

AN ABSTRACT OF THE THESIS OF

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INTELLECTUAL DEVELOPMENT OF PRESCHOOL
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The purpose of the study was to develop a resource guide

1. to introduce high school students to ways in which intellectual development can be taught in early childhood education programs.
2. to give early childhood educators additional ways of teaching intellectual concepts to preschool children.

To achieve this purpose, it was necessary to identify the intellectual concepts which were most often taught by preschool teachers and the concepts which teachers would teach if they had additional teaching techniques. The concepts taught and methods used by educators of young children in Oregon were established through questionnaires sent to members of the Oregon Association for the Education of Young Children.

From the results of the questionnaires, the writer hoped to identify:

1. what intellectual concepts were being included in the curriculum.
2. at what age or ages intellectual concepts were being taught to preschool children.
3. what intellectual concepts teachers would be including in their curriculum if they had additional teaching techniques.
4. what teaching methods were being used by early childhood educators.

The questionnaire was sent to the membership of the Oregon Association for the Education of Young Children. The membership totals 270 individuals, including preschool teachers, day care teachers, Head Start teachers, directors of various early childhood education programs, community college and university students, and others interested in early childhood education. Of the 105 questionnaires returned, seven were too incomplete for analysis. The findings of this study are based on the responses of 98 members, comprising 36% of the 1971 membership in the Oregon Association for the Education of Young Children.

The total number of children, by age, taught by the preschool teachers who responded to the questionnaire was 3,680. The total

number of all adults assisting in the preschools was 347. Approximately 149 high school students, community college and university students, parents, and community volunteers also assisted in the preschools.

The preschool teachers tended to mark the age at which a concept should be included in the curriculum as the same age, or at least the same mean age, as the children they taught. Teaching techniques were received for 97 of the 98 listed concepts.

A resource guide was developed from the teaching techniques suggested by the respondents. Additional teaching techniques were provided as a result of the writer's classroom teaching experiences and reading.

Developing Teaching Techniques for the
Intellectual Development of Preschool
Children for use by Teachers in
Child Care Service Programs

by

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DEVELOPING TEACHING TECHNIQUES FOR THE INTELLECTUAL DEVELOPMENT OF PRESCHOOL CHILDREN FOR USE BY TEACHERS IN CHILD CARE SERVICE PROGRAMS

CHAPTER I

INTRODUCTION

In the past several years the importance of preschool for the social, emotional, physical, and intellectual development of young children has gained support from government, working mothers, educators and other interested groups and individuals. With this increased support, Head Start, Follow Through, and similar programs have been initiated, and day care and preschool programs have increased in number. This increase in early childhood education programs and the need for child care aides to assist with these programs have been factors leading to the development of Child Care Services Programs in the high schools. The increased emphasis on vocational education has been another factor leading to the development of programs such as this which prepare high school students in job entry-level skills. High school students are prepared to be employed as child care aides in preschools, Head Start programs, day care centers, and other programs concerned with the care and education of young children. The curriculum of the Child Care Services Programs have incorporated the various areas in which

the high school students need to be skilled to be a contributing member of an early childhood education staff.

Some of the areas included in these programs are:

1. the development and behavior of children
2. the social, emotional, intellectual and physical growth of children
3. the establishment of an interesting and educational program for preschoolers
4. the responsibilities of a child care aide
5. the job qualifications required of a child care aide
6. the career opportunities available in the child care field.

Need for the Study

The need for growth in the area of intellectual development of preschool children, as well as social and emotional growth, has been reestablished in recent years (Wann, 1962; Bruner, 1964). Activities relating to the intellectual development of preschool children have been the basis of many books in recent years (Croft and Hess, 1972; Taylor, 1964; Nimnicht, 1969; Weikart et al., 1971; Carmichael, 1969). Many of the Child Care Services Program guides written in the 1960's do not reflect this reemphasis on intellectual development. The earlier programs often stressed custodial care rather than the

comprehensive care stressed in the newer guides; therefore, additions to, or revisions of, the earlier guides may be required. By determining what is currently being taught in preschool and what teachers would teach if they had additional materials, the area of intellectual development can be evaluated and improved. In addition, since the Child Care Services Programs are educating students to assist with preschool programs, it is important that they are knowledgeable of what actually is being taught, or could be taught, by preschool teachers in their classrooms.

Statement of the Problem

The major purpose of this study is to develop a resource guide

1. for introducing high school students to ways in which intellectual development can be taught in early childhood education programs.
2. for giving early childhood educators additional ways by which intellectual concepts can be taught to preschool children.

To achieve this purpose, it was necessary to identify the intellectual concepts which are most often taught by preschool teachers and the concepts which teachers would teach if they had additional teaching techniques. The concepts taught and methods used by educators of young children in Oregon were established through

questionnaires sent to members of the Oregon Association for the Education of Young Children.

From the results of the questionnaires, the writer hopes to discover

1. what intellectual concepts are being included in the curriculum.
2. at what age or ages intellectual concepts are being taught to preschool children.
3. what intellectual concepts teachers would be including in their curriculum if they had additional teaching techniques.
4. what teaching methods are being used by early childhood educators.

From the study, it is anticipated that high school teachers will have a basis for determining what concepts actually are taught and how they are taught by early childhood educators. The high school students in Child Care Services Programs will profit from this study by being prepared to reinforce the classroom teachings of early childhood educators.

Definition of Terms

Terms used in this study are defined in the following manner:

Child Care Services Program - child care programs which are

included in many high schools. The high school students have experience with young children in a preschool setting and with classroom instruction in various phases of child development.

Child Care Services Program Teacher - a certified high school teacher who is responsible for teaching the Child Care Services Program.

Concepts - topics or subject matter included in preschool curriculum. Examples of specific concepts which might be included are colors, shapes, etc.

Cues - interests of preschool children observed by the preschool teacher and used as a basis for planning curriculum.

Early Childhood Educators - teachers in preschools, day care centers, Head Start programs, or similar types of programs concerned with the education and care of young children.

Intellectual Development - area of the preschool curriculum dealing with specific topics or concepts such as colors, shapes, numbers, etc.

Preschool Children - in this study, the term "preschool children" includes children in preschools, day care centers, or Head Start programs.

Limitations

1. This study is restricted to the members of the Oregon Association for the Education of Young Children. Membership is open to any individual interested in the education of young children. Preschool teachers may or may not have had formal preparation for working with young children.
2. Respondents may have experienced difficulty differentiating between the four terms "always," "usually," "sometimes," and "never."
3. Respondents were able to check one or several ages; however, they were able to check only one of the four terms; consequently, if the respondents wanted to check additional terms for different ages, the questionnaire did not provide for this.
4. The age columns required respondents to choose specific ages for each concept and did not allow for differences in ability of children the same age.
5. Respondents teaching one age level may have marked only that age on the questionnaire because of not having had experience teaching other ages.
6. The teaching techniques included in Chapter V have not been formally tested by the writer, and therefore their effectiveness cannot be assessed.

CHAPTER II

REVIEW OF LITERATURE

Intellectual Development

Learning can be an exciting and stimulating process, or it can be a boring and dreaded experience. In a school setting, the teacher is the key figure in determining the classroom atmosphere and the direction of learning. Preschool students respond to variations in classroom settings just as older students do. The preschool teacher has a big responsibility in aiding the preschool child's intellectual growth, since preschool is usually the child's first experience in a school setting. The teacher's awareness of the child's background, his abilities, and his needs, will assist her in planning a relevant and stimulating setting for his growth. Nimnicht (1970) stressed the importance of planning for a responsive classroom. This requires continually evaluating the children's progress, providing new and varied learning experiences, and utilizing a variety of teaching methods to meet the needs of different students.

"Readiness" is a term which is often associated with learning and characterizes the right time for teaching a particular concept. Bruner (1966) feels that "readiness" is not something for which a teacher must wait, but an opportunity for which a teacher can plan.

An example of this would be the concept of color. If a preschool were devoid of color, the teacher might have to wait a long time before the students were "ready" to learn about colors. Having colorful pictures on the walls, furnishing colored play dough, and discussing the colors of food at lunchtime are ways in which teachers can provide opportunities for children to become interested in and learn about color. Teaching concepts should not be so structured that the teacher ignores the interests of children as guidelines for learning; rather, the importance of providing opportunities to promote interest should be considered.

"Cues" or interests of the children can serve as indicators for items the preschool teacher should include in her curriculum. Schulman (1967) agreed with the importance of utilizing the "cues" or interests of the children to determine curriculum. In addition to the "cues" of the children, teachers can base curriculum on reading about common goals of preschool age children, on past experience with children, and on opportunities within the teacher's community for promoting intellectual development of students. The majority of ideas, topics, and concepts can be discussed or illustrated in simple ways that interest children and lead them on to more advanced levels (Bruner, 1966). Imagination, curiosity, and determination can be assets which greatly aid the preschool teacher in establishing an effective learning climate.

An understanding of forces characterizing the intellectual development of the preschool child is another area in which the preschool teacher needs to be knowledgeable, so as to plan a meaningful curriculum. Jean Piaget, one of the best known developmental psychologists, is very much involved in cognitive development. He terms the preschool years, from approximately two to four years of age, as the preoperational period; however, Piaget does not stress age in his periods of development. During this period, the child's cognitive picture of his internal and external world is gradually growing. He is beginning to group or categorize events, but he has still not reached the stage of completely conceptualizing his thoughts. Symbols, language, and make-believe play all contribute to his development at this stage (Mussen et al., 1969). He is beginning to be less egocentric in his thinking and able to appraise himself in relation to those around him (Maier, 1965).

The end of the preoperational period Piaget has designated as the intuitive stage, which covers approximately the four to seven year-old range. "During this stage the child acquires a mode of dealing with many of the problems of integrating different viewpoints and information from different sources" (Baldwin, 1967, p. 245). It is during this stage that the child begins to group objects into classes. One of the primary reasons for the child's increasing initiative and awareness during this stage is his increased interest in the people

and world around him (Maier, 1965).

Much of Piaget's reasoning for the adaptation of the individual to new experiences is based on his belief in accommodation and assimilation.

. . . assimilation describes the capability of the organism to handle new situations and new problems with its present stock of mechanisms; accommodation describes the process of change through which the organism becomes able to manage situations that are at first too difficult for it (Baldwin, 1967, p. 176).

The two processes are constantly complementing and challenging one another (Maier, 1965).

The principle of conservation is another attainment which Piaget emphasizes.

A subject has achieved conservation of mass or substance when he thinks that the amount of matter which an object contains must remain unchanged during changes in form, so long as nothing is added or taken away (Pratoomraj, 1966, p. 343-344).

The attainment of conservation is contingent on the child's ability to go beyond perception, that is, what is observable, to conception, that which is not observable. Since this ability is often not characteristic of the preschool child, he has difficulty attaining conservation. He also has difficulty in attaining conservation because he seldom understands invariance or reversibility (Baldwin, 1967). However, the preschool teacher can assist the child in his eventual attainment of conservation by providing opportunities in multiple classification,

reversibility, and conservation (Sigel et al., 1966). The importance of conservation in regard to further intellectual development is stressed by Piaget. "Piaget maintains a child must master the principles of conservation of quantity, such as permanency and continuity, before he can develop a concept of numbers" (Maier, 1965, p. 119).

Jerome Bruner, another theoretician, contributes valuable research findings which will aid the preschool teacher. Bruner stresses the importance of language in the intellectual development of preschool children (Bruner, 1964). He is very concerned also with the attainment of categorizing.

. . . category learning is one of the principal means by which a growing member of a society is socialized, for the categories that one is taught and comes to use habitually reflect the demands of the culture in which they arise (Bruner, 1957, p. 231-232).

Categorizing is similar to Piaget's concept of grouping, and perceptual categorizing is attained during Piaget's preoperational period. Conceptual categorizing is usually not attained until the stage of concrete operations, approximately in the seven to 11 year-old age range. Conceptual categorizing goes beyond observable categorizing of properties to categorizing unobservable properties.

From these theorists' findings, some basic concepts for the preschool teacher's guidance of the intellectual development of her students can be drawn. Language was one important area of growth

which was stressed. The preschool teacher can help the student to expand his vocabulary by using records, books, songs, stories and by answering the child's questions. Because the preschool age is the time when a child is becoming more involved with people around him and showing more initiative, this is a good time for his teacher to reinforce this interest by providing experiences for the child to learn more about the world. Symbolic play and make believe is another area in which the preschool child is involved. Through these two means of expressing himself, the child has a chance to further expand language and to act out feelings, as well as to interpret the world around him. As he acts out real situations he brings himself into closer contact with reality.

Grouping, classifying objects, and categorizing concepts are all tasks which are characteristic of the preschool child. The preschool teacher can assist the child in his understanding of categorizing by structuring experiences which will involve the use of this concept. Animals, shapes, and plants, all lend themselves to various kinds of groupings, and the preschool teacher can provide ways of including these concepts in the curriculum.

Reversibility and conservation are more difficult principles for the child to attain, and generally they are not attained during the preschool years. The teacher might provide experiences through which the child could see examples of reversibility and conservation,

such as rolling a ball of clay into an elongated shape and rolling it back into a ball. Practice in problem solving could be incorporated along with experiences in the principles of reversibility and conservation.

Learning assumes many forms. Learning to get along with peers, developing a positive self-concept, and learning about the world, are just a few of the possible goals of education. The types of experiences the preschool teacher includes in her curriculum should aid her students to develop to their fullest intellectually, physically, emotionally, and socially. The students should also become more self-confident and self-sufficient through their experiences and receive satisfaction through intrinsic rewards (Bruner, 1966). The teacher can assist her students to these ends by presenting a varied, interesting, and relevant curriculum which appeals to children from varying backgrounds and involves them in the learning process.

Child Care Services Programs

Within the past several years, numerous Child Care Services Programs have been introduced in Oregon, as well as in other states. Some of these are one-year programs while others are two-year programs. The majority of the programs prepare their students for employment in child care, but preparation for parenthood is an additional benefit of the programs. The students in the programs have the

opportunity to apply what they learn in class in an actual preschool setting. Although the programs differ from one another in some respects, there are many similarities (list of Child Care Services Program guides evaluated given in Appendix A). The writer has listed some guides as examples for each similarity, but this does not preclude others that also list this similarity.

The need for preschools, and the differences between the types of preschools are two of the topics included in most Child Care Services Programs (Monroe, 1970; Oklahoma, 1968; Beaverton, 1969). Licensing of preschools and the various functions of the preschool, particularly the importance of supervising children, are additional facets of the programs. Some other topics which are included in the curriculums are: importance of parent-school cooperation, understanding the family background of each child, social agencies concerned with the welfare of children, and state and federal laws concerned with the protection of children. The development and behavior of children is usually covered in depth (Oklahoma, 1968; Indiana, 1971). The importance of infancy, the sequence of growth, the differences in rates of growth, the developmental tasks, and the contributions of heredity and environment to the development of the child are all included. The contributions of social, emotional, intellectual, and physical growth to the development of the child are discussed in all guides listed in Appendix A. The needs of children, the

importance of giving children opportunities to make choices, the causes of different kinds of behavior, and various methods of guiding children are additional topics (Monroe, 1970; Indiana, 1971). A definite challenge to the high school students involved is the provision of an emotional climate conducive to learning for every child, each of whom will have different needs at different times, and whose needs may be different from each of the other children in the program. In the majority of the programs, the students are encouraged to assist each child in developing a positive self-concept and also in learning to interact with his peers, his family, and other adults (Oklahoma, 1968; Monroe, 1970; Alabama, 1966; Beaverton, 1969).

Since the high school students participate as assistants in a preschool, within their own high school, and/or in a private preschool, they may help to set up the physical facilities of the preschool as well as help plan the program. These aspects of the preschool necessitate additional topics for inclusion in the Child Care Services Programs. Scheduling activities for the preschool children and providing flexibility in the scheduling, as well as providing a variety of opportunities for growth and development, are all important (Nimnicht, 1969; Taylor, 1964). This helps the preschool children establish habits and routines and, at the same time, encourages independence. Evaluating types of equipment provided in the preschool and their contribution to the growth and development of

children is also studied (Monroe, 1970; Oklahoma, 1968). The importance of play to children is sometimes underrated so students are encouraged to notice the benefits of play, as they observe the children. Development of self-esteem, creativity, and provision for intellectual, emotional, social and physical growth are just a few of the benefits of play.

Providing an interesting and educational program for pre-schoolers with reference to the concerns of living, is another important aspect of the Child Care Services Programs (Alabama, 1966). An example of this is the nutritious, attractive meals which are planned with children's preferences in mind, and served in amounts appropriate for children (Indiana, 1971). It is important that there be stress on providing opportunities for children to become self-reliant, selecting appropriate books for children, providing interesting and educational music experiences, and including opportunities in science, art, and language development (Beaverton, 1969; Monroe, 1970; Alabama, 1966; Indiana, 1971). An additional concern of pre-school teachers and assistants is the safety and health of children, and time is provided in the programs for this. One guide (Alabama, 1966) stressed keeping up-to-date on current research pertaining to children. The writer believes this to be a most important inclusion.

The majority of the guides contained a section dealing with the world of work, as applied to the high school student who plans to work

right after graduation. The generalizations listed would apply to any occupation, but many of them seemed to have special significance for the prospective child care worker. The main topics included were: developing positive attitudes toward the world of work, understanding the socio-economic conditions and laws and regulations surrounding work, and the management problems encountered by working mothers in fulfilling their dual role. Also included in this section were the responsibilities and qualifications of a child care aide, as well as a list of job opportunities available. A large part of this section was concerned with evaluating personal characteristics and attitudes vital to obtaining and keeping a job. The importance of self-esteem and the development of a philosophy of life were also emphasized. Communication techniques and the importance of developing good interpersonal relationships with co-workers were given attention. After the actual experience in Child Care Services Programs, the high school students should be able to evaluate their strengths and weaknesses as well as their potentials as successful child care aides.

Another section of the guide deals with securing a job (Indiana, 1971). Information about job opportunities was given and techniques for applying and responding in interviews were discussed in some detail. The final part of this section was concerned with the management of finances, including the deductions and benefits and the

advantages and disadvantages of credit.

In the area of intellectual development of children, the guides do not provide much depth. Although the preschool teacher has the main responsibility of introducing concepts to the children, the child care aide could reinforce her teaching by providing additional experiences in the areas of intellectual development.

Teaching Techniques

Earlier in this section the importance of planning a responsive classroom (Nimnicht, 1970) was mentioned. Well-planned teaching techniques are requisites in achieving this end. Specific teaching techniques that a teacher can use will be listed in another section of the study, but the importance of planning valuable material for classroom presentation will be discussed here.

Encouraging students to be aware of and involved in the world around them is an excellent method of increasing their knowledge (Issacs, 1968). This idea should be used with the very young child, as well as with the older child. Preschool teachers rely heavily on events that occur on the spur of the moment and incorporate them into their curriculum. A sudden snow storm or a building under construction are occasions for many questions by children. A teacher who is well-versed in subject matter is able to answer the majority of the children's questions and expand their interest through activities

related to the event during the following days. Pieters (1970) terms this "utilizing the strategic moment," and it is an excellent way for teachers to keep their curriculum relevant. To do this successfully, however, the teacher needs to have a broad background in many areas and to keep her knowledge current.

Nimnicht (1970) suggests that a teacher should incorporate four phases of ability in her teaching. These four abilities are: senses and perceptual acuity, language, concept formation, and problem solving. The wise teacher will plan for these abilities, rather than just hoping they result from her teaching. To develop these abilities, the teacher plans specific objectives for each topic or concept taught. The next step is to decide on the material to include and to choose a method of presentation. With young children, varied lengths of attention span, interest, and previous knowledge of the subject, must be considered.

Child care aides can reinforce what the teacher teaches in the classroom by being aware of the materials presented by the teacher and also by answering questions children ask. Although the child care aide is not qualified through her training to be responsible for preparing the curriculum for the preschool, she can contribute to the children's understanding of various topics and concepts by having an understanding of the teaching techniques and the materials the teacher presents. Nimnicht (1970) and Jones (1970) both state that

the teacher's role is to constantly assume responsibility for assessing children's growth and learning. The child care aide can assist the teacher with this responsibility by contributing her observations of the children in staff discussions. Almy (1967) further emphasizes the part the child care aide can contribute to the preschool. "To say that children are 'forming concepts' in their play is not enough. One needs to know what concepts are revealed and at what level of adequacy" (Almy, 1967, p. 269). It is difficult for one preschool teacher, who is responsible for 20 children to know the level of adequacy of each concept for each child, but with the help of the teaching assistants and aides and the observations they give the teacher, this task, hopefully will be accomplished.

The assistance that a child care aide can offer the teacher is one of the primary reasons for the presentation of teaching techniques in this paper. If the child care services teacher adequately prepares her students to be aware of, and knowledgeable in, the subject matter and teaching techniques of the preschool teacher, she will have given that student the tools to be a valuable, contributing part of a preschool staff.

CHAPTER III

METHOD OF PROCEDURE

In order to develop a resource guide, four questions needed to be answered:

1. what intellectual concepts are being included in the curriculum?
2. at what age or ages are intellectual concepts being taught to preschool children?
3. what intellectual concepts would teachers be including in their curriculum if they had additional teaching techniques?
4. what teaching methods are being used by early childhood educators?

The writer decided a questionnaire would be the most satisfactory way of answering these questions.

Request for Curriculum Guides

To establish what intellectual concepts were currently being included in the curriculums of Child Care Services Programs, copies of curriculum guides were requested from Child Care Services Program teachers in the state of Oregon (Appendix B). The writer also read numerous curriculum guides from Child Care Services Programs

outside the state of Oregon.

Construction of Questionnaire

A questionnaire was developed to identify the intellectual concepts taught in early education programs in Oregon and the age or ages when the concepts were included in the curriculum (Appendix B). These concepts were identified through the university course work and reading done by the writer.

The questionnaire included a section concerning background information on the preschool. The questions the respondents were to answer in this section dealt with the number of children in each age group, 1 year-olds, 2 year-olds, 3 year-olds, 4 year-olds, 5 year-olds, and 6 year-olds, in their preschool and the number of adults employed or assisting in the preschool in the following job classifications: preschool teacher, assisting mothers, teacher aides, and cooks. A space was also included for the respondent to check if she/he was a preschool teacher at present.

Part I of the questionnaire included 98 concepts. In the first section of Part I the respondents marked whether or not they included the concept in their curriculum by checking one of the four headings: always, usually, sometimes, or never. The second section dealt with whether or not the teacher would include the concept in the curriculum if additional teaching techniques were provided. The

respondents were to check yes, no, or leave the section blank. The third section was concerned with the age or ages at which the respondent felt the concept should be included in the curriculum. One through six were the ages listed. The fourth section of Part I was headed "additional comments." Respondents could write any suggestions or remarks they might want to add in this area. At the end of Part I, there were spaces under the title "others" for additional concepts to be listed by the respondents. Part II of the questionnaire requested the respondents to list three of the concepts they checked as having taught. Under each concept listed, main points covered in regard to concepts and teaching methods used were asked of the respondents. At the end of Part II, there was a space provided for additional comments by the respondent.

The questionnaire was evaluated by members of the Home Economics Education and Family Life Departments of Oregon State University. Recommendations and suggestions were given to the writer by members of these two departments, and suggested changes were made in the questionnaire before it was distributed.

Distribution of Questionnaire

The questionnaire was sent to the membership of the Oregon Association for the Education of Young Children. The membership

totals 270 individuals, including preschool teachers, day care teachers, Head Start teachers, directors of various early childhood education programs, community college and university students, and others interested in early childhood education. A follow-up post card was mailed to each respondent who had not returned a completed questionnaire by May 22, 1971 (Appendix B).

Returns of Questionnaire

Replies were received from 105 respondents. Of the 105 questionnaires returned, seven were too incomplete for analysis. The findings of this study are based on the responses of 98 members (comprising 36% of the 1971 membership) of the Oregon Association for the Education of Young Children.

Procedure for Analysis of Data

Background information on the programs was compiled from answers given on the questionnaires. From the information, the ratio of adults to children in the preschool was determined. An analysis of variance was used to determine if centers with predominantly younger preschool children had a higher ratio of adults to children than centers with older preschool children.

The respondents were divided into two groups, preschool teachers and nonpreschool teachers, according to the information

provided in the background information section. The respondents were to mark, for each concept they included in their curriculum, either always, to indicate a concept they felt was very important and which they continually reinforced; usually, to indicate a concept they felt was important and which they included in the curriculum so that the majority of their students were aware of it; sometimes, to indicate a concept which may have been of interest to a few of the students, so they included it for the benefit of those students; or never, to indicate that the concept was either too elementary, too advanced, or not of interest to the students, so they did not include it. The respondents were asked to mark only one column "always," "usually," "sometimes," or "never" for each concept. The total number of respondents marking each column, listed by concept, is shown in Appendix C, Table A. The responses were divided into two groups, preschool teachers and nonpreschool teachers.

The responses of the preschool teachers and nonpreschool teachers as to when each concept was included in their curriculum ("always," "usually," "sometimes," or "never") were analyzed by the chi square test of significance. Those answers which were significant at the .05 level are discussed in the chapter on data analysis. The age or ages at which the respondents felt the concepts should be included in the curriculum was determined from the respondents' answers on six columns headed 1, 2, 3, 4, 5, 6. Mean ages for

each concept for both groups were obtained and an analysis of variance was used on the mean ages. The mean age at which respondents reported each concept should be taught was compared to the mean age the preschool teachers taught. The comparisons were evaluated at the .05 level of significance.

The final section of the study consists of teaching techniques which were suggested by the respondents. On the questionnaire, respondents also checked concepts for which they would like to have additional teaching techniques.

Providing Additional Teaching Techniques

The respondents were asked to check yes, no, or leave blank, the column headed "I would include this concept in my curriculum if additional teaching techniques were provided." The teaching techniques given in the final chapter of the study were based on the answers received from the respondents and on teaching techniques suggested by the writer. Additional teaching techniques were requested for all but five of the 98 intellectual concepts listed. The total number of respondents requesting additional teaching techniques for each concept are given in Appendix C, Table A.

Development of the Teaching Techniques

The writer developed a resource guide:

1. for introducing high school students to ways in which intellectual development can be taught in early childhood education programs
2. for giving early childhood educators additional ways by which intellectual concepts can be taught to pre-school children.

The teaching techniques included in the resource guide were suggested by the questionnaire respondents, and the main points covered in regard to the intellectual concepts and the teaching methods used were listed by the respondents. Additional teaching techniques were provided as a result of the writer's classroom teaching experiences and reading.

CHAPTER IV

ANALYSIS OF DATA, CONCLUSIONS, RECOMMENDATIONS AND SUMMARY

Questionnaires were sent to the 270 members of the Oregon Association for the Education of Young Children (1971-72 membership). One hundred and five questionnaires were returned. Of these seven were too incomplete for analysis. The findings of this study were based on the responses of 98 members (comprising 36% of the membership) of the Oregon Association for the Education of Young Children.

Background of the Programs

The first page of the questionnaire requested background information on the programs in which respondents were involved. Of the 98 respondents, 50 checked that they were preschool teachers. The nonpreschool teachers group of 48 included early childhood education students, preschool teachers who were not presently teaching, directors of early childhood education centers, and individuals interested in early childhood education, but not presently serving in the capacity of a preschool teacher. Community college and university instructors were included in this last group, as were kindergarten teachers.

Preschool teachers provided information on their preschools;

however, several respondents who were preschool directors also included this information on their questionnaires. The information included the number of children in each age group they taught, 1 year-olds, 2 year-olds, 3 year-olds, 4 year-olds, 5 year-olds, 6 year-olds, and listed the number of adults employed or assisting in the preschool in each job classification, preschool teacher, assisting mothers, teacher aides, and cooks. The results are listed in Table 1 and Table 2.

Table 1. Total number of children, by age, taught by preschool teachers.

| Age | N = 98 | Number |
|-------|--------|--------|
| 1 | | 5 |
| 2 | | 55 |
| 3 | | 455 |
| 4 | | 1,480 |
| 5 | | 1,473 |
| 6 | | 212 |
| Total | | 3,680 |

Table 2. Number of adults in the preschools.

| Adults | Number |
|--------------------|--------|
| Preschool teachers | 165 |
| Teaching aides | 104 |
| Assisting mothers | 48 |
| Cooks | 30 |
| Total | 347 |

Respondents listed other individuals who assisted in the pre-schools. There were 50 high school student trainees, approximately 50 community college and university students, 49 parents, and numerous volunteers from the community assisting in the preschools in various capacities.

From the data, the ratio of preschool teachers to preschool children was determined. The ratio was 1:22.30, based on a total of 3,680 preschool children and 165 preschool teachers. The ratio of all adults assisting or employed in the preschool, to preschool children was 1:10.61. This was based on a total of 3,680 preschool children and 347 adults, employed or assisting in the preschool. The 347 adults did not include those individuals included in the "others" category, such as high school and college students, volunteers, parents, and others assisting on a part-time basis. The ratio of adults to preschool children would be even smaller if all these individuals were included in the totals. The writer was interested in finding out if the ratio of adults to children changed as the ages of the preschool children decreased. When this was tested, using an analysis of variance, the results were not significant.

The Age or Ages at Which the Concept is
Included in the Curriculum

The responses are listed in Appendix C, Table B. The mean age at which respondents felt each concept should be taught was

computed separately for the preschool and nonpreschool teachers. An analysis of variance was done comparing the mean age for each concept. The results were found to be not significant. The F-test and LSD results for the analysis of the variance are given in Appendix C, Table B.

The mean age at which respondents felt each concept should be taught was compared to the mean age taught. The comparisons were found to be significant at the .05 level in 72 out of the 98 concepts listed. This would indicate that preschool teachers tended to mark the age at which a concept should be included in the curriculum as the same age, or at least the same mean age, as the children they taught. The results of this test are listed in Appendix C, Table C.

Many respondents were dissatisfied with the column headings: "This concept is included in my curriculum - "always, " "usually, " "sometimes, " and "never, " and "The age or ages at which you feel this concept should be included in the curriculum." The reasons for their dissatisfaction were included in the questionnaire under "additional comments." Main criticisms were: concepts are in constant use but never or rarely ever "taught"; the age or ages depends on the individual child, omitting or including each concept would depend on the individual's needs and background; and concept is an elusive term ranging anywhere between exposure to an idea or identification of a term and understanding.

Teaching Techniques

Teaching techniques were received for 97 of the 98 concepts. Magnets was the only concept for which no teaching technique was received. In Appendix C, Table D contains a list of the number of respondents suggesting teaching techniques, or giving comments.

Additional concepts identified by the respondents are listed below.

Body Movement or Perceptual-Motor Development

| | |
|--|--|
| Body-space relationships | Physical fitness |
| Balance | Anatomy |
| Balance boards | Swinging |
| Exercises | Twisting |
| Structured physical education | Walking |
| Jumping rope | Rope work |
| Climbing | Gallop |
| Tumbling | Natural dance |
| Body movement forward, backward, left, right, somersault | Hammering, clapping, scissors step, grapevine step, imitative movements, expressive movements, free movements. |
| Additional movements to music - jumping, hopping, marching, twirling, leaping - (forwards and backwards) | |

Music

Listening to familiar tunes and

guessing tunes

Instruments of the orchestra

Imitative music for animals

Singing games

Creative rhythms

Making up songs

Improving listening skills

Stop and start to music

Verse choir

Choral speaking

Drama

Free expression to a story

Presenting plays

Play acting

Animals

Reptiles

Insects

Movements of animals

Dinosaurs

Birds

Science

The ocean and its life

Geology

Rocks and soil

Earth

Gravity

Air

Density

Outer space

Shadows

Basic electricity

Leaf differences

Environment

Water - rain, tides, dams,
conservation

Pollution

Interpersonal Relationships

Friends

Right and wrong

Cooperation

Manners

Sympathy and empathy
for others

Responsibilities

Concept of good work habits

Sharing

Cultural Understanding

Children of neighboring countries -

Mexican, Canadian, South
American

Indians

People of other lands

Spatial Relationships

Thick, thin

Light, dark

Similarities, dissimilarities

Left, right

More, less, enough

Opposites

Reading and Reading Readiness

Poems, dramatizations, stories

Finger plays

Phonics

Listening

Rhyming words

Oral language - sentence structure

Beginning reading

Time

Seasons

Clock

Calendar

Measures

Linear

Volume

Pouring and measuring - water,

sand, cornmeal, beans and peas

Numbers and Counting

Recognize and be able to

write 1-10

Money

Ordinals 1-5

Sets 1-5

Art

Appreciation of art

Leather

Paper

Painting with string, eye droppers

Chalk

Colors

Experimenting with various media -

collage, clay, printing, rubbings,

wood constructions

Tools and Woodworking

Safe use of tools

Small box construction

Miscellaneous Concepts

Tying shoes

Three-dimensional forms

City, country

Animate versus inanimate objects

Field trips

The value of money

Appropriate clothing for indoor

Safety

and outdoor activities

Water play

Data Analysis by Individual Intellectual Concept

Information received on each concept is discussed in more detail in this section. For each subconcept, the following information is provided:

1. the frequency with which the concept is included in the curriculum ("always, " "usually, " "sometimes, " "never"). This includes a comparison of the frequencies for the particular concept under discussion with the frequencies of the other concepts listed.

2. the responses of the nonpreschool and preschool groups on the frequency with which the concept is included in the curriculum have been analyzed using the chi square test of significance. The results are listed in Appendix C, Table A. Those which were found to be significant at the .05 level of significance are discussed.
3. the mean age for teaching each concept computed from the answers given by the preschool teachers and the answers of the nonpreschool teachers.
4. any comments, in addition to the teaching techniques, received from the respondents which apply to the concept under discussion.

Colors

"Primary" and "secondary" colors were included in the curriculum under the heading of "always" by the majority of the respondents, as indicated in Table 3. "Complementary colors" were included in the curriculum less often and were listed as "never" being included by 11 of the preschool respondents and nine of the nonpreschool respondents. Since "complementary colors" is a more advanced concept and hence difficult to understand, perhaps it would have been better to include "tertiary colors" rather than "complementary colors" in the questionnaire. The mean age listed for each

subconcept reflects the greater degree of difficulty for children in understanding the term "complementary colors."

Shapes

The first four shapes, "circle," "triangle," "square," "rectangle" received primarily "always" answers and a number of "usually" answers by the respondents, in regard to frequency of inclusion in the curriculum, as shown in Table 4. Answers for the subconcept "diamond," however, were distributed throughout the four ratings. Answers of the preschool teachers compared to answers of the nonpreschool teachers in regard to the age or ages at which the subconcept "diamond" should be introduced indicated a significant difference, as shown in Table 4.

Table 3. Responses to the color concept.

| Concept | Respondents | N | This concept is included in the curriculum. | | | | The mean age for including the concept in the curriculum. |
|----------------------|-----------------------|----|---|---------|-----------|-------|---|
| | | | Always | Usually | Sometimes | Never | |
| Primary colors | Preschool teachers | 50 | 45 | 2 | 2 | 1 | 3.8488 |
| | Nonpreschool teachers | 46 | 42 | 2 | 1 | 1 | 3.9000 |
| Secondary colors | Preschool teachers | 50 | 41 | 5 | 3 | 1 | 4.2683 |
| | Nonpreschool teachers | 46 | 38 | 5 | 2 | 1 | 4.2683 |
| Complementary colors | Preschool teachers | 48 | 19 | 7 | 11 | 11 | 4.8676 |
| | Nonpreschool teachers | 46 | 23 | 3 | 11 | 9 | 4.7353 |

Table 4. Responses to the shape concept as shown in Table 8.

| Concept | Respondents | N | This concept is included in the curriculum. | | | | The mean age for including the concept in the curriculum. |
|-----------|-----------------------|----|---|---------|-----------|-------|---|
| | | | Always | Usually | Sometimes | Never | |
| Circle | Preschool teachers | 50 | 41 | 7 | 2 | 0 | 4.0000 |
| | Nonpreschool teachers | 46 | 41 | 5 | 0 | 0 | 3.9625 |
| Triangle | Preschool teachers | 50 | 40 | 8 | 2 | 0 | 4.2561 |
| | Nonpreschool teachers | 46 | 40 | 6 | 0 | 0 | 4.1829 |
| Square | Preschool teachers | 50 | 40 | 8 | 2 | 0 | 4.1585 |
| | Nonpreschool teachers | 46 | 41 | 5 | 0 | 0 | 4.0976 |
| Rectangle | Preschool teachers | 50 | 37 | 11 | 2 | 0 | 4.4625 |
| | Nonpreschool teachers | 46 | 39 | 5 | 2 | 0 | 4.3902 |
| Diamond | Preschool teachers | 47 | 16 | 10 | 17 | 4 | 4.8250 |
| | Nonpreschool teachers | 46 | 30 | 8 | 7 | 1 | 4.6667 |
| | | | $\chi^2 = 10.4402$ d. f. 3 | | | | Significant .05 level |

Form

The subconcepts under form fell into two groups according to the answers of respondents. The first group consisted of "liquid to gas," and "gas to liquid" and respondents included these subconcepts in their curriculum primarily in the "sometimes" and "never" columns. "Solid to liquid," and "liquid to solid," comprised the second group and respondents included these primarily under the "sometimes" column. The "always" and "usually" categories were about equal, and several respondents stated that they never taught the concept. This data is shown in Table 5.

The form concept was one of the concepts least often included in the curriculum, based on the answers of both preschool and non-preschool teachers. It was also one of the few concepts which received a mean age of slightly over five. From these results, it might be concluded that this concept is too difficult for most preschoolers to understand. One respondent substantiated this when she stated that the concept is not used in her classroom until late in the year after most of the children have turned six.

Table 5. Responses to the form concept.

| Concept | Respondents | N | This concept is included in the curriculum. | | | | The mean age for including the concept in the curriculum. |
|-----------------|-----------------------|----|---|---------|-----------|-------|---|
| | | | Always | Usually | Sometimes | Never | |
| Liquid to gas | Preschool teachers | 41 | 4 | 6 | 13 | 18 | 5.1111 |
| | Nonpreschool teachers | 41 | 6 | 4 | 17 | 14 | 5.0333 |
| Gas to liquid | Preschool teachers | 42 | 4 | 5 | 11 | 22 | 5.1923 |
| | Nonpreschool teachers | 40 | 5 | 2 | 16 | 17 | 5.2143 |
| Solid to liquid | Preschool teachers | 43 | 8 | 11 | 18 | 6 | 4.7344 |
| | Nonpreschool teachers | 43 | 12 | 8 | 20 | 3 | 4.6842 |
| Liquid to solid | Preschool teachers | 44 | 9 | 10 | 19 | 6 | 4.7627 |
| | Nonpreschool teachers | 43 | 11 | 8 | 20 | 4 | 4.7162 |

Senses

"Touch, " "taste, " "smell, " "sight, " and "sound" were the five subconcepts listed under "senses" and the majority of the respondents would "always" include "senses" in their curriculum, as shown in Table 6. The mean age for each concept was in the three years of age range which indicates that this was a principal concept taught to preschoolers. One respondent remarked under "comments" that "senses" are very basic to children.

Alphabet

The data in Table 7 indicates that "pronunciation of letters" is more often taught in the preschool than is "writing of letters." The reason for this might be the difficulty children from two to four years have in writing letters because their small muscle coordination is not fully developed. This conclusion is substantiated by the mean age at which "writing letters" should be a part of the curriculum (see Table 7). Four respondents stated in the "comments" section that they only include "writing letters" in their curriculum on an individual basis, as children become ready for this experience.

Table 6. Responses to the five senses concept.

| Concept | Respondents | N | This concept is included in the curriculum. | | | | The mean age for including the concept in the curriculum. |
|---------|-----------------------|----|---|---------|-----------|-------|---|
| | | | Always | Usually | Sometimes | Never | |
| Touch | Preschool teachers | 44 | 40 | 4 | 0 | 0 | 3.6471 |
| | Nonpreschool teachers | 43 | 40 | 3 | 0 | 0 | 3.5588 |
| Taste | Preschool teachers | 44 | 36 | 7 | 1 | 0 | 3.8472 |
| | Nonpreschool teachers | 44 | 39 | 4 | 1 | 0 | 3.6538 |
| Smell | Preschool teachers | 44 | 38 | 5 | 1 | 0 | 3.7702 |
| | Nonpreschool teachers | 44 | 39 | 4 | 1 | 0 | 3.6667 |
| Sight | Preschool teachers | 44 | 40 | 4 | 0 | 0 | 3.7568 |
| | Nonpreschool teachers | 44 | 41 | 3 | 0 | 0 | 3.6538 |
| Sound | Preschool teachers | 44 | 40 | 4 | 0 | 0 | 3.7778 |
| | Nonpreschool teachers | 44 | 41 | 3 | 0 | 0 | 3.6447 |

Table 7. Responses to the alphabet concept.

| Concept | Respondents | N | This concept is included in the curriculum. | | | | The mean age for including the concept in the curriculum. |
|--------------------------|-----------------------|----|---|---------|-----------|-------|---|
| | | | Always | Usually | Sometimes | Never | |
| Pronunciation of letters | Preschool teachers | 44 | 21 | 7 | 13 | 3 | 4.8485 |
| | Nonpreschool teachers | 43 | 22 | 9 | 11 | 1 | 4.7000 |
| Writing letters | Preschool teachers | 44 | 16 | 10 | 13 | 5 | 5.1857 |
| | Nonpreschool teachers | 41 | 13 | 12 | 14 | 2 | 5.1528 |

Reading

"Left to right exercises" were taught more often than the "pronunciation of words," according to data listed in Table 8. Responses were more evenly distributed among "always," "usually," and "sometimes" for the subconcept "pronunciation of words" than for "left to right exercises," which had a few more responses in the "always" column. These two subconcepts would not be listed high in importance in a preschool, based on results obtained.

It is interesting to note, in the mean age at which the concept should be included, "pronunciation of words" has a lower age than "left to right exercises." From results in the emphasis columns, however, the mean ages would be expected to be exactly the opposite.

Patterns and Ordering

The data in Table 9 shows that the subconcepts received similar responses. "What goes where," and "alike, unlike," are terms taught in the majority of preschools, although a few "sometimes" responses were received.

Table 8. Responses to the reading concept.

| Concept | Respondents | N | This concept is included in the curriculum. | | | | The mean age for including the concept in the curriculum. |
|-------------------------|-----------------------|----|---|---------|-----------|-------|---|
| | | | Always | Usually | Sometimes | Never | |
| Left to right exercises | Preschool teachers | 44 | 27 | 10 | 5 | 2 | 4.5882 |
| | Nonpreschool teachers | 42 | 26 | 10 | 4 | 2 | 4.8194 |
| Pronunciation of words | Preschool teachers | 41 | 19 | 11 | 10 | 1 | 4.4516 |
| | Nonpreschool teachers | 41 | 25 | 7 | 7 | 2 | 4.5556 |

Table 9. Responses to the pattern and ordering concept.

| Concept | Respondents | N | This concept is included in the curriculum. | | | | The mean age for including the concept in the curriculum. |
|-----------------|-----------------------|----|---|---------|-----------|-------|---|
| | | | Always | Usually | Sometimes | Never | |
| What goes where | Preschool teachers | 42 | 32 | 5 | 5 | 0 | 4.2941 |
| | Nonpreschool teachers | 43 | 32 | 7 | 4 | 0 | 4.3250 |
| Alike, unlike | Preschool teachers | 49 | 34 | 14 | 1 | 0 | 4.3846 |
| | Nonpreschool teachers | 45 | 36 | 8 | 1 | 0 | 4.1829 |

Spatial Relationships

The responses varied somewhat for different subconcepts, with "long, longer, longest," receiving less "always" and more "sometimes" responses than other subconcepts listed. The importance of these terms to the preschool program is reflected in Table 10.

Animals

"Zoo" and "farm animals" received more "always" and "usually" responses than the other subconcepts. One respondent stated in the "comments" that she usually doesn't stress the categories of animals because they are not applicable when differences in cultures are considered. All categories, however, seemed to have a significant role in the preschool, based on the data in Table 11.

Table 10. Responses to the spatial relationship concept.

| Concept | Respondents | N | This concept is included in the curriculum. | | | | The mean age for including the concept in the curriculum. |
|-----------------|-----------------------|----|---|---------|-----------|-------|---|
| | | | Always | Usually | Sometimes | Never | |
| Long, short | Preschool teachers | 49 | 34 | 14 | 1 | 0 | 4.3846 |
| | Nonpreschool teachers | 45 | 36 | 8 | 1 | 0 | 4.1829 |
| Big, little | Preschool teachers | 50 | 41 | 9 | 0 | 0 | 4.0000 |
| | Nonpreschool teachers | 46 | 39 | 6 | 1 | 0 | 4.0125 |
| Bigger, smaller | Preschool teachers | 50 | 35 | 12 | 3 | 0 | 4.4500 |
| | Nonpreschool teachers | 46 | 34 | 9 | 3 | 0 | 4.3125 |
| High, low | Preschool teachers | 50 | 37 | 10 | 3 | 0 | 4.2250 |
| | Nonpreschool teachers | 46 | 34 | 10 | 2 | 0 | 4.1463 |
| Under, over | Preschool teachers | 50 | 36 | 12 | 2 | 0 | 4.3250 |
| | Nonpreschool teachers | 46 | 35 | 8 | 3 | 0 | 4.2804 |
| Far, near | Preschool teachers | 50 | 32 | 12 | 6 | 0 | 4.4875 |
| | Nonpreschool teachers | 45 | 29 | 11 | 5 | 0 | 4.2804 |

Table 10. (Continued)

| Concept | Respondents | N | This concept is included in the curriculum. | | | | The mean age for including the concept in the curriculum. |
|-----------------------|-----------------------|----|---|---------|-----------|-------|---|
| | | | Always | Usually | Sometimes | Never | |
| Up, down | Preschool teachers | 48 | 38 | 10 | 0 | 0 | 4.0875 |
| | Nonpreschool teachers | 46 | 37 | 8 | 1 | 0 | 4.0125 |
| Long, longer, longest | Preschool teachers | 49 | 27 | 11 | 10 | 1 | 4.7051 |
| | Nonpreschool teachers | 44 | 22 | 15 | 7 | 0 | 4.6500 |
| Heavier, lighter | Preschool teachers | 49 | 29 | 14 | 6 | 0 | 4.6154 |
| | Nonpreschool teachers | 45 | 24 | 16 | 5 | 0 | 4.5000 |
| Taller, shorter | Preschool teachers | 49 | 33 | 15 | 1 | 0 | 4.4079 |
| | Nonpreschool teachers | 45 | 30 | 14 | 1 | 0 | 4.3750 |

Table 11. Responses to the animal concept.

| Concept | Respondents | N | This concept is included in the curriculum. | | | | The mean age for including the concept in the curriculum. |
|-----------------|-----------------------|----|---|---------|-----------|-------|---|
| | | | Always | Usually | Sometimes | Never | |
| Farm animals | Preschool teachers | 48 | 37 | 10 | 1 | 0 | 3.7368 |
| | Nonpreschool teachers | 46 | 35 | 8 | 3 | 0 | 3.5132 |
| Wild animals | Preschool teachers | 46 | 27 | 14 | 5 | 0 | 4.1375 |
| | Nonpreschool teachers | 46 | 26 | 13 | 7 | 0 | 4.0641 |
| Zoo animals | Preschool teachers | 47 | 30 | 13 | 4 | 0 | 4.0000 |
| | Nonpreschool teachers | 46 | 32 | 11 | 3 | 0 | 3.7692 |
| Fish | Preschool teachers | 48 | 23 | 14 | 9 | 2 | 4.2308 |
| | Nonpreschool teachers | 45 | 27 | 9 | 9 | 0 | 3.9359 |
| Care of animals | Preschool teachers | 46 | 24 | 12 | 10 | 0 | 4.2500 |
| | Nonpreschool teachers | 45 | 30 | 10 | 5 | 0 | 3.9359 |

Vegetation

Table 12 reflects the variation in responses for the four sub-concepts listed. "Seeds," and "what makes plants grow," received predominately "always" and "usually" responses. "Rooting" received fewer "always" and "usually" responses and more "sometimes" responses, and the responses for "cuttings" were divided into all four categories. The responses of the preschool and nonpreschool teachers for "cuttings" differ significantly as shown in Table 12. The mean age at which the subconcept "cuttings" should be included in the curriculum is higher than the mean age for the other sub-concepts which indicates that "cuttings" is difficult for young children to comprehend.

Time

Of the four "time" subconcepts, "holidays" seems to be the primary one taught in preschools, as shown in Table 13. The responses for the other three subconcepts were similar in their distribution; however, they show more responses in the "usually" category than "holidays" does. "Calendar" appears to be included at the kindergarten level rather than at the preschool level, based on the preschool teachers' mean age for "calendar."

Table 12. Responses to the vegetation concept.

| Concept | Respondents | N | This concept is included in the curriculum. | | | | The mean age for including the concept in the curriculum. |
|------------------------|-----------------------|----|---|--------------------------|-----------|-------|---|
| | | | Always | Usually | Sometimes | Never | |
| Rooting | Preschool teachers | 45 | 14 | 18 | 10 | 3 | 4.7027 |
| | Nonpreschool teachers | 46 | 18 | 13 | 12 | 3 | 4.7368 |
| Seeds | Preschool teachers | 48 | 25 | 17 | 6 | 0 | 4.3590 |
| | Nonpreschool teachers | 46 | 28 | 12 | 6 | 0 | 4.3333 |
| Cuttings | Preschool teachers | 43 | 3 | 9 | 19 | 12 | 5.1470 |
| | Nonpreschool teachers | 43 | 12 | 10 | 15 | 6 | 4.8750 |
| $\chi^2 = 7.9232$ | | | d. f. 3 | Significant at .05 level | | | |
| What makes plants grow | Preschool teachers | 48 | 21 | 20 | 7 | 0 | 4.5540 |
| | Nonpreschool teachers | 46 | 27 | 13 | 6 | 0 | 4.6341 |

Table 13. Responses to the time concept.

| Concept | Respondents | N | This concept is included in the curriculum. | | | | The mean age for including the concept in the curriculum |
|----------------------------|-----------------------|----|---|---------|-----------|-------|--|
| | | | Always | Usually | Sometimes | Never | |
| Yesterday, today, tomorrow | Preschool teachers | 43 | 24 | 13 | 5 | 1 | 4.6892 |
| | Nonpreschool teachers | 43 | 24 | 12 | 7 | 0 | 4.5256 |
| Calendar | Preschool teachers | 42 | 25 | 6 | 6 | 5 | 5.0139 |
| | Nonpreschool teachers | 43 | 25 | 12 | 3 | 3 | 4.7973 |
| Holidays | Preschool teachers | 42 | 34 | 6 | 2 | 0 | 4.5000 |
| | Nonpreschool teachers | 43 | 32 | 9 | 2 | 0 | 4.1538 |
| Before, now, after | Preschool teachers | 43 | 22 | 10 | 8 | 3 | 4.7361 |
| | Nonpreschool teachers | 43 | 23 | 14 | 6 | 0 | 4.4714 |

Family Relationships

The subconcepts involving the nuclear family, "father, mother," "sister, brother," received more responses in the "always" column than those terms involving the extended family, "aunt, uncle," "cousin," as depicted in Table 14. The responses for "aunt, uncle," and "cousin" were divided among all four columns. The subconcept "grandmother, grandfather" also received a majority of "always" responses, but this one received more "usually" responses than "father, mother," and "sister, brother." The subconcepts pertaining to the extended family also received a higher mean age than those dealing with the nuclear family.

Community Helpers

Table 15 indicates that the terms "fireman," "postman," "policeman," and "teacher" were included to about the same degree in preschool curriculums. These subconcepts received primarily "always" and "usually" responses, although they each received several "sometimes" and "never" responses. The concept of "community helpers" appears to be an important, although not a primary, aspect of most preschool curriculums.

Table 14. Responses to the family relationships concept.

| Concept | Respondents | N | This concept is included in the curriculum. | | | | The mean age for including the concept in the curriculum. |
|--------------------------|-----------------------|----|---|---------|-----------|-------|---|
| | | | Always | Usually | Sometimes | Never | |
| Father, mother | Preschool teachers | 41 | 38 | 1 | 1 | 1 | 3.5143 |
| | Nonpreschool teachers | 44 | 36 | 5 | 2 | 1 | 3.6750 |
| Sister, brother | Preschool teachers | 41 | 36 | 3 | 1 | 1 | 3.6389 |
| | Nonpreschool teachers | 44 | 37 | 5 | 1 | 1 | 3.7875 |
| Grandmother, grandfather | Preschool teachers | 41 | 32 | 6 | 2 | 1 | 3.8333 |
| | Nonpreschool teachers | 44 | 30 | 9 | 3 | 2 | 3.8625 |
| Aunt, uncle | Preschool teachers | 39 | 9 | 12 | 16 | 2 | 4.4242 |
| | Nonpreschool teachers | 44 | 18 | 12 | 10 | 4 | 4.3919 |
| Cousin | Preschool teachers | 39 | 6 | 10 | 18 | 5 | 4.7879 |
| | Nonpreschool teachers | 43 | 17 | 9 | 11 | 6 | 4.6571 |

Table 15. Responses to the community helpers concept.

| Concept | Respondents | N | This concept is included in the curriculum. | | | | The mean age for including the concept in the curriculum. |
|-----------|-----------------------|----|---|---------|-----------|-------|---|
| | | | Always | Usually | Sometimes | Never | |
| Fireman | Pr eschool teachers | 44 | 29 | 12 | 2 | 1 | 4. 2763 |
| | Nonpreschool teachers | 44 | 35 | 6 | 2 | 1 | 4. 2436 |
| Postman | Pr eschool teachers | 43 | 24 | 13 | 4 | 2 | 4. 3158 |
| | Nonpreschool teachers | 44 | 32 | 8 | 3 | 1 | 4. 2125 |
| Policeman | Pr eschool teachers | 44 | 29 | 10 | 4 | 1 | 4. 3158 |
| | Nonpreschool teachers | 44 | 35 | 5 | 3 | 1 | 4. 2125 |
| Teacher | Preschool teacher | 42 | 28 | 11 | 2 | 1 | 4. 1667 |
| | Nonpreschool teacher | 44 | 37 | 4 | 1 | 2 | 4. 1538 |

Feelings

In Table 16 the difference of opinion, in regard to the subconcepts "happiness" and "anger," between the two groups of respondents is significant. In both cases, the nonpreschool teachers indicated that they would "always" include the two subconcepts in their curriculums more often than the preschool teachers. The nonpreschool teachers would also use the term "surprise" in their classrooms more often than the preschool teachers, but not to the same degree as the other two subconcepts. All three subconcepts, however, are included to some degree in the preschool, except in one case.

Identity

The subconcepts received a similar distribution of responses for all four columns with the majority of responses in the "always" and "usually" columns. Each concept received several "sometimes" responses and a smaller number of "never" responses. The nonpreschool group gave a substantially lower mean age for all the subconcepts. Table 17 indicates that identity is a concept that is included, to a large degree, in most preschool curriculums.

Table 16. Responses to the feelings concept.

| Concept | Respondents | N | This concept is included in the curriculum. | | | | The mean age for including the concept in the curriculum. |
|-----------|-----------------------|-------------------|---|--------------------------|-----------|-------|---|
| | | | Always | Usually | Sometimes | Never | |
| Happiness | Preschool teachers | 44 | 29 | 12 | 3 | 0 | 3.9730 |
| | Nonpreschool teachers | 43 | 38 | 3 | 2 | 0 | 4.0359 |
| | | $\chi^2 = 6.7984$ | d. f. 2 | Significant at .05 level | | | |
| Anger | Preschool teachers | 44 | 29 | 12 | 3 | 0 | 4.0000 |
| | Nonpreschool teachers | 43 | 37 | 3 | 3 | 0 | 4.0897 |
| | | $\chi^2 = 6.3590$ | d. f. 2 | Significant at .05 level | | | |
| Surprise | Preschool teachers | 44 | 24 | 15 | 4 | 1 | 4.0676 |
| | Nonpreschool teachers | 43 | 32 | 7 | 4 | 0 | 4.0921 |

Table 17. Responses to the identity concept.

| Concept | Respondents | N | This concept is included in the curriculum. | | | | The mean age for including the concept in the curriculum. |
|-----------------------|-----------------------|----|---|---------|-----------|-------|---|
| | | | Always | Usually | Sometimes | Never | |
| Who am I | Preschool teachers | 49 | 35 | 9 | 3 | 2 | 4.0000 |
| | Nonpreschool teachers | 44 | 38 | 4 | 2 | 0 | 3.5395 |
| Who are you | Preschool teachers | 48 | 29 | 11 | 6 | 2 | 4.2179 |
| | Nonpreschool teachers | 44 | 35 | 7 | 2 | 0 | 3.9211 |
| My own place | Preschool teachers | 46 | 30 | 7 | 7 | 2 | 4.2361 |
| | Nonpreschool teachers | 44 | 35 | 6 | 3 | 0 | 3.8158 |
| My own identification | Preschool teachers | 48 | 35 | 7 | 4 | 2 | 4.3333 |
| | Nonpreschool teachers | 44 | 36 | 5 | 3 | 0 | 3.9605 |
| What I look like | Preschool teachers | 47 | 29 | 10 | 7 | 1 | 4.0263 |
| | Nonpreschool teachers | 45 | 36 | 6 | 3 | 0 | 3.8919 |

Foods

"Tasting foods" was the subconcept which received the majority of "always" and "usually" responses among the subconcepts listed. "Basic four food groups" received responses in all four categories with many "sometimes" and "never" responses. Both the preschool and nonpreschool groups indicated that "basic four food groups" is a more advanced concept, judging from the mean ages it received. "Preparing food" was included to some degree in the majority of the preschool curriculums. Table 18 indicates that, as the responses increased in the "usually" and "always" categories, the mean age lowered.

Cleanliness

"Washing hands before a meal" received a majority of "always" responses, whereas "brushing teeth" had responses more evenly distributed across all the categories, as depicted in Table 19. The difference in responses may be due to the fact that children usually have snacks or meals during the preschool session, before which they have to wash their hands, but because of the short time children are in preschool, they usually do not brush their teeth at school. With the increase in attendance, and the longer amount of time spent in day care centers, knowing how to brush teeth may become more important in preschool activities.

Table 18. Responses to the foods concept.

| Concept | Respondents | N | This concept is included in the curriculum. | | | | The mean age for including the concept in the curriculum. |
|------------------------|-----------------------|----|---|---------|-----------|-------|---|
| | | | Always | Usually | Sometimes | Never | |
| Basic four food groups | Preschool teachers | 47 | 17 | 6 | 13 | 11 | 4.9559 |
| | Nonpreschool teachers | 45 | 12 | 15 | 9 | 9 | 4.9545 |
| Preparing food | Preschool teachers | 47 | 16 | 15 | 15 | 1 | 4.3649 |
| | Nonpreschool teachers | 46 | 24 | 10 | 11 | 1 | 4.2027 |
| Tasting food | Preschool teachers | 49 | 27 | 16 | 5 | 1 | 3.8108 |
| | Nonpreschool teachers | 46 | 29 | 12 | 5 | 0 | 3.7368 |

Table 19. Responses to cleanliness concept.

| Concept | Respondents | N | This concept is included in the curriculum. | | | | The mean age for including the concept in the curriculum. |
|--------------------------------|-----------------------|----|---|---------|-----------|-------|---|
| | | | Always | Usually | Sometimes | Never | |
| Brushing teeth | Preschool teachers | 49 | 29 | 11 | 6 | 3 | 3.6375 |
| | Nonpreschool teachers | 44 | 26 | 5 | 9 | 4 | 3.7727 |
| Washing hands before a meal | Preschool teachers | 50 | 42 | 5 | 3 | 0 | 3.4625 |
| | Nonpreschool teachers | 45 | 40 | 3 | 2 | 0 | 3.5714 |

Reproduction

Several respondents stated that reproduction was a topic too controversial to discuss in the preschool. Other respondents mentioned that this topic was more appropriately taught at an older age. These opinions are reflected in the responses of both groups for all three subconcepts, which were primarily "sometimes" and "never." These subconcepts received the fewest "always" and "usually" responses of any of the concepts listed on the questionnaire. It is interesting to note the differences in the responses of the nonpreschool and preschool groups in regard to the subconcept "conception." The nonpreschool group gave more "usually" and "sometimes" and less "never" responses to this subconcept. The significance of this difference is reflected in Table 20.

Geography

"Transportation" received more "always" and "usually" responses than "maps" and "the globe," as shown in Table 21. One respondent stated in the "comments" that "the globe" and "maps" would be of more interest to older children. The majority of the respondents appear to agree that "maps" and "the globe" were more advanced concepts, based on the mean ages for these two subconcepts. "Transportation" received a lower mean age which reflects the greater number of "always" and "usually" responses it received.

Table 20. Responses to the reproduction concept.

| Concept | Respondents | N | This concept is included in the curriculum | | | | The mean age for including the concept in the curriculum. |
|-----------------|-----------------------|--------------------|--|--------------------------|-----------|-------|---|
| | | | Always | Usually | Sometimes | Never | |
| Conception | Preschool teachers | 45 | 5 | 0 | 8 | 32 | 5.0313 |
| | Nonpreschool teachers | 43 | 5 | 6 | 15 | 17 | 4.8125 |
| | | $\chi^2 = 12.6834$ | d. f. 2 | Significant at .05 level | | | |
| Growth of fetus | Preschool teachers | 45 | 5 | 2 | 18 | 20 | 4.6667 |
| | Nonpreschool teachers | 44 | 5 | 7 | 16 | 16 | 4.5652 |
| Birth | Preschool teachers | 49 | 10 | 8 | 18 | 13 | 4.5714 |
| | Nonpreschool teachers | 44 | 9 | 7 | 18 | 10 | 4.4259 |

Table 21. Responses to the geography concept.

| Concept | Respondents | N | This concept is included in the curriculum. | | | | The mean age for including the concept in the curriculum. |
|----------------|-----------------------|----|---|---------|-----------|-------|---|
| | | | Always | Usually | Sometimes | Never | |
| Maps | Preschool teachers | 50 | 13 | 8 | 19 | 10 | 5.0857 |
| | Nonpreschool teachers | 45 | 9 | 7 | 24 | 5 | 4.9143 |
| Globe | Preschool teachers | 48 | 13 | 5 | 20 | 10 | 5.0588 |
| | Nonpreschool teachers | 43 | 11 | 11 | 16 | 8 | 4.8788 |
| Transportation | Preschool teachers | 50 | 27 | 15 | 6 | 2 | 4.2857 |
| | Nonpreschool teachers | 46 | 26 | 14 | 6 | 0 | 4.1711 |

Weather and Astronomy

The writer mistakenly listed these concepts in the questionnaire as "weather and astrology." However, because the subconcepts were correct, the respondents did not appear to have any difficulty responding to this section. Several respondents noted the error, crossed out "astrology," and wrote in "astronomy."

"Hail," "stars," "planets," and "evaporation" received fewer "always" responses and more "sometimes" and "never" responses than the others, as shown in Table 22. This might be explained by comments from several respondents stating that they discuss weather primarily when it occurs. "Planets" and "evaporation" also received higher mean ages, which might signify more advanced concepts.

Buoyancy

Table 23 indicates that "floating" and "sinking" were given similar emphasis in the preschools. The responses were about equally distributed between "always," "usually" and "sometimes," with a few "never" responses indicating that these terms were included to some degree in most preschool curriculums.

Table 22. Responses to the weather and astronomy concept.

| Concept | Respondents | N | This concept is included in the curriculum. | | | | The mean age for including the concept in the curriculum. |
|-------------|-----------------------|----|---|---------|-----------|-------|---|
| | | | Always | Usually | Sometimes | Never | |
| Clouds | Preschool teachers | 44 | 19 | 16 | 7 | 2 | 4.1563 |
| | Nonpreschool teachers | 44 | 25 | 13 | 5 | 1 | 4.0946 |
| Rain | Preschool teachers | 45 | 28 | 15 | 1 | 1 | 3.9412 |
| | Nonpreschool teachers | 44 | 29 | 12 | 2 | 1 | 3.9189 |
| Wind | Preschool teachers | 45 | 27 | 15 | 3 | 0 | 4.0606 |
| | Nonpreschool teachers | 44 | 28 | 11 | 4 | 1 | 4.1757 |
| Hail | Preschool teachers | 42 | 12 | 16 | 12 | 2 | 4.4844 |
| | Nonpreschool teachers | 44 | 19 | 12 | 11 | 2 | 4.2639 |
| Snow | Preschool teachers | 45 | 27 | 15 | 3 | 0 | 4.0882 |
| | Nonpreschool teachers | 44 | 25 | 13 | 5 | 1 | 3.8649 |
| Sunshine | Preschool teachers | 45 | 30 | 13 | 1 | 1 | 3.9706 |
| | Nonpreschool teachers | 44 | 31 | 10 | 2 | 1 | 3.8378 |
| Temperature | Preschool teachers | 45 | 21 | 13 | 8 | 3 | 4.6515 |
| | Nonpreschool teachers | 44 | 21 | 15 | 7 | 1 | 4.4189 |
| Stars | Preschool teachers | 43 | 8 | 12 | 19 | 4 | 4.8594 |
| | Nonpreschool teachers | 42 | 15 | 15 | 10 | 2 | 4.5571 |
| Planets | Preschool teachers | 43 | 3 | 7 | 19 | 14 | 5.2000 |
| | Nonpreschool teachers | 42 | 8 | 8 | 16 | 10 | 5.1515 |
| Evaporation | Preschool teachers | 44 | 9 | 12 | 11 | 12 | 5.0323 |
| | Nonpreschool teachers | 43 | 12 | 16 | 12 | 3 | 4.9857 |

Table 23. Responses to the buoyancy concept.

| Concept | Respondents | N | This concept is included in the curriculum. | | | | The mean age for including the concept in the curriculum. |
|----------|-----------------------|----|---|---------|-----------|-------|---|
| | | | Always | Usually | Sometimes | Never | |
| Floating | Pr eschool teachers | 44 | 14 | 13 | 12 | 5 | 4.4706 |
| | Nonpreschool teachers | 44 | 16 | 16 | 10 | 2 | 4.2794 |
| Sinking | Preschool teachers | 44 | 14 | 12 | 13 | 5 | 4.4286 |
| | Nonpreschool teachers | 43 | 16 | 15 | 10 | 2 | 4.3194 |

Magnets

The concept "magnets" was taught by the majority of the respondents "always" or "usually," with 11 respondents including it "sometimes" and two "never." Table 24 shows that this concept was prevalent in most preschool curriculums, at least to some degree.

Arithmetic

From Table 25, it can be concluded that "spoken numbers" were used more often than either "written numbers" or "unit blocks." Since small muscle coordination is not fully developed in small children, it is understandable that "written numbers" would not be taught to the extent that "spoken numbers" would be. However, "unit blocks" do not require the same degree of skill in small muscle coordination as "written numbers," and it is difficult to understand why they are not included more often in the preschool. Possibly the term "unit blocks" was an unfamiliar one to some of the respondents, and the term "blocks" would have been more suitable.

Table 24. Responses to the magnet concept.

| Concept | Respondents | N | This concept is included in the curriculum. | | | | The mean age for including the concept in the curriculum. |
|---------|-----------------------|----|---|---------|-----------|-------|---|
| | | | Always | Usually | Sometimes | Never | |
| Magnets | Preschool teachers | 44 | 26 | 11 | 6 | 1 | 4.3333 |
| | Nonpreschool teachers | 43 | 21 | 16 | 5 | 1 | 4.3000 |

Table 25. Responses to the arithmetic concept.

| Concept | Respondents | N | This concept is included in the curriculum. | | | | The mean age for including the concept in the curriculum. |
|-----------------|-----------------------|----|---|---------|-----------|-------|---|
| | | | Always | Usually | Sometimes | Never | |
| Unit blocks | Preschool teachers | 39 | 28 | 5 | 4 | 2 | 4.3387 |
| | Nonpreschool teachers | 41 | 31 | 6 | 3 | 1 | 4.2353 |
| Spoken numbers | Preschool teachers | 45 | 34 | 8 | 3 | 0 | 4.1351 |
| | Nonpreschool teachers | 43 | 35 | 8 | 0 | 0 | 4.0946 |
| Written numbers | Preschool teachers | 44 | 23 | 10 | 7 | 4 | 4.9722 |
| | Nonpreschool teachers | 42 | 21 | 11 | 10 | 0 | 4.9054 |

Music

"Songs" was one of the most frequently included subconcepts of all those listed. "Rhythm" and "playing instruments" also received a large number of "always" and "usually" responses, although not as many "always" responses as "songs." "High notes" responses were more evenly distributed throughout all four categories; however, the nonpreschool teachers gave a larger number of "usually" and "sometimes" responses than the preschool teachers. Eleven respondents stated they never taught "high notes." This difference in opinion is reflected in Table 26.

Movement to Music

Table 27 indicates that "skipping," "marching," and "dancing" are included "always" or "usually" in the majority of preschool curriculums, although "dancing" received five "never" responses from the preschool respondents. "Skating" received significantly different answers from the two groups. The preschool teachers gave fewer "usually" responses and more "never" responses than the nonpreschool group. The writer was surprised at the 19 "never" responses of the preschool teachers and feels it may be due to a misunderstanding of the term. In the movement to music sense, "skating" represents imitating skating movements and not actually skating with ice or roller skates. An explanation of the term on the questionnaire may have been needed.

Table 26. Responses to the music concept.

| Concept | Respondents | N | This concept is included in the curriculum. | | | | The mean age for including the concept in the curriculum. |
|---------------------|-----------------------|-------------------|---|--------------------------|-----------|-------|---|
| | | | Always | Usually | Sometimes | Never | |
| High notes | Preschool teachers | 47 | 19 | 7 | 10 | 11 | 4.6129 |
| | Nonpreschool teachers | 41 | 13 | 13 | 13 | 2 | 4.4194 |
| | | $\chi^2 = 9.1807$ | d. f. 3 | Significant at .05 level | | | |
| Rhythm | Preschool teachers | 50 | 37 | 12 | 1 | 0 | 3.9474 |
| | Nonpreschool teachers | 46 | 38 | 7 | 1 | 0 | 3.8205 |
| Songs | Preschool teachers | 50 | 48 | 2 | 0 | 0 | 3.7105 |
| | Nonpreschool teachers | 46 | 45 | 1 | 0 | 0 | 3.6750 |
| Playing instruments | Preschool teachers | 50 | 33 | 12 | 4 | 1 | 4.0270 |
| | Nonpreschool teachers | 46 | 30 | 12 | 4 | 0 | 3.9737 |

Table 27. Responses to the movement to music concept.

| Concept | Respondents | N | This concept is included in the curriculum. | | | | The mean age for including the concept in the curriculum. |
|----------|-----------------------|----|---|---------|-----------|-------|---|
| | | | Always | Usually | Sometimes | Never | |
| Skipping | Preschool teachers | 49 | 37 | 7 | 5 | 0 | 4.5135 |
| | Nonpreschool teachers | 46 | 39 | 4 | 3 | 0 | 4.6923 |
| Marching | Preschool teachers | 50 | 41 | 6 | 3 | 0 | 4.0676 |
| | Nonpreschool teachers | 46 | 40 | 5 | 1 | 0 | 4.0125 |
| Dancing | Preschool teachers | 50 | 34 | 8 | 3 | 5 | 4.1212 |
| | Nonpreschool teachers | 46 | 40 | 4 | 2 | 0 | 3.9487 |
| Skating | Preschool teachers | 47 | 17 | 4 | 7 | 19 | 4.6964 |
| | Nonpreschool teachers | 45 | 25 | 8 | 7 | 5 | 4.4714 |
| | | | $\chi^2 = 10.9855$ d. f. 3 | | | | Significant at .05 level |

Summary

The major purpose of this study was to develop a resource guide:

1. for introducing high school students to ways in which intellectual development can be taught in early childhood education programs.
2. for giving early childhood educators additional ways of teaching intellectual concepts to preschool children.

To achieve this purpose, it was necessary to identify the intellectual concepts which are most often taught by preschool teachers and the concepts which teachers would teach if they had additional teaching techniques. The concepts taught and methods used by educators of young children in Oregon were established through questionnaires sent to members of the Oregon Association for the Education of Young Children.

From the results of the questionnaires, the writer hoped to identify:

1. what intellectual concepts are being included in the curriculum.
2. at what age or ages intellectual concepts are being taught to preschool children.
3. what intellectual concepts teachers would be including

in their curriculum if they had additional teaching techniques.

4. what teaching methods are being used by early childhood educators.

From the study it is anticipated high school teachers will have a basis for determining what concepts actually are taught and how they are taught by early childhood educators. High school students in Child Care Services Programs will profit from this study by being prepared to reinforce what the early childhood educators teach in the classroom.

In order to develop a resource guide, four questions needed to be answered:

1. what intellectual concepts are being included in the curriculum?
2. at what age or ages are intellectual concepts being taught to preschool children?
3. what intellectual concepts would teachers be including in their curriculum if they had additional teaching techniques?
4. what teaching methods are being used by early childhood educators?

The writer decided a questionnaire would be the most satisfactory way of answering the questions. The total number of children,

by age, taught by the preschool teachers who responded to the questionnaire was 3,680. The total number of all adults assisting in the preschools was 347. Approximately 149 high school students, community and university students, parents and community volunteers also assisted in the preschools.

The preschool teachers tended to mark the age at which a concept should be included in the curriculum as the same age, or at least the same mean age, as the children they taught. Teaching techniques were received for 97 of the 98 listed concepts.

Conclusions

1. The preschool teachers and the nonpreschool teachers responses were similar in regard to the frequency with which a concept was included in the curriculum. In only seven of the 98 concepts were the answers of the two groups significantly different.
2. The mean age for each concept indicated by the preschool and nonpreschool groups was not significantly different for any of the 98 concepts.
3. Preschool teachers' mean age for teaching each concept was approximately the same as the age of the largest group of children they taught. This was significant for 72 of the 98 concepts.
4. Both groups of respondents tended to give lower mean ages

for concepts which received a majority of "always" and "usually" responses.

5. Concepts receiving predominately "sometimes" and "never" responses, or evenly distributed responses, tended to receive higher mean ages from the two groups of respondents.

Recommendations

The writer recommends the following suggestions for possible future research:

1. The teaching techniques assembled in Chapter V have not been formally tested; therefore, an evaluation of the effectiveness of these teaching techniques in preschool classrooms needs to be done.
2. The teachers of the Child Care Services Programs should assist in the evaluation of the guide to determine its effectiveness in Child Care Services Programs.
3. A further study could be done to determine why some of the concepts received predominately "sometimes" and "never" responses and others predominately "usually" and "always" responses in regard to the frequency of the concept being included in the curriculum.

CHAPTER V

GUIDE

Introduction

This section of the study includes suggestions, given by respondents, for teaching techniques in the area of intellectual development. In areas where the teaching techniques were few in number or repetitious, additional techniques based on the reading and classroom teaching experiences of the writer have been given. A resource list, provided at the end of this section, gives bibliographical information on the kits and books listed throughout the text.

The main purpose of this section is to provide a guide for teachers to help high school students in Child Care Services Programs understand and implement teaching-learning techniques which foster intellectual development. A second purpose is to give preschool teachers additional teaching techniques in the area of intellectual development for use in their classrooms. Bruner (1966) stresses the importance of planning curriculum so that interesting learning opportunities are provided for preschool children. Intellectual concepts are taught through many means: stories, songs, games, puzzles, experiences, conversations, and a variety of other ways. It is the preschool teacher's responsibility to be aware of the children's interests and

abilities and to capitalize on them. The careful planning of curriculum involves the selection of materials based on abilities and interests of children. It is hoped that the teaching techniques included in this section will be adaptable to individual needs of preschool children and contribute to an environment inviting to children. The writer's philosophy of teaching young children and reason for assembling the teaching techniques are reflected in this comment by one of the respondents:

[The] child seems to learn easily in (a) relaxed, free to explore environment, where materials and opportunities are available and he can enjoy whatever is presented casually, leaving and returning, at will. The planned environment for a nursery school is essential for all areas of development of the children as well as helping the teacher have better control of the total program. (Smith, Catherine. Assistant Professor, Family Life, Oregon State University. Questionnaire 212. Spring, 1971).

Teaching Techniques

Alphabet and Reading

Language development is a main emphasis of early childhood educators because "success in school depends upon the ability to comprehend and use language" (Nimnicht, 1969, p. 41). The home environment does not always prepare a child adequately in this area, so the school must provide opportunities for children to improve their vocabulary and communication skills. Because of the close

association of the two concepts of reading and the alphabet, teaching techniques for both are included in this section. Subconcepts listed under "reading and alphabet" were: "pronunciation of letters," "writing letters," "left to right exercises," and "pronunciation of words." Specific teaching techniques are given for each subconcept listed.

Pronunciation of Letters. Wooden letters, felt letters, and games involving letters can be used to introduce children to the letters in the alphabet. When first using letters, the teacher can pronounce the letter correctly, and the children can repeat the letter after her. As the children become more skilled, they can pronounce each letter without having to first hear it. After they are familiar with each letter in the alphabet, they can make alphabet books. These books could include each letter with pictures of items beginning with that letter.

Writing Letters. Children can trace wooden letters until they are able to print letters free hand. The teacher could encourage a correct method of printing each letter by assisting the child when he is tracing a letter.

Left to Right Exercises. Children can wear bells, perfume, or a star on their left hands to emphasize the left hand, since reading and printing proceed from left to right. Another teaching technique which deals with left to right utilizes mimeographed sheets containing

rows of dots with the distance between dots increasing with each row. The children use a crayon and draw lines from one dot to the next dot, from left to right across the row. They continue with the other rows, always drawing lines from left to right. The teacher should explain to them that they are drawing from left to right and use a book to demonstrate how this principle is used in reading and writing (Croft and Hess, 1972).

Pronunciation of Words. This teaching technique incorporates the pronunciation of letters and words. Lower and upper case letters (A, a) are matched, and one letter is emphasized each week. The children identify objects with that initial consonant or vowel, such as ball, bat, bed etc. for the letter "B." This activity is similar to the alphabet book mentioned under pronunciation of letters. Printed labels and signs located throughout the room encourage children to relate the word printed on a door to items located inside the cupboard or closet.

Animals

Animals such as gerbils, hamsters, guinea pigs, rats, snakes and rabbits, common pets in preschools, can provide opportunities for children to learn about birth, care of the young, and the rapid changes that take place in the growth and development of animals. Preschool teachers often include pets in the curriculum to assist

children in learning to feed and care for pets properly and as a source of questions and discussions on various needs of different animals, holding pets correctly, how different animals are born, and a variety of other topics of interest.

"Animals" was a main heading in the questionnaire with "farm animals," "wild animals," "zoo animals," "fish," and "care of animals" listed under it. Some suggestions for teaching these sub-concepts are listed.

Farm Animals. Preschool children can visit a farm and learn about milking a cow and making butter and ice cream. In addition, they can have the opportunity to feel the fleece of a sheep and see the fleece carded and spun into yarn on a wheel and woven into fabric on a loom. Stories, pictures, puzzles, songs and records may be used to familiarize children with farm animals. The sounds animals make, their movements, their similarities and differences can be taught to children through class activities.

Wild and Zoo Animals. The zoo is an excellent place for children to learn about animals from all over the world. OMSI provides an educational experience for children in this area. Stories, pictures, puzzles, songs and records can be beneficial in increasing a child's understanding of wild and zoo animals.

Fish. Many preschool classrooms have aquariums with fish, snails, and plants. Children can learn about fish and caring for fish

by having fish in the classroom. To familiarize children with rare types of fish, a trip to OMSI might be arranged. Visits to fish hatcheries and the Marine Center in Newport provide opportunities for children to see fish native to various Oregon waterways. If this is not feasible, pictures of fish native to different water sources could be used in classroom discussion.

Care of Animals. The Humane Society employees will visit classrooms and show slides about animal care and also bring an animal for demonstration. To elaborate on this experience, the teacher may encourage children to bring pets to class and discuss what they have learned regarding the care of their own pets.

Arithmetic

The preschool can lay the groundwork for future success in mathematics by acquainting children with numbers, what each number represents, and simple addition and subtraction skills.

"Unit blocks," "spoken numbers," and "written numbers" were the subconcepts listed in the questionnaire under arithmetic. Teaching techniques for these subconcepts follow:

Unit Blocks. Unit blocks, color cubes, beads and counting frames can be used by children for adding and subtracting numbers, so they have an understanding of what each number represents. Terms such as "more than" and "less than" can be visually expressed

through unit blocks.

Spoken Numbers. Numbers can be emphasized through language, such as "Three children can play in the house," and "Four at the blocks," and similar comments. Children can count days on the calendar, use counting in songs, and answer questions which involve counting items. Games, felt numbers and objects can be used by children to increase their number understanding.

Written Numbers. When children are capable of writing numbers, wooden numbers can be used for tracing, along with teacher supervision, until a child has mastered the correct method of writing numbers.

Buoyancy

Buoyancy is based on the Principle of Archimedes:

a body immersed in a liquid loses a weight equal to the weight of liquid displaced. Or, more simply, the loss of weight in liquid equals the weight of liquid displaced (Haupt, n. d., p. 10).

Children are often fascinated by things that float or sink, and with interesting teaching techniques, can begin to understand the principle of buoyancy. Because floating and sinking are related, the teaching techniques for both are listed together.

Floating and Sinking. Fill a large glass container with water and select items that will or will not float. Have children try to

predict which of items will float and which won't before placing them in the container. Explain the principle of buoyancy in terms children can understand. A second teaching technique uses two balloons to show the role air plays in floating. One balloon is filled with water and the other with air. They are both placed in a container of water, so the children can observe how air helps items to float. Other items could be used to demonstrate that an object will sink when it weighs more than the weight of the water it displaces.

Cleanliness

Good habits of hygiene should be taught to children at an early age to help insure good health throughout life. Two aspects of cleanliness included in the questionnaire were brushing teeth and washing hands before a meal. Suggestions for teaching these two concepts are as follows:

Brushing Teeth. A plaster of Paris model of a set of teeth could be used to show how to brush teeth correctly. Children could practice brushing their own teeth following this demonstration. Many preschools in which children stay several hours each day have children brush their teeth at school following snacks or meals. A dentist could be invited to discuss prevention of cavities with the children and at a parent's meeting. Since young children often experience difficulty flossing their own teeth, their parents could be shown how

to assist them with this. The teacher might also distribute copies of the Colgate Company publication titled "Tommy Toothbrush for Children" to the preschool children and their parents.

Washing Hands. The teacher could discuss with the children the importance of good hygiene when using bathroom facilities, such as, washing their hands after going to the bathroom. Washing hands after holding an animal and before meals needs to be stressed also.

Color

Since color is all around us, it is a concept that children usually comprehend quickly. Color is also a classification, and children can learn to categorize objects by their color. To assess the preschool children's understanding of color, the teacher may use the American Association for the Advancement of Science's program which includes behavioral objectives and a pre-test on colors.

"Primary, " "secondary" and "complementary" were the three subconcepts under color in the questionnaire. Ways of incorporating them into the curriculum are suggested below:

Primary. Primary colors can be introduced by having a color day or week with snacks, games, art materials and stories all of or about one color. The children can bring an item or cut a picture from a magazine in the color emphasized that particular day

or week. To lessen children's confusion about colors, primary colors may be introduced first, and then secondary and complementary colors can be introduced gradually. A felt or flannel board can also be used to introduce color. Pictures of different items of varying colors and different colored shapes may be used.

Secondary. The teaching techniques suggested for introducing primary colors could also be used for discussing secondary colors. In addition, baby food jars filled with food coloring and water can be used. Children pour one primary color from one jar into another primary color in another jar and immediately see the secondary color formed by the two primary shades. This activity is best done over a water table or rubber dishpan in order to catch any water spilled in pouring. Colored acetate sheets work in a similar manner. By placing a red sheet over a yellow sheet, the children can see that orange is formed. Fingerpainting with two of the primary colors also produces the secondary colors, and children often comment on the new color produced. Songs can be used to emphasize color. Each child's name and the colors of the clothing they are wearing may be used to emphasize a variety of colors. The use of color identification in conversation, for example: "red dress," "green grass" etc. stresses color as a classification.

Tertiary Colors. The teaching techniques for primary and secondary colors are also applicable to tertiary colors.

By the time children have an understanding of most colors, more advanced teaching techniques can be used. The color name can be printed on a label and placed next to an item corresponding to it. Another idea would be to attach different colored pockets on aprons with Velcro. With appropriate questions, the teacher can assess the children's knowledge of color by asking them what colors the pockets are and then changing the colors as each is mastered. During different times of the year the teacher can take walks with the children and have them point out examples of various colors in nature and in man-made objects.

Communication

Children need opportunities to learn how to communicate effectively, in addition to developing skill in their knowledge of words. One communication problem some children have is pronouncing correctly certain letters or words. Although it is realized that some letters and words are more difficult to pronounce and the speech mechanism must be developed to enable a child to pronounce the letters correctly, there are still methods teachers and parents can use to help increase language skills. Following are several guidelines which will assist children with their speech.

1. Make use of opportunities to use speech when the child is within hearing distance.

2. Have fun imitating indoor sounds, doors squeaking, teakettle, doorbell, and outdoor sounds, fire sirens, dogs, and other animals.
3. Encourage him to make noises and sounds as he plays. Imitate the sounds he makes and try to suggest others.
4. Stimulate listening by providing toys which make a noise.
5. Let him hear you describe the activity you are doing in two or three words, such as "wash my hands," "put on my shoe," "button my coat."
6. Try to understand what he says without making him repeat it.
7. Expect him to say words. Avoid showing surprise or pleasure when you recognize a word he has used.
8. Companionship with children is most helpful in stimulating speech development.
9. Work with him at a time when you are not pressured for time. You will be able to be more patient and your relaxed feeling will "rub off" on the child (Cohen, Carol. Student, Oregon State University. FL427, Oregon State University. October 20, 1970).

Increasing a child's skill in using the telephone is another facet of effective communication. Pacific Northwest Bell has a teletrainer program which is useful in teaching correct use of the telephone. It is available through Pacific Northwest Bell's school consultant (call collect 226-8058 or 226-5498). The students gain experience through this program in listening and talking, as well as becoming familiar with the various aspects of the telephone: receiver, transmitter, dial tone, busy signal, ring, and dialing.

Community Helpers

Career education is a major area in the elementary and secondary education curriculum. Preschool children can be

introduced to this subject through visitors to the classroom and field trips throughout the community. Dentists, doctors, firemen, service station operators, postmen, and policemen are just a few individuals who might visit the classroom and share information on their particular occupations with the children.

The subconcepts listed under the heading of community helpers in the questionnaire were: "fireman," "postman," "policeman," and "teacher." Suggestions for teaching these subconcepts follow:

Fireman. A fireman could discuss fire prevention and the role children, adults, and firemen play in helping to prevent fires. The fireman could demonstrate what the children should do if there were a fire. The children also might take a field trip to the fire station.

Similar experiences could be planned in regard to the other occupations. The responsibilities of various occupations could be further reinforced by providing materials for children to use in the classroom. After returning from a field trip to a service station, the teacher could provide a partially constructed cardboard reproduction of a service station to be finished and used. Inner tubes, air pumps, jumper cables, squirt bottles and sponges could be provided for use with the cardboard service station.

Electricity

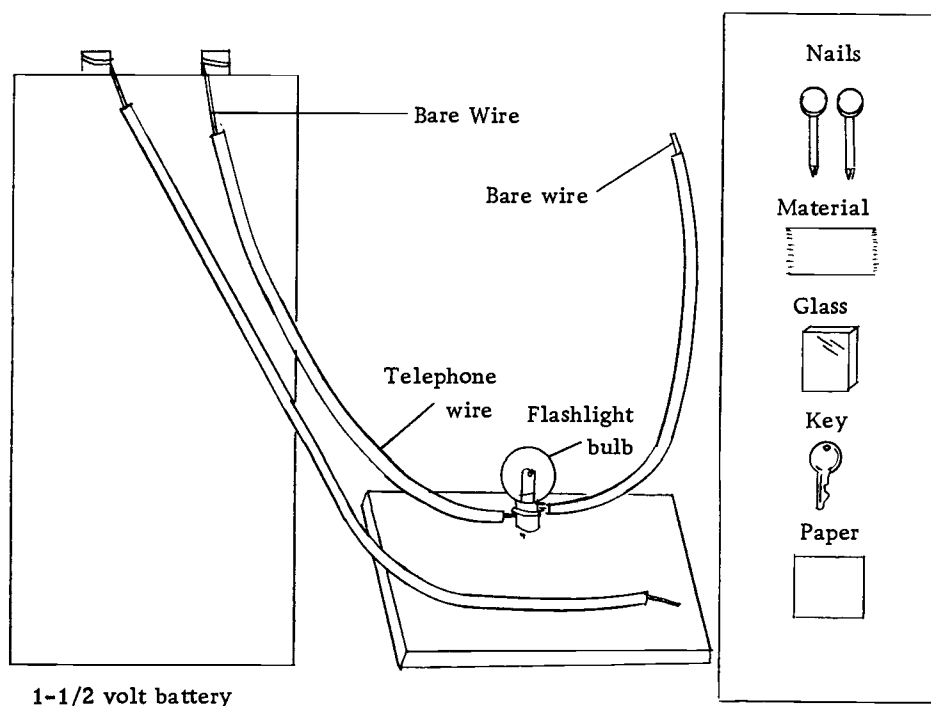
Static electricity and conductors and nonconductors of

electricity are concepts preschool children can understand when simple experiments are planned. The following five activities deal with electricity. The first four activities demonstrate with static electricity and the last activity familiarizes children with conductors and nonconductors of electricity. The five activities and materials needed are:

1. Materials needed for first activity: several balloons. You can electrify a balloon by rubbing it with a piece of woolen cloth. Then put the balloon against a wall or against your cheek. The balloon will stay in place as if stuck with glue.
2. Materials needed for second activity: a comb and tissue paper. Take a pocket comb and charge it with electricity by rubbing it on a piece of wool. Tear a piece of tissue paper into small squares and bring the comb near them. The papers will jump at the comb and cling to it. They will stay on the comb until its electrical charge grows weak, and then will suddenly jump off.
3. Materials needed for third activity: a comb and ping-pong ball. Charge the comb with electricity as before. Bring the comb close to the ball. The neutral ball will be attracted by the comb and will roll towards it. Keep moving the comb, and the ball will follow it around the top of the table.
4. Materials needed for fourth activity: a comb, paper, salt and pepper. Pour salt on piece of paper and add pepper. Charge the comb with electricity as before. Pass the comb over the salt and pepper. The pepper is lighter, so therefore it will cling to the comb.
5. Materials needed for fifth activity: a 1 1/2 volt battery, flashlight bulb, insulated wire, paper clips, fork, key, coin, piece of cloth, wood, glass, rubber band, leather heel, nails, pins, paper, chalk, and covered wire. Hook one wire to the battery and then to the light and let the other end of the wire hang free. Hook the other wire to the other side of the battery. Then put both the wires on an object to see if it will conduct electricity. The ones that conduct electricity

will light up the light bulb, and the ones that do not conduct electricity will not light up the bulb (Outka, Margaret. Student, Oregon State University. FL427, Oregon State University. Fall, 1970).

(Illustration of activity no. 5)



Concepts the teacher could discuss with the children relating to electricity and which are depicted in some of the activities are:

1. A flashlight makes a light.
2. A flashlight has dry cells in it.
3. A dry cell makes electricity.
4. Electricity makes a light.
5. A little electricity makes a little light.
6. More electricity makes a brighter light.
7. Electricity makes the lights in your home.
8. All things that are run by electricity turn on and off.

9. The wires that conduct electricity are covered with material that protects you from getting a shock.
10. Switches turn electric current on and off.
11. Conductors allow electricity to travel from one place to another. Nonconductors do not.
12. An electric bell can be made to ring if correctly connected with a dry cell.
13. An electric circuit is the path that electric current travels (Outka, Margaret. Student, Oregon State University. FL427, Oregon State University. Fall, 1970).

Additional ways of teaching electricity might be with pictures of dams and lightning to illustrate a discussion on mechanical and static electricity. Balloons could be used in another way. Have the children rub the balloons on their clothing to build up a static charge, then put the balloons on the wall or place in a bucket. The balloons will stick to the wall or jump out of the bucket because of the static electricity built up.

Family Relationships

Developing a positive self-image is an important concept of many preschool programs (Nimnicht, 1969). One aspect is for a child to understand his position in a family unit.

Father, mother; sister, brother; grandmother, grandfather; aunt, uncle; and cousin were the subconcepts listed under family relationships. Similar teaching techniques can be used with all of the subconcepts. Books, songs, dress-up and games can assist a child in understanding what the words father, mother, sister,

brother, grandmother, grandfather, aunt, uncle, and cousin mean.

Feelings

Emotional growth has been one emphasis of the preschool for a long time. "Happiness," "anger," and "surprise" were three feelings listed under the heading "feelings" in the questionnaire.

A "magic circle" time can be incorporated into the preschool program, and during this time, the children and teachers can discuss their joys, fears, and other feelings. These discussions may also include topics such as "How we express feelings," "How to control your feelings" or "Sympathy and empathy for others." This idea can be carried out further through children's art work expressing feelings or through pictures from magazines showing a variety of feelings. A similar idea would be to have a sharing time when each person tells one happy thought of the day. This technique encourages children to look optimistically at life rather than being depressed with bad aspects of the day. Many adults might benefit from this idea too.

Foods

Learning about different foods, their importance to health, their preparation, and their taste are just a few of the many ways food can be incorporated into the curriculum. A child's sensory

awareness can be increased through tasting foods, comparing and contrasting their colors, shapes, and textures, seeing the many forms foods come in such as crushed, chunks, whole, juice etc., and how the food feels and smells. Children can learn to appreciate differences in cultures and the types of foods native to a particular country or region as well as numerous methods of food preparation. Measurements, small muscle coordination, concept formation, language development, and problem solving are just a few other areas where foods can be an excellent teaching device.

The three subconcepts listed in the questionnaire under foods were "basic four food groups," "preparing food," and "tasting food." Methods of teaching these follow:

Basic Four Food Groups. The Dairy Council has a wide variety of food models teachers can use in their classrooms. In addition to learning about the basic four food groups, children can use food models to choose adequate meals. Charts, pamphlets, and other materials produced by the National Dairy Council can be sent home to parents to assist children in locating foods belonging to the four food groups.

Preparing Food. In the following teaching technique, the selection, preparation, and tasting of food are all included. The preschool class visits the grocery store where they purchase fruits and vegetables needed to prepare vegetable soup and a fruit salad.

After returning to the classroom, the children can prepare the two dishes and discuss the smells, tastes, textures, and costs of foods they are using. In addition, they can discuss the taste of raw vegetables versus the taste of cooked vegetables, weights and measurements of food, setting the table, steps in preparation of food and clean-up afterwards. Various other dishes can also be prepared in the classroom. The children can rotate duties, such as opening packages, adding ingredients, mixing ingredients, setting timer, etc.

The teacher might discuss the functions of ingredients in a recipe. Gingerbread Men Cookies are an example of this. The functions of ingredients are as follows:

1. shortening keeps the cookies tender
2. sugar sweetens the cookies and helps them brown
3. eggs are used for color, flavor, and hold cookies together
4. flour, when mixed with a liquid, forms gluten, the cookie's structure
5. baking soda forms a gas which expands and helps cookies rise
6. vinegar adds liquid, and works with the soda
7. salt, ginger and cinnamon add flavor
8. molasses adds liquid and flavor (Roecker, Sheila. Student, Oregon State University. FL427. Oregon State University. November 30, 1970).

After the children mix the dough and cut out the shapes, they decorate them, bake them, and have them as dessert or for a snack. The list of foods which can be prepared in the classroom is endless, depending on the ingenuity of the teacher. Numerous suggestions are given in books on preschool activities in case the teacher needs additional

assistance in this area.

Tasting Food. Tasting experiences can include a variety of foods. Sweet, sour, salty, and bitter foods can be used as part of the experience. Children often enjoy being blindfolded as they try to identify different fruits and vegetables as they eat them. Language development can also be emphasized by having the children discuss whether they are eating a fruit or vegetable, the flavor - sweet, sour, bitter, salty, and other aspects of what they are eating. This is a good problem solving situation because the child is trying to solve a problem using taste, smell, and touch without sight.

Form

The forms different objects take are often interesting to children. Natural occurrences provide a variety of form changes and the pre-school teacher should take advantage of them. The effect of heat or cold upon objects and subsequent change in form can be explained to children in simple terms.

Four items under form were listed in the questionnaire. These were: "liquid to gas," "gas to liquid," "solid to liquid," and "liquid to solid." Teaching techniques that could be incorporated to demonstrate form are, ice and snow melting, and ice on puddles. Another idea would be to make sand candles; during the process, the children are able to see solid (wax) turn to liquid (melted wax) turn back to

solid (candle). Boiling water and observing the change to steam and back to liquid through condensation could be used to demonstrate that liquid can change to gas and back to liquid.

Geography

As interest in travel increases, so does interest in the world around us. To encourage this interest, the preschool teacher should include information on geography in the curriculum.

In the questionnaire "maps," "the globe," and "transportation" were listed as subconcepts under the heading "geography." Suggestions for teaching these subconcepts are listed below:

Maps. A puzzle of the United States may be used to familiarize children with the names of some of the states. The state of Oregon might be discussed in more detail with the children. Different cities in Oregon could be pointed out on a map with pictures of those cities available for children to see. Children might be encouraged to discuss those cities they have visited throughout the state. The terrain of Oregon could be shown on a three-dimensional map. It could include mountains, valleys, deserts, lakes, rivers, and the ocean. Various industries in Oregon such as fishing, lumber, and agriculture could be shown through pictures and a collage map with the Oregon products in their correct locations. Canned vegetables and fruits produced and processed in Oregon could also be displayed.

Globe. Examining the globe and discussing the sun's relationship to the earth are two ideas a teacher might use. A dramatic approach to the story of Columbus and the shape of the earth can involve children in making sailboats from walnut shells and using them to individually express their ideas of the earth's roundness.

Transportation. Selling tickets for a train ride or a bus ride and riding in a train or bus are two ways of interesting children in transportation. These experiences can be supplemented with stories, books, pictures, and songs about transportation. An activity that goes into greater depth with this subject involves children making special booklets on transportation, including pictures depicting land, water, and air transportation. The children could select pictures from magazines and discuss these in a group situation. The last page of the booklet could be a picture drawn by the children titled: "My Favorite Transportation." The children might complete their booklet by making a train, car, airplane, or other form of transportation for the cover, using various shapes and colors.

Outer space is of interest to many children. A few topics in a unit might be travel to the moon, which could include information on rockets; spaceships and astronauts; terms used in regard to outer space; and day and night. Building a simple spaceship from pegboard panels, modeling clay into mountains and craters, making small rockets from paper rolls, an egg carton cup, and squares of

cardboard, or space helmets from paper bags are a few other teaching techniques that could be used.

Health and Safety

These two concepts are important for the physical well-being of all individuals. Preschool children can learn health and safety facts which can be expanded upon as they are able to understand additional information. Safety when using the equipment in the preschool is often discussed with the children as a group and individually. A game might be one way of introducing safety reminders to the children. Make a large circle with pictures of children participating in various activities such as playing in a sandbox, riding tricycles, climbing trees, sitting in a chair, riding in a car, and playing outside. Attach a spinner to the center of the circle. The children spin and when the spinner stops, the children discuss what they think is going on in the picture and mention safety precautions that they might need to take. Using a technique such as this early in the year might reduce the safety reminders the teacher normally has to give during the year.

Under the concept of health, the teacher can discuss the importance of sleep, exercise, fresh air, eating well, wearing clothing suited to the weather, seeing the dentist or doctor, covering a cough or sneeze, and staying home when sick.

Identity

The importance of a person's self-concept has been a major aspect of most preschools, and it has continually become more important as results of research on this subject are revealed (Nimnicht, McAfee, and Meier, 1969). Therefore, the concept of identity was included in the questionnaire and "who am I," "who are you," "my own place," "my own identification," and "what I look like" were the subconcepts listed under identity. Many of the subconcepts could be dealt with in a booklet titled, "About Me" or a similar title. Children could include information in these booklets about their family, home, friends, pets, bedroom, etc. and the teacher could write titles on each page using the child's own words.

Who Am I, My Own Identification, and What I Look Like. The "About Me" booklet would be a good starting point for children to gain a better understanding of who they are. Mirrors should be strategically placed in the preschool so the children can see what they look like. Dress-up clothes near the mirror often encourage children to try on different outfits and portray different roles. In addition, individual lockers or boxes with the names of the children printed on them give children a feeling of belonging and having something that is theirs and doesn't have to be shared with others. Children can learn to be responsible for their own belongings, and to show respect and

understanding for others. The teacher can further assist a child in his formation of a self-concept by helping him set expectations for himself as well as limitations. A child wants to feel good about himself, and a teacher can help him towards this goal by reinforcing his positive actions and guiding him towards more acceptable behaviors when he displays negative behavior. A kit entitled "Me, Myself, and I: How Preschoolers See Themselves" is available from J. C. Penney's and would be useful in this area.

Magnets

Magnets are fascinating to most children. Children can learn "the basic law of magnetism - that like poles of magnet repel each other and unlike poles attract each other" (Carmichael, 1969, p. 94) by using two magnets. An experiment the teacher can use with magnets is to put various items, such as keys, nails, paper clips, eraser, thumb tack, etc. on a table. The children use a magnet to see which items will be attracted to it. The ones containing iron will be attracted (Edmund, 1971). Electricity and magnets might be taught simultaneously since their functions are interrelated.

Movement to Music

Movement to music aids in developing eye-hand coordination, eye-foot coordination, and large and small muscle coordination. In

addition, children gain a sense of control over the parts of their body, a sense of freedom, and imaginative interpretation of the music. This area has also received attention recently from research resulting in the publication of several books and guides (Handbook for Perceptual Development, 1972; Improving Motor-Perceptual Skills, 1970).

The subconcepts listed under the heading of movement to music were: "skipping," "marching," "dancing" and "skating." A list of additional movements that could be included follow: walking on a balance board, forwards, backwards, and with eyes closed, running, walking, skipping, trotting, galloping, jumping, stepping high, marching, twisting, wiggling, crawling, turning, hopping, and tip-toeing. A hoola hoop can be used for jumping in and out and in other ways. Recognizing the various parts of the body and basic body movement, such as moving forwards, backwards, and sideways could also be included. Ropes, beanbags, streamers, and other props can be used to acquaint children with their muscles and how to use them. Exercises which help develop muscle control and grace can also be included in the program. A few suggested exercises are, walking on tip-toe, walking on a line with toes straight ahead, rolling back and forth on the grass or floor, or imitating the movements of different animals. The addition of music sometimes aids the children in originating new exercises.

Music

Music can and should be an enjoyable element in any preschool curriculum. An enthusiastic teacher can introduce children to concepts of rhythm, ability to express themselves through music, increased awareness in the world around them, and an avenue for expressing creativity (Taylor, 1964).

Subconcepts listed under music were: "high notes," "rhythms," "songs," and "playing instruments." Suggestions for teaching these areas are listed below:

High Notes. Learning the different notes, especially high versus low notes, is done in different ways. Children can stand on their tip-toes when high notes are played and crouch for low notes. The use of the hands can also be incorporated as the children raise their hands for the high notes and follow the note range with hand movements.

Rhythms. Rhythm can be taught through the use of rhythm instruments, clapping to the rhythm of notes played on the piano, autoharp, or guitar, or records. Movement to music, such as dancing, galloping, spinning, and additional movements provide opportunities for children to interpret music in the way they perceive it.

Songs. Songs usually should be taught a line or two at a time

until the children are familiar with them. Repetition in songs aids children in learning the words. Children can increase their knowledge concerning a variety of subjects through songs which give factual information. Language development can also be increased through the wise selection of preschool songs. Appropriate songs for language development are discussed in McAfee, Nimnicht and Meier, Learning Activities Booklet VI.

Playing Instruments. Introducing different orchestra and band instruments should be part of the curriculum. The clarinet, bass viola, cello, violin, and other instruments can be brought into the classroom so the children can hear and see them. If these are difficult to borrow, there are several records with sounds of musical instruments on them which could be used along with pictures of the instruments.

Oceans, Rivers, and Lakes

Terms for water, especially large bodies of water, were not included in the questionnaire, but with the prevalence of oceans, lakes, and rivers in Oregon and the importance of these waterways to Oregon's industries, the need for including them in a preschool curriculum is apparent.

Pictures of rivers, streams, lakes, and oceans might be used to capture interest. Children might also be encouraged to point out

some of the main rivers, lakes, and the ocean on an Oregon map. To further their understanding of the differences in lakes, rivers, streams, and the ocean, the children could form all sorts of waterways in a sandbox. Aluminum foil could be used in the sand to help keep water in place.

Field trips to various waterways, dams, etc. in Oregon would be an excellent way to further children's understanding of water and aquatic life. If many children go camping or on vacation trips to various lakes, rivers, and the ocean, their observations and experiences would be valuable in a unit on this subject. Salt water versus fresh water also could be discussed along with the plants and animals native to each.

Patterns and Ordering

As the language development of children increases, they are able to understand how objects are similar to and different from one another. "Patterns" and "ordering" are two concepts dealing with similarities and differences in objects. "What goes where," and "alike, unlike" were the two subconcepts listed under "patterns and ordering." Suggestions for teaching techniques follow:

Children can deal with objects of varying sizes, quantities, or qualities to understand ordering and seriation. Puzzles or blocks of different dimensions can be used so children can understand such

concepts as large/small (Weikart et al., 1971).

Recurring patterns can be taught by giving children plastic dishes, counting cubes, rubber triangle puzzles, blocks, or similar materials which will be used to repeat, extend or duplicate the pattern the teacher has started (McAfee, Nimnicht, and Meier, 1969c). This technique is also a good example of problem solving.

Matching cards and games can be used to teach the concept of "alike, unlike."

Reproduction

Teaching reproduction at the preschool level is often done on an individual basis as questions arise. "Conception," "growth of fetus," and "birth" were the subconcepts listed under reproduction. Suggested teaching techniques often overlap for the different subconcepts.

Teaching reproduction through the use of animals is often done in the classroom. With the current concern about the over-population of our country with cats, dogs, and other animals, however, the use of this teaching technique might be questionable. Several commercially prepared filmloops on animal births are available. There are also some excellent books on this subject which are well-written and can be used in a group or on an individual basis when questions do arise. A filmstrip appropriate for this age group is titled "I Wonder, I Wonder." It might be useful in answering individual questions,

especially when a child has a new brother or sister and is curious.

Senses

Development of the senses is a major area in the preschool curriculum. Every day there are opportunities available to increase a child's sensory development. Snacks or meals are excellent times to discuss the taste of foods, their appearance, how they feel, and how they smell. Children, especially young children, often retain what they learn from concrete examples better than from abstract examples. In other words, if a child can see, feel, smell, and taste an object, he often has a better understanding of that object than if the teacher just mentions its name. Teachers should watch for opportunities to enrich a child's sensory development. "Because a child is often exposed to too much sensory stimuli, the teacher should plan well-defined sensory experiences accompanied by verbal interpretations and explanations" (Nimnicht, McAfee, and Meier, 1969, p. 36-37).

The questionnaire included "touch," "taste," "smell," "sight," and "sound," under the heading of "senses." Several teaching techniques are included below:

Touch. A feel box is a good method of teaching touch because it eliminates the use of the other senses. Items having different textures or shapes can be placed in a box and, without looking into

the box, the children can try to guess what the items are, just by feeling them.

Taste. Different items can be cut into bite-size pieces and then, after the child is blindfolded, the teacher can give him a piece of each food to see if he can identify it. Because the smell of food is often a good clue to its identity, the teacher could have the child hold his nose to demonstrate that smell and taste are closely related.

Smell. Similar experiments can be used with smell. Identical bottles can be filled with different items, and the child can be asked to identify them by smell alone. The child should be blindfolded during this experiment also.

Sight. Different items may be gathered and children can describe them by color, shape, and other observable characteristics. To demonstrate the importance of sight, the teacher can blindfold the child first and have him try to identify the objects by feel alone, then remove the blindfold to see how many additional characteristics the child can describe.

Sound. The teacher can have a record or tape recording of different sounds, and children try to identify the sounds. Additional teaching techniques for sound are vibrating strings, guitar, violin, etc.; the inside of a piano, filling matching glasses with varying amounts of water and tapping them for sounds; blowing in different sized bottles; and making a cigar box and rubber band banjo. Along

with these activities, the teacher can discuss air waves, the ear drum, vibrations and other principles of sound in terminology that children understand.

Shapes

As children gain in understanding of shapes, they also increase understanding of classification since shape is a classification. Various shapes are included on the television program, "Sesame Street." In addition to the shapes included in the questionnaire - circle, triangle, square, rectangle, and diamond - "Sesame Street" also includes three-dimensional forms such as cube, pyramid, oval, and cylinder.

Often it is easiest to introduce one shape at a time because it lessens the child's confusion in regard to shapes. Books, easel paper cut into shapes, lotto games, blocks, and pictures made from shapes can be used. Commercially prepared kits of three dimensional shapes are available, or the teacher could easily make her own examples for introducing three-dimensional shapes. There are at least two kits available for teaching shapes. One is by Noble and Noble and is titled "TRY Kit #1." A second kit, titled the "American Association for the Advancement of Science Program," deals with the identification of shapes.

Spatial Relationships

An understanding of spatial relationships enables children to

compare objects of varied dimensions. The questionnaire included several examples of spatial relationships. They were: "long, short"; "big, little"; "bigger, smaller"; "high, low"; "under, over"; "far, near"; "up, down"; "long, longer, longest"; "heavier, lighter"; and "taller, shorter." Terms such as "high," "low," and "under," "over," can be acted out by children. By acting out the terms the children receive a visual as well as an auditory image of the word. Another technique is to set up an obstacle course through which the children can move. After going through the course children can discuss with the teacher which items they climbed over, crawled under or through, and similar terms.

Using unit blocks is another way of teaching spatial relationships. "High, low"; "long, longer, longest"; and "taller, shorter," are just a few terms that can be depicted by having children arrange blocks to show different terms. Techniques for teaching spatial relationships are suggested in Weikart et al., The Cognitively Oriented Curriculum. In one technique the teacher pushes three identical toy cars, two of them forward and one backward. The children specify which cars are going in the same direction, and which car is going in a different direction and identify the directions in which the cars are moving. Cuisenaire rods were suggested in another publication (McAfee, Nimnicht, and Meier, 1969) as a useful way of teaching children concepts such as "longer than," "shorter than"; "wide,

wider, widest, " and many other comparative terms.

A flannel board, pictures, and games can all be useful teaching techniques for this idea. Reinforcing concepts through conversation, and assessing children's understanding of the terms are important when teaching spatial relationships.

Time

Many preschool children can grasp the concept of time in relation to hours and sometimes to minutes. Commercially prepared or teacher prepared materials can be used to teach hours. The concept of minutes is more difficult and may not be understood by most preschoolers.

Under the concept of time, in the questionnaire, were listed "yesterday, today, tomorrow"; "calendar," "holidays": "before," "now," and after." The calendar is probably the most often used technique for teaching about time. It can be used to discuss the month, names and dates of the week, seasons of the year, and holidays. The calendar can also be used to reinforce spatial relationships such as "How many days until Christmas?" "Before," "after," and "now" can all be taught in a similar manner.

Vegetation

Growing plants in the classroom can be an exciting and educational experience for children. Because of the constant changes plants undergo, interest can be maintained over a long period of time.

Subconcepts dealing with vegetation were "rooting," "seeds," "cuttings" and "what makes plants grow." The following teaching techniques pertain to the subconcepts.

Rooting. Roots, stems, leaves, seeds and other aspects of vegetation provide an ideal way of teaching classification. Through pictures, games, actual examples or by other means, a teacher can assist the students in learning how to classify objects. Another idea is to plant pussywillows in the spring so children can view root hairs as they develop. A similar activity would be to root a variety of seeds between cotton, and then notice how each seed has its own system of rooting, with similarities and differences in each.

Seeds. Planting seeds in egg cartons, on wet paper toweling, on styrofoam meat packages, in flower pots, and in other mediums is generally very successful. Germination takes place quite quickly when seeds are placed on wet sponges. Another method is to use a ring of paper toweling in a small baby food jar filled with sand and water. Bean seeds grow quite well by this method when planted

between the towel and the jar. The beans split and roots and leaves grow. Bird seed is interesting to plant because the variety of seeds included result in many different types of plants. Carrot tops, potatoes, corn, peas, sweet potatoes, vines, crocus bulbs, pussywillows, pumpkin, and avocados are other planting materials. Students can use a magnifying glass to look at the seeds. This idea can be expanded and the students may also view cross-sections of carrots, beans, and other items, after they have grown, to see how they are formed.

Cuttings. After plants have grown in the classroom, the children might like to take cuttings of the plants home to grow. This would expand the classroom experience.

What Makes Plants Grow. The teacher can explain, using a chart or felt board, how plants grow. Included in this explanation could be their need for moisture, air and water. The children could then plant different seeds, care for them, and see how plants grow when moisture, air, and nourishment are provided.

Making terrariums can be an enjoyable and educational activity. Terrariums have become extremely popular in recent years. There are several good books with terrarium ideas in them. Terrariums provide an excellent way for students to see how moisture is formed and used by plants. A variety of containers, plants, wood, moss, and other items can be used.

Weather and Astronomy

Because weather is visible daily, this concept is one that can be easily understood by children. Therefore, a number of terms relating to these two concepts were included in the questionnaire. The subconcepts included were "clouds," "rain," "wind," "hail," "snow," "sunshine," "temperature," "stars," "planets," and "evaporation."

Clouds, Rain, Wind, Hail, Snow, Sunshine, and Temperature.

Weather figures such as "Wendy, the weather girl" or a boy and girl on a graph can be dressed by the children in clothing appropriate for the day's weather. Other suggestions are to have a weather man or woman who would give the daily weather report, a weather wheel with appropriate pictures that can be "dialed" to the current weather, a felt thermometer with movable yarn to be set at the correct temperature, and/or a thermometer outside of the classroom to be checked each day. Songs, movies, and stories about weather can also be used as well as art projects involving sleds, mittens, birds, flowers, and other articles representative of weather.

Utilizing the teachable moment should be employed in all classrooms. When it snows, hails, or rains, this opportunity should be expanded upon with discussions concerning the weather at that moment. The seasons of the year are another means of teaching weather.

Colored leaf trees in the fall, bare trees in the winter, new leaves in the spring and many leaves in the summer are just a few ideas that could be included in science or art projects.

Evaporation. An evaporation experiment can be performed by placing a dish of water in the sun. Within a few hours, the water will have disappeared. The teacher can explain what has taken place by telling the children:

1. the sun heats the water
2. the water evaporates and goes into the air
3. water from the oceans, rivers, lakes rises into the air when the sun heats it (Croft and Hess, 1972, p. 69).

Planets and Stars. Information on planets and stars along with additional suggestions for teaching about outer space are given in Carmichael, Science Experiences for Young Children.

Weights and Measures

As we change to the metric system, teachers will need to be knowledgeable in this area, so experience can be provided with metric as well as linear measurements. Eventually the teacher will include only the metric system in her curriculum when the change to the metric system is completed. Until this happens, however, the teacher may have the children use a pint container to fill a quart container and see how many pints are needed to make a quart. Similar experiences can be used to see how many quarts are needed to

make a gallon. Additional measures that can be included are cup, tablespoon, teaspoon and more difficult measures depending on how well children can comprehend them. Similar activities may be planned using the metric system.

A balance-type scale is useful for teaching weights. Spatial relationships such as "heavier than" and "lighter than" are demonstrated by balancing objects of different weights. Simple examples of addition and subtraction can also be shown with the scale. Common household articles such as bottle caps, spools of thread, pencils, paper clips, pennies and nuts, because of their familiarity to children, may be used instead of weights.

A more advanced concept of weight, that large items; bag of feathers, styrofoam piece, ball of yarn, do not always weigh more than small items; a rock, piece of clay, etc., could be discussed as children gain knowledge of weights. Piaget's emphasis on conservation could be demonstrated with a ball of clay. Two equal amounts of clay, one in a ball and one flattened could be placed on the scale to demonstrate that change of shape does not affect weight.

Summary

The teaching techniques listed were suggested by the questionnaire respondents. Additional teaching techniques, from the writer's reading and classroom teaching experiences, were also included. A

resource list, which includes books, kits, and various other resources, is provided following this section. The writer hopes that the resource list will be helpful to early childhood education students and teachers.

Resource List

Books

- Carmichael, Viola S. 1969. Science experiences for young children. Los Angeles, California. Southern California Association for the Education of Young Children. 103 p.
- Croft, Doreen J. and Robert D. Hess. 1972. An activities handbook for teachers of young children. Boston, Massachusetts. Houghton Mifflin Company. 190 p.
- Edmund, Doris. 1971. Let's begin. Monterey Park, California. Creative Teaching Press, Inc. 111 p.
- Haupt, Dorothy. n.d. Science experiences for nursery school children. Washington, D.C. National Association for the Education of Young Children. 32 p.
- McAfee, Oralie, Glen Nimnicht and John Meier. 1969. The new nursery school learning activities booklet I. Morristown, New Jersey. General Learning Press. 48 p.
- McAfee, Oralie, Glen Nimnicht and John Meier. 1969A. The new nursery school learning activities booklet II. Morristown, New Jersey. General Learning Press. 47 p.
- McAfee, Oralie, Glen Nimnicht and John Meier. 1969B. The new nursery school learning activities booklet III. Morristown, New Jersey. General Learning Press. 39 p.
- McAfee, Oralie, Glen Nimnicht and John Meier. 1969C. The new nursery school learning activities booklet IV. Morristown, New Jersey. General Learning Press. 32 p.

- McAfee, Oralie, Glen Nimnicht and John Meier. 1969D. The new nursery school learning activities booklet V. Morristown, New Jersey. General Learning Press. 48 p.
- McAfee, Oralie, Glen Nimnicht and John Meier. 1969E. The new nursery school learning activities booklet VI. Morristown, New Jersey. General Learning Press. 64 p.
- Nimnicht, Glen, Oralie McAfee and John Meier. 1969. The new nursery school. Morristown, New Jersey. General Learning Press. 181 p.
- Portland Public Schools. 1970. Improving motor-perceptual skills. A continuing education book. Corvallis, Oregon. 124 p.
- School District No. 4J, Lane County Education Center. 1972. Handbook for perceptual development. Eugene, Oregon. 223 p.
- Taylor, Barbara J. 1964. A child goes forth. Provo, Utah. Brigham Young University Press. 133 p.

Pamphlets, Kits, Newsletters, Charts

Rainbow Publications (pamphlets)
Project Head Start
Office of Economic Opportunity
Washington, D. C. 20506

Helping Parents Teach Young Children (pamphlets)
Superintendent of Documents
U. S. Government Printing Office
Washington, D. C. 20402
Price: 10 copies for 65¢

National Dairy Council (pamphlets, charts)
Order from: Oregon Dairy Council
0123 S. W. Hamilton
Portland, Oregon 97201
Material free for classroom use

Tommy Toothbrush for Children (pamphlet)
Colgate-Palmolive Company
Editorial and Executive Offices
345 Hudson Street
New York, New York 10014

FOCUS (bi-monthly newsletter)
E. C. Brown Center for Family Studies
University of Oregon
1802 Moss Street
Eugene, Oregon 97403

TRY Kit #1
Noble and Noble, Publishers, Inc.
Subsidiary of Dell Publishing Co., Inc.
750 Third Avenue
New York, New York 10017

American Association for the Advancement of Science Program
Xerox Corporation
Available through: OMSI Kit, Inc.
10655 S. W. Greenburg Road
Portland, Oregon 97223
Specify grade level when ordering

Me, Myself and I: How Preschoolers See Themselves (kit)
Order from: J. C. Penney's Co., Inc.
1301 Avenue of the Americas
New York, New York 10019

Cost: \$11

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- Baldwin, Alfred L. 1967. Theories of child development. New York. John Wiley and Sons, Inc. New York. 171-300.
- Beaverton School District 48. 1969-70. Tentative guide, child care services. Beaverton, Oregon. 29 p.
- Bruner, Jerome S. 1964. The course of cognitive growth. *American Psychologists* 19:1-15. January.
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- Department of Public Instruction, Division of Vocational Education. 1971. Curriculum for training child care workers. State of Indiana. Indianapolis, Indiana. 53 p.
- Edmund, Doris. 1971. Let's begin. Monterey Park, California. Creative Teaching Press, Inc. 111 p.
- Haupt, Dorothy. n.d. Science experiences for nursery school children. Washington, D.C. National Association for the Education of Young Children. 32 p.
- Home Economics Education. 1965. Suggested guide, training program for child care aides. Wage earning program. University of Kentucky. 66 p.
- Irwin, Olga. 1970. Preparation for employment of the child care aide. Monroe High School. Portland, Oregon. 75 p.

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- Jones, Elizabeth, Beatrice R. Dahle and Mary B. Pieters. 1970. Implementing a free choice program in public school kindergarten classrooms. In: Curriculum is what happens, ed. by Laura D. Dittman. Washington, D.C. National Association for the Education of Young Children. p. 39-50.
- Maier, Henry W. 1965. Three theories of child development. New York. Harper and Row. 314 p.
- McAfee, Oralie, Glen Nimnicht and John Meier. 1969. The new nursery school learning activities booklet I. Morristown, New Jersey. General Learning Press. 48 p.
- McAfee, Oralie, Glen Nimnicht and John Meier. 1969A. The new nursery school learning activities booklet II. Morristown, New Jersey. General Learning Press. 47 p.
- McAfee, Oralie, Glen Nimnicht and John Meier. 1969B. The new nursery school learning activities booklet III. Morristown, New Jersey. General Learning Press. 39 p.
- McAfee, Oralie, Glen Nimnicht and John Meier. 1969C. The new nursery school learning activities booklet IV. Morristown, New Jersey. General Learning Press. 32 p.
- McAfee, Oralie, Glen Nimnicht and John Meier. 1969D. The new nursery school learning activities booklet V. Morristown, New Jersey. General Learning Press. 48 p.
- McAfee, Oralie, Glen Nimnicht and John Meier. 1969E. The new nursery school learning activities booklet VI. Morristown, New Jersey. General Learning Press. 64 p.
- Mussen, Paul H., John J. Conger and Jerome Kagan. 1969. Child development and personality. New York. Harper and Row. 302-306.
- Nimnicht, Glen, Oralie McAfee and John Meier. 1969. The new nursery school. Morristown, New Jersey. General Learning Press. 181 p.

- Nimnicht, Glen. 1970. Planning in a head start or kindergarten classroom. In: Curriculum is what happens, ed. by Laura D. Dittmann. Washington, D.C. National Association for the Education of Young Children. p. 7-13.
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- Pieters, Mary B. 1970. Utilizing the strategic moment in arithmetic. In: Curriculum is what happens, ed. by Laura D. Dittmann. Washington, D.C. National Association for the Education of Young Children. p. 32-38.
- Portland Public Schools. 1970. Improving motor-perceptual skills. A continuing education book. Corvallis, Oregon. 124 p.
- Pratoomraj, Sawat and Ronald C. Johnson. 1966. Kinds of questions and types of conservation tasks as related to children's responses. Child Development 37(1):343-353. June.
- Research Foundation. 1968. A pilot study for gainful employment in home economics. Volume II - a suggested curriculum guide for preparing child care workers for entry level jobs. Oklahoma State University. 89 p.
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- Schulman, Anne S. 1967. Absorbed in living children learn. Washington, D.C. National Association for the Education of Young Children. 204 p.
- Sigel, Irving E., Annemarie Roeper and Frank H. Hooper. 1966. A training procedure for acquisition of Piaget's conservation of quantity: a pilot study of its replication. British Journal of Educational Psychology 36:301-311. November.
- Taylor, Barbara J. 1964. A child goes forth. Provo, Utah. Brigham Young University Press. 133 p.
- Weikart, David P. et al. 1971. The cognitively oriented curriculum. Urbana, Illinois. University of Illinois. 182 p.

APPENDICES

APPENDIX A

Bibliography of Child Care Services Programs Guides

Bibliography of Child Care Services Programs Guides

- Alabama State Department of Education. 1966. Outline for occupational home economics course in child development occupations. Montgomery, Alabama. 44 p.
- Beaverton School District 48. 1969-70. Tentative guide, child care services. Beaverton, Oregon. 29 p.
- Department of Public Instruction, Division of Vocational Education. 1971. Curriculum for training child care workers. State of Indiana. Indianapolis, Indiana. 53 p.
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- Irwin, Olga. 1970. Preparation for employment of the child care aide. Monroe High School. Portland, Oregon. 75 p.
- Ohio State Department of Education, Division of Vocational Education. 1968. Skills and related information needed for employment in child care services. 15 p.
- Research Foundation. 1968. A pilot study for gainful employment in home economics. Volume II - a suggested curriculum guide for preparing child care workers for entry level jobs. Oklahoma State University. 89 p.

APPENDIX B

Letter

Questionnaire

Follow-up Post card

January 19, 1971

Dear

May I ask for your help? Will you please send me a guide or an outline of your Child Care Services Program?

As a high school home economics teacher, I became very interested in the Child Care Services Programs. This year, as a graduate student at Oregon State University, I am able to pursue this interest through my master's thesis. As background material for my thesis, I will be sending questionnaires to preschool teachers throughout Oregon in order to find out what concepts in the area of intellectual development they are presently including in their curriculum. From these results, I will develop learning experiences in the area of intellectual development related to preschool children which will serve as a guide to teachers of Child Care Services Programs.

Thank you for any help you are able to give me.

Sincerely,

Connie Sherlock
Graduate Student
Department of Home Economics
Education
Room 20
Oregon State University
Corvallis, Oregon 97330

Dear Colleague:

As a high school home economics teacher I became very interested in the Child Care Services Programs in the high schools. This year, as a graduate student at Oregon State University, I am able to pursue this interest through the research for my master's thesis. As background material for my thesis I am sending questionnaires to O. A. E. Y. C. members in order to find out what concepts in the area of intellectual development are currently being included in their curriculum. If you are a preschool teacher, please place a check here _____. If you are not a preschool teacher, I would appreciate your completing the questionnaire anyway, indicating the concepts you feel should be included in a preschool curriculum.

From the results of the questionnaires I will develop teaching techniques in the area of intellectual development related to preschool children which will serve as a guide to high school teachers of Child Care Services Programs. This will increase the high school teacher's awareness of the current curriculum in the preschools. Hopefully, this will make Child Care Services Programs in the high schools more relevant, in the area of intellectual development of preschool children, and increase the high school students' skills and abilities as potential child care employees.

I would appreciate your assistance in completing Part I of the questionnaire, by May 22, 1971. To return the questionnaire, just fold it so my address is visible and staple the edges together.

Thank you for your assistance.

Sincerely,

Connie Sherlock

If you are a preschool teacher, please answer the following questions concerning background information on your preschool which will be useful in determining the ages at which specific concepts (such as color, transportation, etc.) are introduced and the effect, if any, that the number of staff members has on the concepts included in the curriculum.

The number of children in each age group.

| | | |
|-------------------|-------------------|-------------------|
| 1 year-olds _____ | 3 year-olds _____ | 5 year-olds _____ |
| 2 year-olds _____ | 4 year-olds _____ | 6 year-olds _____ |

The number of adults employed or assisting in the preschool in each job classification.

| | |
|--|---------------------|
| Preschool teacher _____ | Teacher aides _____ |
| Assisting mothers _____ | Cooks _____ |
| Others (please include job classification) _____ | |

If you would like to have a copy of the teaching techniques I develop, please include your name and address.

Name _____ Address _____

PART I

The following concepts deal with the intellectual development of preschool children. Please mark the columns as completely as possible. The "additional comments" column is optional. Mark in the appropriate column, for each concept which you include in your curriculum, either always, which indicates a concept you feel is very important and which you continually reinforce so that the majority of the students understand it; usually, which indicates a concept you feel is important and you include it in the curriculum so that the majority of the students are aware of it; sometimes, which indicates a concept which may be of interest to a few of the students so you include it for the benefit of those few students; or never; which indicates that the concept is either too elementary, too advanced, or not of interest to your students so you do not include it.

[illegible]

[illegible]

| Concepts | This concept is included in my curriculum. | | | | I would include this concept in my curriculum if additional teaching techniques were provided. | | The age or ages at which you feel this concept should be included in the curriculum. | | | | | | Additional comments. |
|------------------------------|--|---------|-----------|-------|--|----|--|---|---|---|---|---|----------------------|
| | Always | Usually | Sometimes | Never | | | 1 | 2 | 3 | 4 | 5 | 6 | |
| | | | | | Yes | No | | | | | | | |
| <u>Spatial relationships</u> | | | | | | | | | | | | | |
| Long, short | | | | | | | | | | | | | |
| Big, little | | | | | | | | | | | | | |
| Bigger, smaller | | | | | | | | | | | | | |
| High, low | | | | | | | | | | | | | |
| Under, over | | | | | | | | | | | | | |
| Far, near | | | | | | | | | | | | | |
| Up, down | | | | | | | | | | | | | |
| Long, longer, longest | | | | | | | | | | | | | |
| Heavier, lighter | | | | | | | | | | | | | |
| Taller, shorter | | | | | | | | | | | | | |
| <u>Animals</u> | | | | | | | | | | | | | |
| Farm animals | | | | | | | | | | | | | |
| Wild animals | | | | | | | | | | | | | |
| Zoo animals | | | | | | | | | | | | | |
| Fish | | | | | | | | | | | | | |
| Care of animals | | | | | | | | | | | | | |
| <u>Vegetation</u> | | | | | | | | | | | | | |
| Rooting | | | | | | | | | | | | | |
| Seeds | | | | | | | | | | | | | |
| Cuttings | | | | | | | | | | | | | |
| What makes plants grow | | | | | | | | | | | | | |

[illegible]

[illegible]

[illegible]

[illegible]

PART II

Since this part of the questionnaire may take you longer to **complete**, please complete Part I and return it to me and then return Part II at your convenience.

Please list three of the concepts you checked that you teach, the main points you cover in each, and describe the teaching methods you use for each concept.

Additional comments:

December 30, 1971

Dear Colleague:

Last spring I asked for your assistance in completing a questionnaire dealing with the intellectual development of preschool children.

Thus far I have not received your questionnaire. I would appreciate it if you would complete the questionnaire and mail it to me.

My new address is:

8585 S. W. Canyon Lane, Apt. 57
Portland, Oregon 97225

Sincerely,

Connie Sherlock

APPENDIX C
TABLES

Table A. The frequency of including concepts in the curriculum.

| Concept | *Respondents | N | This concept is included in the curriculum. | | | | Chi square test of significance. | | Would include if additional teaching techniques provided. | |
|----------------------|--------------|----|---|---------|-----------|-------|----------------------------------|-----------|---|----|
| | | | Always | Usually | Sometimes | Never | d. f. | χ^2 | Yes | No |
| Primary colors | Preschool | 50 | 45 | 2 | 2 | 1 | 3 | .2706 | 1 | 2 |
| | Nonpreschool | 46 | 42 | 2 | 1 | 1 | | | 6 | 1 |
| Secondary colors | Preschool | 50 | 41 | 5 | 3 | 1 | 3 | .1475 | 1 | 2 |
| | Nonpreschool | 46 | 38 | 5 | 2 | 1 | | | 7 | 1 |
| Complementary colors | Preschool | 48 | 19 | 7 | 11 | 11 | 3 | 2.1394 | 3 | 5 |
| | Nonpreschool | 46 | 23 | 3 | 11 | 9 | | | 3 | 3 |
| Circle | Preschool | 50 | 41 | 7 | 2 | 0 | 2 | 2.1704 | 2 | 1 |
| | Nonpreschool | 46 | 41 | 5 | 0 | 0 | | | 5 | 0 |
| Triangle | Preschool | 50 | 40 | 8 | 2 | 0 | 2 | 2.1227 | 2 | 1 |
| | Nonpreschool | 46 | 40 | 6 | 0 | 0 | | | 5 | 0 |
| Square | Preschool | 50 | 40 | 8 | 2 | 0 | 2 | 2.5424 | 2 | 1 |
| | Nonpreschool | 46 | 41 | 5 | 0 | 0 | | | 5 | 0 |
| Rectangle | Preschool | 50 | 37 | 11 | 2 | 0 | 2 | 2.1397 | 2 | 1 |
| | Nonpreschool | 46 | 39 | 5 | 2 | 0 | | | 4 | 0 |
| Diamond | Preschool | 47 | 16 | 10 | 17 | 4 | 3 | **10.4402 | 2 | 1 |
| | Nonpreschool | 46 | 30 | 8 | 7 | 1 | | | 4 | 1 |
| Liquid to gas | Preschool | 41 | 4 | 6 | 13 | 18 | 3 | 1.8333 | 10 | 2 |
| | Nonpreschool | 41 | 6 | 4 | 17 | 14 | | | 10 | 2 |
| Gas to liquid | Preschool | 42 | 4 | 5 | 11 | 22 | 3 | 2.9167 | 11 | 2 |
| | Nonpreschool | 40 | 5 | 2 | 16 | 17 | | | 11 | 1 |

*Under respondents, preschool indicates preschool teachers and nonpreschool indicates nonpreschool teachers.

**Significant at .05 level

Table A. (Continued)

| Concept | *Respondents | N | This concept is included in the curriculum. | | | | Chi square test of significance. | | Would include if additional teaching techniques provided. | |
|--------------------------|--------------|----|---|---------|-----------|-------|----------------------------------|----------|---|----|
| | | | Always | Usually | Sometimes | Never | d. f. | χ^2 | Yes | No |
| Solid to liquid | Preschool | 43 | 8 | 11 | 18 | 6 | 3 | 2.3789 | 6 | 1 |
| | Nonpreschool | 43 | 12 | 8 | 20 | 3 | | | 7 | 0 |
| Liquid to solid | Preschool | 44 | 9 | 10 | 19 | 6 | 3 | .8365 | 6 | 1 |
| | Nonpreschool | 43 | 11 | 8 | 20 | 4 | | | 7 | 0 |
| Touch | Preschool | 44 | 40 | 4 | 0 | 0 | 1 | .0010 | 2 | 0 |
| | Nonpreschool | 43 | 40 | 3 | 0 | 0 | | | 5 | 0 |
| Taste | Preschool | 44 | 36 | 7 | 1 | 0 | 2 | .9382 | 2 | 0 |
| | Nonpreschool | 44 | 39 | 4 | 1 | 0 | | | 5 | 0 |
| Smell | Preschool | 44 | 38 | 5 | 1 | 0 | 2 | .1241 | 3 | 0 |
| | Nonpreschool | 44 | 39 | 4 | 1 | 0 | | | 5 | 0 |
| Sight | Preschool | 44 | 40 | 4 | 0 | 0 | 1 | 0 | 2 | 0 |
| | Nonpreschool | 44 | 41 | 3 | 0 | 0 | | | 5 | 0 |
| Sound | Preschool | 44 | 40 | 4 | 0 | 0 | 1 | 0 | 2 | 0 |
| | Nonpreschool | 44 | 41 | 3 | 0 | 0 | | | 5 | 0 |
| Pronunciation of letters | Preschool | 44 | 21 | 7 | 13 | 3 | 3 | 1.4286 | 4 | 1 |
| | Nonpreschool | 43 | 22 | 9 | 11 | 1 | | | 2 | 1 |
| Writing letters | Preschool | 44 | 16 | 10 | 13 | 5 | 3 | 1.7112 | 0 | 3 |
| | Nonpreschool | 41 | 13 | 12 | 14 | 2 | | | 3 | 1 |
| Left to right exercises | Preschool | 44 | 27 | 10 | 5 | 2 | 3 | .0835 | 2 | 3 |
| | Nonpreschool | 42 | 26 | 10 | 4 | 2 | | | 3 | 0 |

*Under respondents, preschool indicates preschool teachers and nonpreschool indicates nonpreschool teachers.

Table A. (Continued)

| Concept | *Respondents | N | This concept is included in the curriculum. | | | | Chi square test of significance. | | Would include if additional teaching techniques provided. | |
|------------------------|--------------|----|---|---------|-----------|-------|----------------------------------|----------|---|----|
| | | | Always | Usually | Sometimes | Never | d. f. | χ^2 | Yes | No |
| Pronunciation of words | Preschool | 41 | 19 | 11 | 10 | 1 | 3 | 2.5698 | 0 | 2 |
| | Nonpreschool | 41 | 25 | 7 | 7 | 2 | | | 3 | 2 |
| What goes where | Preschool | 42 | 32 | 5 | 5 | 0 | 2 | .4327 | 2 | 0 |
| | Nonpreschool | 43 | 32 | 7 | 4 | 0 | | | 6 | 0 |
| Alike, unlike | Preschool | 44 | 32 | 8 | 4 | 0 | 2 | .8934 | 2 | 0 |
| | Nonpreschool | 43 | 31 | 10 | 2 | 0 | | | 6 | 0 |
| Long, short | Preschool | 49 | 34 | 14 | 1 | 0 | 2 | 1.5261 | 3 | 0 |
| | Nonpreschool | 45 | 36 | 8 | 1 | 0 | | | 4 | 0 |
| Big, little | Preschool | 50 | 41 | 9 | 0 | 0 | 2 | 1.4859 | 3 | 0 |
| | Nonpreschool | 46 | 39 | 6 | 1 | 0 | | | 4 | 0 |
| Bigger, smaller | Preschool | 50 | 35 | 12 | 3 | 0 | 2 | .2769 | 3 | 0 |
| | Nonpreschool | 46 | 34 | 9 | 3 | 0 | | | 4 | 0 |
| High, low | Preschool | 50 | 37 | 10 | 3 | 0 | 2 | .1604 | 4 | 0 |
| | Nonpreschool | 46 | 34 | 10 | 2 | 0 | | | 4 | 0 |
| Under, over | Preschool | 50 | 36 | 12 | 2 | 0 | 2 | .8489 | 4 | 0 |
| | Nonpreschool | 46 | 35 | 8 | 3 | 0 | | | 4 | 0 |
| Far, near | Preschool | 50 | 32 | 12 | 6 | 0 | 2 | .0188 | 3 | 0 |
| | Nonpreschool | 45 | 29 | 11 | 5 | 0 | | | 4 | 0 |
| Up, down | Preschool | 48 | 38 | 10 | 0 | 0 | 2 | 1.1935 | 2 | 0 |
| | Nonpreschool | 46 | 37 | 8 | 1 | 0 | | | 4 | 0 |

*Under respondents, preschool indicates preschool teachers and nonpreschool indicates nonpreschool teachers.

Table A. (Continued)

| Concept | *Respondents | N | This concept is included in the curriculum. | | | | Chi square test of significance. | | Would include if additional teaching techniques provided. | |
|-----------------------|--------------|----|---|---------|-----------|-------|----------------------------------|----------|---|----|
| | | | Always | Usually | Sometimes | Never | d. f. | χ^2 | Yes | No |
| Long, longer, longest | Preschool | 49 | 27 | 11 | 10 | 1 | 3 | 2.3931 | 3 | 0 |
| | Nonpreschool | 44 | 22 | 15 | 7 | 0 | | | 4 | 0 |
| Heavier, lighter | Preschool | 49 | 29 | 14 | 6 | 0 | 2 | .5267 | 2 | 0 |
| | Nonpreschool | 45 | 24 | 16 | 5 | 0 | | | 4 | 0 |
| Taller, shorter | Preschool | 49 | 33 | 15 | 1 | 0 | 2 | .0071 | 2 | 0 |
| | Nonpreschool | 45 | 30 | 14 | 1 | 0 | | | 4 | 0 |
| Farm animals | Preschool | 48 | 37 | 10 | 1 | 0 | 2 | 1.2358 | 2 | 1 |
| | Nonpreschool | 46 | 35 | 8 | 3 | 0 | | | 3 | 0 |
| Wild animals | Preschool | 46 | 27 | 14 | 5 | 0 | 2 | .3892 | 3 | 1 |
| | Nonpreschool | 46 | 26 | 13 | 7 | 0 | | | 3 | 0 |
| Zoo animals | Preschool | 47 | 30 | 13 | 4 | 0 | 2 | .3633 | 2 | 1 |
| | Nonpreschool | 46 | 32 | 11 | 3 | 0 | | | 3 | 0 |
| Fish | Preschool | 48 | 23 | 14 | 9 | 2 | 3 | 3.3136 | 3 | 1 |
| | Nonpreschool | 45 | 27 | 9 | 9 | 0 | | | 3 | 0 |
| Care of animals | Preschool | 46 | 24 | 12 | 10 | 0 | 2 | 2.5045 | 5 | 0 |
| | Nonpreschool | 45 | 30 | 10 | 5 | 0 | | | 4 | 0 |
| Rooting | Preschool | 45 | 14 | 18 | 10 | 3 | 3 | 1.4775 | 4 | 1 |
| | Nonpreschool | 46 | 18 | 13 | 12 | 3 | | | 5 | 0 |
| Seeds | Preschool | 48 | 25 | 17 | 6 | 0 | 2 | .9898 | 2 | 1 |
| | Nonpreschool | 46 | 28 | 12 | 6 | 0 | | | 3 | 0 |

*Under respondents, preschool indicates preschool teachers and nonpreschool indicates nonpreschool teachers.

Table A. (Continued)

| Concept | *Respondents | N | This concept is included in the curriculum. | | | | Chi square test of significance. | | Would include if additional teaching techniques provided. | |
|----------------------------|--------------|----|---|---------|-----------|-------|----------------------------------|----------|---|----|
| | | | Always | Usually | Sometimes | Never | d. f. | χ^2 | Yes | No |
| Cuttings | Preschool | 43 | 3 | 9 | 19 | 12 | 3 | **7.9232 | 4 | 1 |
| | Nonpreschool | 43 | 12 | 10 | 15 | 6 | | | 7 | 0 |
| What makes plants grow | Preschool | 48 | 21 | 20 | 7 | 0 | 2 | 2.2702 | 3 | 1 |
| | Nonpreschool | 46 | 27 | 13 | 6 | 0 | | | 4 | 0 |
| Yesterday, today, tomorrow | Preschool | 43 | 24 | 13 | 5 | 1 | 3 | 1.3733 | 3 | 1 |
| | Nonpreschool | 43 | 24 | 12 | 7 | 0 | | | 4 | 0 |
| Calendar | Preschool | 42 | 25 | 6 | 6 | 5 | 3 | 3.4887 | 3 | 1 |
| | Nonpreschool | 43 | 25 | 12 | 3 | 3 | | | 4 | 0 |
| Holidays | Preschool | 42 | 34 | 6 | 2 | 0 | 2 | .6489 | 1 | 1 |
| | Nonpreschool | 43 | 32 | 9 | 2 | 0 | | | 4 | 0 |
| Before, now, after | Preschool | 43 | 22 | 10 | 8 | 3 | 3 | 3.9746 | 3 | 1 |
| | Nonpreschool | 43 | 23 | 14 | 6 | 0 | | | 4 | 0 |
| Father, mother | Preschool | 41 | 38 | 1 | 1 | 1 | 3 | 2.9518 | 1 | 1 |
| | Nonpreschool | 44 | 36 | 5 | 2 | 1 | | | 5 | 0 |
| Sister, brother | Preschool | 41 | 36 | 3 | 1 | 1 | 3 | .4083 | 1 | 1 |
| | Nonpreschool | 44 | 37 | 5 | 1 | 1 | | | 5 | 0 |
| Grandmother, grandfather | Preschool | 41 | 32 | 6 | 2 | 1 | 3 | 1.0933 | 1 | 1 |
| | Nonpreschool | 44 | 30 | 9 | 3 | 2 | | | 6 | 0 |
| Aunt, uncle | Preschool | 39 | 9 | 12 | 16 | 2 | 3 | 4.7674 | 2 | 1 |
| | Nonpreschool | 44 | 18 | 12 | 10 | 4 | | | 5 | 0 |

*Under respondents, preschool indicates preschool teachers and nonpreschool indicates nonpreschool teachers.

**Significant at .05 level

Table A. (Continued)

| Concept | *Respondents | N | This concept is included in the curriculum. | | | | Chi square test of significance. | | Would include if additional teaching techniques provided. | |
|-------------|--------------|----|---|---------|-----------|-------|----------------------------------|----------|---|----|
| | | | Always | Usually | Sometimes | Never | d. f. | χ^2 | Yes | No |
| Cousin | Preschool | 39 | 6 | 10 | 18 | 5 | 3 | 6.9154 | 2 | 2 |
| | Nonpreschool | 43 | 17 | 9 | 11 | 6 | | | 4 | 0 |
| Fireman | Preschool | 44 | 29 | 12 | 2 | 1 | 3 | 2.5625 | 2 | 1 |
| | Nonpreschool | 44 | 35 | 6 | 2 | 1 | | | 5 | 0 |
| Postman | Preschool | 43 | 24 | 13 | 4 | 2 | 3 | 2.7984 | 1 | 1 |
| | Nonpreschool | 44 | 32 | 8 | 3 | 1 | | | 5 | 0 |
| Policeman | Preschool | 44 | 29 | 10 | 4 | 1 | 3 | 2.3720 | 2 | 1 |
| | Nonpreschool | 44 | 35 | 5 | 3 | 1 | | | 5 | 0 |
| Teacher | Preschool | 42 | 28 | 11 | 2 | 1 | 3 | 5.1358 | 2 | 1 |
| | Nonpreschool | 44 | 37 | 4 | 1 | 2 | | | 5 | 0 |
| Happiness | Preschool | 44 | 29 | 12 | 3 | 0 | 2 | **6.7984 | 3 | 0 |
| | Nonpreschool | 43 | 38 | 3 | 2 | 0 | | | 5 | 0 |
| Anger | Preschool | 44 | 29 | 12 | 3 | 0 | 2 | **6.3590 | 3 | 0 |
| | Nonpreschool | 43 | 37 | 3 | 3 | 0 | | | 5 | 0 |
| Surprise | Preschool | 44 | 24 | 15 | 4 | 1 | 3 | 5.0411 | 3 | 0 |
| | Nonpreschool | 43 | 32 | 7 | 4 | 0 | | | 5 | 0 |
| Who am I | Preschool | 49 | 35 | 9 | 3 | 2 | 3 | 3.9891 | 6 | 0 |
| | Nonpreschool | 44 | 38 | 4 | 2 | 0 | | | 5 | 0 |
| Who are you | Preschool | 48 | 29 | 11 | 6 | 2 | 3 | 5.2875 | 6 | 0 |
| | Nonpreschool | 44 | 35 | 7 | 2 | 0 | | | 6 | 0 |

*Under respondents, preschool indicates preschool teachers and nonpreschool indicates nonpreschool teachers.

**Significant at .05 level.

Table A. (Continued)

| Concept | *Respondents | N | This concept is included in the curriculum. | | | | Chi square test of significance. | | Would include if additional teaching techniques provided. | |
|-----------------------------|--------------|----|---|---------|-----------|-------|----------------------------------|-----------|---|----|
| | | | Always | Usually | Sometimes | Never | d. f. | χ^2 | Yes | No |
| My own place | Preschool | 46 | 30 | 7 | 7 | 2 | 3 | 4.0191 | 5 | 0 |
| | Nonpreschool | 44 | 35 | 6 | 3 | 0 | | | 5 | 0 |
| My own identification | Preschool | 48 | 35 | 7 | 4 | 2 | 3 | 2.3207 | 6 | 0 |
| | Nonpreschool | 44 | 36 | 5 | 3 | 0 | | | 5 | 0 |
| What I look like | Preschool | 47 | 29 | 10 | 7 | 1 | 3 | 4.3124 | 4 | 0 |
| | Nonpreschool | 45 | 36 | 6 | 3 | 0 | | | 5 | 0 |
| Brushing teeth | Preschool | 49 | 29 | 11 | 6 | 3 | 3 | 2.8960 | 4 | 1 |
| | Nonpreschool | 44 | 26 | 5 | 9 | 4 | | | 3 | 0 |
| Washing hands before a meal | Preschool | 50 | 42 | 5 | 3 | 0 | 2 | .4870 | 3 | 0 |
| | Nonpreschool | 45 | 40 | 3 | 2 | 0 | | | 5 | 0 |
| Basic four food groups | Preschool | 47 | 17 | 6 | 13 | 11 | 3 | 5.6057 | 4 | 0 |
| | Nonpreschool | 45 | 12 | 15 | 9 | 9 | | | 4 | 0 |
| Preparing food | Preschool | 47 | 16 | 15 | 15 | 1 | 3 | 3.2050 | 4 | 0 |
| | Nonpreschool | 46 | 24 | 10 | 11 | 1 | | | 6 | 0 |
| Tasting food | Preschool | 49 | 27 | 16 | 5 | 1 | 3 | 1.5497 | 4 | 0 |
| | Nonpreschool | 46 | 29 | 12 | 5 | 0 | | | 5 | 0 |
| Conception | Preschool | 45 | 5 | 0 | 8 | 32 | 3 | **12.6834 | 6 | 5 |
| | Nonpreschool | 43 | 5 | 6 | 15 | 17 | | | 4 | 3 |
| Growth of fetus | Preschool | 45 | 5 | 2 | 18 | 20 | 3 | 3.3291 | 7 | 4 |
| | Nonpreschool | 44 | 5 | 7 | 16 | 16 | | | 5 | 1 |

*Under respondents, preschool indicates preschool teachers and nonpreschool indicates nonpreschool teachers.

**Significant at .05 level

Table A. (Continued).

| Concept | *Respondents | N | This concept is included in the curriculum. | | | | Chi square test of significance. | | Would include if additional teaching techniques provided. | |
|----------------|--------------|----|---|---------|-----------|-------|----------------------------------|----------|---|----|
| | | | Always | Usually | Sometimes | Never | d. f. | χ^2 | Yes | No |
| Birth | P reschool | 49 | 10 | 8 | 18 | 13 | 3 | .2425 | 7 | 2 |
| | Nonpreschool | 44 | 9 | 7 | 18 | 10 | | | 5 | 0 |
| Maps | P reschool | 50 | 13 | 8 | 19 | 10 | 3 | 2.7866 | 9 | 0 |
| | Nonpreschool | 45 | 9 | 7 | 24 | 5 | | | 6 | 0 |
| Globe | P reschool | 48 | 13 | 5 | 20 | 10 | 3 | 3.0422 | 7 | 0 |
| | Nonpreschool | 46 | 11 | 11 | 16 | 8 | | | 5 | 0 |
| Transportation | P reschool | 50 | 27 | 15 | 6 | 2 | 3 | 1.8900 | 5 | 0 |
| | Nonpreschool | 46 | 26 | 14 | 6 | 0 | | | 4 | 0 |
| Clouds | P reschool | 44 | 19 | 16 | 7 | 2 | 3 | 1.7952 | 4 | 0 |
| | Nonpreschool | 44 | 25 | 13 | 5 | 1 | | | 5 | 0 |
| Rain | P reschool | 45 | 28 | 15 | 1 | 1 | 3 | .6731 | 2 | 0 |
| | Nonpreschool | 44 | 29 | 12 | 2 | 1 | | | 5 | 0 |
| Wind | P reschool | 45 | 27 | 15 | 3 | 0 | 3 | 1.7654 | 2 | 0 |
| | Nonpreschool | 44 | 28 | 11 | 4 | 1 | | | 5 | 0 |
| Hail | P reschool | 42 | 12 | 16 | 12 | 2 | 3 | 2.1502 | 2 | 0 |
| | Nonpreschool | 44 | 19 | 12 | 11 | 2 | | | 5 | 0 |
| Snow | P reschool | 45 | 27 | 15 | 3 | 0 | 3 | 1.7088 | 1 | 0 |
| | Nonpreschool | 44 | 25 | 13 | 5 | 1 | | | 5 | 0 |
| Sunshine | P reschool | 45 | 30 | 13 | 1 | 1 | 3 | .7299 | 1 | 0 |
| | Nonpreschool | 44 | 31 | 10 | 2 | 1 | | | 5 | 0 |

*Under respondents, preschool indicates preschool teachers and nonpreschool indicates nonpreschool teachers.

Table A. (Continued)

| Concept | *Respondents | N | This concept is included in the curriculum. | | | | Chi square test of significance. | | Would include if additional teaching techniques provided. | |
|-----------------|--------------|----|---|---------|-----------|-------|----------------------------------|----------|---|----|
| | | | Always | Usually | Sometimes | Never | d. f. | χ^2 | Yes | No |
| Temperature | P reschool | 45 | 21 | 13 | 8 | 3 | 3 | 1.1984 | 2 | 0 |
| | Nonpreschool | 44 | 21 | 15 | 7 | 1 | | | 5 | 0 |
| Stars | P reschool | 43 | 8 | 12 | 19 | 4 | 3 | 5.9126 | 4 | 1 |
| | Nonpreschool | 42 | 15 | 15 | 10 | 2 | | | 5 | 0 |
| Planets | P reschool | 43 | 3 | 7 | 19 | 14 | 3 | 3.2519 | 7 | 1 |
| | Nonpreschool | 42 | 8 | 8 | 16 | 10 | | | 4 | 1 |
| Evaporation | P reschool | 44 | 9 | 12 | 11 | 12 | 3 | 6.4328 | 5 | 0 |
| | Nonpreschool | 43 | 12 | 16 | 12 | 3 | | | 6 | 0 |
| Floating | P reschool | 44 | 14 | 13 | 12 | 5 | 3 | 1.9112 | 3 | 0 |
| | Nonpreschool | 44 | 16 | 16 | 10 | 2 | | | 6 | 0 |
| Sinking | P reschool | 44 | 14 | 12 | 13 | 5 | 3 | 2.1325 | 3 | 0 |
| | Nonpreschool | 43 | 16 | 15 | 10 | 2 | | | 6 | 0 |
| Magnets | P reschool | 44 | 26 | 11 | 6 | 1 | 3 | 1.5375 | 2 | 0 |
| | Nonpreschool | 43 | 21 | 16 | 5 | 1 | | | 6 | 0 |
| Unit blocks | P reschool | 39 | 28 | 5 | 4 | 2 | 3 | .6701 | 0 | 2 |
| | Nonpreschool | 41 | 31 | 6 | 3 | 1 | | | 5 | 0 |
| Spoken numbers | Preschool | 45 | 34 | 8 | 3 | 0 | 2 | 2.9706 | 0 | 1 |
| | Nonpreschool | 43 | 35 | 8 | 0 | 0 | | | 5 | 0 |
| Written numbers | P reschool | 44 | 23 | 10 | 7 | 4 | 3 | 4.6239 | 0 | 1 |
| | Nonpreschool | 42 | 21 | 11 | 10 | 0 | | | 3 | 2 |

*Under respondents, preschool indicates preschool teachers and nonpreschool indicates nonpreschool teachers.

Table A. (Continued)

| Concept | *Respondents | N | This concept is included in the curriculum. | | | | Chi square test of significance. | | Would include if additional teaching techniques provided. | |
|---------------------|--------------|----|---|---------|-----------|-------|----------------------------------|-----------|---|----|
| | | | Always | Usually | Sometimes | Never | d. f. | χ^2 | Yes | No |
| High notes | Preschool | 47 | 19 | 7 | 10 | 11 | 3 | **9.1807 | 8 | 0 |
| | Nonpreschool | 41 | 13 | 13 | 13 | 2 | | | 5 | 1 |
| Rhythm | Preschool | 50 | 37 | 12 | 1 | 0 | 2 | 1.1645 | 4 | 0 |
| | Nonpreschool | 46 | 38 | 7 | 1 | 0 | | | 5 | 0 |
| Songs | Preschool | 50 | 48 | 2 | 0 | 0 | 1 | .0054 | 4 | 0 |
| | Nonpreschool | 46 | 45 | 1 | 0 | 0 | | | 5 | 0 |
| Playing instruments | Preschool | 50 | 33 | 12 | 4 | 1 | 3 | .9779 | 5 | 0 |
| | Nonpreschool | 46 | 30 | 12 | 4 | 0 | | | 5 | 0 |
| Skipping | Preschool | 49 | 37 | 7 | 5 | 0 | 2 | 1.2774 | 3 | 0 |
| | Nonpreschool | 46 | 39 | 4 | 3 | 0 | | | 4 | 0 |
| Marching | Preschool | 50 | 41 | 6 | 3 | 0 | 2 | .9382 | 3 | 0 |
| | Nonpreschool | 46 | 40 | 5 | 1 | 0 | | | 4 | 0 |
| Dancing | Preschool | 50 | 34 | 8 | 3 | 5 | 3 | 6.8651 | 3 | 1 |
| | Nonpreschool | 46 | 40 | 4 | 2 | 0 | | | 4 | 0 |
| Skating | Preschool | 47 | 17 | 4 | 7 | 19 | 3 | **10.9855 | 4 | 2 |
| | Nonpreschool | 45 | 25 | 8 | 7 | 5 | | | 4 | 0 |

*Under respondents, preschool indicates preschool teachers and nonpreschool indicates nonpreschool teachers.

**Significant at .05 level

Table B. The age or ages at which the concept is included in the curriculum.

| Concepts | * Respondents | The age or ages at which the concept is included in the curriculum. | | | | | | The mean age for including the concept in the curriculum. | Analysis of Variance | |
|----------------------|---------------|---|---|----|----|----|----|---|----------------------|-----------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | | F-test | LSD (.95) |
| Primary colors | Preschool | 1 | 7 | 26 | 26 | 21 | 10 | 3.8488 | .04972 | ** |
| | Nonpreschool | 2 | 5 | 28 | 26 | 24 | 18 | 3.9000 | | |
| Secondary colors | Preschool | 1 | 4 | 16 | 23 | 23 | 13 | 4.2683 | 0 | .42135 |
| | Nonpreschool | 0 | 3 | 16 | 27 | 27 | 17 | 4.2683 | | |
| Complementary colors | Preschool | 1 | 2 | 4 | 12 | 20 | 16 | 4.8676 | .35559 | .44390 |
| | Nonpreschool | 0 | 0 | 7 | 15 | 23 | 19 | 4.7353 | | |
| Circle | Preschool | 0 | 3 | 20 | 26 | 20 | 9 | 4.0000 | .02806 | .44643 |
| | Nonpreschool | 0 | 5 | 22 | 19 | 21 | 15 | 3.9625 | | |
| Triangle | Preschool | 0 | 2 | 14 | 28 | 22 | 11 | 4.2561 | .14649 | .38025 |
| | Nonpreschool | 0 | 3 | 20 | 22 | 24 | 16 | 4.1829 | | |
| Square | Preschool | 0 | 2 | 19 | 29 | 22 | 11 | 4.1585 | .09553 | .39239 |
| | Nonpreschool | 0 | 5 | 20 | 22 | 23 | 16 | 4.0976 | | |
| Rectangle | Preschool | 0 | 1 | 9 | 27 | 24 | 11 | 4.4625 | .17060 | ** |
| | Nonpreschool | 0 | 1 | 15 | 20 | 27 | 17 | 4.3902 | | |
| Diamond | Preschool | 0 | 1 | 5 | 15 | 26 | 14 | 4.8250 | .77097 | ** |
| | Nonpreschool | 0 | 1 | 9 | 17 | 26 | 19 | 4.6667 | | |
| Liquid to gas | Preschool | 0 | 0 | 0 | 8 | 20 | 11 | 5.1111 | .16229 | ** |
| | Nonpreschool | 0 | 0 | 3 | 9 | 22 | 16 | 5.0333 | | |

*Under respondents, preschool indicates preschool teachers and nonpreschool indicates nonpreschool teachers.

* *LSD not computed - sample sizes unequal

Table B. (Continued)

| Concepts | * Respondents | The age or ages at which the concept is included in the curriculum | | | | | | The mean age for including the concept in the curriculum. | Analysis of Variance | |
|-----------------------------|---------------|--|---|----|----|----|----|---|----------------------|-----------|
| | | 1 | 2 | 3 | 4 | 6 | 6 | | F-test | LSD (.95) |
| Gas to liquid | Preschool | 0 | 0 | 0 | 7 | 20 | 11 | 5.1923 | .01396 | ** |
| | Nonpreschool | 0 | 0 | 2 | 6 | 18 | 18 | 5.2143 | | |
| Solid to liquid | Preschool | 0 | 0 | 7 | 15 | 25 | 12 | 4.7344 | .05749 | ** |
| | Nonpreschool | 0 | 0 | 9 | 13 | 26 | 18 | 4.6842 | | |
| Liquid to solid | Preschool | 0 | 1 | 7 | 13 | 26 | 13 | 4.7627 | .05545 | ** |
| | Nonpreschool | 0 | 0 | 8 | 13 | 27 | 17 | 4.7162 | | |
| Touch | Preschool | 4 | 8 | 25 | 24 | 17 | 10 | 3.6471 | .10699 | .53952 |
| | Nonpreschool | 6 | 9 | 20 | 23 | 22 | 16 | 3.5588 | | |
| Taste | Preschool | 3 | 8 | 23 | 27 | 22 | 12 | 3.8472 | .61209 | ** |
| | Nonpreschool | 6 | 9 | 22 | 26 | 25 | 18 | 3.6538 | | |
| Smell | Preschool | 4 | 7 | 25 | 27 | 21 | 12 | 3.7702 | .17048 | ** |
| | Nonpreschool | 5 | 9 | 22 | 26 | 25 | 18 | 3.6667 | | |
| Sight | Preschool | 4 | 9 | 27 | 27 | 21 | 13 | 3.7568 | .17633 | ** |
| | Nonpreschool | 6 | 9 | 22 | 26 | 25 | 18 | 3.6538 | | |
| Sound | Preschool | 4 | 8 | 27 | 26 | 20 | 13 | 3.7778 | .28844 | ** |
| | Nonpreschool | 6 | 8 | 21 | 25 | 24 | 17 | 3.6447 | | |
| Pronunciation of letters | Preschool | 0 | 0 | 6 | 14 | 26 | 13 | 4.8485 | .50091 | ** |
| | Nonpreschool | 0 | 1 | 8 | 14 | 24 | 17 | 4.7000 | | |

*Under respondents, preschool indicates preschool teachers and nonpreschool indicates nonpreschool teachers.

* *LSD not computed - sample sizes unequal

Table B. (Continued)

| Concepts | * Respondents | The age or ages at which the concept is included in the curriculum. | | | | | | The mean age for including the concept in the curriculum. | Analysis of Variance | |
|-------------------------|---------------|---|---|----|----|----|----|---|----------------------|-----------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | | F-test | LSD (.95) |
| Writing letters | Preschool | 0 | 0 | 1 | 9 | 26 | 18 | 5.1857 | .03912 | ** |
| | Nonpreschool | 0 | 0 | 2 | 10 | 22 | 22 | 5.1528 | | |
| Left to right exercises | Preschool | 0 | 2 | 6 | 18 | 27 | 11 | 4.5882 | 1.45082 | ** |
| | Nonpreschool | 0 | 1 | 8 | 17 | 26 | 18 | 4.8194 | | |
| Pronunciation of words | Preschool | 1 | 3 | 9 | 15 | 20 | 11 | 4.4516 | .16120 | ** |
| | Nonpreschool | 0 | 2 | 12 | 21 | 20 | 19 | 4.5556 | | |
| What goes where | Preschool | 1 | 4 | 15 | 22 | 24 | 12 | 4.2941 | .02058 | ** |
| | Nonpreschool | 0 | 5 | 14 | 24 | 28 | 20 | 4.3250 | | |
| Alike, unlike | Preschool | 1 | 5 | 14 | 23 | 25 | 13 | 4.3846 | .00007 | ** |
| | Nonpreschool | 0 | 4 | 15 | 25 | 27 | 20 | 4.1829 | | |
| Long, short | Preschool | 0 | 0 | 17 | 27 | 25 | 12 | 4.3846 | 1.00491 | ** |
| | Nonpreschool | 0 | 3 | 13 | 24 | 26 | 17 | 4.1829 | | |
| Big, little | Preschool | 0 | 6 | 24 | 26 | 23 | 11 | 4.0000 | .00288 | ** |
| | Nonpreschool | 1 | 4 | 17 | 22 | 25 | 16 | 4.0125 | | |
| Bigger, smaller | Preschool | 0 | 0 | 12 | 32 | 27 | 12 | 4.4500 | .63779 | .34331 |
| | Nonpreschool | 0 | 0 | 15 | 24 | 27 | 16 | 4.3125 | | |
| High, low | Preschool | 0 | 1 | 19 | 31 | 24 | 10 | 4.2250 | .15320 | ** |
| | Nonpreschool | 0 | 5 | 16 | 21 | 28 | 16 | 4.1463 | | |

*Under respondents, preschool indicates preschool teachers and nonpreschool indicates nonpreschool teachers.

**LSD not computed - sample sizes unequal

Table B. (Continued)

| Concepts | *Respondents | The age or ages at which the concept is included in the curriculum. | | | | | | The mean age for including the concept in the curriculum. | Analysis of Variance | |
|-----------------------|--------------|---|----|----|----|----|----|---|----------------------|-----------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | | F-test | LSD (.95) |
| Under, over | Preschool | 0 | 0 | 17 | 28 | 24 | 11 | 4.3250 | .05731 | ** |
| | Nonpreschool | 0 | 1 | 18 | 21 | 28 | 17 | 4.2804 | | |
| Far, near | Preschool | 0 | 0 | 12 | 27 | 27 | 13 | 4.4875 | 1.24023 | ** |
| | Nonpreschool | 0 | 1 | 16 | 23 | 27 | 17 | 4.2804 | | |
| Up, down | Preschool | 0 | 5 | 21 | 24 | 23 | 11 | 4.0875 | .10065 | .47140 |
| | Nonpreschool | 2 | 5 | 17 | 22 | 26 | 18 | 4.0125 | | |
| Long, longer, longest | Preschool | 0 | 0 | 8 | 23 | 33 | 15 | 4.7051 | .10394 | ** |
| | Nonpreschool | 0 | 0 | 8 | 22 | 26 | 20 | 4.6500 | | |
| Heavier, lighter | Preschool | 0 | 0 | 9 | 27 | 29 | 15 | 4.6154 | .41737 | ** |
| | Nonpreschool | 0 | 1 | 9 | 26 | 26 | 19 | 4.5000 | | |
| Taller, shorter | Preschool | 0 | 1 | 11 | 29 | 25 | 13 | 4.4079 | .02924 | ** |
| | Nonpreschool | 0 | 1 | 10 | 24 | 23 | 16 | 4.3750 | | |
| Farm animals | Preschool | 1 | 8 | 22 | 20 | 21 | 11 | 3.7368 | .74750 | .51589 |
| | Nonpreschool | 3 | 11 | 21 | 23 | 20 | 13 | 3.5132 | | |
| Wild animals | Preschool | 0 | 6 | 20 | 23 | 24 | 15 | 4.1375 | .12395 | ** |
| | Nonpreschool | 0 | 3 | 20 | 24 | 24 | 14 | 4.0641 | | |
| Zoo animals | Preschool | 0 | 5 | 25 | 21 | 24 | 14 | 4.0000 | 1.11807 | ** |
| | Nonpreschool | 0 | 9 | 19 | 28 | 21 | 14 | 3.7692 | | |

*Under respondents, preschool indicates preschool teachers and nonpreschool indicates nonpreschool teachers.

**LDS not computed - sample sizes unequal

Table B. (Continued)

| Concepts | *Respondents | The age or ages at which the concept is included in the curriculum. | | | | | | The mean age for including the concept in the curriculum. | Analysis of Variance | |
|-------------------------------|--------------|---|---|----|----|----|----|---|----------------------|-----------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | | F-test | LSD (.95) |
| Fish | Preschool | 0 | 7 | 15 | 20 | 26 | 15 | 4.2308 | 1.63086 | .46042 |
| | Nonpreschool | 0 | 6 | 20 | 22 | 23 | 14 | 3.9359 | | |
| Care of animals | Preschool | 0 | 2 | 20 | 27 | 25 | 14 | 4.2500 | 2.56041 | ** |
| | Nonpreschool | 0 | 7 | 21 | 25 | 24 | 14 | 3.9359 | | |
| Rooting | Preschool | 0 | 1 | 10 | 14 | 26 | 17 | 4.7027 | .02818 | ** |
| | Nonpreschool | 0 | 0 | 6 | 17 | 26 | 19 | 4.7368 | | |
| Seeds | Preschool | 0 | 2 | 18 | 18 | 29 | 17 | 4.3590 | .01484 | .41965 |
| | Nonpreschool | 0 | 2 | 14 | 23 | 26 | 18 | 4.3333 | | |
| Cuttings | Preschool | 0 | 1 | 6 | 7 | 28 | 20 | 5.1470 | 2.38165 | ** |
| | Nonpreschool | 0 | 0 | 5 | 13 | 26 | 20 | 4.8750 | | |
| What makes plants grow | Preschool | 0 | 0 | 10 | 19 | 28 | 15 | 4.5540 | .18093 | ** |
| | Nonpreschool | 0 | 1 | 10 | 20 | 31 | 20 | 4.6341 | | |
| Yesterday, today, tomorrow | Preschool | 0 | 0 | 7 | 18 | 30 | 14 | 4.6892 | .71380 | ** |
| | Nonpreschool | 0 | 1 | 9 | 16 | 28 | 17 | 4.5256 | | |
| Calendar | Preschool | 0 | 0 | 1 | 11 | 33 | 15 | 5.0139 | 2.13448 | ** |
| | Nonpreschool | 0 | 0 | 8 | 12 | 31 | 16 | 4.7973 | | |
| Holidays | Preschool | 0 | 2 | 12 | 18 | 29 | 16 | 4.5000 | 2.31928 | ** |
| | Nonpreschool | 2 | 3 | 18 | 19 | 26 | 16 | 4.1538 | | |

*Under respondents, preschool indicates preschool teachers and nonpreschool indicates nonpreschool teachers.

**LSD not computed - sample sizes unequal

Table B. (Continued)

| Concepts | * Respondents | The age or ages at which the concept is included in the curriculum | | | | | | The mean age for including the concept in the curriculum. | Analysis of Variance | |
|--------------------------|---------------|--|----|----|----|----|----|---|----------------------|-----------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | | F-test | LSD (.95) |
| Before, now, after | Preschool | 0 | 0 | 7 | 14 | 29 | 15 | 4.7361 | 1.39003 | ** |
| | Nonpreschool | 0 | 1 | 10 | 11 | 25 | 14 | 4.4714 | | |
| Father, mother | Preschool | 6 | 12 | 21 | 19 | 21 | 10 | 3.5143 | .28495 | ** |
| | Nonpreschool | 6 | 11 | 19 | 24 | 25 | 18 | 3.6750 | | |
| Sister, brother | Preschool | 4 | 12 | 20 | 20 | 22 | 10 | 3.6389 | .26753 | ** |
| | Nonpreschool | 5 | 10 | 18 | 24 | 25 | 18 | 3.7875 | | |
| Grandmother, grandfather | Preschool | 3 | 9 | 19 | 20 | 23 | 12 | 3.8333 | .01147 | ** |
| | Nonpreschool | 3 | 8 | 19 | 24 | 24 | 18 | 3.8625 | | |
| Aunt, uncle | Preschool | 1 | 0 | 10 | 17 | 22 | 11 | 4.4242 | .01652 | ** |
| | Nonpreschool | 1 | 2 | 12 | 17 | 26 | 19 | 4.3919 | | |
| Cousin | Preschool | 1 | 0 | 4 | 14 | 20 | 14 | 4.7879 | .30706 | ** |
| | Nonpreschool | 0 | 2 | 5 | 16 | 26 | 17 | 4.6571 | | |
| Fireman | Preschool | 0 | 0 | 16 | 25 | 24 | 13 | 4.2763 | .02874 | ** |
| | Nonpreschool | 0 | 0 | 20 | 23 | 24 | 17 | 4.2436 | | |
| Postman | Preschool | 0 | 0 | 15 | 21 | 25 | 11 | 4.3158 | .25019 | ** |
| | Nonpreschool | 0 | 1 | 19 | 22 | 24 | 17 | 4.2125 | | |
| Policeman | Preschool | 0 | 0 | 15 | 27 | 24 | 12 | 4.3158 | .30888 | ** |
| | Nonpreschool | 0 | 0 | 20 | 26 | 24 | 17 | 4.2125 | | |

*Under respondents, preschool indicates preschool teachers and nonpreschool indicates nonpreschool teachers.

* *LSD not computed - sample sizes unequal

Table B. (Continued)

| Concepts | *Respondents | The age or ages at which the concept is included in the curriculum. | | | | | | The mean age for including the concept in the curriculum. | Analysis of Variance | |
|-----------------------|--------------|---|----|----|----|----|----|---|----------------------|----|
| | | 1 | 2 | 3 | 4 | 5 | 6 | | | |
| Teacher | Preschool | 0 | 1 | 19 | 22 | 22 | 10 | 4.1667 | .00356 | ** |
| | Nonpreschool | 0 | 3 | 18 | 22 | 23 | 17 | 4.1538 | | |
| Happiness | Preschool | 2 | 3 | 20 | 24 | 25 | 11 | 3.9730 | .07439 | ** |
| | Nonpreschool | 1 | 5 | 23 | 25 | 26 | 18 | 4.0359 | | |
| Anger | Preschool | 2 | 3 | 18 | 24 | 25 | 11 | 4.0000 | .14708 | ** |
| | Nonpreschool | 0 | 4 | 22 | 25 | 26 | 18 | 4.0897 | | |
| Surprise | Preschool | 2 | 5 | 15 | 23 | 26 | 11 | 4.0676 | .01023 | ** |
| | Nonpreschool | 1 | 5 | 21 | 24 | 25 | 18 | 4.0921 | | |
| Who am I | Preschool | 2 | 9 | 19 | 20 | 26 | 11 | 4.0000 | 3.45183 | ** |
| | Nonpreschool | 2 | 12 | 21 | 23 | 19 | 14 | 3.5395 | | |
| Who are you | Preschool | 1 | 5 | 16 | 20 | 27 | 13 | 4.2179 | 1.77561 | ** |
| | Nonpreschool | 0 | 8 | 16 | 26 | 21 | 14 | 3.9211 | | |
| My own place | Preschool | 1 | 6 | 12 | 20 | 24 | 10 | 4.2361 | 3.82651 | ** |
| | Nonpreschool | 1 | 7 | 24 | 26 | 20 | 14 | 3.8158 | | |
| My own identification | Preschool | 1 | 2 | 14 | 18 | 27 | 12 | 4.3333 | 3.15199 | ** |
| | Nonpreschool | 1 | 6 | 22 | 24 | 22 | 14 | 3.9605 | | |
| What I look like | Preschool | 2 | 6 | 19 | 18 | 26 | 9 | 4.0263 | .28908 | ** |
| | Nonpreschool | 2 | 4 | 16 | 25 | 21 | 13 | 3.8919 | | |

*Under respondents, preschool indicates preschool teachers and nonpreschool indicates nonpreschool teachers.

**LSD not computed - sample sizes unequal

Table B. (Continued)

| Concepts | *Respondents | The age or ages at which the concept is included in the curriculum. | | | | | | The mean age for including the concept in the curriculum. | Analysis of Variance | |
|--------------------------------|--------------|---|----|----|----|----|----|---|----------------------|-----------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | | F-test | LSD (.95) |
| Brushing teeth | Preschool | 3 | 10 | 22 | 21 | 21 | 10 | 3.6375 | .29149 | ** |
| | Nonpreschool | 1 | 13 | 22 | 22 | 23 | 15 | 3.7727 | | |
| Washing hands before a meal | Preschool | 4 | 12 | 25 | 21 | 21 | 10 | 3.4625 | .17620 | ** |
| | Nonpreschool | 3 | 17 | 21 | 23 | 23 | 16 | 3.5714 | | |
| Basic four food groups | Preschool | 0 | 1 | 3 | 14 | 20 | 13 | 4.9559 | .00005 | ** |
| | Nonpreschool | 0 | 1 | 3 | 15 | 23 | 18 | 4.9545 | | |
| Preparing food | Preschool | 0 | 3 | 12 | 25 | 24 | 14 | 4.3649 | .63050 | .40722 |
| | Nonpreschool | 0 | 2 | 20 | 21 | 24 | 16 | 4.2027 | | |
| Tasting food | Preschool | 4 | 7 | 18 | 26 | 22 | 12 | 3.8108 | .07447 | ** |
| | Nonpreschool | 3 | 11 | 19 | 24 | 23 | 15 | 3.7368 | | |
| Conception | Preschool | 0 | 0 | 3 | 6 | 11 | 8 | 5.0313 | .49675 | ** |
| | Nonpreschool | 0 | 1 | 4 | 11 | 13 | 13 | 4.8125 | | |
| Growth of fetus | Preschool | 0 | 0 | 5 | 10 | 13 | 7 | 4.6667 | .10909 | ** |
| | Nonpreschool | 0 | 1 | 5 | 9 | 12 | 10 | 4.5652 | | |
| Birth | Preschool | 0 | 0 | 7 | 17 | 14 | 10 | 4.5714 | .28408 | ** |
| | Nonpreschool | 0 | 2 | 8 | 11 | 16 | 13 | 4.4259 | | |
| Maps | Preschool | 0 | 0 | 1 | 12 | 28 | 18 | 5.0857 | 1.14714 | .32011 |
| | Nonpreschool | 0 | 0 | 2 | 13 | 26 | 17 | 4.9143 | | |

*Under respondents, preschool indicates preschool teachers and nonpreschool indicates nonpreschool teachers.

**LSD not computed - sample sizes unequal

Table B. (Continued)

| Concepts | *Respondents | The age or ages at which the concept is included in the curriculum. | | | | | | The mean age for including the concept in the curriculum. | Analysis of Variance | |
|----------------|--------------|---|---|----|----|----|----|---|----------------------|-----------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | | F-test | LSD (.95) |
| Globe | Preschool | 0 | 0 | 0 | 10 | 28 | 16 | 5.0588 | 1.02570 | ** |
| | Nonpreschool | 0 | 0 | 4 | 10 | 23 | 14 | 4.8788 | | |
| Transportation | Preschool | 0 | 0 | 16 | 19 | 24 | 12 | 4.2857 | .24372 | ** |
| | Nonpreschool | 0 | 3 | 16 | 20 | 22 | 16 | 4.1711 | | |
| Clouds | Preschool | 1 | 3 | 12 | 17 | 18 | 9 | 4.1563 | .06058 | ** |
| | Nonpreschool | 0 | 4 | 19 | 18 | 25 | 14 | 4.0946 | | |
| Rain | Preschool | 2 | 5 | 14 | 18 | 20 | 9 | 3.9412 | .00647 | ** |
| | Nonpreschool | 1 | 6 | 19 | 18 | 24 | 15 | 3.9189 | | |
| Wind | Preschool | 1 | 4 | 13 | 16 | 20 | 9 | 4.0606 | .20268 | ** |
| | Nonpreschool | 0 | 5 | 16 | 17 | 27 | 15 | 4.1757 | | |
| Hail | Preschool | 1 | 2 | 7 | 12 | 21 | 8 | 4.4844 | .73969 | ** |
| | Nonpreschool | 0 | 4 | 12 | 15 | 24 | 14 | 4.2639 | | |
| Snow | Preschool | 1 | 4 | 15 | 19 | 23 | 10 | 4.0882 | .66988 | ** |
| | Nonpreschool | 1 | 6 | 19 | 15 | 23 | 15 | 3.8649 | | |
| Sunshine | Preschool | 1 | 5 | 17 | 21 | 20 | 10 | 3.9706 | .24623 | ** |
| | Nonpreschool | 1 | 6 | 21 | 18 | 24 | 15 | 3.8378 | | |
| Temperature | Preschool | 0 | 2 | 5 | 13 | 24 | 14 | 4.6515 | .74186 | ** |
| | Nonpreschool | 1 | 2 | 10 | 13 | 25 | 17 | 4.4189 | | |

*Under respondents, preschool indicates preschool teachers and nonpreschool indicates nonpreschool teachers.

**LSD not computed - sample sizes unequal

Table B. (Continued)

| Concepts | * Respondents | The age or ages at which the concept is included in the curriculum. | | | | | | The mean age for including the concept in the curriculum. | Analysis of Variance | |
|-----------------|---------------|---|---|----|----|----|----|---|----------------------|-----------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | | F-test | LSD (.95) |
| Stars | Preschool | 0 | 0 | 3 | 16 | 18 | 14 | 4.8594 | 1.57535 | ** |
| | Nonpreschool | 0 | 3 | 8 | 13 | 27 | 17 | 4.5571 | | |
| Planets | Preschool | 0 | 0 | 3 | 7 | 15 | 17 | 5.2000 | .05175 | ** |
| | Nonpreschool | 0 | 0 | 3 | 8 | 20 | 20 | 5.1515 | | |
| Evaporation | Preschool | 0 | 0 | 3 | 9 | 21 | 14 | 5.0323 | .05813 | ** |
| | Nonpreschool | 0 | 0 | 3 | 10 | 26 | 17 | 4.9857 | | |
| Floating | Preschool | 0 | 1 | 9 | 19 | 24 | 13 | 4.4706 | .63024 | .48163 |
| | Nonpreschool | 0 | 3 | 10 | 18 | 23 | 14 | 4.2794 | | |
| Sinking | Preschool | 0 | 1 | 10 | 19 | 24 | 13 | 4.4286 | .21242 | ** |
| | Nonpreschool | 0 | 3 | 10 | 18 | 25 | 14 | 4.3194 | | |
| Magnets | Preschool | 0 | 0 | 17 | 18 | 26 | 11 | 4.3333 | .02689 | ** |
| | Nonpreschool | 0 | 1 | 10 | 23 | 24 | 13 | 4.3000 | | |
| Unit blocks | Preschool | 1 | 5 | 10 | 20 | 24 | 12 | 4.3387 | .15994 | ** |
| | Nonpreschool | 0 | 6 | 11 | 18 | 23 | 13 | 4.2353 | | |
| Spoken numbers | Preschool | 1 | 4 | 18 | 22 | 27 | 13 | 4.1351 | .02481 | .51323 |
| | Nonpreschool | 0 | 6 | 14 | 19 | 24 | 14 | 4.0946 | | |
| Written numbers | Preschool | 0 | 0 | 1 | 13 | 31 | 15 | 4.9722 | .19031 | ** |
| | Nonpreschool | 0 | 0 | 2 | 15 | 25 | 18 | 4.9054 | | |

*Under respondents, preschool indicates preschool teachers and nonpreschool indicates nonpreschool teachers.

**LSD not computed - sample sizes unequal

Table B. (Continued)

| Concepts | *Respondents | The age or ages at which the concept is included in the curriculum. | | | | | | The mean age for including the concept in the curriculum. | Analysis of Variance | |
|---------------------|--------------|---|----|----|----|----|----|---|----------------------|-----------|
| | | 1 | 2 | 3 | 4 | 5 | 6 | | F-test | LSD (.95) |
| High notes | Preschool | 0 | 1 | 8 | 21 | 24 | 14 | 4.6129 | .86228 | .41687 |
| | Nonpreschool | 1 | 3 | 11 | 20 | 23 | 15 | 4.4194 | | |
| Rhythm | Preschool | 0 | 7 | 22 | 25 | 22 | 13 | 3.9474 | .33119 | ** |
| | Nonpreschool | 3 | 11 | 22 | 28 | 26 | 16 | 3.8205 | | |
| Songs | Preschool | 2 | 12 | 21 | 24 | 21 | 13 | 3.7105 | .02122 | ** |
| | Nonpreschool | 2 | 14 | 23 | 28 | 25 | 17 | 3.6750 | | |
| Playing instruments | Preschool | 1 | 7 | 17 | 24 | 22 | 13 | 4.0270 | .04611 | ** |
| | Nonpreschool | 1 | 4 | 23 | 22 | 25 | 15 | 3.9737 | | |
| Skipping | Preschool | 0 | 0 | 6 | 26 | 24 | 13 | 4.5135 | .92511 | ** |
| | Nonpreschool | 0 | 1 | 8 | 18 | 28 | 18 | 4.6923 | | |
| Marching | Preschool | 0 | 2 | 20 | 27 | 22 | 13 | 4.0676 | .06849 | ** |
| | Nonpreschool | 0 | 4 | 22 | 25 | 26 | 15 | 4.0125 | | |
| Dancing | Preschool | 1 | 5 | 17 | 21 | 23 | 14 | 4.1212 | .54820 | ** |
| | Nonpreschool | 0 | 8 | 20 | 25 | 24 | 14 | 3.9487 | | |
| Skating | Preschool | 0 | 0 | 5 | 21 | 18 | 13 | 4.6964 | 1.44949 | ** |
| | Nonpreschool | 0 | 0 | 11 | 22 | 27 | 14 | 4.4714 | | |

*Under respondents, preschool indicates preschool teachers and nonpreschool indicates nonpreschool teachers.

**LSD not computed - sample sizes unequal

Table C. Comparison of the preschool teachers' mean age for teaching each concept with the mean age of the children they teach.

| Concept | n | *d. f. | p | 5% Tabular Value | 95% Confidence Interval | |
|--------------------------|----|--------|----------|------------------|-------------------------|--------|
| | | | | | Lower | Upper |
| Primary colors | 42 | 40 | .2835 | .304 | -0.0224 | 0.5408 |
| Secondary colors | 40 | 38 | .4626** | .325 | 0.1765 | 0.6766 |
| Complementary colors | 33 | 31 | .5648** | .349 | 0.2748 | 0.7606 |
| Circle | 39 | 37 | .5090** | .325 | 0.2305 | 0.7104 |
| Triangle | 40 | 38 | .5656** | .325 | 0.3084 | 0.7457 |
| Square | 40 | 38 | .5644* * | .325 | 0.3068 | 0.7449 |
| Rectangle | 39 | 37 | .5720** | .325 | 0.3130 | 0.7518 |
| Diamond | 39 | 37 | .5980** | .325 | 0.3482 | 0.7685 |
| Liquid to gas | 27 | 25 | .4038** | .381 | 0.0281 | 0.6795 |
| Gas to liquid | 26 | 24 | .2526 | .388 | -0.1494 | 0.5829 |
| Solid to liquid | 31 | 29 | .5945** | .355 | 0.3042 | 0.7837 |
| Liquid to solid | 32 | 30 | .6016** | .349 | 0.3200 | 0.7855 |
| Touch | 33 | 31 | .2564 | .349 | -0.0953 | 0.5512 |
| Taste | 35 | 33 | .4038** | .349 | 0.0815 | 0.6496 |
| Smell | 36 | 34 | .2362 | .325 | -0.1001 | 0.5241 |
| Sight | 36 | 34 | .2958 | .325 | -0.0363 | 0.5690 |
| Sound | 35 | 33 | .3501** | .349 | 0.0191 | 0.6120 |
| Pronunciation of letters | 32 | 30 | .2739 | .349 | -0.0827 | 0.5683 |
| Writing letters | 35 | 32 | .2965 | .349 | -0.0463 | 0.5768 |
| Left to right exercises | 33 | 31 | .4547** | .349 | 0.1320 | 0.6903 |
| Pronunciation of words | 30 | 28 | .5011** | .361 | 0.1718 | 0.7296 |
| What goes where | 33 | 31 | .7200** | .349 | 0.4909 | 0.8560 |
| Alike, unlike | 34 | 32 | .6005** | .349 | 0.3292 | 0.7802 |
| Long, short | 38 | 36 | .5257** | .325 | 0.2476 | 0.7238 |
| Big, little | 40 | 38 | .4868** | .304 | 0.2066 | 0.6932 |
| Bigger, smaller | 39 | 37 | .3965** | .304 | 0.0926 | 0.6328 |

*d. f. = n-2

**Significant at .05 level

Table C. (Continued)

| Concept | n | * d. f. | p. | 5% Tabular Value | 95% Confidence Interval | |
|-------------------------------|----|---------|---------|---------------------|-------------------------|--------|
| | | | | | Lower | Upper |
| High, low | 39 | 37 | .4611** | .304 | 0.1704 | 0.6780 |
| Under, over | 39 | 37 | .3750** | .304 | 0.0675 | 0.6175 |
| Far, near | 39 | 37 | .5591** | .304 | 0.2958 | 0.7435 |
| Up, down | 39 | 37 | .5099** | .304 | 0.2316 | 0.7110 |
| Long, longer, longest | 38 | 36 | .4224** | .325 | 0.1187 | 0.6538 |
| Heavier, lighter | 38 | 36 | .5138** | .325 | 0.2323 | 0.7159 |
| Taller, shorter | 37 | 35 | .5004** | .325 | 0.2105 | 0.7094 |
| Farm animals | 37 | 35 | .2802 | .325 | -0.0482 | 0.5539 |
| Wild animals | 39 | 37 | .3873** | .304 | 0.0818 | 0.6263 |
| Zoo animals | 39 | 37 | .3947** | .304 | 0.0904 | 0.6316 |
| Fish | 38 | 36 | .2081 | .325 | -0.1195 | 0.4949 |
| Care of animals | 39 | 37 | .3265** | .304 | 0.0122 | 0.5821 |
| Rooting | 36 | 34 | .4134** | .325 | 0.0982 | 0.6532 |
| Seeds | 38 | 36 | .5029** | .325 | 0.2183 | 0.7087 |
| Cuttings | 33 | 31 | .1145 | .349 | -0.2382 | 0.4405 |
| What makes plants grow | 36 | 34 | .4865** | .325 | 0.1880 | 0.7027 |
| Yesterday, today, tomorrow | 36 | 34 | .5378** | .325 | 0.2542 | 0.7363 |
| Calendar | 35 | 33 | .5281** | .325 | 0.2365 | 0.7324 |
| Holidays | 37 | 35 | .5495** | .325 | 0.2743 | 0.7415 |
| Before, now, after | 35 | 33 | .4009** | .325 | 0.0781 | 0.6476 |
| Father, mother | 34 | 32 | .3669** | .349 | 0.0328 | 0.6272 |
| Sister, brother | 35 | 33 | .4341** | .325 | 0.1179 | 0.6704 |
| Grandmother, grandfather | 35 | 33 | .4264** | .325 | 0.1086 | 0.6651 |
| Aunt, uncle | 32 | 30 | .3579** | .349 | 0.0105 | 0.6282 |
| Cousin | 32 | 30 | .3288 | .349 | -0.0225 | 0.6078 |
| Fireman | 37 | 35 | .4445** | .325 | 0.1407 | 0.6718 |
| Postman | 37 | 35 | .3490** | .325 | 0.0282 | 0.6046 |

Table C. (Continued)

| Concept | n | * d. f. | p. | 5% Tabular Value | 95% Confidence Interval Lower | Upper |
|--------------------------------|----|---------|---------|------------------|----------------------------------|--------|
| Policeman | 37 | 35 | .4364** | .325 | 0.1309 | 0.6662 |
| Teacher | 35 | 33 | .4632** | .325 | 0.1537 | 0.6899 |
| Happiness | 36 | 34 | .4895** | .325 | 0.1918 | 0.7047 |
| Anger | 36 | 34 | .4865** | .325 | 0.1880 | 0.7027 |
| Surprise | 36 | 34 | .4157** | .325 | 0.1009 | 0.6548 |
| Who am I | 38 | 36 | .4389** | .325 | 0.1387 | 0.6652 |
| Who are you | 38 | 36 | .4029** | .325 | 0.0955 | 0.6401 |
| My own place | 35 | 33 | .2790 | .325 | -0.0598 | 0.5602 |
| My own identification | 35 | 33 | .4696** | .325 | 0.1616 | 0.6942 |
| What I look like | 37 | 35 | .4711** | .325 | 0.1736 | 0.6898 |
| Brushing teeth | 39 | 37 | .0340 | .325 | -0.2846 | 0.3458 |
| Washing hands before a meal | 39 | 37 | .1851 | .325 | -0.1385 | 0.4730 |
| Basic four groups | 33 | 31 | .1225 | .349 | -0.2305 | 0.4470 |
| Preparing food | 36 | 34 | .4562** | .325 | 0.1502 | 0.6825 |
| Tasting food | 36 | 34 | .4056** | .325 | 0.0889 | 0.6478 |
| Conception | 16 | 14 | -.1403 | .497 | -0.5947 | 0.3820 |
| Growth of fetus | 18 | 16 | -.1118 | .468 | -0.5500 | 0.3746 |
| Birth | 20 | 18 | .3407 | .444 | -0.1199 | 0.6806 |
| Maps | 34 | 32 | .3413** | .349 | 0.0035 | 0.6092 |
| Globe | 33 | 31 | .3836** | .349 | 0.0464 | 0.6423 |
| Transportation | 34 | 32 | .5934** | .349 | 0.3193 | 0.7759 |
| Clouds | 31 | 29 | .4053** | .355 | 0.0595 | 0.6642 |
| Rain | 33 | 31 | .5104** | .349 | 0.2026 | 0.7264 |
| Wind | 32 | 30 | .4883** | .349 | 0.1682 | 0.7152 |
| Hail | 31 | 29 | .2934 | .355 | -0.0680 | 0.5867 |
| Snow | 33 | 31 | .5400** | .349 | 0.2414 | 0.7452 |
| Sunshine | 33 | 31 | .4609** | .349 | 0.1397 | 0.6943 |
| Temperature | 32 | 30 | .3198 | .349 | -0.0325 | 0.6014 |
| Stars | 31 | 29 | .4161** | .355 | 0.0724 | 0.6714 |

Table C. (Continued)

| Concept | n | * d. f. | p | 5% Tabular | 95% Confidence Interval | |
|---------------------|----|---------|---------|------------|-------------------------|--------|
| | | | | Value | Lower | Upper |
| Planets | 29 | 27 | .1929 | .367 | -0.1868 | 0.5225 |
| Evaporation | 30 | 28 | .3295 | .361 | -0.0349 | 0.6166 |
| Floating | 33 | 31 | .3850** | .349 | 0.0480 | 0.6433 |
| Sinking | 34 | 32 | .3339 | .349 | -0.0048 | 0.6039 |
| Magnets | 35 | 33 | .5253** | .325 | 0.2328 | 0.7306 |
| Unit blocks | 30 | 28 | .3437 | .361 | -0.0189 | 0.6264 |
| Spoken numbers | 36 | 34 | .5101** | .325 | 0.2181 | 0.7183 |
| Written numbers | 35 | 33 | .3786** | .325 | 0.0519 | 0.6321 |
| High notes | 30 | 28 | .2572 | .361 | -0.1136 | 0.5651 |
| Rhythm | 37 | 35 | .4203** | .325 | 0.1115 | 0.6551 |
| Songs | 37 | 35 | .3816** | .325 | 0.0657 | 0.6280 |
| Playing instruments | 36 | 34 | .3919** | .325 | 0.0727 | 0.6383 |
| Skipping | 36 | 34 | .3557** | .325 | 0.0308 | 0.6126 |
| Marching | 36 | 34 | .4828** | .325 | 0.1833 | 0.7003 |
| Dancing | 32 | 30 | .4518** | .349 | 0.1224 | 0.6916 |
| Skating | 27 | 25 | -.0070 | .381 | -0.3860 | 0.3740 |

Table D. The number of respondents suggesting teaching techniques, or giving comments, for each concept.

| Concept | Teaching techniques and comments received | Concept | Teaching techniques and comments received |
|-----------------------|--|-----------------------|--|
| Colors | 17 | Feelings | 8 |
| Shapes | 19 | Identity | 6 |
| Forms | 6 | Cleanliness | 3 |
| Senses | 8 | Foods | 11 |
| Alphabet | 13 | Reproduction | 17 |
| Reading | 4 | Geography | 10 |
| Patterns and ordering | 2 | Weather and astrology | 6 |
| Spatial relationships | 8 | Buoyancy | 2 |
| Animals | 12 | Magnets | 0 |
| Vegetation | 12 | Arithmetic | 7 |
| Time | 5 | Music | 11 |
| Family relationships | 2 | Movement to music | 7 |
| Community helpers | 11 | Others | 102 |