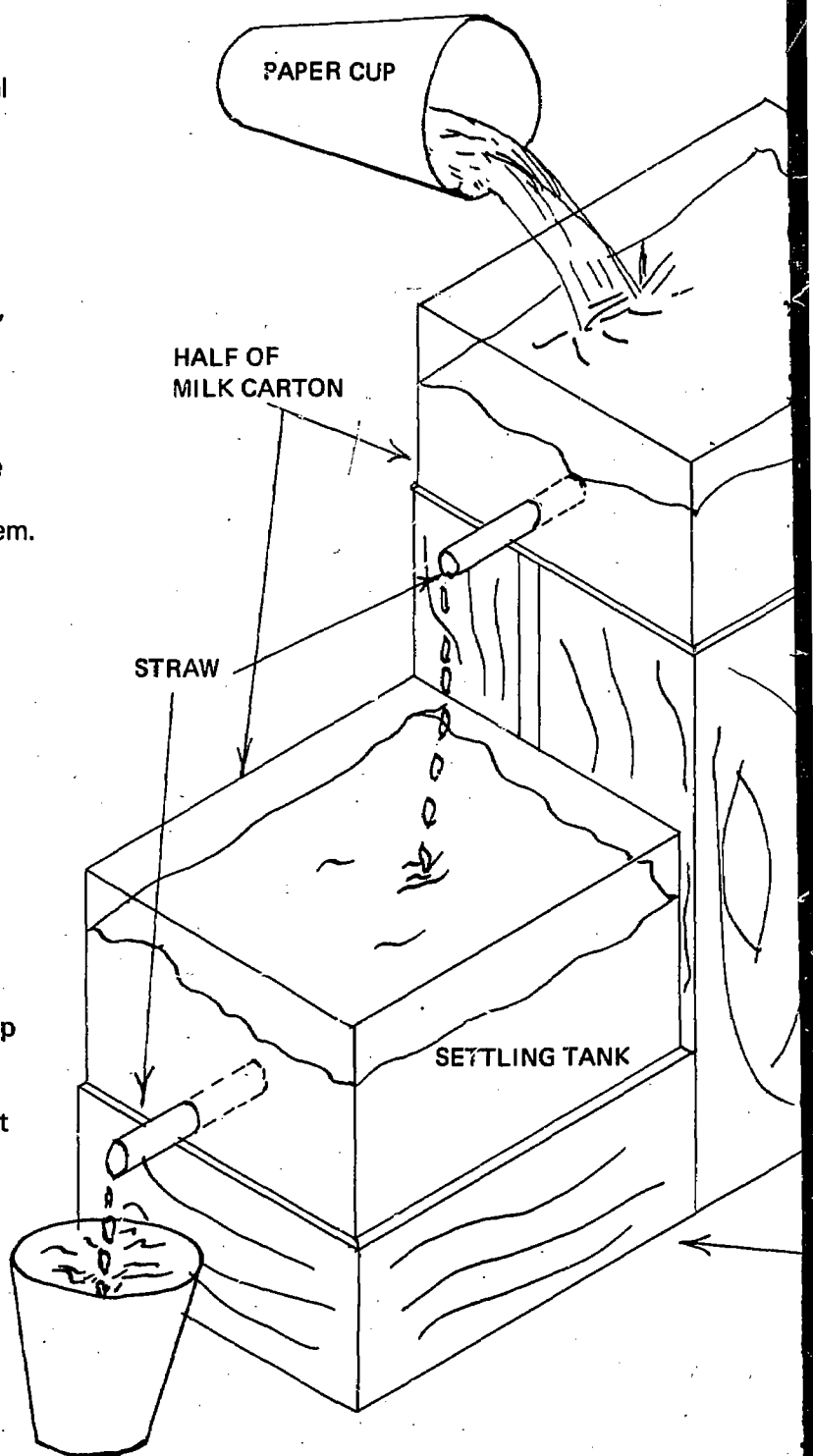
Purify the system again with 6-10 cups of clear water.

To demonstrate that this filtration system works only to remove particular matter, add food coloring or salt or sugar to some water and run it through the system. The fitlered water will retain coloring or the taste of the salt or sugar.

NOTE: At the conclusion of each experiment, flush set-up with clear water (6-10 cups).

OPTIONAL: You may wish to demonstrate the different filtering abilities of coarse gravel, coarse sand, and fine sand. The more coarse the filtering material, the less filtering of particular material.

WATER FILTRATION DEMO



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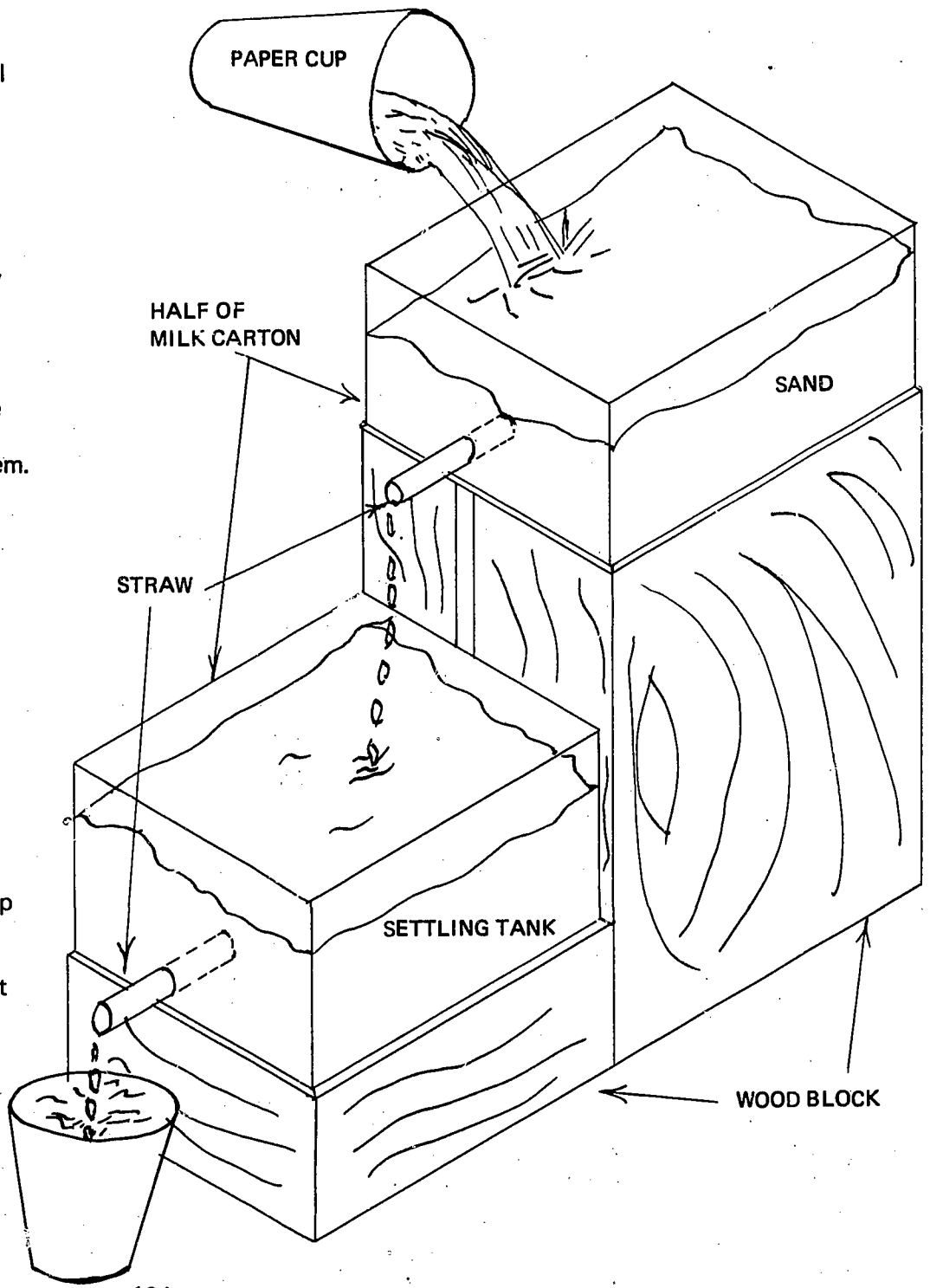
WATER FILTRATION DEMONSTRATION



PHASE II
Water Table Demonstration

I. Physical Environment

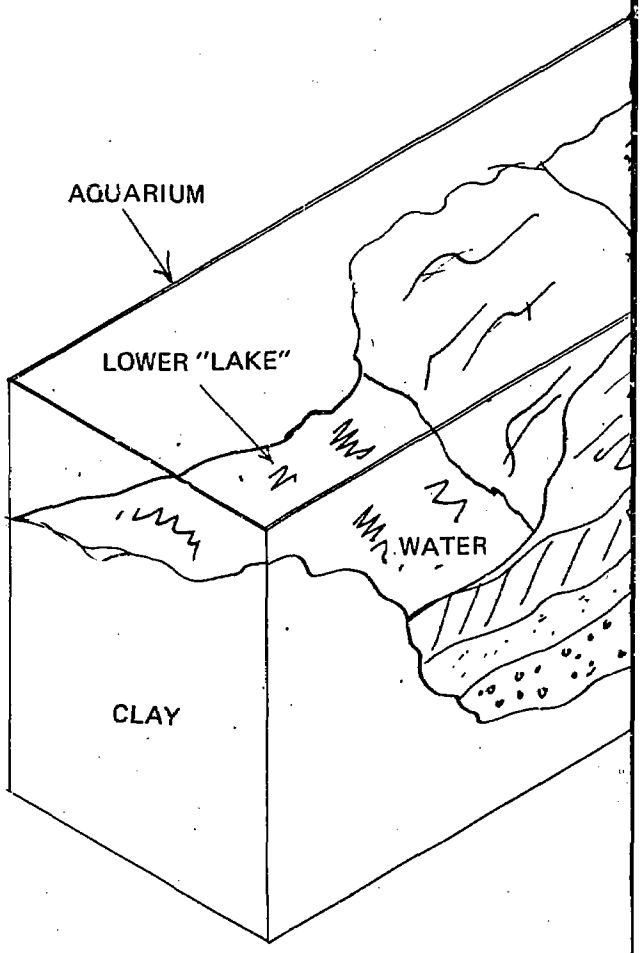
A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
1 bag	Dirt	Garden supply
1 5 lb. box	Clay	Hammetts
1 bag	Gravel or sand	Garden supply
1	Aquarium (or metal pan)	School supply
	Water	

C. Equipment

None needed.



II. Procedure

1. In an aquarium shape bottom clay or dirt to form a hill.
2. Next layer on sand and gravel.
3. Layer on dirt and build the upper and lower "lakes".
4. Rims of the "lakes" may be clay for improved water holding.
5. Pack all layers firmly (moisturizing each layer will help compaction).
6. Let experiment set for from one to two days.
7. Fill upper "lake" with water (if food coloring is added and an aquarium used, underground water movement can be more easily observed). Refill as necessary.
8. This experiment can also be used to demonstrate the natural filtering action on particulate matter which is performed by the underground seepage. Use of food coloring can be made to indicate that cleansing may not be performed on water which is chemically polluted.

PHASE II
Water Table Demonstration

ıl Environment

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Item Description	Where Available
Dirt	Garden supply
Clay	Hammetts
Gravel or sand	Garden supply
Aquarium (or metal pan)	School supply
Water	

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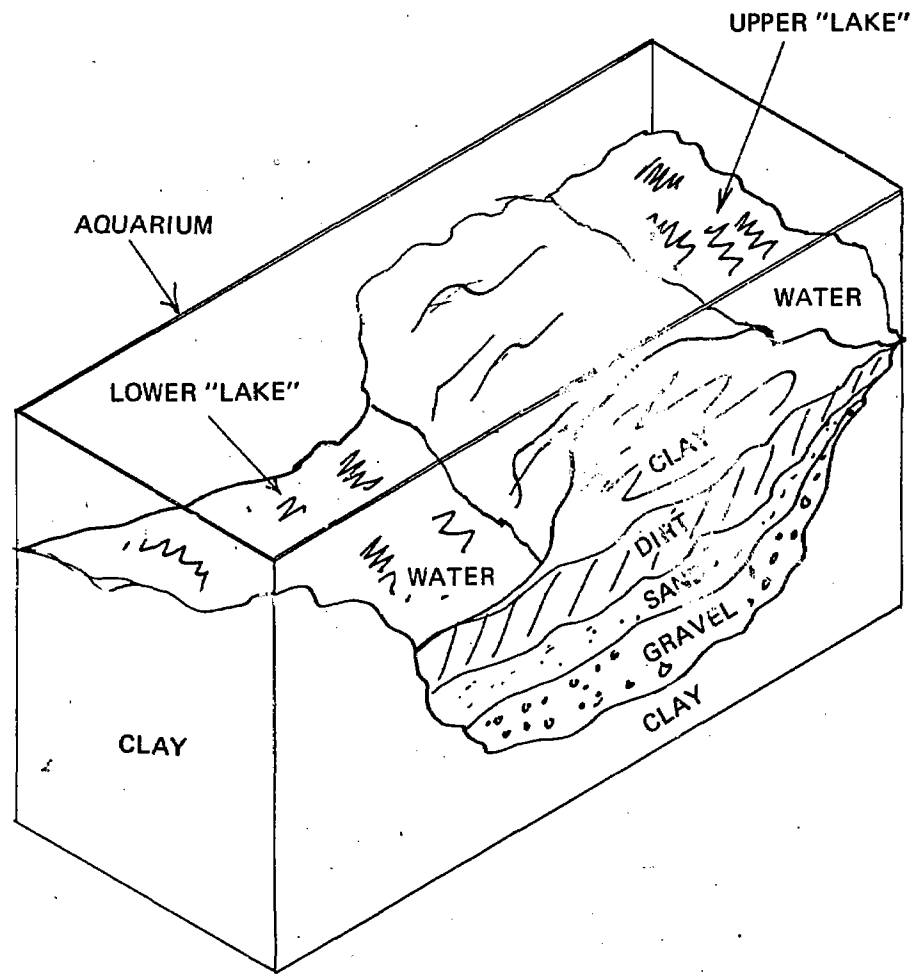

PHASE III
Bacteria in Water

Teacher's Notes

I. Physical Environment

A. Classroom

B. Expendable Materials

No. Needed	Item Description	Where Available
2	Glass jars with tight fitting lids	Home
Various	Food scraps (meat, bread, vegetable)	Home
1 container	Dirty water (from gutter)	
1 container	Clean water	Tap

C. Equipment

No. Needed	Item Description	Where Available
1	Hole punch	

II. Procedure

1. Label jars A and B.
2. Place dirty water in jar A, clean water in jar B.
3. Add food scraps in equal amounts in each jar.
4. Punch 3 or 4 holes in each jar lid (oxygen from the air is necessary for food decomposition and reaction with water bacteria). Place lids on jars.
5. Let jars sit in sunlight.
6. Observe daily.

Over a period of several days the food scraps in the dirty water should grow mold or fungus more rapidly than the scraps in the clean water. (This experiment illustrates the importance of water filtration, chlorination, and other purification techniques in maintaining and protecting a community's health.