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ABSTRACT

The project reported on here was established to develop an item pool to reflect the universe of content set down in "Education in the Primary and Junior Division" (EPJD), which was adopted by the Ontario Ministry of Education in 1975 to provide a general framework for the justification of curricular decisions; to provide a curriculum change indicator, a diagnostic instrument for determining how closely a given classroom reflects the content set down in EPJD; to produce a manual of instructions to accompany the instrument for use by teachers and administrators; and to prepare a report describing the process, the results, and the findings of the study. This is the report. It contains, along with a discussion of the item selection process and a description of the refinement of the curriculum change indicator, manuals for both the curriculum change indicator and the item pool, the EPJD teacher behavior assessment instrument, and the curriculum change indicator. (Author/IRT)

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# THE DEVELOPMENT OF A CURRICULUM CHANGE INDICATOR

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**Based upon an Analysis of  
Education in the Primary and Junior Divisions**

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The researchers acknowledge at this time the contribution made to the project by the judges. Their participation involved a considerable investment of time, however, the research was strengthened by their comments and suggestions.

The researchers thank the administrators, principals and teachers who assisted throughout the project. The involvement of teachers in the field testing phase was essential to the success of the research. The researchers acknowledge the individual contributions of teachers which took place at a busy time of the school year. The cooperation received from teachers indicates their interest and concern for educational improvement at the Primary and Junior levels.

Throughout the project the researchers interacted with representatives of the Ministry of Education. Their cooperation and support is acknowledged by the research team.

THE DEVELOPMENT OF A  
CURRICULUM CHANGE INDICATOR

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ABSTRACT

The investigation was undertaken to produce a Curriculum Change Indicator based on the Ministry of Education document entitled Education in the Primary and Junior Divisions. Specifically the study was to include the following:

- 1) The development of an item pool to reflect the universe of content set down in EPJD.
- 2) The provision of an instrument to determine how closely a given classroom reflects the content of EPJD.
- 3) The production of a manual of instructions to accompany 1) and 2) for use by teachers and by supervisors.

The item pool presents the means statements outlined in EPJD which will accomplish the desired ends. This comprehensive list of items will have many uses in the schools. Examples of potential uses include:

- 1) Use by school principals or supervisors to ascertain the level of implementation of EPJD in a particular school.
- 2) Use by a teacher or group of teachers for self-assessment.

3) Combined use by principals and teachers for setting classroom and school objectives.

4) As an in-service education document to investigate specific sections of EPJD.

A Teacher Behaviour Assessment Instrument was constructed from the material in the item pool. Extensive testing of this instrument was undertaken in a representative sample of Ontario schools. Analyses of the data have been presented in detail in the report. Highlights of the findings are identified. For example:

1) Certain teacher behaviours appear to be a "given". These behaviours can be found in most classrooms regardless of the quality of teaching.

2) The researchers wrote each item in a positive fashion with the expectation of a desirable response. Analyses of the data indicated that many of the desirable behaviours were not present in the classrooms. Several reasons for this finding are suggested.

3) Based on the analyses of the data items were selected for the Curriculum Change Indicator. This instrument should undergo further testing prior to widespread use.

Tentative suggestions for use of the Curriculum Change Indicator include the following:

1) Teacher assessment of a classroom. The results would provide valuable information to the teacher concerning the level of implementation of EPJD.

2) Use by the principal to assess the level of school implementation. Results of the investigation could provide information for future planning and goal-setting.

3) A family of schools could utilize the instrument as a basis for in-service education. The Curriculum Change Indicator could provide information on the actual situation prevailing in the classrooms or schools, or as an indicator of the situation envisioned by the Ministry of Education as set down in EPJD.

The report concludes with suggestions for further research:

1) Additional validation studies involving principal or supervisory officials.

2) Utilization of pre-test and post-test designs investigating changes in particular classrooms during the school year.

3) Further refinement within the Primary or Junior Divisions to provide data on specific behaviours unique to each section.

The researchers emphasize that a composite score for the instrument is not meaningful. The items do indeed represent the content of EPJD. The score obtained, however, by assigning a numerical value to the frequency scale would not necessarily reflect the intent of the document. In other words the higher the frequency obtained on any given item does not necessarily reflect the optimum level of

implementation. More work is needed on the scale before this type of reliability could be insured. As suggested in the report it is hoped that individual teachers and schools will utilize the instrument as a benchmark for the assessment of EPJD implementation.

SECTION ONE  
DEVELOPMENT OF THE  
CURRICULUM CHANGE INDICATOR

## CHAPTER I

### RATIONALE

Education in the Primary and Junior Divisions, adopted by the Ontario Ministry of Education in 1975, provides an extensive philosophical and psychological basis and rationale for the program of these two divisions. Primary Division refers to the junior kindergarten through grade three organization of the elementary school; Junior Division represents grades four through six.

Education in the Primary and Junior Divisions (henceforth to be designated EPJD) suggests how the official curriculum policy summarized in The Formative Years (1975) may be translated into an integrated and child-centered framework (1). EPJD reflects a general provincial thrust in education — an ideology that is consonant with the definition of curriculum stated in the document (2). Curriculum is seen as taking form in the interaction between children and teachers, and between children and learning situations. This posture, which encourages an atmosphere of mutual trust, the full development of each child's potential, a rich aggregate of the cognitive, affective, and psychomotor elements, is not an overnight development.

MacKillican provided this brief chronology:



There have been several official government publications in the period from 1937 to 1975 that have encouraged Ontario elementary schools to modify their curricular activities to be more congruent with the classroom openness construct. The 'grey course of study' in 1937 first suggested a move in this direction by introducing alternatives to the Ryersonian tradition. In 1950, the Hope Commission Report kept these alternatives alive by giving some support to the same new ideas. The strongest break with tradition, however, began in the 1960's when the Kindergarten guideline, PLJ1 curriculum guidelines and the Hall-Dennis Report, Living and Learning, took a consistently strong position in favour of classroom openness. In 1975, the Ministry of Education gave further strength to this trend with the publication of a new official curriculum guideline that is a consolidation of the ideas that emerged in the 1960's and 1970's. This guideline, more strongly than ever, advocates classroom openness to be the more efficacious mode of instruction for children in the five to twelve year age range. (3)

The 1975 provincial curriculum policy mentioned by MacKillican, The Formative Years, not only advocates a curriculum which will help develop and maintain confidence and a sense of self-worth in the learner along with the acquisition of knowledge of attitudes necessary for active participation in Canadian society, and the development of moral and aesthetic sensitivity necessary for a complete and responsible life (4), but "it strongly re-stressed the basic skills represented by the three R's — reading, writing, arithmetic, spelling, and so on." (5)

The Formative Years evolved through the participation of thousands of Ontario citizens as reflected in the report of the Curriculum Revision Committee of the Primary-Junior Cyclic Review. Hundreds of hours, thousands of pages of give and take were shared during the period that the PLJ1

Curriculum Revision Committee worked together to produce a new look at the "what", "why", "when", "where", and "how" of learning in the Primary and Junior Divisions. This widespread involvement was unparalleled in curriculum-development annals in Ontario. The document, released at the societal level for dissemination at the institutional and instructional levels, reflects input from all other levels of the educational spectrum from the learner to the Minister of Education.

What philosophical and psychological stance does The Formative Years represent? It delineates goals, aims, and specific learning opportunities. On the basis of the contents of this document, the teacher must choose what to teach and how to organize and emphasize the selected content. A focus is necessary to give coherence and rationality to the decisions made concerning the curriculum stated in The Formative Years. Without this focus, that curriculum could remain bland and meaningless. Translation of the document into relevant classroom learning experiences means more than selecting subject matter. The teacher must go beyond the content into the selection, organization, and guidance of learning opportunities.

EPJD helps provide that focus. It adds rationality to the curriculum stipulated in The Formative Years. As a support document for the latter, it provides teachers with an overall general framework, based on the best available contemporary funded knowledge and conventional wisdom, to help them justify their curricular decisions. EPJD is an

inseparable adjunct to The Formative Years. It serves as a reminder to educators that paramount to all curriculum development are the children and their individual ways of learning. It also reiterates the concept of teaching and learning as being based on a process of continual interaction in which the teacher and learner are partners. EPJD adds meat to the curriculum objectives delineated in The Formative Years through an explication of the ideal and the desirable in three major areas; namely, Communication, The Arts, and Environmental Studies.

What use is to be made of EPJD? Will it be just another document? How can one ascertain that this rationale for the program of the Primary and Junior Divisions will be translated into a meaningful statement for the educators expected to utilize it? What implementation strategies are necessary to assure that the investment of manpower and resources in this publication was worthwhile? How can this philosophical and psychological statement be bridged with the real world of the classroom? How may relevant learning experiences result from it? In other words, how may this document be put to work? How may it serve as a point of departure for teaching and as an initial system for predicting outcomes?

Principals and teachers, in particular, if they are to benefit at all, must take a close look at the situation in their respective schools as it now exists in the light of EPJD. What is the current curriculum posture? The

contents of EPJD can mean many different things to many different people. Somehow an attempt must be made to help administrators and teachers assess the teaching-learning process on the basis of that document. How?

A number of school boards in the province have prepared survey sheets which reflect "extractions" from EPJD. Items have been delineated which reflect the contents; these in turn are used in needs-assessment exercises which provide information on degree of acceptance, degree of implementation, and priorities for the respective school systems. This is an effort with commendable merits but it is restricted to a few boards.

There is a feeling of apprehension expressed by many provincial educators, all the way from "we are doing all of these things" to "what do we do now" and "how do we go about it" and "show us." This is only natural. The document is in the hands of educators but what is the next step? - How can it become a useful document? Is there a need to effect change? How much and what kinds of change? Before these questions can be answered, it becomes vitally important to assess present conditions — finding out what the situation is at present and what it should be, or could be. This involvement becomes essential if this document is to have significance.

In response to this need, the Ministry of Education outlined a study which would (a) examine the contents of EPJD, (b) extract an item-pool representative of that

content, (c) develop a curriculum-change indicator which would help schools define what EPJD contains, and (d) provide a mechanism to help schools decide how their present teaching-learning environment compares to the ideal that is articulated in the document. This study would provide a comprehensive operational definition of the document through an item-pool reflecting the universe of content set down in EPJD.

It was felt that these data (the item-pool and followup curriculum-change indicator), based on people's perceptions of the contents of EPJD, would be important in helping educators perceive their school setting in the light of the item pool and/or the diagnostic instrument extracted from the ministerial statement. What facts are least visible? Which are the most obvious? Perhaps the former should be considered as prime candidates in initiating change.

As outlined by the Ministry, the first phase of the study would include the extraction of key items from EPJD on the basis of predetermined criteria (listed elsewhere in the study). This item-pool, reflecting the universe of content, would be presented to judges, including personnel from the Ministry of Education, Faculties of Education, and representatives of school boards for establishing content validation.

Phase II of the study would include the development of a diagnostic instrument for determining how closely a given classroom (or school) environment reflects the content of

(EPJD). The instrument would evolve from the item-pool established in the first phase. Extensive field testing for content validity would follow.

Manuals of instruction to accompany both phases of the study would be written.

A skeletal framework of the report is delineated as follows:

- 1) The item-selection process which resulted in the item-pool representing the universe of content in EPJD. Criteria for item selection are stipulated, along with strategies employed in the actual screening. The rationale for involving judges is reported along with related procedures. Item clarification and validation preceded item revision — all leading to the refined item-pool.

- 2) The field-testing process which precedes the final selection of items. Respondents are identified and results are reported.

- 3) The implications of the research along with summary and conclusions.

It was felt that the curriculum-change indicator, if it was to be accessible to the user, should be situated at the end of the report along with the manual of instructions for its use and directions for utilizing the item-pool.

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2. EPJD, pp. 3-4.
3. William S. MacKillican, "An Empirical Study of the Relationship between School Management Patterns and the Change toward Classroom Openness", unpublished doctoral dissertation, University of Ottawa, 1975, pp. 52-53.
4. EPJD, p. 4.
5. Thomas L. Wells, "Adjusting the Pendulum", Interchange, Vol. 7, No. 4, 1976-77, p. 4.



## CHAPTER II

### ITEM SELECTION PROCESS

#### A. ESTABLISHMENT OF ITEM POOL

The major thrust of the study was the selection of an item pool representing the universe of content in the document, Education in the Primary and Junior Divisions.

At the outset of the study it was established with the liaison official appointed by the Ministry of Education that this research would be limited to Chapters 4, 5 and 6 of the document. A research project entitled "An Empirical Investigation of the Relationship Between Teacher Self-Actualization and Degree of Acceptance of Education Principles Enunciated in EPJD" was already in progress. This project dealt with Chapters 1, 2 and 3.

This section of the report will present the process undertaken to prepare the item pool.

#### ORIENTATION

A series of meetings involving the researchers was held to discuss the general significance of the document, EPJD. These sessions involved a perusal of the preceding documents, for example PlJ1 - 1966, The Formative Years, Living and Learning. In addition, the support documents produced by the Ministry of Education were analyzed. These steps were undertaken to familiarize the researchers with the general philosophy underlying the document, EPJD.



## SELECTION CRITERIA

A further analysis of Chapters 4 to 6 was conducted in order to identify specifications for item selection. As indicated in a preliminary design submitted to the Ministry of Education, the researchers were investigating the possibility of formulating a matrix to assist in classifying the items. This framework would assist in classifying the selected items and in identifying possible areas of duplication. A review of the document did not provide the headings for a matrix. The integrative nature of the chapters suggested that each section would require separate analysis.

The review provided the researchers with a number of criteria for item selection. In consultation with the liaison official of the Ministry of Education, the following criteria were adopted for our preliminary item selection.

1) Each item must be able to discriminate. When taken out of context, the item would be self-explanatory.

2) Each item must contain one idea. Since the resulting item pool was to be field-tested it was necessary to have only one behaviour in each statement.

3) The behaviour represented must be observable. Each item was to be written in behavioural terms. This criteria proved to be the most difficult to meet.

4) Each item must contain a subject and a verb. The specific behaviour was to be indicated along with the action necessary to facilitate the behaviour.

5) The item must be concise and clear. Since the users of the material would be working out of context each item had to be clearly and concisely written.

#### ITEM SELECTION

Individual chapters were analyzed to select the items representing the universe of content in the selected chapters of EPJD. Each item was screened according to the criteria identified above. It was necessary at this time to translate the selected items into observable behaviours. This aspect of the research required considerable time, since very few of the items appeared in behavioural terms in EPJD.

Throughout the document a number of statements appeared regarding the end behaviour desired in students in the Primary and Junior Divisions. The behaviours are an elaboration of the statements outlined in The Formative Years. The chapters contain many statements which are means to accomplishing the end behaviours, for example, measurement skills can be practised through the use of protractors, simple clinometers, magnetic compasses and other surveying instruments (p. 68). The researchers were uncertain if the items selected should reflect the ends explicated in the document or if it was our mandate to select means statements. It was decided to select all items for the initial screening and to utilize the input from the judges to assist in making the final decision.

The researchers worked individually, in groups of two and as a team in selecting the items. This allowed us to validate our selections and in many instances to reword the items for clarification. Duplicate items were not included in the preliminary list, for example, a classroom environment exists in which children share original ideas, poems, phrases and paragraphs as exciting discoveries. Repetition of this item appeared several places in EPJD. Therefore the main idea of this item, that is, a classroom environment exists in which children share exciting discoveries, appeared only once. As a result of this analysis, a preliminary list of approximately three hundred twenty-five items was produced. Each item met the criteria adopted for the project. In the opinion of the researchers the item pool reflected the universe of content in EPJD.

#### ITEM CLARIFICATION

Following the item selection and revision by the research team, the resulting pool of items was presented to groups of teachers and principals. The respondents were not necessarily familiar with the document, EPJD. They were asked to evaluate the items in terms of clarity and observability. A number of items were reworded as a result of their responses.

#### ITEM VALIDATION

As indicated in the preliminary design of the project the item pool was to be presented to a panel of judges.

The judges were selected in cooperation with the Ministry of Education official designated to the project. These persons, including personnel from the Ministry of Education, Faculties of Education, as well as consultants employed by school boards were selected on the basis of their familiarity with the original document. Thirty-five judges were included in the validation procedure. Each judge was sent the item pool representative of one chapter of EPJD. Since the judges had been selected on the basis of their subject expertise the items from a particular chapter were matched to each respondent. The list of items included the corresponding page number from the booklet, EPJD. This factor allowed the judges to locate specific items in the original text. A covering letter was forwarded to each of the judges stating the purpose of the research and requesting their cooperation.

#### ITEM REVISION

The material returned by the judges was used to revise the original item pool. A majority of the judges commented on the importance of the project and offered suggestions. Several judges asked for clarification and suggested additional items. Since each judge received only one chapter of the item pool a problem arose concerning the apparent omissions. Although the items had been included in another chapter the judges had no way of knowing this fact.

All responses from the judges were considered individually. The researchers referred to the text and

utilized the information submitted. Follow-up telephone calls were made to the person if further clarification was necessary.

The research team decided to include all items at this time. Since each item was coded with the corresponding page number in the original document, there was no concern with duplications. Many of the items submitted by the judges did not meet the original criteria proposed by the researchers. These items would have to be rewritten for inclusion in the final list. In addition, many of the items contained several subsections and had to be rewritten.

It was apparent from the above exercise that further revision would be necessary before the item pool was ready for field-testing. The list now contained approximately 600 items, including some items which did not meet the criteria.

The following procedure was approved to further revise the preliminary list of items:

- 1) The research team would refine the items to meet the original criteria.
- 2) The refined items would be submitted to a small number of teachers. Since teachers would be the potential users of the material, their input at this stage of the project was desirable.
- 3) The list of items would be submitted to eight judges for their analysis. On this occasion each judge would receive the complete list. The eight judges had been

involved in the original review and had indicated interest in the complete item pool.

4) The item pool resulting from these procedures would form the basis for the proposed diagnostic instrument.

#### B. REFINEMENT OF THE ITEM POOL

Most of the judges selected for the second review indicated in their responses that they would like to dialogue with the researchers concerning the items. They indicated some concern with the format of the item pool. As a result of their requests two meetings were scheduled to review the total item pool. One meeting was held at North Bay and the second in Ottawa. Two major recommendations were made at these sessions.

1) Each item must stand by itself and be recognizable out of context. It was suggested that an explanatory statement precede each item which was not self-explanatory. In many cases it was possible to list several sub-items under the lead statement.

2) The means-ends dichotomy mentioned earlier in the report had not been satisfactorily resolved. Members of the panel observed that some of the items appeared to be ends statements while others were means statements. An analysis of the material indicated that approximately thirty per cent of our items were in this category. The terms of reference for the research were that the study reflect the content of the document, EPJD. The research was to concentrate on the means proposed to accomplish

certain ends. Therefore, it was decided that the material in the document would be the guide. Each item was to be a specific means for accomplishing certain ends. In some instances the desired end-result behaviour appears in the document, however all could be located in the policy statement, The Formative Years.

The decisions made above required the researchers to rewrite some of the items and to eliminate others. Understandably, the items became more specific and thus more observable. In the opinion of the researchers this aspect made the study more valuable to the potential users.

The decisions made in this area necessitated a further analysis of the original document. It was agreed that the researchers would contact several of the judges individually and review the item pool. Additional meetings were held in Ottawa and North Bay to accomplish this task. The complete list was then scrutinized by the liaison official and the research team.

The procedures outlined on the preceding pages produced the item pool which appears on the following pages of this report. To assist the reader in locating the items the researchers have also presented the corresponding pages from EPJD. Each page has been reprinted in its entirety along with the items from that page of the document. In a few instances where no items were selected the researchers have given an explanation. Suggestions for use of the item pool are presented in Section Two.



TABLE 1

Items Selected from EPJD

## Chapter Four Communication

Communication has both expressive and receptive components, involving all the ways that children:

- receive and interpret the ideas, attitudes, and feelings of others;
- record what they wish to express;
- represent their experiences and their thinking through language and mathematics. (Other forms of communication have been dealt with in chapter 5, "The Arts".)

For the child, communication begins in experience. It starts with the child's having something to say and being helped to find the best way of saying it. The expression of attitudes, feelings, and ideas requires the acquisition and mastery of symbols of many kinds: sounds, gestures, movement, pictures, signs, letters, words, or numerals. Communication allows children to remember, relate, and share information and ideas.

The general aims or long-term objectives of the program are to enable children to have access to as many means of communication as possible, to help them extend and refine their communication skills to the best of their abilities, and to encourage them as they begin to find their particular style of communication and as they interact with their world and interpret it to themselves and others. Some components of these aims are to help the child:

- achieve the skill of expressing personal experiences both linguistically and mathematically;
- establish and retain a *functional literacy*, that is, to enable him or her to understand and interpret essential information from signs, messages, books, and instructions; to compare points of view; to take a critical attitude towards advertising and propaganda; to understand graphic and numerical material in books, magazines, and newspapers;
- read and enjoy books, periodicals, plays, and poetry, and appreciate good writing;
- develop and exercise his or her imagination through a range of vicarious experiences;

Pages 27-29 introduce the concept of communication emphasizing the ends or purposes which give direction for establishing learning opportunities in the classroom. The learning opportunities themselves or the means to accomplish the stated ends are not in evidence until page 30. Therefore no items are selected from these introductory pages.



- use the aforementioned skills as a basis for rational problem-solving (in so far as young children are able).

Communication has many forms. Although these are discussed separately in this document, they are not experienced as separate by children; they flow into, complement, and reinforce one another. Children instinctively experiment with forms of communication consistent with their stage of development. Teachers' expectations, therefore, should be consonant with the appropriateness of the form in a given situation and with the children's degree of confidence in that form.

Young children express themselves first through bodily movements, gestures, and babbling or talking to themselves. They move into a stage where they can symbolize an absent object or person through an imitative gesture or words. They then move into a stage of using toys, such as trucks and dolls, as symbols for the objects and people they represent. Gradually they reach a stage where the symbols or analogues are pictures that develop into sketches or diagrams of whatever they are trying to communicate. Later in the Primary years, they learn to use and understand written symbols and notations. This process is intensified in our society by the varied and complex symbols that surround children from an early age. Their world is a mosaic of television pictures, photographs, pictures, signals (e.g., *red for stop*), slogans and advertisements, words, letters, and figures. Active participation by children in this world necessitates the gradual acquisition and mastery of some of the major forms of communication such as listening, speaking, reading, writing, and mathematics.

#### **Pre-school Development**

For each child, language begins and develops in a social setting. Attentive adults have answered him or her, stimulated him or her to make sounds and, later, to speak. They have offered new words, phrases, and expressions to sort out and use. The child has been given opportunity to acquire words and ranges of meaning for familiar things and people — objects, happenings, colours, shapes, textures, and the similarities that contribute to generalizations of experience: *dog, fast, baby, bed, drink, car*. He or she has been given the material from which to select the significant features of language. Attempts to classify and organize such experiences of the world and of language are reflected in the development, between the ages of two and three, of a personal variety of grammar. By the age of four, most children have mastered the basic structures of their language and by age five or six, they have 3,000 to 5,000 words at their command. However, the quality of each child's language depends on the variety and quality of the speech encountered in the family and on the variety of the experiences and relationships he or she has shared with them. The fortunate child hears constructive conversations, questions, and explanations. He or she listens as nursery rhymes, jingles, and favourite stories are told or read. He or she hears, views, and discusses carefully selected radio and television programs.



Even at the beginning of school, the child is doing two things with every new utterance: expressing a need or observation and experimenting with and developing patterns of language. The school should capitalize on the desire and need of the child to learn more meanings and more ways of expressing them, to discover that everything has a name and to learn as many of them as possible, and to play and experiment continually with language. This experimentation should develop from real experiences and from samples of lively and real language, not from the second-hand experiences of workbooks and exercises.

It is essential for the teacher to respond to the children as individuals, to give them security, and to reach out to them. Personal acceptance of each child is all the more important because of the aforementioned varying pre-school experiences and the consequent wide variation in individual understanding and use of language.

*The teacher starts where the child is, accepting existing idiom and speech patterns. The concern should be to make children confident and willing to express themselves naturally. What they have to say and how effectively they say it is the first consideration, correctness a secondary one. The children are ready to use only what they can discriminate and what they have assimilated.*

### **Developing Language**

As children play and experiment, the teacher's role is to:

- ask questions and, in so doing, accept and expand the children's responses, thereby helping them to confirm and extend their language in structure, vocabulary, and meaning and in articulation and sensitivity to sound and rhythm;
- give them new words and expressions related to textures, qualities, shapes, and colour relationships;
- offer comments, explanations, and suggestions.

The child also gains language insights through manipulative experiences. A simple item such as a water tray can lead to a variety of experiences at several levels, from simple activities such as splashing, dripping, and pouring water or handling containers to the stage where the child experiments with capacity measures, filters, water pressures, flows, and floating.

Diverse shared activities facilitate language expansion. Children need centres where they can handle, discuss, and experiment with magnets, balloons, pendulums, magnetic compasses, map-measurers, thermometers, and a variety of associated resource materials. Activities with any of these will provide opportunities for expanding the spoken language and build the foundations of science and mathematics. In playing and experimenting with these materials, children use all their senses as they discriminate, compare and match, and, with the teacher's guidance, classify a variety of concrete objects, put them in order, and find relationships of pattern, symmetry, order, size, number, use, and cause-effect. Such activities should lead to naming, describing, sequencing, and using qualitative words such as *big, tall, wide, thin, hot, and rough*.

Children also extend the range of their language abilities when they use paint, crayons, pencils, paper, and scrap materials and, in the process, discuss their activities with peers and with adults. Their productions provide the teacher with clues to their level of understanding and their ways of communicating; in addition, the language children use in discussing their productions often suggests what materials the teacher should add next to the classroom environment and what activities (visits, discussions, drama, music, experiments) can extend and enrich experience.

At a later stage, children plan beforehand what they intend to represent in their paintings or models. They may wish to translate their ideas into oral and possibly written language. At this point, the teacher can help children

- 1-005 The teacher asks open-ended questions that stimulate a variety of responses.
- 1-006 The teacher intervenes as children play and experiment to give new words and expressions.
- 1-007 Children are provided with opportunities to participate in manipulative experiences in the classroom, starting with such activities as splashing, dripping, pouring at a water table and proceeding to where they experiment with filters, water pressure, etc.
- 2-025 A variety of activity centres is provided for creative expression.
- 1-008 Children handle, discuss and experiment with such things as balloons, pendulums, magnetic compasses, map-measurers, thermometers and other resource materials.
- 1-009 Children use all of their senses to discriminate, compare and match as they experiment with different materials.
- 1-010 With the teacher's guidance, children classify a variety of concrete objects to find such relationships as pattern, symmetry, order, size, number, use and cause-effect.
- 1-011 Children use such materials as paint, crayons, pencils, papers and scrap to extend their language development.
- 1-012 Children discuss their activities with other children.
- 1-013 Older children plan and organize ideas before expressing them through oral or written language.

individually to clarify and organize their ideas and record them in print. The words and painting support each other. Still later, when children have become more familiar and competent with printed symbols, they will first copy and then write their own comments and stories.

Another spur to language development is the well-told story involving the children in response and dramatization. Equally effective are carefully selected songs or nursery rhymes, told by the teacher, played on records, or illustrated in picture books. A child who has learned the common nursery rhymes has an oral vocabulary and a variety of expression that extend far beyond the restricted language of the first stages of the basal reader. The teacher, however, should remember that some children may have learned the rhymes in rote fashion and may not know what the words mean.

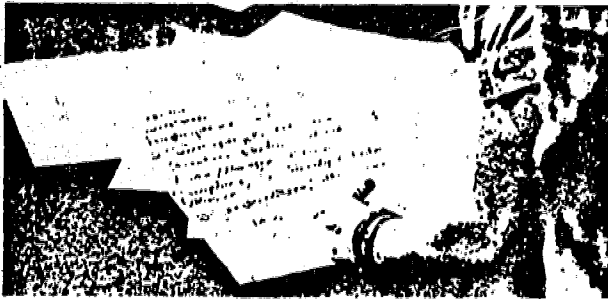
Radio, films, and television programs, carefully selected and used, can broaden children's experience and stimulate discussions and explanations and extend their language. For example, children could hear the teacher read a story, then listen to it on tape, or enjoy it on film.

Personal and social language may be stimulated by imaginative experiences such as imitative play, puppetry, drama, and movement. Activities can take place everywhere in the classroom with clay, paint, sand, water, toys, a house-corner, and a dress-up area. Other sources of stimulation for spoken and written language are display boards and problem or curiosity centres with constantly renewed materials (see chapter 6, "Environmental Studies").

Language is more than vocabulary. It is a dynamic interplay of sound, syntax, and semantics, formed and developed by interaction among people. People, therefore, are major sources: an aide or a parent, besides being another pair of hands and eyes, can be another person to listen to a child, read a story, and provide the extension of interaction that some children need. Other visitors can also be sources of stimulation. Children can extend their experience by seeking information through conversations, interviews, and discussions.

Older children in the Junior Division may prepare questions for interviews inside or outside school or organize a school newspaper or "radio station" with their material. They can be helped to understand the influence of native peoples, of early settlers, and of later immigrants on the way they themselves speak. They can find out more about the customs, places, names, and language usages of their community by interviewing senior citizens about childhood experiences. In addition, they can be made aware of the constant changes in language effected by discoveries in science and technology. Gradually, the child learns that language has a variety of forms and functions, some personal, some social, some heuristic and imaginative, and some regulatory. Children need to hear examples of all these forms from the teach-

- 1-014 The children use dramatization to respond to stories.
- 1-015 Children are exposed to selected songs and nursery rhymes to extend their language development.
- 1-016 Selected audio-visual media are used to stimulate discussion and to broaden children's verbal experience.
- 2-026 The classroom has centres that include such materials as sand, clay, paint, water and toys to stimulate language usage.
- 2-027 The classroom contains display boards with constantly renewed materials.
- 1-017 The children use curiosity centres and/or problem tables.
- 2-028 Materials at curiosity centres and/or problem tables are renewed constantly.
- 1-018 Children interact with people from the community.
- 041 Children seek information through conversations, interviews and discussions with other people.
- 1-019 The teacher provides children with examples of different forms of language; e.g. personal, social, heuristic, imaginative, regulatory.



er; they need to be stimulated by the heuristic and imaginative and encouraged by the social, not to be repressed by over-exposure to the regulatory.

In addition, language differs in vocabulary and expression or *register* to suit the situations, polite, formal, or familiar, in which it is used. Children should be helped to realize in practical contexts that some forms of speech are appropriate to one situation, some to another, that imaginative play, drama, discussion in small groups, or a question-and-answer exchange with the teacher are conducted on different levels of language. Five-year-old children can move back and forth over several levels of language, from a monologue that accompanies and directs their play to a conversation with a friend or the formal instructions of another child, in mixing the ingredients for a simple cake.

Children and teachers need to learn the art of asking questions that provoke useful and varied answers and a continuing dialogue. This takes time and practice. Questioning, explaining, discussing, guessing, and testing ideas should all arise from the children's own observations, manipulative and creative experiences, and experimentation.

Teachers may be unaware that, even when they think they are giving children considerable opportunity to talk, they themselves may be talking over fifty per cent of the time. The teacher's intervention (for instance, in asking a *closed* question that gives more information than the child needs, in offering an explanation too readily) may, if badly planned, cut off the dialogue instead of keeping it open and moving in a fruitful direction.

In life, listening and speaking, reading and writing, mathematics and all other facets of communication are inextricably interwoven. On entering a restaurant, for instance, one may appreciate the decor and may or may not appreciate the background music. In any event, one reads the menu, notes prices, orders a meal, engages in conversation, listens as the waiter elaborates on the choice of desserts, checks the addition of the bill, calculates a tip.

- 1-020 Children practice using different registers of language appropriate to given situations; e.g. polite, formal, familiar.
- 1-021 The teacher asks questions that lead to continuing and purposeful dialogue; e.g. explaining, guessing, discussing, testing.

counts the change, and says goodbye. All these facets of communication are part of one process.

In this document, therefore, any apparent division of the facets of communication is arbitrary, undertaken mainly for reference purposes and based only on consideration of what may be the focus of the activity as perceived by the teacher in relation to his or her long-term aims for skill or concept development. From the perspective of the child, these divisions do not exist.

In view of the essentially integrated nature of the facets of communication, there may be some overlap of ideas in this document. An attempt has been made to keep such overlap to a minimum by cross-referencing.

### Listening

Language experience begins in listening. The capacity to listen and to interpret language influences one's ability to speak. Listening is more than hearing; it requires a sensitivity to significant sound, to intonation, volume, stress, and pitch, and to the whole melody of speech — the contrasts and signals that carry mood and meaning; it requires discrimination, interpretation, and response to a variety of significant sounds in the environment.

Most children learn to distinguish and understand sounds and speech before coming to school, but some do not. Possibly they fail to learn to listen because they have been subjected to a continuous bombardment of unorganized sound, noise, and speech that lacks focus and significance. The school's task is to help children to listen with interest and selectivity, so that they may extend the range of what they can hear and interpret. This is not meant to suggest that specific periods be allocated to listening, but rather that an environment be created in which there are many opportunities to explore a variety of sound and speech activities such as those listed in this section.

All children require opportunities to listen for, locate, compare, classify, and discuss a rich variety of sounds. Such opportunities might include individual and group exploration and experimentation. For example, if children take a tape recorder on walks around the school or neighbourhood, they can record a variety of natural, mechanical, animal, and human sounds. For a sequence, they can produce a *sound story* which other children can interpret and to which they can respond. Older children enjoy producing their own *sound stories*, combining recorded sounds from the environment and their own sound effects with an imaginative script. Exploration with sound might include the following:

*natural sounds:* heart beat; bird calls; wind; water; thunder; animal sounds;  
*man-made sounds:* engines and machines (typewriters, lawn mowers, snow machines, airplanes); horns; sirens; train whistles; traffic noises;  
*music:* percussion; music with marked rhythms and variations in pitch, tim-

- 1-022 Children practice listening to a variety of sounds.
- 1-023 Children record a variety of natural, mechanical, animal and human sounds.
- 1-024 Children produce a sound story by placing their own recorded sounds in sequence.
- 1-025 Children interpret and respond to sound stories of other children.
- 1-026 Children experiment with natural, man-made and musical sounds.
- 1-027 Older children produce their own sound stories, combining recorded sounds and their own sound effects with an imaginative script.

bre, key; music linked with instruments, rhythmic words, and song; singing; experiments with music.

*sounds*: sounds in the classroom, near school, in the home, near, far, located in space;

*speech sounds*: song; nursery rhymes; stories; rhymes and jingles.

Children link sound and speech when they play with the rhythms of words and develop sound patterns with percussion instruments. Just as children can be made aware of the rich variety of colours in their world through the right materials and experiences, so can they be made aware of the qualities and textures of sound and the subtle range of words needed to describe them. Experimenting with sound provides opportunities not only for creativity in music and language, but also for making comparisons and finding relationships among words.

#### Reading Aloud

Reading aloud to children of all ages from a variety of books can contribute substantially to the development of listening skills, literacy, and imagination. Prose and poetry, selected for interest and quality, will involve children in language that is used with skill and beauty and that will stimulate them to explore and interpret human experience, feelings, and values. Through literature, children explore situations that supplement and extend their own experiences and are motivated to develop an appreciation of excellence. They learn more about themselves through literature with which they can identify and through which they can expand the world of imagination.

Children respond to a well-told story: an effective reading that brings out the richness and variety of meanings in dialogue and description requires sensitivity to the dramatic elements in a story as well as skill in dramatic expression. Teachers must, therefore, make their favourite stories *their own*, that is, get to know them well enough to free themselves from the book and engage in direct communication.

At times reading aloud should involve the children as participants; this could take the form of character imitation, role-playing, or direct participation in the reading either individually or as a group. Reading may be followed by activities that help children relive the story and share their feelings with others. These experiences can also involve expressive activity and interpretation through other forms of communication; they can be followed, for example, by movement, drama, puppetry, painting, and music, by playing with the rhythms of interesting words and phrases, and by dialogue.

#### Interpretations

Listening is concerned with interpretation; it cannot be passive. In real life situations, the mark of the imaginative listener is the ability to listen to a story, a news broadcast, or a speaker, and to interpret and understand what lies behind the words. Children, too, can learn to envisage the situations related, share the humour or pathos, and evaluate the information received. A child

1-028 Someone reads aloud to children from a variety of books.

1-029 The teacher tells favorite stories to the children.

1-030 Reading aloud involves the children as participants by character imitation, role-playing or direct participation.

1-031 Reading aloud is followed by expressive activities such as movement, drama, puppetry, painting and music; playing with the rhythms of interesting words and phrases, and by dialogue.

1-032 Children interpret things they have listened to; e.g. speaker, story, newscast.





can also identify personal expression and learn to understand English spoken with different accents.

Listening should also include learning to cope with oral directions, messages, and reports. Being able to listen attentively and critically to oral reports and to the arguments in a discussion are invaluable skills for the child in the Junior Division.

The teacher, being a model listener, can contribute much to the children's listening skills by:

- learning to listen to himself or herself;
- listening more than talking in class;
- becoming sensitive to the nuances of meaning and feeling in children's speech and questions;
- accepting and working with the fact that children normally understand better than they can express themselves orally, even in their mother tongue, and that understanding is not always a matter of giving an answer;

1-033 Children listen to oral directions, messages and reports.

The teacher demonstrates the attributes of a model listener by

- 1-034 - listening more than talking in class
- 1-035 - listening to herself or himself
- 1-036 - becoming sensitive to the differences in meaning and feeling of children's responses
- 1-037 - accepting and working with the fact that children normally understand better than they express themselves orally



- finding out whether anything in the situation, materials, or manner of presentation has confused a child;
- using the child's own forms of oral expression, and expanding and improving them without criticism that discourages the child;
- discussing with children alternative and better ways of expressing ideas and feelings.

If children are to listen selectively and critically, they should be given opportunities to discuss favourite radio programs, television documentaries, interviews, and news broadcasts in school.

#### Listening Centres

Classroom teachers and school librarians can plan a wide variety of recordings and audio-tapes to meet student needs. Listening centres may be provided in the school library resource centre, as well as in the class areas. Multiple outlets with headsets enable individuals and small groups to listen to several records and tapes simultaneously.

Activities selected for the listening centres should include opportunities for:

- listening for enjoyment* – a favourite story, record, or tape selected for quality of presentation; stories and poems written by children in the class;
- listening for information* – factual material related to current interests taped by capable readers for children who cannot read well enough to find the information they require; filmstrips and slides with a taped story or information; reports, interviews, and descriptions of experiences taped by the students in the class to assist recall of information;

- listening for practice and reinforcement* – commercial or teacher-prepared tapes that provide brief intensive practice with sounds, spelling, or with a second language. These activities aid in discrimination and offer opportunities for practice in listening for more specific directions and detail.

#### Speaking

In terms of social utility, speech is the most important means of communication. It is an expression of a person's self, and it serves children as a link between themselves and other people. It is, therefore, the school's responsibility to create an atmosphere in which children will be encouraged to express their ideas and feelings and to find new interests and experiences to talk about, and in which they can continue the process begun in infancy – the expansion of sensitivity to sound and pattern, of vocabulary, of language structure, and of speech facility as they articulate their ideas, thoughts, and feelings.

When a child speaks, he or she needs an audience, a listener to complete the interaction and to respond, even when the young child appears to be playing and talking to himself or herself. Free, spontaneous interchange among children in small and large groups is, therefore, essential, not only for the sake of the children, but also for the teacher who will use these opportunities to listen, respond, and to identify particular needs. Such informal speech is

- 1-038 - finding out whether anything in the situation, materials or manner of presentation has confused a child
- 1-039 - using the child's own forms of oral expression and expanding and improving them without criticism that discourages the child
- 1-040 - discussing with children alternative and better ways of expressing ideas and feelings.

Children discuss such things as

- 1-041 - favourite programs
- 1-042 - television documentaries, media interviews, news broadcasts.

- 1-043 Listening centres are used by the children.

Children use listening centres to

- 2-029 - listen for enjoyment
- 2-030 - get information
- 2-031 - practice language skills.

- 2-032 The listening centres are equipped so that they may be used by individual children and small groups.

- 1-044 Opportunities are provided for free, spontaneous interchange among children in small or large groups.

stimulated in a variety of situations, devised to suit the occasion and the maturity and needs of the speakers. It is important to note that a collection of objects, a picture, a photograph, or a new hamster will generate more stimulating and relevant discussion than will questions posed under artificial situations in workbooks. Verbal reasoning, sequencing, and problem-solving skills are evident when a child is thinking aloud or seeking the solution to a problem with a friend. Watching a baby duckling struggling to emerge from his shell produces the poetic language of emotion and wonder. A youngster's return from a holiday trip or a class field trip will prompt questions, explanations, descriptions, and reports. Discussions of a penalty or a last-minute goal in a hockey game will produce the language of argument, persuasion, explanation, and emotion.

Such exciting, varied, informal, and spontaneous situations are often preferable to staged conversations, language lessons, and *sharing time*.

Many children have a keen interest in words. If it is to be fostered, they must be able to experiment, practise, and play with words, expressions, phrases, sentence patterns, idioms, rhymes, and nonsense syllables. Their curiosity, wonder, speculation, conceptualization, and imagination must be nourished through real and exciting experiences. Their discoveries and interests need to be discussed, re-created in a variety of ways, and shared with a teacher, small group, and at times with the whole class.

#### Models

Children must hear and feel the kind of language that will enrich and expand their speech in sensitivity and breadth. Meanings depend not just on words used as labels, but on the breadth and variety of meanings in words and on the way they affect one another and are used to give information, to persuade, or to communicate feeling.

Presenting models of good speech is a more effective way of teaching good spoken language than direct correction and rule-giving. Children respond only when they can discriminate. One of the most difficult things for children is to imitate a sound or phrase they have not previously produced themselves. They can learn by having their own impressions used and contrasted with the standard form.

One model that affects every aspect of school life is the teacher's speech. Through the choice and variety of their language, teachers communicate themselves on a highly personal level; thus their speech influences their relationship with the children and the general emotional atmosphere of the classroom. Teachers can invite communication on a personal level by:

- sharing personal experiences;
- sharing favourite collections, books, poetry, and music;
- having conversations with individual children;
- helping children to feel poetry, music, and literature by taking time to play with the words, expressions, and ideas presented.

- 1-045 Many interesting things are available to stimulate discussion among children; e.g. collections, hamster, photographs.
- 1-046 Children practice verbal reasoning, sequencing and problem-solving skills by thinking aloud as they discuss a question with another child.
- 1-047 Opportunities are provided to witness natural phenomena such as baby chickens hatching.
- 1-048 Children share the experiences of holidays and field trips to gain practice at giving explanations, descriptions and reports.
- 1-049 Discussions of current happenings, such as a last minute goal in a hockey game, are held to encourage the language of argument, persuasion, explanation and emotion.

The teacher invites communication on a personal level by

- 1-050 - sharing personal experiences
- 1-051 - sharing favourite collections, books, poetry and music
- 1-052 - helping children to feel poetry, music and literature by taking time to play with the words, expressions and ideas presented.

In dialogue with children, the teacher's responsibility is to:

- listen and assess;
- anticipate by suggesting a new word or a re-formulation;
- refer a question or explanation back to an individual or group;
- extend children's understandings by moving them at their own pace from the specific to the general, from the concrete or immediate sensory experience to the communication of that experience;
- relate one experience to another, extending the idea of pattern and classification;
- bring out of experience and language the idea of relationship and meaning, emotional as well as factual, and consider its validity in terms of the child's concerns;
- communicate personal pleasure in shared discovery as well as the satisfaction and enjoyment that experimentation with language can bring.

There is evidence that discussion and exchange between child and child, or teacher and child, or child and group are essential to allow the child to share perceptions and findings with others and so modify or reorganize what might be too personal or subjective.

Oral language should continue to hold a prominent position throughout the Primary and Junior Divisions even when children come to read and write fluently. Programmed instruction that keeps children working in isolation for long periods should be reviewed critically.

#### Resources

If used with discretion, the tape recorder is an excellent instrument for helping children improve their oral expression. It has the advantage of allowing children to analyse their own speech and replay it at will. Tape recorders can be used for reading personal stories and poems, telling stories, describing experiences, reporting, giving directions for a game, dictating a recipe, or giving a news report or a sportscast. When children recognize the need for help as a result of having listened to themselves, the teacher is usually their prime resource for assistance.

A telephone can be used in a variety of ways at different ages to emphasize the importance of speech. Inarticulate children are liberated through the impersonal medium. It is possible for them to ask for information, make appointments, conduct interviews, and arrive at their own rules for the effective development of conversation.

Younger children can be helped to become more discriminating users of radio and television if they are encouraged to discuss and share the programs they hear or view. Older children can use the media to analyse and evaluate ideas, situations, feelings, and language. As the occasion arises, they could discuss how the motives of advertisements are revealed in the use of music, jingles, slogans, and emotive or dramatic content. Through such discussions,

- 1-053 The teacher encourages dialogue among children by listening, assessing, suggesting, probing, extending ideas, pointing out relationships and communicating personal pleasures.
- 1-054 Tape recorders are used for such things as reading personal stories and poems, telling stories, describing experiences, reporting, giving directions for a game, dictating a recipe, or giving a news report or a sportscast.
- 1-055 The telephone is used in ways such as asking for information, making appointments, conducting interviews.

children can begin to form an intelligent and analytical interest in the power and techniques of persuasive marketing.

Given equipment and guidance, children can take photographs, make movies, or put together a simple television program by the end of the Junior Division. To make a set of slides for a particular project, or a simple movie or video tape, they must first discuss content, story, and script, and plan the action, interviews, and shooting of the film. In this manner, children can gain a skill that many adults lack — the ability to translate their ideas readily from verbal to visual forms of communication.

Younger children can interview staff members and visitors to produce a *book of friends*, in which they record candid descriptions of people with whom they have talked. Older children can run a "radio station" or newspaper in which they feature items of current interest, interviews, surveys, and descriptions of personalities.

Formal rules of speech and discussion may acquire meaning for children in the Junior Division through observation of committees or courts at work in the community. Such visits naturally lead to playing through the situations witnessed. These occasions can be useful for discussion of roles, speech, customs, and expected behaviour in community life. They can lead to an examination, in the children's own terms, of values and moral issues such as telling the truth, repeating rumours, and being loyal to friends.

The importance of the spoken word in human relations can be developed through role-playing, mime, movement, drama, and puppetry. A dress-up trunk, a full-length mirror, and a house corner with a variety of props are all that young children require to assume the roles of people in the real world, in the world of television, or in the world of fantasy. In this setting, they explore the personality of others by expressing the emotions and reproducing the speech patterns of their chosen characters.

#### **Puppets**

Puppets can be used to reinforce many aspects of the school program and they are particularly effective in helping children to further their competence in speaking. Through puppets, children can be helped to work out their emotions, desires, and fantasies. Some children may speak through the mouth of a puppet when they are too shy or disturbed to express their feelings and ideas directly.

The teacher should help young children in the Primary Division to use puppets in a creative way without restricting their imagination. The child can be encouraged first to speak *through* the puppet; a mirror is useful in helping him or her to play alone, yet see the puppet come alive. Children can begin to interact with each other, using glove puppets as extensions of themselves. They can fondle the puppets, talk to them, and give them names and personalities. The teacher can suggest ways in which different puppets

- 1-056 Older children translate their ideas from verbal to visual forms of communication by taking photographs, making movies or videotapes, putting together a simple television program or making a set of slides.
- 1-057 Children produce a "book of friends" in which they record candid descriptions of people whom they have interviewed.
- 1-058 Children run a simulated radio station or newspaper in which they feature items of current interest, interviews, surveys and descriptions of personalities.
- 3-042 Children observe the language of others by attending such events as community committee meetings and court hearings.
- 1-059 The importance of the spoken word in human relations is developed through role-playing, mime, movement, drama and puppetry.
- 3-029 Puppets are used by children.
- 3-001 Young children use puppets in a variety of ways to practice speaking.



can become familiar characters such as mother, father, teacher, or the family pet; in this way, the child can link puppet play with familiar roles and with house play.

At the beginning, children often play in pairs or small groups but do not really interact with each other; as they become more mature and adept, the play session will become longer, and play more interactive, less fragmentary, and less aggressive. Puppetry can then develop into a variety of dramatic situations arising from the children's experience, from a story or a poem, or possibly from a play or story on television.

Later, probably in the Junior Division, children will be ready to use puppetry to show their developing concepts of literary and historical situations. At the beginning they will need simple situations and sets and they may need to work out the dialogue by trial and error. Later puppetry can involve larger groups of children and can generate diverse oral language experiences through such activities as making puppets, preparing scripts and sets, and producing sound and light effects.

#### Special Needs

Some children enter school with immaturities of speech such as lisping or poor articulation. In general, these are developmental lags that will become less significant with age and appropriate language experiences; some of these children, however, will continue to experience difficulties. The teacher should give special consideration to these children, observing and gathering information on possible physical, social, or emotional factors. Having identified their needs, the teacher should endeavour to meet them, not by attempting therapy or speech exercises, but by selecting and emphasizing items from general language experience. It may be necessary to stress certain sound groups or sound sequences to help the children distinguish and use the desired words, syllables, or expressions in the context of their own experience. Interesting rhymes and rhythmic material, songs, and verses may also be useful. Articulation is known to be related to speech perception; children with poor articulation or poor discrimination of speech are likely, therefore, to have difficulties in reading as they try to match their confused or distorted perceptions of words to the printed image. Special attention should be given to these children.

- 3-002 Children use puppets as an extension of themselves to interact with each other.
- 3-003 Children use puppets to dramatize personal experiences, stories, poems or plays.
- 1-060 Children or groups of children generate diverse oral language experiences through such activities as making puppets, preparing scripts and sets, and producing sound and light effects.
- 1-061 Extra practice in oral language is provided for children with speech immaturities.
- 1-062 Extra practice in oral language is extended to older children who continue to have language difficulties.

If speech therapy by a specialist becomes necessary, it is likely to be more effective if the child is given a sensitive, individual follow-up by the teacher in the general program.

The hearing-handicapped child who suffers from an educationally significant degree of hearing loss also needs special provision. This disability is crucial in the early stages of acquiring language. Most teachers will sooner or later encounter children with a degree of hearing loss that has escaped diagnosis but is severe enough to make it difficult to discriminate speech clearly in the general noise of the classroom. These children may show their difficulties in shyness, lack of confidence, misbehaviour, errors in understanding, or, even more specifically, in the confusion of sound in the early stages of speaking or reading. They have particular difficulty with the breath consonants *p, t, k, th, f, s*.

It should be remembered that in acquiring language most children have practised new words and expressions constantly. In assisting older children who still appear to have some difficulties with oral language, it is best, if no other program is available, to give them as much time and opportunity for oral language activity as one would to a younger child.

Many children come to school speaking a language other than English or having acquired English incidentally. They can be at a serious disadvantage and remain so for several years if their special needs are not recognized.

The considerations that apply to this situation and to learning a second language are discussed later (see "Learning a Second Language", p. 59).

When working with children with limited competence in spoken English, the teacher should:

- link language with concrete situations, gestures, and pictorial information;
- offer names and expressions, as appropriate;
- help the children to discriminate and practise words and expressions;
- gain the co-operation of English-speaking children in using play and conversation to reinforce language patterns and words in context;
- try to find out which features of the child's first language hinder him in English (for example, confusion of the alphabets or of speech sounds);
- use the child's interests in devising appropriate materials;
- use slides, films, audio-tapes;
- simplify and pace the language to suit the needs of the learner.

Experience suggests that some children learning English as a second language gain a deceptive fluency in conversational English. Teachers should be aware that such children may still experience difficulty when they encounter the more abstract uses of language later in school.

2-033 Special programs are in effect for children with limited competence in spoken English.

The teacher assists children who are learning English as a second language by

- 1-063 - linking language with concrete situations, gestures and pictorial information
- 1-064 - offering names and suggestions
- 1-065 - helping the children to discriminate and practice words and expressions
- 1-066 - gaining the co-operation of English-speaking children in using play and conversation to reinforce language patterns and words in context
- 1-067 - trying to find out which features of the child's first language hinders him or her in English
- 1-068 - using the child's interests in devising appropriate materials
- 1-069 - using slides, films, audio-tapes
- 1-070 - simplifying and pacing the language to suit the needs of the learner.



### Reading

Reading, even at the earliest levels, depends on deriving meaning by guessing and by testing a variety of cues: visual, phonic, syntactical, and semantic. Reading involves interaction between the author's ideas and the reader's experience of reality and of language. It requires interpretation and personal choice. Therefore reading is more than the ability to decode letters and words; it involves searching for patterns of meaning, problem-solving, analysis, judgement, evaluation, and synthesis. In planning reading experiences, the teacher should aim to help each child:

to understand and appreciate the process of reading by learning to apply his or her reading skills to materials of personal interest and developing his or her own reading materials from experience;

to become aware of the significance of reading in his or her own life by recognizing the reading materials within the environment (signs, labels, newspapers, magazines, billboards, recipes, directions, letters, initials);

to develop the particular skills and processes that he or she finds most effective and useful in decoding the symbols of writing;

to gain independence and fluency in reading through the use of various kinds and levels of materials (stories, verses, directives, assignments, and reference books);

to understand and interpret the ideas presented beyond the stage of comprehension and recall of factual detail;

to develop the ability to read critically and to react personally to the ideas presented;

to use reading as a source of information for activities, investigation, and inquiry;

to discover that reading can offer personal enrichment and growth by exposing him or her regularly to the best literature available (modern classics, folk tales, myths, legends), some of which may be beyond his or her independent reading ability;

to find personal satisfaction and pleasure in reading and recognize and appreciate literary value by acquainting him or her with a variety of books of quality geared to his or her interests and maturity.

### Reading System Criteria

An effective system of teaching reading should meet some of the following criteria. It should:

match children's real experience with oral and printed language;

draw on children's language experiences, vocabulary, and sentence structures in providing reading experiences;

use children's own responses as far as possible to create reading experiences and material and, in particular, link early reading to writing;

relate reading to real-life situations that demonstrate how much we depend on our ability to read;

move the child on to books that are not primers as soon as possible;

provide a learning environment that focuses the child's attention on the

- 1-071 Children read for personal interest and satisfaction.
- 1-072 Children develop some of their own reading material.
- 1-073 Children interpret things they have read.
- 1-074 Children read critically.
- 1-075 Children use reading material in the environment; e.g. signs, labels, newspapers, magazines, billboards, recipes, directions, letters, initials.
- 2-034 Children read various kinds and levels of materials; e.g. stories, verses, directives, assignments, reference books.
- 2-035 Children are exposed to a variety of good literature; e.g. modern classics, folk tales, myths, legends.
- 2-036 Children read a variety of quality books that are geared to their interests and maturity.

Which of these do you do?

- 2-037 - match children's real experiences with oral and printed language
- 2-038 - draw on children's language experiences, vocabulary and sentence structure in providing reading experiences
- 2-039 - use children's own responses to create reading experiences and materials
- 2-040 - relate reading to real life situations that demonstrate how much we depend on our ability to read.
- 2-041 - move the child on to books that are not primers

significance and use of graphic symbolism and that stimulates interest in this aspect of reading:

● provide a flexible response that can accommodate the individual needs of children at different stages of reading, so that the *different kinds of reading techniques* – perceptual, phonic, structural, and semantic – can be developed as appropriate and as needed;

● emphasize significance and meaning as the purpose of reading in helping the child to develop decoding strategies;

● use the child's capacities and needs for discriminating and classifying;

● provide scope for the learning that takes place when a child perceives discrepancies between the responses he or she makes in reading and the meaning (sounds, routine patterns, or words) the text should have, so that he may learn by correcting, or being helped to correct, errors.

● emphasize reading as an active process, requiring trial responses and checking by child and teacher, not the learning of sight words, sounds, or rote sentence patterns;

● make use of structural clues in reading material by using appropriate experiences or materials so that the child can contrast and change word orders and patterns (if needed, structural controls and clues for the children's own language should be provided by using movable printed materials that they can manipulate);

● adopt a rational phonic system in dealing with early code-breaking aspects by using English spelling patterns, and not just letters, as models for the association of sound and symbol;

● use brief intensive practice periods, games, and activities to reinforce particular aspects of reading which have already been approached actively;

● use nursery rhymes and songs for early reading and for supplementary material, supporting them with records, tapes, and films;

● use the children's own stories, vocabulary, and structures for reading in the early stages.

*The ability to follow sequences of pictures, events, and words is basic to reading. Relating these involves quite complex mental processes which can be developed through appropriate experiences.*

Even here a teacher must remember that the meaning of simple pictures is not self-evident to the young child. Interpretation depends on knowledge and experience. Much that is obvious to the adult depends on a knowledge of artistic conventions, such as shading and perspective, and on background information. Teachers should never assume that a young child has processed the visual information in a picture.

Since reading depends on sequence, and on left-to-right scanning, it can be affected by confusions of orientation. A firm sense of laterality, that is, sense of oneself in space in terms of left or right and awareness of which side is moving, grasping, or performing a function, may not be established in some children until six or seven years of age; some continue to show confusion throughout the early years. This sense of space, of body awareness,

- 2-042 - make use of structural clues in reading materials by using experiences or materials so that the child can contrast and change word orders and patterns
- 2-043 - adopt a rational phonic system in dealing with early code-breaking aspects using English spelling patterns
- 2-044 - use brief intensive practice periods, games and activities to reinforce particular aspects of reading which have already been approached actively
- 2-045 - use nursery rhymes and songs for early reading and for supplementary material
- 2-046 - use the children's own stories, vocabulary and structure for reading in the early stages
- 2-047 - provide a flexible response that can accommodate the individual needs of children at different stages of reading
- 2-048 - use the child's capacities and needs for discriminating and classifying.





of left and right, can be developed through expressive movement and through physical activity.

*Young children perceive oral and written languages as an unbroken flow. They do not at first discriminate words as units, which are an invention of print, and they need help to recognize that words are separate and separately significant and that the spaces between them are important. Their fundamental discovery, however, is that printed language matches speech to some extent and that it has an order and sense that is similar to that of speech. This discovery precedes discrimination of single letters or sound-letter correspondence.*

Two of the basic tasks in reading are the discrimination of letter forms and their association with sounds. Young children (between four and eight years of age) make errors of inversion and reversal in comparing and copying significant shapes such as letters. These may not disappear until eight years of age in some children, but younger children may discriminate efficiently if motivated and given clues. Letters and sound patterns have significance

Page 44 describes the behavioural aspects of children's language progression. Suggested means to assist children in language learning are found on the preceding and following pages. Therefore no items are selected from page 44.

only in words. Experience of playing with, discriminating, and using letter forms improves performance. Teachers can help by drawing attention to differences in the features of letters or words.

Children do not fully comprehend blending of sounds and letter symbols until about six and a half years of age. This is probably because they cannot keep the whole and the part in mind at the same time in putting letters together to make sounds.

#### Assessing Readiness

Although children need a certain level of visual-motor competence in order to learn, there is no certain connection between reading facility and scores on visual perception or reading readiness tests. Training in visual perception or readiness does not guarantee improvement in reading performance. In fact, the time is better spent on language experiences and direct reading at the appropriate level. Reading readiness tests are no more accurate in predicting the child's response to reading than are teachers' assessments of the kind outlined below, based on observation of the child's performance and interest.

*Is the child ready to read?* Here are samples of questions the teacher can ask; there are many others.

- Does the child see normally at reading distance? (Many children are still long-sighted when they enter school.)
- Which eye and hand does he or she prefer to use?
- Has he or she a clear sense of left and right?
- Does he or she hear speech sounds and respond appropriately?
- Can he or she attend to a task?
- Is he or she reasonably independent of the teacher?
- Does he or she respond to being read to?
- Does he or she choose a book to leaf through?
- Does he or she look at pictures, understand them, and distinguish between figure and background?
- Does he or she have some sense of the sequence shown in pictures?
- Does he or she show interest and competence in sorting and matching 3D objects and shapes, 2D shapes, letters, and numbers?
- Does he or she recognize a number of familiar printed and graphic symbols?
- Can he or she distinguish different voices, intonations, and particular speech sounds?
- Can he or she distinguish sounds and words that rhyme?
- Can he or she distinguish and match words with similar beginnings or endings?
- Does he or she show a range of oral vocabulary?
- Can he or she get meaning from a familiar caption or act on a simple instruction displayed in the classroom?
- Can he or she point out words as separate, regardless of knowing their meaning?

Children are diagnosed for reading readiness

3-004 - by a reading readiness test

3-005 - by the teacher based on observation.

#### Beginning Reading

There is no one successful method of teaching reading to children, nor is there any one particular sequence in learning; the teacher may choose to begin with sight and proceed to phonics, or vice versa. Researchers who have attempted to compare the many methods of teaching reading generally agree that children do not learn to read as a result of a particular method, material, or teaching medium (such as a new alphabet); they learn by evolving strategies that suit their own learning style.

It is important that the teacher observe and understand these strategies and adjust techniques and materials to meet the particular interests and linguistic abilities of the child.

As mentioned in chapter 3, "Teaching and Learning", teachers may have preferred styles of teaching, methods, or materials that they think work best. They should be aware, however, that these are preferences and should remain flexible in their attempts to accommodate the child's style of learning.

For the children, the major accomplishment has been learning how to speak. In the process they developed their own strategies. Given the opportunity, they will apply these same strategies to reading: they will look for significance, using clues based on sound and vocabulary and searching for intuitive rules and meanings. In addition, they have had some experience in discriminating, comparing, and classifying objects, shapes, and sounds. Their visual and auditory acuity is usually adequate for the discriminations they will now be required to make. The teacher's observation of children's general activities in the classroom will make evident any inadequacies or need for further experiences.

Reading, like all other learning, develops best in the context of varied experiences. In learning to read, children should be provided with visual and auditory stimuli through real experiences, books, films and filmstrips, records, music, songs, and poetry. They must be given the opportunity to respond to things that interest them and to express their ideas in writing, drawing, painting, modelling, movement, and dance. In this way, they can extend their existing knowledge of syntax (sentence structure) and produce reading materials based on their own experiences and on their own language. This is the raw material that children use to make discoveries about printed language and that the teacher uses in teaching the necessary word and pattern recognition skills, thus extending the children's reading vocabulary to match that of their listening and speaking.

It is still not known exactly how an individual child learns to read. Some children use the shape of words as cues, others identify similar beginnings or endings, and others seem to learn words by looking at individual letters. In any event, the process of reading — the use of cues to find meaning — depends on scanning and guessing, which lead to errors of various kinds. Children must be allowed to make these errors not only when they begin

#### In learning to read

- 3-030 - children are provided with visual and auditory stimuli through real experiences such as books, films, filmstrips, records, music, songs and poetry
- 3-031 - children are given the opportunity to respond to things that interest them and express their ideas in writing, drawing, painting, modelling, movement and dance
- 3-006 - children are allowed to make errors in guessing new words.

reading but at every stage of learning to cope with print. Errors are indicators of the child's attempts to interpret print and should be used in a constructive and diagnostic way.

It is known, however, that children must be given the time and opportunity to develop their own methods for discriminating and acquiring words, sentence patterns, and letters. The teacher's aim is to increase the variety and flexibility of the cues and strategies used by children: word meaning, structure, letter or spelling pattern, sound, punctuation, and content. Most children, however, do not know where to look for significant cues for decoding and interpreting written language and it is the teacher's task to help them do this.

Once printed words are familiar, most children find them interesting for their own sake. They enjoy using them to build new sentence patterns, grouping them into families of rhyming words or words that begin in the same way, seeing little words in larger words, and making new words by adding prefixes and suffixes. They enjoy collecting and grouping words in ways that satisfy them: in alphabetical order or in categories such as *colour, action, or beautiful-sounding*. These activities reinforce and extend the children's awareness of words and help them begin to cope with written language.

#### Games

Language games support the process of individual learning, but cannot replace it. As children progress, they can enjoy and profit from:

- playing with words or letters, matching them with pictures or words;
- grouping words with similar patterns, especially words that have the same prefix or suffix;
- grouping letter symbols or spelling patterns;
- making new sentences by altering order or by using new words;
- making new words by altering order or substituting letters;
- playing stepping stones from one word to another by changing one letter at a time (how does *pat* become *fun*?);
- associating letters with sounds and objects.

These activities should be incorporated into games rather than into formal exercises. Such games can be based on the principles of lotto, domino, or card and board games, and played by groups or individuals.

The teacher's role in this process is to provide the words, phrases, and sentence patterns that the children require and then direct their attention to the distinguishing cues. These may be visual or auditory, or they may stem from the meaning or structure. It is very important for the teacher to remember, however, that letters and spelling patterns have significance only in words, that words only have meaning within the context of a sentence, and that sentences really have meaning only in connected discourse. It is only when a child can respond to written material with understanding, personal interest, and satisfaction, that he or she can be considered a reader.

Children use and extend their word knowledge by

- 3-007 - building new sentence patterns
- 3-008 - grouping words in familiar or rhyming sets
- 3-009 - seeing little words in larger words
- 3-010 - making new words by adding prefixes and suffixes
- 3-011 - collecting and grouping words in alphabetical order or in categories.

Children use language games in the following ways:

- 2-049 - grouping words with similar patterns
  - 2-050 - grouping letter symbols or spelling patterns
  - 2-051 - making new sentences by altering order or by using new words
  - 2-052 - making new words by altering order or substituting letters
  - 2-053 - playing stepping stones from one word to another by changing one letter at a time
  - 2-054 - associating letters with sounds and objects.
- 1-076 Children use language games.

#### Further Development in Reading

Children in the Junior Division often begin as eager readers and make tremendous strides in their capacity to read with maturity and power. In this division, there is a wide range of abilities in reading and language development, from children who are reading fluently to children who only have a bare grasp of the mechanics of letters and words.

In order to accommodate the wide range of abilities and interests at this stage, children need to be organized in groups. These groups should remain flexible in membership, meet at various times of day, and have their activities and materials related to individual needs. Children in this stage are more capable of assuming responsibility and can help one another. If they are allowed to do so, the teacher can be freed to work with children who require more assistance and guidance.

A significant proportion of children still lack the skill and security they need to forge ahead in reading, even though they have had sensitive and devoted teaching. They are in a stage of transition and may require the security of controlled material and continued individual help, language experience, and varied practice to help them undertake realistic and individualized reading.

Programmed skill-building materials and basal readers may be helpful for the child who is not yet independent. However, this kind of material should only be used to supplement active teaching so that the child may develop a variety of techniques and interests. The teacher must recognize that a highly structured program tends to stress reading for fact, detail, and correct answers. Thus it robs the child of the opportunity for personal interpretation and response. Books that relate to the child's interests, on the other hand, provide understandable and rewarding content and enable the child to apply his skills.

At this stage, children should be guided to a more intensive use of word and meaning cues. Interest in new words can be generated through discussion, through investigation of the origins of words, and through recognition of the variety of context and stylistic clues that an author uses to help the reader get the meaning. Dictionaries can become prized possessions at this stage if the teacher succeeds in generating enthusiasm for discovering new words and meanings. As interest grows, children will transfer the vocabulary and techniques authors use to their own writing.

Units of work and topics that generate personal inquiries and questions should lead to extensive use of the school library resource centre and its reference and resource materials. The school library resource centre can also include an index of community resources (including human ones) and an inter-library loan system linking the resource centre with other information services.

Different abilities and interests in reading and language development are accommodated by:

- 3-043 - grouping according to interest
- 3-044 - grouping according to ability
- 3-045 - making group membership flexible
- 3-046 - meeting with groups at various times of the day
- 3-047 - relating group activities and materials to individual needs
- 3-076 - having children assume responsibility for helping one another.
- 3-048 Program skill-builders and basal readers, are used as one method to supplement active teaching so that the child may develop a variety of technique and interest.
- 3-049 High interest books are available. Interest in new words is generated through
  - 3-077 - discussion
  - 3-078 - investigation of the origin of words
  - 3-079 - recognition of the variety of context and stylistic clues that the author uses to help the reader get the meaning
  - 3-080 - use of the dictionary.
- 3-081 The school library resource centre is used to generate personal inquiries and questions. The school library resource centre includes
  - 3-050 - an index of community resources
  - 3-051 - an inter-library loan system linking the resource centre with other information services.



#### Reference Skills

The teacher and librarian must be aware of the child's readiness for particular kinds of activity and should provide direct experience and instruction, as needed, in the use of reference books, maps, charts, directives, and other resource materials. Such resource and reference techniques include:

- defining questions or problems in realistic terms so that answers can be found;
- collecting information from a variety of sources (primary sources such as people and places should be placed before film, slides, tapes, pictures, and books);
- learning how to get information from people through conversation, interview, and discussion; about places and things through observation, using a tape-recorder, a camera, and survey techniques; from graphic sources such as pictures, cartoons, diagrams, charts, maps, and tables, and from audio-visual materials;
- learning to use the school library and other libraries as sources of information;

Children practice their reference skills by

- 1-077 - defining questions or problems in terms so that answers can be found
- 1-078 - getting information through conversation interview and discussion
- 1-079 - getting information about places and things through observation, using a tape-recorder, a camera, and survey techniques
- 1-080 - getting information from graphic sources such as pictures, cartoons, diagrams, charts, maps, tables
- 1-081 - getting information from audio-visual sources
- 1-082 - using the school library and other libraries as sources of information



- checking information for relevance, authenticity, and bias — a skill developed by discussion, by checking sources against first-hand experience, by comparing sources, and by searching for inconsistencies and fallacies in texts;
- paraphrasing and summarizing pertinent information;
- translating information into another form — for example, summarizing a sketch in a note, or a picture in a diagram.

#### Reading Materials

Reading in the Junior Division should include a wide variety of materials: newspapers, magazines, directions for models, recipes, instructions, sports manuals, and cartoons. Under the teacher's guidance, children will recognize that techniques for reading differ according to the material. For example, detailed directions for science experiments or problems in mathematics require a slower pace and more detailed attention than a novel or news account. Experience with varied materials at this stage should help children learn to adjust their speed and technique to their purposes and reading material.

The teacher must help the children to vary their approaches, to scan, to speed up, to slow down, to look for detail or for main ideas. With help, children will also grow in appreciation of style, feeling, intention, rhythm, mood, plot, and characterization. Novels can be read at different levels of meaning; it is important, therefore, that teachers consider the maturity of the children and use an approach that will deepen their appreciation of books rather than present the novel simply as a story or a series of comprehensive questions.

Later in the Junior Division, children should use more difficult materials. In literature, they should be presented with the beginnings of conflict in character, with conflicts in ideas and values, and with emotional or ethical problems. In factual prose, they need to learn to infer, to go beyond the statements, to compare different ideas or statements, to predict results, and to begin to evaluate. Comprehension and interpretation of these materials require the ability to read critically and to probe deeply for meanings. This competence can be developed through experiences in assessing writing in terms of function and literary value. These experiences can take the form of discussions with peers and adults. Discussion will encourage the children to share their personal reactions and will prompt them to pay close attention to the author and the text.

The Junior Division has been identified as the golden age of reading. In some cases, if children are not hooked on reading at this age, they will not return to it as adults. This is the age at which children develop personal reading interests and they should be given time to read a wide selection of materials. They need to be free to read without continual checks and formal testing of comprehension and vocabulary.

- 1-083 - checking information for relevance authenticity and bias
- 1-084 - paraphrasing and summarizing pertinent information
- 1-085 - translating information into another form; e.g. a note into a picture.
- 3-052 Reading includes a wide range of materials; e.g. newspapers, magazines, directions for models, recipes, instruction, sports, manuals, cartoons.  
Children use literature in which they examine
- 3-082 - beginnings of conflict in character
- 3-083 - conflicts in ideas and values
- 3-084 - emotional and ethical problems.  
Children use factual prose to
- 3-085 - infer
- 3-086 - go beyond the statements
- 3-087 - to predict results
- 3-088 - evaluate.
- 3-089 Children assess writing in terms of function and literary value during discussion with peers and adults.
- 3-053 Children are given time to read a wide selection of materials.
- 3-090 Children are free to read without continual checks and formal testing of comprehension and vocabulary.

### Comprehension

One of the teacher's main concerns is to ascertain the degree to which the children have understood what they have read. Paraphrasing is one of the best indicators of comprehension. If the children can paraphrase, it is likely that they have assimilated the paragraph, the sentence, or the phrase into their own systems of meaning. Children can express their personal responses by talking about or recording their observations and feelings, or expressing their interpretation through paintings, dramatizations, models, maps, or diagrams.

Comprehension involves a personal understanding and responsiveness to the author's meaning which cannot be demonstrated through the mechanical completion of workbook assignments or basal reader-type exercises. A more relevant way of assessing comprehension would be to ask the children to read a page and define some of the words, to have them tell a story or predict a story's outcome, to relate reading to a report, or to review creative writing, drama, or painting.

Individualized unassigned reading requires stimulus and motivation. The paperback market and shelves in public libraries are full of new and old books for children; the classroom should be no different. Collections geared to the needs of children at different stages of development can be borrowed from the school library resource centre. In addition, teachers must be prepared to share books with children and to read to them regularly at all age levels. By reading books to them that are above their independent reading level, the teacher can broaden children's interest in literature by widening the scope of the materials accessible to them. Material suitable for reading aloud includes books from modern literature, books that deal with our Canadian heritage, and books that have stood the test of time — poetry, legends, myths, folk tales.

### Writing

Writing, and forms of symbolic representation in general, help children to organize their experiences so that they can communicate them to others; they also help to organize and extend their thinking. In learning to write and to set down appropriate symbols, children have to reorganize their concepts and mental processes as the order of internal speech differs considerably from the order of external or written language.

The ability to use words well and to express oneself with sensitivity, clarity, and conciseness in writing is an achievement that, once developed, will be of lifelong value. To achieve this fluency, children must have something real and personal to write about, a wealth of language with which to express their ideas, and the opportunity and time to write. Writing can be used to inform people, to explain, to describe, to narrate, to give voice to imagination and fantasy, to persuade, to argue, to express feelings, and to generate response. The purpose should determine the form of writing and the kind of language used.

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Children express their personal responses to written material by

- 1-086 - talking about their observations and feelings
- 1-087 - recording their observations and feelings
- 1-088 - expressing their interpretations through painting, dramatization, models, maps or diagrams.

Comprehension is assessed by asking the children to

- 1-089 - read a page and define some of the words
- 1-090 - tell a story
- 1-091 - predict a story outcome
- 1-092 - relate reading to a report
- 1-093 - review creative writing, drama or painting.

The teacher

- 2-055 - provides collections of books in the classroom geared to the needs of children at different stages of development
- 1-094 - reads to the children.
- 1-095 Children are given the opportunity and time to write.

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Personal writing is an expression of self and involves the language of self-discovery. It may take the form of a personal letter or note, an imaginative or fanciful story, a poem, a series of impressions, or a description of an experience.

The sources of personal writing are the child's store of observations, feelings, impressions, and imaginings, which can be enriched by a variety of experiences and activities, both indoors and out. These feed the senses and enrich children's awareness of themselves and their world. Experiences — and therefore the writing — gain depth when the teacher helps children to explore them more intensely: to *feel* what they touch, to *listen* to what they hear, to *observe* what they look at. The teacher's commentary in this process provides the language that the children will require to convey their ideas accurately and precisely.

#### Beginnings

Young children often model their first writings on stories and poems they know. Many of the words and phrases they borrow become part of their personal store of words through constant repetition of favourite stories and poems. As has already been stated, therefore, teachers should read aloud to children from material chosen for its quality of language, illustration, and plot, as well as its suitability for the age and interest level of the particular group.

Many children need to express their ideas in other forms before they are ready to turn to writing. Therefore a variety of forms of expression (discussion, art, construction, drama, movement, and sound) should be made available so that children may have many opportunities to crystallize their ideas and refine their sensitivity.

Imaginative writing flourishes in an environment where praise is offered when it is due, where original phrases, paragraphs, and poems are shared as exciting discoveries, where poems and stories and books are edited, typed, and featured in a library or resource centre (always with the young author's permission).

In the early years, children should be given many opportunities to express their experiences and interests through many different channels. They should also be encouraged to collect words, phrases, idioms, and impressions. Such collections will evolve from the children's own experiences, discussions, and reading. Words and phrases generated by experiences can be recorded on a group or an individual basis for future use and reference.

As already mentioned, the emphasis at this stage is on quality and fluency of expression rather than neatness and correctness. Spelling, punctuation, and printing can be dealt with, on an individual or small group basis, once fluency and spontaneity are established. Over-emphasis on errors may, in fact, make children so self-conscious that they cannot write at all.

1-096 Children's own experience provide the base for writing.

Personal writing is expressed through

2-056 - a personal letter or note

2-057 - an imaginative or fanciful story

2-058 - a poem

2-059 - a series of impressions

2-060 - a description of an experience.

3-032 Children express their ideas in forms other than writing; e.g. art, discussion, construction, drama, movement and sound.

3-012 Children's poems, stories and books are edited, typed and featured in a library or resource centre.

3-013 Children collect words, phrases, idioms and expressions from their own experiences, discussions and reading.

3-033 The children's words and phrases are recorded on a group or individual basis.

Much of the writing activity in the Primary Division may consist of making booklets containing stories, verse, news, accounts of visits and experiments, and other personal writings. Children at the Junior level should continue to write stories and verse and to produce booklets dealing with their activities and investigations — on an individual or a group basis.

#### Older Children

In the Junior Division, children who write freely and well in one mode usually write well in another. They begin, nevertheless, to establish individual preferences. Some children are happier with factual prose, while others prefer imaginative prose or poetry. Their purposes for writing become more varied and they can be helped to see when a particular kind of vocabulary and style is appropriate.

Older children continue to require help to see vividly, feel intensely, and to express their experiences lucidly. Our heritage of prose and poetry remains one of the best resources for helping children gain sensitivity and precision of expression.

Visits and discussions with artists, poets, and authors can also stimulate older children to search for words, phrases, and expressions and to record them for future reference. Alternatively, books and collections of poetry in which authors describe the experiences and feelings vividly will help children develop imaginative forms of expression. Children who have been encouraged to gain an appreciation of good writing tend to produce their own myths, legends, mysteries, and autobiographies.

Effective writing develops from continued practice in writing about experiences that are real and relevant to the writer; such practice can be made more effective by discussing what has been written with other children and with the teacher and by leaving a piece of writing to return to it later when perception has matured. Children may be much encouraged and motivated by a teacher's interest and appreciation of ideas expressed at their own level.

Children may show a superficial awareness of language rules in isolated exercises. The aim, however, is to make such rules an automatic part of language use. This is best accomplished when children use a grammatical rule as an indispensable aid to the expression of something they really want to say, especially in connection with an experience they have undergone themselves.

#### Formal Writing

Formal writing serves functional needs and comprises a large part of writing in school. In the early stages of the Primary Division, it is the teacher who will have to record what the children wish to commit to paper, whether it be questions, information, summaries, or discoveries. By the beginning of the Junior Division, children should develop the skills required to write:

• records of facts such as distances, directions, addresses, and telephone numbers;

- 3-014 Much of the writing activity consists of making booklets containing stories, news, verse, accounts of visits and experiments and other personal writings.
- 3-015 The emphasis is on quality of expression rather than neatness and correctness.
- 3-091 Children write stories and verse and produce booklets dealing with their activities and investigations.
- 3-054 Children study our heritage and poetry to gain sensitivity and precision of expression.
- 3-092 Older children are stimulated to search for words, phrases and expressions by visits and discussions with artists, poets, and authors.
- 3-055 Children use books and collections of poetry to help them develop imaginative forms of expression.
- 3-056 Children have practice in writing about experiences that are real and relevant to them.
- 3-093 Children discuss their writing with other children and with the teacher.
- 3-057 Children return to their writing later when their perception has matured.
- Children write:
- 3-058 - records of facts such as distances, directions, addresses and telephone numbers

- short reports of study activities (with each child contributing at his or her particular level);
- summaries of information gathered on a field trip, or from a filmstrip or book;
- outlines of main ideas for an oral presentation to the class;
- sequential instructions for specific operations such as baking a cake, building a model, or conducting a science experiment;
- news items or scripts for a radio broadcast, a slide presentation, or a dramatization;
- descriptions of interesting trips or experiments;
- a diary or log book recording the development of a particular unit of study or project;
- booklets of various kinds containing stories, news reports, and accounts of visits and experiments;
- letters for permission and information and personal letters to friends and pen pals.

Children in the Junior Division need guidance in developing the techniques involved in making useful notes from reference materials. For further information on this point, see chapter 6, "Environmental Studies", pages 97-98.

How frequently the children are to write has to be decided by the teacher and children in the light of circumstances. Writing should not take place daily, simply as an exercise. Children will obviously write often, and perhaps daily, in terms of taking notes and making records in connection with aspects of the curriculum. The project itself will dictate when major pieces of communication need to be undertaken. Writing should always have a defined purpose.

#### Development

Children need individual help in learning to write correctly and in selecting vocabulary and structure. The amount of time spent on group or class instruction in any given week ought, therefore, to be limited. The children should also be helped to look at and improve their writing in the light of the task that they have set themselves and of the purpose of the writing. Linguistic analyses show that, in pre-school and early school years, children acquire language forms such as plurals, tenses, and the passive voice, which enable them to use long but loosely connected sentences. From the middle of the Primary Division, they can be helped to progress from isolated phrases or sentences to the development of a sequential paragraph. This improvement involves more than persuading them to write more sentences or to substitute other words for *and* or *then*. At this stage, children's increasing use of appropriate prepositions and logical connectives provides a measure of the development of their language and of their growing ability to organize information. Towards the end of the Junior Division, sentences once more tend to become shorter but more complex, and the maturity of writing is shown in increasingly compact phrasing and interlocking constructions.

- 3-059 - short reports of study activities (with each child contributing at his or her particular level)
- 3-060 - summaries of information gathered on a field trip or from a filmstrip or book
- 3-061 - outlines of main ideas for an oral presentation to the class
- 3-062 - sequential instructions for specific operations such as baking a cake, building a model, or conducting a science experiment
- 3-063 - news items or scripts for a radio broadcast, a slide presentation, or a dramatization
- 3-064 - descriptions of interesting trips or experiments
- 3-065 - a diary or log book recording the development of a particular unit of study or project
- 3-094 - booklets of various kinds containing stories, news reports and accounts of visits and experiments
- 3-095 - letters for permission and information and personal letters to friends and pen pals.
- 1-097 The emphasis in teaching writing is directed toward individual and small groups rather than the class as a unit.



To summarize, the whole point of writing and recording is to communicate with others; essentially, the only way in which a child can learn to write is through experience in writing.

#### Grammar and Usage

Speech and writing should develop in precision and accuracy throughout the Primary and Junior years. The ability to speak and write fluently and articulately should be the first concern.

It is important to relate questions of *spoken* usage and style to effective communication rather than to grammatical standards. In *writing*, however, where usage is more stable and where non-standard forms may be a barrier to effective communication, the teacher should, as recommended elsewhere in this chapter, help the children develop standard forms by working from their own writing.

By four years of age, children have an intuitive knowledge of the grammatical rules of oral language. They are still learning substitutions, transformations, and variations in sentence pattern at six or later. There is no evidence, however, that they are helped to speak, write, or think by studying the rules of prescriptive grammar. To some extent, children may be helped by practice in changing tenses, using synonyms, and making other transformations such as changes in sentence structure, but, as a general rule, competence is best acquired through the comparisons and corrections that children make in their own writing. Time that would be spent on the study of grammar is better used speaking and writing. Moreover, much of the grammar found in older school texts is of a prescriptive type unrelated to modern approaches to linguistics.

1-098 The teacher helps the children develop standard forms of grammar by working from their own writing.

Towards the end of the Junior Division, children may become interested in word forms or derivations. They can, if interested, undertake comparative and experimental investigations of their own language by listing words and experimenting with word order, by comparing the kinds of words that are normally used together or that normally occur in the same place in a sentence, or by studying the ways in which changes in sentences and word structure change meaning. This kind of activity should not be confused with formal grammar. Children seem to learn best when they are given a chance to play with new usages, to make comparisons between usages, and to explore the effects of words, word patterns, and idioms. The younger child may manipulate tangible words and letters. The older child can experiment with verbal variations.

#### Spelling and Punctuation

Spelling and punctuation, being graphic conventions used to facilitate communication, depend on the relationship between the sound and writing systems of a language.

Competence in spelling is closely connected with reading ability and with awareness of spelling patterns. Children, therefore, should read widely and have many opportunities to experiment and play with words — to pull them apart, put them together, and build new ones. If phonic experience and investigation of spelling patterns are made part of the reading program, children seem to develop strategies for finding spelling rules and their exceptions. There is little evidence that any particular method of spelling instruction produces better spellers than wide experience in reading and writing.

When children have gained fluency in writing, there is merit in helping them develop strategies for finding the rules and practising spelling, individually or with others in small groups. As in other cases, the most effective study focuses on words that spring from the children's own needs — that is, words that they have misspelled or that they wish to use in their writing. They can be helped to classify words from their personal list according to common spelling patterns or rules. Then they can be helped to understand the structures of words and, through a process of comparing and contrasting, to develop the rules they require.

Some children may require direct guidance in focusing on different aspects of a word: the beginning, the end, the medial vowel; syllabic units, prefixes, and suffixes; or whatever distinguishing feature (visual, auditory, or semantic) will best help them to remember the pattern. Children who need this direct guidance can receive more attention from the teacher if the other children are occupied, either in pairs or small groups, with spelling and word games that they have worked out for themselves or that the teacher has invented.

Linguistic research suggests that if the child is to attain full comprehension of the deeper levels of language, word meanings and structure must be

Children undertake comparative and experimental investigations of their own language by

- 3-096 - listing words
- 3-097 - experimenting with word order
- 3-098 - comparing kinds of words that are used together
- 3-099 - studying the ways in which changes in sentences and word structure change meaning.
- 1-099 Phonic experiences and investigations of spelling patterns are made part of the reading program.
- 2-061 Children develop personal spelling lists.
- 2-062 Children classify words from their personal lists according to common patterns or rules.
- 1-100 Spelling and word games are used.

used to augment phonic/spelling pattern units (for example, mishap/bishop; I will read/I have read).

Knowledge of correct punctuation may also be developed through the child's own writing. The latter enables the child to understand the function of punctuation as a set of graphic signals invented (mainly by printers) to represent intonation, stress, and phrasing.

For this reason, some punctuation can be learned through speech. Children should read aloud what they have written and try to communicate stress, intonation, and feeling. They can be helped to see where sentences appear to end, where there should be periods and pauses, and where they should put them in their writing. The considerable difficulty that children have in identifying sentences and putting periods *in the right places* reflects the fact that the printed sentence does not adequately identify the linguistic structure that defines the unit of meaning.

In discussing reading, the teacher can draw attention to the devices an author uses to produce certain effects and the ways in which punctuation is used to alter pace, build suspense, introduce surprise, and list items. Children can experiment with such techniques and learn from their many errors. In classrooms where children are provided with opportunities to write, discuss, and share their writing with others, they will become aware of the need for punctuation marks that indicate question, surprise, interest, fear, or excitement. Even in the Primary Division, some children are ready to discuss such devices as quotation marks.

It is often wise to refrain from immediately correcting errors in spelling and punctuation. For example, over-emphasis on correctness in spelling can inhibit the children's experimentation with new words and, ultimately, may lead to the overuse of simple words that they know how to spell. If children are encouraged to collect and store their writing in a personal folder, they can go over their work some time later, think over the spelling and punctuation, and correct them. This self-correction indicates, for them, progress towards mastery.

### Handwriting

Writing is a complex sensory-motor skill that requires fine hand-eye co-ordination, visual acuity, and visual discrimination. Therefore the teacher's expectations with regard to writing in the Primary years must be realistically based on the children's stage of development. Children should not be pushed into handwriting activities too soon. Long before they are ready to write, they should participate in activities that involve hand-eye co-ordination in order to develop the pattern of skills (in time and space) on which writing is based. The young child is interested in scribbling, drawing, painting, modelling, and constructing, without being aware that these are pre-writing activities. The sensitive teacher is ready to capitalize on these manipulative experiences to help the child gain control over the tools used in writing. How-

- 1-101 The teacher uses the child's own writing to develop a knowledge of correct punctuation.
- 1-102 Children discuss and share their writing with others.
- 1-103 Children read aloud what they have written in order to communicate stress, intonation and feeling.
- 2-063 Children collect and store their writing in a personal folder.
- 2-064 Children return to their personal writing folder to correct spelling and punctuation.
- 1-034 Specific activities such as drawing, painting, modelling to develop fine sensori motor skills are used.



ever, there is very little sense in attempting to teach children to write before they can express their ideas orally. Only the stimulus of challenging and varied activities will motivate children to record and express themselves in writing.

Eventually all children wish to express themselves in writing; the teacher's task is to encourage the desire and seize the most appropriate moment for teaching. Small children will scribble letters and stories and read them back to a parent or a teacher. The first letters to Santa Claus and the messages on home-made birthday cards are created even before children are aware of words and letters. Later, they will dictate captions to an adult who will act as the scribe. The latter should use a thick felt pen and write the dictated words clearly and carefully, for this script will serve as a model. It is therefore essential that children observe fluent, accurate movements and a large, well-defined script. They should begin writing when they can form writing patterns fluently; they should not copy letters line by line.

Small children should have the opportunity to experiment with writing at any time with large, easily manipulated felt pens and crayons and large blank pieces of newsprint set out on a writing table or clipped to an easel. A box of large cards, each with a word and picture or a sentence and picture, could easily be made available. Children select material they would like to copy.

Many classrooms display the alphabet high up on the wall, often at the back of the room. It should be noted that copying from such a distant display, or from the chalkboard, is a highly complicated task requiring a considerable degree of visual and psychomotor control. It involves adjusting from one size of print at a distant point of fixation to a smaller size which, in fact, appears larger, from the children's point of view, at the near point of fixation. In addition, children have to rely on their memory of what they have seen in the brief interval between seeing it on the board and copying it. In short, if children are to follow a model, it should be presented on cards or in a book that they can keep on their own writing surface.

It has been customary in the past for children to practise writing between lines that are spaced to their dexterity or maturity. However, as long as children are given a guideline as a base, it is better for them to write letters and words of the size they find comfortable. Lines for writing are better delayed until children have established control and have a better sense of the purpose of line and margin. Later, they can see that their writing is given greater graphic impact and meaning when it is conventionally spaced.

Children should not be pressured for neatness and precision in the first two years of the Primary Division. While all children must learn to write legibly, premature insistence on precise form and accuracy will cause tension and even fear. Neatness and precision are a matter of coordination and

- 3-016 Adults act as scribes to record ideas and thoughts of small children.
- 3-017 The captions recorded by the adults are used as a printing model.
- 3-018 Writing or printing materials are available in a variety of media; e.g. felt pens, crayons, newsprint.
- 2-065 A writing or printing model is provided for individual children to keep on their writing surface.
- 3-019 Children are given only a single base line to guide their printing rather than being forced to print between two lines.
- 3-020 Children are not pressured for precise form and accuracy of handwriting.

practice, affected in no small part by the value children place on the appearance and legibility of their own writing.

Children need to practise the technical aspects of writing and making letters but only to the extent that they are encouraged to see the purpose and use of writing for communication. While most young children are able to copy their names and many can even print them without models, they need to develop their skills through purposeful practice. Copying notices, invitations, and lists of materials for projects might be appropriate activities.

A large book of blank newsprint can become a class news book in which all events of current interest to the children are recorded: the arrival of a new baby, the loss of a tooth, the acquisition of a new car or a pair of new shoes, a trip to another town. Such accounts will make a unique book that will be reread with great interest. The children will be motivated to create their own book of events and here the teacher will be able to help each child with letter formation on an individual basis. There is little purpose in large-group or class lessons in handwriting.

It is important that handwriting be developed as an art form. Whatever style of writing is adopted, the child should appreciate the attractiveness and legibility of its design and learn to use it in a measured and precise way. Children at the Junior stage should learn to copy selected pieces of writing with a fair degree of competence, demonstrating an aesthetic as well as functional awareness of such elements as spacing, margins, and capitals.

#### Learning a Second Language

In Ontario English-language schools, there are two basic contexts in which children learn a second language: some children come from a non-English-speaking home<sup>1</sup> and must learn English which is their school's language of instruction; others study French as a second language.

Non-English-speaking children may be entering a linguistic and cultural milieu that is completely different from their own. It is important to help these children maintain pride in their own traditions; the experience with a second language should not undermine their self-concept. Teachers must be aware that the aim of teaching a second language is not to replace the language and culture of the children but to add another dimension to their ability to communicate. By showing interest in and respect for the children's heritage, the teacher will give them encouragement and confidence.

The language base of the community has a bearing on the study of French as a second language. The environment for French study varies in different areas of the province. This variety has generated three alternative types of French program: *regular*, *extended*, and *immersion*. In the regular program,

<sup>1</sup> Further information regarding language policy for native children is found in the resource guide, *People of Native Ancestry*.

- 3-021 A class news book is used to record events of current interest to the children; e.g. the arrival of a new baby, a trip to another town.
- 3-035 Individual children record events of current interest in a news book.
- 1-104 Individual and small group instruction is utilized to teach hand writing.
- 1-105 Children develop printing and/or writing skills by copying materials appropriate to their developmental level.





the French language is studied as a subject in itself. In the extended program, instruction in one or more subject areas through the medium of French is added to the study of the language. In the immersion program, French is used much more extensively as the vehicle of instruction.

Any second-language instruction at the Primary-Junior level must observe the principles laid down for educating young children: it must provide for different developmental stages, varying learning styles, and active participation, and must ensure a degree of success for all children. The individual child's needs, experiences, and interests can be accommodated in a second-language program that offers variety in depth, pace, and activity. The young child's need to explore new areas of knowledge can be met in a program that includes child-centred learning activities and small-group work, and that avoids excessive formal instruction.

The formal development of general language principles is not appropriate until the Junior Division, by which time children have a basis of several years' second-language experience. A grammar-translation approach to language instruction is totally unsuitable in the Primary and Junior Divisions.

Second-language learning involves the gradual acquisition of four skills — listening, speaking, reading, and writing. From the outset, whatever the skills

Pages 59-61 relate to second language learning which is a subject of specialization. Although the principles stated on these pages are significant in terms of primary/junior education they do not apply to the regular primary/junior teacher. Therefore no items were selected from this section.

children are learning, constant attention must be given to leading them from structured contexts to free communication of their own ideas. Listening and speaking will have priority throughout the Primary and Junior Divisions. Like the development of generalizations, the introduction of reading and writing as support skills must be carefully timed in accordance with the developmental stage and second-language competence of the child.

There is no definitive evidence that any one approach to language-learning is the best for all children. The most successful programs are evolved where teachers professionally alert to children and to second-language methodology use an eclectic and pragmatic approach. Teachers must be careful observers of their pupils, ready to adapt to their needs.

Close observation of children is essential to the diagnostic assessment of their competence and confidence. This assessment will have important bearing on the children's progress. While rigid adherence to a content sequence is undesirable at this level, unnecessary repetition of previously mastered skills should be avoided. Progress in language acquisition must be evident to satisfy and motivate the children.

In a program in which the second language is integrated with other areas of study, children can be motivated to make meaningful use of the second language within the school context. The degree of integration will vary with the type of program. In the regular program of language study, interrelation with art, creative drama, music, and other aspects of the child's day is possible through interest themes and activity centres. In extended and immersion programs, the learning of other subjects through the medium of the second language provides content, impetus, and opportunity for active and passive use of the language.

Learning a second language is compatible with the Communications program and must be consistent with fundamental principles of Primary-Junior education.

### **Mathematics**

Mathematics is an invention of man that helps us to understand, analyse, and communicate both qualitative and quantitative ideas about our environment. Fundamentally, it consists of abstract models that represent aspects of the real world, as well as rules and operations for working with these models.

The process of mathematics consists of choosing or creating models; of studying, analysing, and manipulating them; and of relating the findings back to the real world. The diagrams of geometry, the numerals and operations of arithmetic, the graphs and charts representing data and relationships are all models that children employ in their daily activities. These models help children to see relationships in the environment and thus to make sense of the world about them.

The concepts and skills of mathematics, combined with its vocabulary, help the child to discriminate, classify, and think logically. They are developed and reinforced by observation, imitation, discussion, enquiry, investigation, experimentation, practice, and application in day-to-day activities, both in school and out.

### Mathematics and Language

The significance of mathematics in the routines of daily living and in the sophisticated world of the sciences, technology, and business requires that it be an essential component of each child's school experience. Moreover, it is important that the full extent of what constitutes mathematics be understood by teachers and parents so that they may appreciate where, when, and how mathematics is being learned.

Language develops through the need to talk about categories of such things as food, people, homes, toys; "mathematical language" is used to describe qualities such as size, quantity, scale, shape, pattern, and the various relationships that children find in their active play and observation of real things. Their early vocabulary includes words that define relationships (*hot, under, round, gone, fast, out, many, more*). These words are closely related to their perception of the world and their ability to locate themselves in it. In addition, these words reveal children's understanding of the information they obtain by experimenting with physical objects and by thinking about their environment.

Mathematical words and symbols often develop from other aspects of the child's language, but involve briefer and more precise expressions. Every opportunity should be used to enrich the child's vocabulary with regard to shape, size, number, distance, and 'scale' words such as *bigger* and *smaller*. This will help children to extend their power to discriminate, to classify, and to communicate effectively. They learn to distinguish the qualities that belong to some objects and not to others by verbalizing their own perceptions, by listening to others, and by discussion. They extend old meanings and find new ones. They learn the classifications and inclusions involved in mathematics and logic. This process develops throughout the early years in school, as children's understanding of general categories evolves from the concrete and the particular. Thus, in referring to a wide and general class such as *animal*, children simply use words that denote particular specimens they know from experience — *doggie, kitty*, and so on. This parallels the use of *daddy* to describe all adult males. Later, dogs, cats, rabbits, gerbils, fish, and hamsters become special types within the notion of *animal*. As discrimination grows, spaniels, collies, retrievers, and hounds become further refinements under *dog*.

As more precise words and symbols are used, they help children to organize, to condense, and to transfer their understandings to new situations. Conversely, when children have formed understandings of the conservation of quantity and class, they are more likely to remember and use effectively

1-106 Children participate in activities that require mathematical language to describe qualities such as size, shape, quantity.

scale and position words such as *big, larger, above, beyond*. Only when children have acquired a basic ability to classify, to order, to partition, and to match a variety of objects, do they sense the real meaning of pattern or number as distinct from their specific uses.

It is essential that mathematics be related to real experiences. The following are examples of activities that develop both language and mathematics from the same starting point.



**Language Activity**

Children and adults name, describe, and discuss items collected during the walk.

**Mathematical Activity**

The items collected are compared in terms of shape, size, and other attributes. Classes of objects are displayed in graphs. (The same activity can be used with older children. They will measure size and distance and determine position with a magnetic compass.)

1-107 Activities in mathematics are related to real experiences.



**Language Activity**

Children discuss what constitutes a good breakfast; they then plan a menu.

**Mathematical Activity**

Children examine the shapes of containers and compare the amounts of cereal contained in boxes of different dimensions, mass, and capacity. Younger children try to balance amounts of sand and cereal. Older children estimate and find the mass of cereal and the dimensions of the container. They may also devise ways of determining the number of grains.



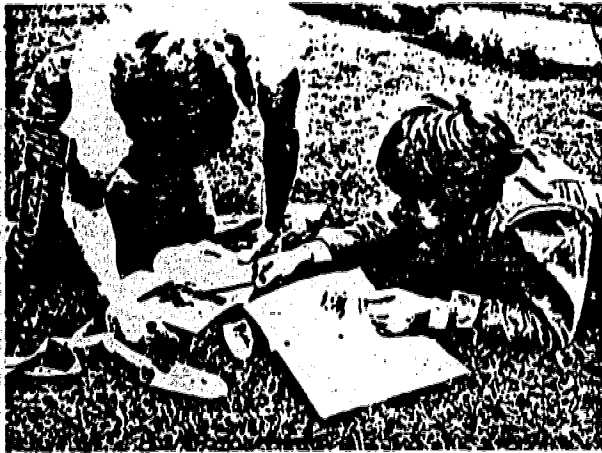
**Language Activity**

Children discuss possible sites and ways to build a rink.

**Mathematical Activity**

A scale model is planned and built before actual construction starts. Children make decisions concerning materials, shape, and dimensions. They may experiment with making ice. Young children can measure using arbitrary units, pack snow into a container, and compare relative masses of snow, ice, and water.

2-066 Mathematical and language activities are integrated in the program; e.g. discussing possible sizes and ways to build a rink.



**Language Activity**

Children consult reference books and examine illustrations to determine variety and number of weeds in a given area of lawn.

**Mathematical Activity**

Children formulate hypotheses, use sampling, measuring, and testing techniques, and make scale drawings.

The behaviours related to this section are found on the following page.

**Mathematics and Representation**

When children play with toys, blocks, sand, water, their own pictures, and words, they are using models to represent their ideas and feelings. This use of symbols to represent ideas is an important stage in the development of their thinking. This will be even more evident at a later stage when mathematical symbols are introduced.

*Speech* is the most common means of communicating ideas and perceptions. Classifying, sequencing, and forming logical ideas can be carried out independently of language, but language is necessary for the more complex classifications where words clarify and focus attention. When children use words to describe a collection of things, a connection between two things, or a pattern of action, they are no longer restricted to using action, images, or objects as the tools for their thinking; they can use concepts and understandings for which they now have word labels.

*Play* is a vital aspect of children's learning. In symbolic play the child operates without penalties, trying out variations and possibilities both in reality and fantasy. The learning of new concepts and skills requires that exploration and manipulation precede systematic investigation. The child

needs time to decide how the new knowledge can be related to previously learned material. During this period of imaginative play children represent the things of the real world and act out experiences that are important to them. Given blocks, boxes, hoops, glue, string, tape, hammer and nails, they will make things that, for them, represent a house, a car, a garage, a bridge, or a snowmobile. Given sand and water, they will explore many aspects of pouring, comparing, classifying, putting in order of size, counting, and estimating. There is value in using structural materials such as rods, blocks, and interlocking cubes to introduce basic ideas of counting, measuring, classification, and number bases. To exploit fully the potential of these materials, the child needs opportunities to play with them and to explore their possibilities. In this way, the child extends his or her understanding of how they behave and how he or she can influence them.

Models and drawings reveal the child's thoughts about connections and relationships as he or she attempts to communicate and master them. Their structure corresponds to the mental image that the child has formed. For instance, a child of four may draw a hat *above* the head because he or she does not sense that the hat fits on the head, or perhaps because he or she does not know how to draw the hat *on* the head.

Children who have had many opportunities to build and talk about models begin to make accurate drawings and plans much sooner than do children who have not had these experiences. Speech, play, models, and drawings are essential forms of communication. Discussion helps children to discover contradictions or lack of accuracy in their pictures, sketches, and other representations of reality. Observation and discussion reveal to the teacher the stage of development of each child and provide clues for planning appropriate activities and experiences.

*Graphs and maps* are major forms of recording and representing information. The development of graphs goes hand in hand with the growth of ideas of number, measurement, classification, correspondence, fractions, scale, and proportion. Throughout the Junior Division, there should be opportunities for activities and experiences that progress steadily from early block graphs to straight-line relationships and to the pattern by which the area of squares or volume of cubes is related to the length of the edge. These underlie the more sophisticated relationships studied in the Intermediate and Senior Divisions. Graphical representation is a dynamic activity; it often starts with familiar materials or situations and then spins off into activities and investigations that may not have been foreseen. Graphing emphasizes sorting and matching, comparing and ordering, estimation and approximation, and a search for pattern that is important at every stage in the development of competence in mathematics. Of equal significance are the opportunities it provides for children to work mathematically from experiences with real things, to create their own quantitative abstractions from reality.

Children use a variety of materials to extend their understanding of mathematics

- 3-022 - sand and water to explore aspects of pouring, comparing, classifying, putting in order of size, counting and estimating
  - 3-023 - structural materials such as rods, blocks and interlocking cubes to introduce basic ideas of counting, measuring, classification and number bases
  - 3-024 - blocks, boxes, loops, glue, string, tape, hammer and nails to make things.
  - 1-108 Children's own pictures and sketches are discussed to discover contradictions or lack of accuracy.
  - 3-100 Children use maps and graphs as major forms of recording and representing information.
- Activities and experiences with graphs and maps progress
- 3-067 - from early block graphs to straight-line relationships
  - 3-068 - to patterns of relationships between areas of squares or volumes of cubes and length of edges.

### Mathematics and Notation

Children see numerals and even learn to write them long before they understand their meanings. However, it is only after many first-hand experiences with classifying and ordering related to quantity and number that they are ready to learn a system of notation. Notation is a means of representing numbers so that they can be recorded on paper and carried in the memory. In order to write numbers greater than nine, the important operation of grouping must be understood and this brings in the ideas of choice of base and place value. The common practice is to introduce groups of ten first because we use ten as the counting set or base of our numeration system. Notations based on other counting sets have their uses, and children should have opportunities to organize numbers by groupings other than ten. The experience of using a variety of bases, first with structural material, then with increasingly less concrete material such as an abacus or number board, helps children to generalize the structure that is common to all systems using the ten Hindu-Arabic digits 0, 1, 2 ... 9.

When children can use numbers without needing physical objects to guide such activity, they are ready to record the operations of addition and subtraction, using first their own and then conventional algorithms. If the development of a notation scheme has been successful, the child will have little difficulty in carrying out additions and subtractions that require regrouping. Structural apparatus, the spike abacus, and diagrams help children to become aware of the relation between the values assigned to neighbouring columns. The way is now open for grouping without limit.

The realization that counting can never reach an end is a startling and memorable experience for most children. The very large numbers required in space travel or population counts and the very small numbers used in modern physics have given rise to a more concise means of symbolizing numbers and operations. Some aspects of scientific notation are well within the grasp of children in the Junior Division.

Early experiences with fractions must emphasize equivalence through a variety of activities. As children's understanding of equivalent fractions is confirmed through extensive use of concrete materials and applications, their ability to deal with the operations *without using tricks* becomes established. Teachers must ensure that the fractions being used are simple and realistic. Decimals are another extension of our notation. As a result of their use of money, children have considerable experience in using decimals before they meet this notation. They can easily grasp the idea that any fraction can be expressed as a decimal by dividing the numerator by the denominator. For some fractions the division terminates; for example,  $\frac{2}{5} = 0.4$ ,  $\frac{1}{4} = 0.25$ ,  $\frac{3}{8} = 0.375$ . For others, such as  $\frac{1}{3}$ ,  $\frac{2}{3}$ , the division process does not terminate but repeats. In these cases the fractional form is easier to use in computation. To facilitate comparison and interpolation, older children can make and use number lines with two scales to illustrate the relationship between fractions and their decimal equivalents.

- 3-066 Children use number lines with two scales to illustrate the relationship between fractions and their decimal equivalents.
- 3-025 Children use measuring activities that lead to the use of metric units in length, area, volume and mass.
- 3-101 Children practice measurement skills through the use of protractors, simple clinometers, magnetic compasses and other surveying instruments.
- 1-114 Children organize numbers by groupings other than ten.
- 1-115 In using a variety of bases children first work with structural material and then proceed to working with less concrete material such as an abacus or number board.
- 1-116 When performing additions or subtractions that require regrouping materials such as structural apparatus, the spike abacus and diagrams are used to show relationship between the values assigned to neighboring columns.
- 3-026 Early experiences with fractions emphasize equivalence through a variety of activities.
- 1-117 Children's experience in the use of money is used as a basis when teaching decimal notation.



As Canada moves towards the use of the metric system of measurement, opportunities for practical use of decimals will increase. Children in the Primary Division should be immersed in measuring activities that lead to the use of metric units of length, area, volume, and mass. Conversion between metric and imperial measures should not be emphasized but treated incidentally.

After exploring number relationships and patterns in a variety of concrete and practical situations and experimenting with composite numbers, square numbers, and primes, children in the Junior Division will be ready to use simple algebraic notations for number relationships. Similarly, they will develop ways of representing geometric ideas such as angles, parallels, and perpendiculars. They should be introduced to the idea of relating the measure of an angle to a rotation. Measurement skills can be practised through the use of protractors, simple clinometers, magnetic compasses, and other surveying instruments. These experiences help children to understand the meaning of such concepts as *vertical, horizontal, perpendicular, and co-ordinates*.

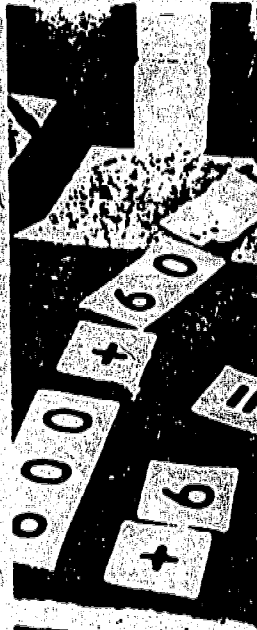
The association of numbers with situations from the child's experience will help to eliminate unrealistic calculations as well as avoid the imposition of inappropriate adult concepts and interpretations. It will also guide the child in developing exciting and personal ways of organizing and recording his perceptions.

#### Mathematics and Computation

With the advent of twentieth-century technology and its wide range of computing devices, the importance of speed and accuracy in calculation as a job qualification has been substantially reduced. Children, however, still need to understand and practise the skills of computation. As a result of research into the ways children learn, it is possible to develop these skills in a more rational way. The child's ability to deal effectively with numerical relationships depends upon the development of certain mental structures rather than on memorization of a body of facts. For example, in most cases, the child's understanding of *twelve* is better achieved through the mental organization of many experiences of 'twelveness' than through unrelated practice in computation.

We now recognize the need for experience. History tells us that people acquired knowledge from practical problems of movement and shape and then went on to symbolize this understanding. The 'four rules of number' were originally manual operations carried out on an abacus. The mathematical idea does not reside in the materials but in the child's abstraction of the actions undertaken with the materials. These actions can be simple: moving a finger up a number ladder or pushing two groups of counters together contain the idea of addition. As a result of many experiences of this nature, children attach meaning to the words *add* or *plus* and usefully employ the mathematical symbol  $+$ . Addition and subtraction of the same numbers need to be seen as inverse operations, each a check on the other. The child

- 3-102 Children experiment with composite numbers, square numbers and primes.
- 3-069 Children use simple algebraic notations for number relationships.
- 3-070 Children develop ways of representing geometric ideas such as angles, parallels and perpendicularous.
- 3-071 Children are introduced to the idea of relating the measurement of an angle to a rotation.
- 1-118 The child's understanding of number is achieved through the mental organization of many experiences of that number.
- 1-119 Addition and subtraction of the same numbers are seen as inverse operations.



needs to understand various re- and to see multiplication as re- the inverse operation of multipl and quotitive, must be experie (to find the size of each equal p parts). *Divide 12 into 4 equal how many 4's are there in 12?*

The build-up towards memo process consisting of carefully p ment, use of money, time, and pretations of the same number *can you make 12? or Move 1, did you go?* than to carry out a nine years of age many childrer come of many practical experi more practice with specific fa



of subtraction in practical activities  
addition of equal groups. Division is  
The two types of division, partitive  
situations that involve either sharing  
grouping (to find the number of equal  
s an example of a sharing problem;  
ample of quotitive division.

of number facts should be a gradual  
practical activities involving measure-  
Children need many different inter-  
ore relevant to ask *How many ways*  
*to 77 on the number line; how far*  
umber of routine additions. By about  
ve "memorized the tables" as the out-  
rd practice. Some children will need  
le others will find great difficulty in

1-109 A knowledge of number facts is accomplished through experience gained from practical activities involving measurement, use of money, time, etc.

1-120 Multiplication is seen as repeated addition of equal groups.

1-121 Division is seen as the inverse of multiplication.

1-122 The two types of division, partitive and quotitive, are experienced in situations that involve sharing (finding the size of each equal part) or grouping (to find the number of equal parts).

committing facts to memory. The reason for memorization is to have the information readily available when needed. If the time and effort required to memorize are unrealistic or if the ability to memorize is beyond the reach of the child, the facts are not easily accessible. These children should be encouraged to *construct* tables that organize this information. Frequently children find that daily use of *their table* helps them to remember facts.

It is important that each child be helped to find the patterns that give structure to number and thus to reduce the number of facts to be memorized. If children understand how the tables are organized, they can then reconstruct facts that they have forgotten. Special numbers, such as 9, have an appeal for children; for example,  $9 \times 77 = 693$ ; the sum of the digits of 693 is 18; the sum of the digits of 18 is 9. This process is called 'casting out nines'. Even less able children will readily acknowledge that  $6 \times 9$  cannot be 56 and thus be able to check their own work.

When children discover and understand the property of commutativity, addition and multiplication facts are nearly reduced by half. Similarly, the distributive and associative laws should be made part of the child's experience. Not only do they help to make the handling of numbers more efficient but they also prepare the ground for algebraic and logical relationships.

The most reasonable way to determine whether children know number facts is to ask them orally. Written tests cannot identify children who are using inefficient processes such as finger counting or counting on in ones, nor do they reveal errors in basic facts or processes without diagnostic inspection of each item and further questioning. Similarly, there is little point in written exercises using tens and units until children can explain orally how to add numbers such as 57 and 26.

A major concern of the teacher is to know:

- when a child is ready to memorize numbers facts;
- when a child is ready to attempt written calculations;
- when a child needs practice and how much.

It is essential that the many variables that influence decisions of this kind be considered.

Written practice is important but, to be effective, must be preceded by the development of the following skills and understandings. Children are not likely, on the average, to acquire all these skills before the age of eight and a half.

- addition and subtraction facts to 10;
- addition (subtraction) of both 1 and 2 to (from) any number up to 20;
- addition of 10 to numbers from 1 to 10;
- addition of 9 to numbers from 1 to 10;
- doubling and halving of numbers up to 20;

2-067 Children are encouraged to construct tables that organize number facts.

1-110 Oral tests of number facts are given.

1-123 Children are helped to find patterns that give structure to number; e.g. "casting out nines".

1-124 The children discover and understand the distributive and associative laws.

Children are assessed for

2-069 - readiness to memorize number facts

2-070 - readiness to attempt written calculations.

1-125 Children are assessed for need for practice.

- use of near doubles up to  $9 + 8$  to recall specific number facts (for example,  $2 \times 8 + 1$  or  $2 \times 9 - 1$ );
- use of a number line to 100 and a set of cardboard strips of 1 to 10 units in length to develop addition and subtraction patterns - for example,  $5 + 9$ ;  $15 + 9$ ;  $25 + 9$ ;  $35 + 9$ ; etc.;
- counting by 2's to 20; 3's to 30, etc. ... to 9's to 90;
- multiplication by 10 and 100; division by 10;
- multiplication and division by 3 up to  $12 \times 3$  and  $36 \div 3$ ;
- recall of the squares of numbers up to 10;
- addition of "higher decades" - i.e., grasping the equivalent of  $5 + 7$ ,  $15 + 7$ ,  $5 + 7, 5 + 17$ , etc.

There will be many 10- and 11-year-olds who will know all the addition, subtraction, multiplication, and division facts by immediate recall. A majority will have reached a standard of quick recall: this means that failure to remember facts such as  $9 \times 6$  can be overcome by recalling  $10 \times 6$  then subtracting 6. About one child in ten will have serious difficulty remembering; these children should use the addition and multiplication tables they have made for themselves.

Other considerations that must be taken into account in making decisions regarding the timing and type of practice in computation are listed below:

- Children should be encouraged to do simple calculations mentally, recording only the answers needed in written solutions to problems.
- The algorithms used should be appropriate to the level of understanding reached by the child.
- Algorithms are best understood when they are the outcome of successive refinements co-operatively determined by the child and the teacher.
- Children need to know an efficient method for performing each of the four arithmetic operations. To achieve this they will need practice, the frequency of which may range from once a day to once a month. This practice should employ various strategies such as games and competitions with individuals and small groups.
- To practise does not mean to *drill*; to practise means to *put to use*. Poorly chosen overpractice can be as harmful as too little practice, if it leads to boredom and a dislike of mathematics.

It is important that children who have difficulty in reaching an appropriate level of computational skill should not have their self-esteem threatened. The time needed for individual help and encouragement is more than compensated for by the confidence and enjoyment the children display when they do become proficient. Brief intensive periods of practice are often all that is needed, coupled with careful diagnosis of the level of response and error. In this way, the children who need it receive additional help and practice, while the others need not keep repeating what they have already mastered. Games and activities of many kinds can be used to motivate and organize individual and group practice and reinforcement.

2-068 Some children have addition and multiplication tables available for ready use.

1-111 Children do calculations mentally, recording only the answers needed in written solutions to problems.

1-112 Group computation games are used by children.

1-113 Individual computation games are used by children.

## Measurement

Measurement is a significant part of applied arithmetic; it links our physical world with mathematics using concepts such as number, order, correspondence, whole and part, unit, fraction, and scale. Much of early mathematics can be approached through measurement experiences with structural apparatus such as rods, or through the traditional counting of groups of objects. Children need both in order to understand and use their arithmetic. Mathematics permeates most areas of experience, and the chapters on Environmental Studies and the Arts include a great many activities that involve measuring.

The study of measurement can be conveniently separated into five stages:

### (a) Concept of Magnitude of Measurement

The concept of magnitude includes the development of an intuitive awareness of order in various kinds of measurement. *Long, longer, longest, short, shorter, shortest, hot, hotter, hottest* and similar terms comprise the introductory elements of measurement.

Because the importance of operational knowledge has already been stressed, it is useful to consider what children learn while playing and using toys and other materials in their environment. During these experiences the children see, hear, and feel, and so discover and remember different qualities for later reference. When words are available, children attach them to these qualities that they have abstracted.

Measurement begins in the experience of matching and comparing sizes — first length, then area, capacity, and volume. For example, children can compare the lengths, widths, and thicknesses of pieces of scrap material (these may be obtained from an upholstery or flooring company) and then match these measurements with objects in the room. They are interested in their own heights. The teacher can ascertain whether they have a firm understanding of length and measurement by checking whether they stand on the same base for measuring and whether they start from the same point in using a ruler. Children will realize early that they can measure around as well as across objects. They need to use string, ribbon, and rope for matching and comparing in a variety of situations.

We must realize that, though *big* and *tall* are reasonably simple ideas, the relationship contained in *more* is both practically and linguistically a difficult one for children up to age seven. The operation of measurement involves the concept of whole and part, which is basic to mathematics and is formed by children only through appropriate experiences in the early years of the Primary Division (four to six), when they are also learning how to differentiate *whole* and *part* in analysing words phonetically.

### (b) Arbitrary Units

The next stage involves the choice of an arbitrary unit. From the beginning of their school experience, children must have opportunities to develop more

Children develop the concept of magnitude of measurement by

- 1-126 - matching and comparing sizes; e.g. of length, area, capacity and volume
- 3-036 - experiencing activities involving the concept of whole and part.



appropriate and more precise referents. Understanding of the quality of length and other dimensions grows from visual or body comparisons to the use of a unit that has the same nature as the things to be measured. For example, once children can place lengths or areas in order of increasing size, they then need to determine the differences in size. For instance, how much longer is the second piece of material than the first? Here an arbitrary unit such as a block or tile can be used to find the answer.

**(c) Standard Units**

Soon the children realize the need for standard units. Group experiences in the classroom and elsewhere make it necessary to compare results and communicate with others.

**(d) Measurement Scales**

The need for a scale arises naturally when the child can handle the concept of whole and part. As a consequence of many experiences in measuring, both with arbitrary and standard units, the child discovers the convenience of using a scale. Instead of using the same unit over and over again to compare length or volume, it is possible to prepare a number line based on the selected unit. For example, the idea of a scale can readily be used in measuring volume when children calibrate a large plastic jug, marking a scale on masking tape fastened to the outside.

**(e) Competence in Measurement**

In the final stages of measurement, children should have an intuitive understanding of the standard units with which they must work. They should not only know the relationship between metres, centimetres, and millimetres, and between other related units, but should be able to estimate distances, volumes, and masses with some degree of success. There should be numerous opportunities for children to see and feel measurable quantities, to estimate their sizes, and then to check their guesses by actual measurement.

1-127 Children develop the concept of arbitrary units; e.g. by making visual or body comparisons as a unit of length.

1-128 Children use standard units to compare results and to communicate results to others.

1-129 Number lines based on selected units are constructed and then used in measurement problems.

To develop competence in measurement children

1-130 - see and feel measurable quantities

1-131 - estimate sizes of measurable quantities

1-132 - check the estimates of the measurable quantities.

## **Metrication**

### **Metric-Imperial duality**

The Canadian government has declared that metric conversion for the nation is inevitable and desirable. The Metric Commission in Ottawa is anxious to have young children in the schools become familiar with metric units of measure.

Over the next few years it is essential that children in the Primary and Junior Divisions become accustomed to the metric system to the point where it becomes their predominant and most natural way of measuring. Some references may be made to inches, feet, yards, and miles; to pints, quarts, and gallons; to ounces, pounds, and tons; to degrees Fahrenheit; but these occasions should gradually decrease. Metric units should receive the major stress. Some teachers may wish to discontinue the use of imperial units for all practical purposes; a continuous mixture of the two systems should certainly be discouraged.

In the final analysis it is essential that metric units become a very real part of the children's experience. Practice in estimating, measuring, and problem-solving can be enjoyable and exciting in the metric system.

## **Geometry**

Geometry is the natural language of spatial concepts and space relationships in the real world. Space is a basic human experience with which every child of every age must come to terms.

Infants learn about shapes through their eyes, the hand, the tongue, and the lips. As they start to move about, they begin to build an awareness of distance, direction, and elevation. The first words relating to space, such as *up*, *down*, *over*, *under*, have a quality of movement that is significant. Children establish *left-right* as a concept somewhere between four and eight years of age. By turning their bodies, children experience angle and rotation. The early years in school are vital in stimulating inquiry and experiment and in making possible the discovery of new spatial relationships and the development of new motor skills in relation to them.

The majority of objects that children see have recognizable geometric shapes. They see food containers that are cubes, cylinders, or cuboids; they see roofs that are shaped like prisms and pyramids. As children handle and observe various solids, they become aware of their properties. With experience and encouragement they will attempt to classify these in various ways. This can lead naturally to the use of such terms as *cone*, *cylinder*, *sphere*, *cube*, *cuboid*, *prism*, and *pyramid*.

Children need a variety of experiences in abstracting plane figures from solid objects; these should vary in size, shape, or both.

1-133 Metric units of measure are used in the classroom.

To facilitate use of metric units children

2-071 - estimate in metric units

2-072 - measure in metric units

2-073 - solve problems in metric units.

3-037 Children become aware of the properties of solids by handling and observing a variety of objects.

3-038 Children classify solid objects to become aware of such terms as cone, cylinder, sphere, cube, prism, pyramid.



Plane figures are first seen as faces of simple solids; later these faces can be traced on paper. In the next stage a study of regular polygons precedes the study of associated regular polyhedra, where they exist. There are many devices and models that encourage children to actively investigate ideas such as:

- convexity;
- interior and exterior;
- the relation between the number of vertices of a figure and the number of intersections of the lines joining the vertices;
- the number of line segments and number of regions;
- simple properties of symmetry.

Children may investigate line-symmetry through paper-folding activities or by examining images with mirrors or semi-transparent plastic. An appreciation of special lines such as bisector of an angle, perpendiculars, perpendicular bisector of a segment, and parallel can be achieved through line-symmetry. Later, ideas of rotational symmetry, point symmetry, and translational symmetry can be explored. Symmetry plays an important role in art and architecture, as well as in geometry and other branches of mathematics.

Similar figures have the same shape. Similarity is first introduced with three-dimensional models and later in two dimensional drawings. Similar figures can be obtained through size enlargement or reduction. Using measurement, relationships between similar figures can be determined and used in problems involving scale drawings.

Congruent figures have the same size and shape. By a slide, turn, or flip of a tracing of a figure or by combinations of these motions, new figures are obtained that are congruent to the original. Conversely, if two figures are congruent, a tracing of one can be fitted onto the other by means of a slide, flip or turn, or a combination of these. These ideas are intuitively obvious to children and lead them to a basic understanding of the properties of geometric figures.

When viewed as mappings, transformations (slides, flips, turns, and dilations) lead to a generalized approach to congruent and similar figures in space. Projecting a region of a geographic globe onto a flat surface is also a mapping idea. Projections that give the least distortion are a topic of vital interest in the production of maps.

*Co-ordinates in a plane* is a simple idea that can be introduced to young children. Once they are aware that two pieces of information are needed to fix a position (for example, "my coat is on the fifth hook in the second row") they can state the position of any point in the plane by measuring its distance from two reference lines. Children can profit from games such as battleship, tic-tac-toe, and others that involve locating a position by means of a pair of co-ordinates.

Children have a variety of experiences in abstracting plane figures from solid objects by investigating ideas such as

- 2-074 - convexity
- 2-075 - interior and exterior
- 2-076 - relation between the number of vertices of a figure and the number of intersections of the lines joining those vertices
- 2-077 - the number of line segments and the number of regions
- 2-078 - simple properties of symmetry.
- 1-134 Children gain experience in abstracting plane figures from solid objects by investigating ideas such as convexity, interior and exterior, simple properties of symmetry, number of line segments and the number of regions, etc.
- 1-135 Children investigate line symmetry through paper-folding activities or by examining images with mirrors or semi-transparent plastics.
- 2-079 The concept of similar figures is introduced with three-dimensional models and later in two-dimensional drawings.
- 1-136 Children study congruent figures by the sliding, turning or flipping of a tracing of a figure to produce new figures.
- 1-137 Children are made aware of geometric shapes.
- 1-138 Children play games such as battleship and tic-tac-toe that locate position by means of a pair of co-ordinates.

After points in the first quadrant have been named using whole numbers, integers can be used to locate points in the whole plane. Special cases of slide, flip, or turn images of figures drawn on graph paper can be described by mapping notations which indicate the correspondence of each point of the plane to its image. Simple algebraic relationships can be illustrated by means of a graph.

Many of the compasses and straight-edge constructions are rich in line-symmetry. The techniques of these constructions may be motivated through activities involving paper-folding or mirrors. Such constructions may also be performed with drafting instruments such as a parallel rules, set squares, or semi-transparent mirrors.

1-139 Children illustrate simple algebraic relationships by means of a graph.

1-140 Children investigate symmetry through the use of a variety of materials; e.g. parallel rules, set squares, semi-transparent mirrors.

## Chapter Five The Arts

The arts have always held a central position in the community life of older cultures, both primitive and sophisticated. Our society has, on the other hand, tended to treat the arts less seriously, especially in the context of the young child's learning experiences. In the instances when it did receive attention, education in the arts focused on analytical study, imitation, or, in the case of drama and music, performance. Only in recent years has the function of the individual imagination and self-expression through the arts been recognized as an important element in the child's learning.

The arts are entwined with children's thinking and feeling and their creative development. The arts can provide many opportunities for growth, both in self-expression and in the ability to respond to human emotions such as joy and sorrow, fear and wonder.

In the arts, growth and development are fostered through the freedom of an active imagination, the exploration of the inner self, the joy of responding fervently to the environment with all the senses, and the security gained from achievement and proficiency. All these entail a process in which most children are happy to join, that of exploring, investigating, and expressing what they think and how they feel about their environment. Children need little encouragement to look, listen, taste, touch, and imagine. They like to feel the textures and qualities of many different things and to create with wood, clay, metal, plastic, paper, wax, and a variety of other materials. In this way, children come to know materials by working with them. They become familiar with the properties of materials, and, by learning how to use them effectively, they discover their own gifts and limitations. Through free movement, they explore the qualities and power of their own bodies. Also, through this free movement, through singing, painting, inventing, and various forms of drama, including improvisation and mime, they deepen their perceptions of themselves and of their world.

Freedom to use the arts in their own way, so that they are able to participate fully and spontaneously in an experience, is important for children.

Pages 77-79 provide a rationale for the inclusion of the arts in the program at the primary/junior level. Specific activities are related on the pages following this introduction. Therefore no items were selected from these introductory pages for inclusion in the item pool.

They should be given opportunities to splash paint on easels, to move their bodies freely, to beat a drum — with or without rhythm. They should, however, come to learn that each of the arts has its own tradition, its own content, and its own disciplines and techniques. Creating a graceful dance movement or painting a picture may have aesthetic and emotional elements, but they also have an intellectual component. Children must experience all these elements if the arts are to contribute to other areas of the curriculum or to the children's own satisfaction in self-expression.

The teacher must strike a balance between child discovery and adult direction. It is vital that the teacher observe the children at work, intervene when necessary by providing further stimulus, introduce new materials, extend the techniques used, and encourage children to broaden their range of activities. It is also vital that the teacher know when to withdraw or refrain from intervention. The children's curiosity must not be destroyed by technique lessons unrelated to their particular needs. On the other hand, there are concepts in the arts that have to be understood if the children are to progress.

By providing stimulating experiences and the means through which they can be expressed, the teacher establishes an environment that is conducive to creativity. It is necessary, however, to consider the factor of time. The program must be planned in such a way that each child is given time to think about new experiences and to extend and develop them. Class periods of fixed duration rarely allow sufficient time for really creative work.

The arts program in schools is education through the senses, and sensory exploration should be an ongoing process. Small, frequently changed exhibitions of things, both man-made and natural, can provide visual, tactile, or olfactory experiences. Tables of musical instruments or materials left out for use will also help children to regard the arts as an integral part of their daily lives.

Inspiring rather than dictating, and discussing, sharing, and responding to the feelings and perceptions of children are of utmost importance. By creating situations in which processes in the arts can be examined in as many ways as possible, the teacher is providing the kind of guidance that will help the child grow in sensitivity and mastery.

Learning experiences may take place in many settings. They can occur at a museum, puppet show, shopping plaza, art gallery, food store, forest, zoo, brook, or concert hall. All of these yield opportunities for exploration in the arts.

The development of personal and creative expression is a major aim of the arts. The arts encourage divergent responses on the part of each individual. These are neither *right* nor *wrong*; they are alternative responses to a particular artistic concern. Because of this emphasis on personal, subjective criteria, rather than on uniform, commonly-held standards, it is important that evaluation in the arts be used as a method of encouraging judgement



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and self-evaluation. It should be a process shared by teacher and child and one that reflects mutually accepted objectives.

### Drama

Drama consists of *playing out* and talking about the stories of others and playing out and discussing the children's own stories. It has already been said in chapter 2, "Children and Learning", that children need to learn to see the world through other people's eyes. Through drama, children can extend themselves into another's experience, another's point of view, another's style of feeling and thinking.

In drama, all the children are involved at the same time, experimenting with the flow of thinking, the flow of language, and the flow of movement. This kind of spontaneous activity allows children the opportunity to live someone else's experience and then reorganize this experience to relate it to their own pattern of thinking; they can also pursue their search for new ways of communicating experiences to others and experiment without fear of failure.

Children can work in pairs or in small groups spread out about the classroom. At other times, the whole class may work as a single unit, each individual functioning as a part of the whole. Such situations (e.g., crowd scenes) should be used to involve all the children dramatically; even the shiest child has an opportunity to experiment with actions and words without embarrassment.

At all times, the children are *experimenting*, not preparing finished works for an audience - that is, they are not concerned with *theatre*. Theatre is primarily concerned with performing for an audience and it requires much experience in drama. When children are placed in performance situations, the point of view of the audience becomes the major consideration rather than the development of the children's own feelings and relationships.

#### Drama in education can:

- promote expression of all kinds;
- encourage the free flow of language;
- become a learning tool by integrating dramatic work with the learning process and content of other subjects;
- help children to work co-operatively in groups, sharing ideas and respecting each other's points of view;
- increase sensitivity and awareness of others;
- offer opportunities to exercise and channel emotions;
- provide practice in organizing ideas by giving children the opportunity to create stories for group improvisation;
- enhance listening skills, strengthen concentration, and generally refine the child's awareness of the process of communication;
- add enjoyment and realism to the child's experience with language;

- 1-141 Children participate in creative drama activities.
- 2-080 Drama is utilized as a learning tool by integrating it with the learning process and content of other subjects.
- 1-142 Drama provides practice in organizing ideas by giving children the opportunity to create stories for group improvisation.

- allow the child to explore one of man's oldest ways of expressing timeless truths and universal experience.

Although there are drama activities that may require a gymnasium or a large open space, the average classroom is ordinarily sufficient. In fact, it is important that the children come to associate drama with learning in the classroom setting. Drama is classroom learning.

Children can explore drama in the following ways:

**Spontaneous Play.** Toys and dress-up materials are the stuff of drama for young children as they play imaginatively in the play kitchen or doll corner. Such corners should contain toys, hats, "dress-up", puppets, dolls, props, and sets made by the children. In addition, small portable platforms (suitable for all ages) will permit children to work with vertical space. Suitable equipment can do much to promote social play and interaction. Props should be chosen for their dramatic potential, but should never be as explicit as to leave no room for imagination. A simple red cape, for instance, can become an apron, a bandit's disguise, or Little Red Riding Hood's cloak.

In addition to providing the time and the climate for this activity, the teacher should observe the ways in which children play with materials. Such observation reveals a great deal about previous experiences, feelings, and anxieties. Do the children consider a toy ukulele to be a weapon or a sound-producing object? Do they pretend to play it as an instrument? Do they elaborate on its use by making it part of a musical group?

The teacher must also judge when to intervene with a suggestion intended to stimulate play. What props should be added? What materials are inhibiting imagination and should be removed? Observation will help the teacher in planning drama lessons based on the children's experiences as well as in introducing them to new experiences through drama. The play corner is vital to the drama program; under the conditions outlined, it can provide the kind of atmosphere children need for uninhibited expression and experimentation with modes of communication.

**Movement to Sound.** Practice in moving to sound helps children to build their repertory of body movements. Appropriate activities may include:

- individual movement: each child moves independently in his or her own space and explores body movement as a means of expression;
- movement in small groups: children share a common space, influence each other's movements, and interact through movement;
- movement in large groups or as a class: children move to strong, simple rhythms.

**Movement based on Ideas (mime)** Ideas may replace sound as the stimulus for movement. Children try the roles of all manner of creatures, people, and

2-081 Children associate drama with learning in the classroom setting.

3-03> Toys and dress-up materials are used by children.

3-027 A play corner containing suitable props such as a simple red cape, toys, hats, is available to permit social play and interaction.

3-028 Small portable platforms are available to allow children to work with vertical space.

1-143 Children practice moving to sound through participation in movement activities in which each child reacts individually and moves independently in his or her own space.

1-144 Children practice moving to sound through small group activities in which children share a common space, influence each other's movements and interact through movement.

1-145 Children practice moving in large groups or as a class to strong simple rhythms.



objects. They dramatize their stories, dreams, angers, and despairs as they continue to explore their range of movement.

**Speech** The growth of oral expression is a major factor in helping children learn to read and write. Speech may be fostered by discussion or role-playing undertaken as a class, in pairs, individually, or in groups. The children experiment with language for many purposes; activities might take such forms as playing with sounds, playing with words, describing, defending, persuading, comforting, instructing, reporting factually, and communicating emotions.

**Speech combined with movement** These two aspects of drama can be combined in several ways; for example:

● **story dramatization** in which the children, working in groups, play out familiar stories, using their own words and movements. The plot of the story is followed, but the children supply the details and dialogue. They might also explore events that might presumably have taken place before and after the story. They can change the locale, the time, or the mood; they can ask, *What would happen if . . . ?*

● **improvisation** in which the children, working in groups, play out their own stories. These might be based on ideas derived from picture books, poetry, games, literature, film, sound effects, music, slides, or created objects.

**Interpretation of the printed word** Poems, situations, dialogue, or action verse, plays, skipping games, nursery rhymes, and direct narration—all these can become vehicles for the imagination as the child interprets what they mean, how they were spoken, and how the listener is affected by them. Methods for classroom drama might include choral dramatization, group oral reading, circle theatre, playmaking (without an audience), vocal jazz, and puppetry. At the end of each oral and dramatic experience, time should be provided to allow the children to calm down after the stimulus of dramatic activity. Moving in slow motion to quiet music or sitting together to listen to a story related to the dramatic experience are excellent ways of accomplishing this. Equally important are opportunities for discussion, for listening to music, or for expressing some part of the experience in clay, paint, fabric, or words.

The work in drama is cumulative. If ten-year-olds have had no previous experience with this way of learning, then they must begin in the same way as six-year-olds. Each day's activity will, in large measure, be determined by the work done on the previous day. Always, the teacher will have to observe, analyse, and evaluate in order to structure experiences that will be truly developmental and that will encourage concentration, awareness, and sensitivity.

Activities must suit not only the environment but the teacher's ability and the children's stages of development. At all times, the activities must allow children to create for themselves, not lead them to imitate the teacher's ideas.

- 2-082 Children are stimulated in movement activities by a variety of roles, ideas and emotions.
- 1-146 Children become involved in speech activities such as describing, defending, persuading, comforting, instructing, reporting, factually and communicating emotions.
- 1-147 Children participate in story dramatization where they improvise and play out their own stories.
- 1-148 Children retell familiar stories using their own words and movements.  
The following methods of classroom drama are used:
- 2-083 - choral dramatization
  - 2-084 - group oral reading
  - 2-085 - circle theatre
  - 2-086 - playmaking (without an audience)
  - 2-087 - vocal jazz
  - 2-088 - puppetry
- 2-089 Children have time to calm down at the end of each dramatic experience through such activities as discussion, listening to music, or expressing some part of the experience in clay, paint, fabric or words.
- 1-149 Some of the following are used by children as vehicles to extend the interpretation of the printed word; poems situations dialogue, action verse, songs, plays, skipping, games, nursery rhymes and direct narration.
- 2-090 Drama activities are cumulative in nature; they build on previous activities.
- 2-091 Drama activities allow children to create for themselves rather than cause them to imitate the teacher's ideas.



The teacher may provide the stimulus for dramatization, but the children must be allowed to work out what will be realized and how. A very subtle balance has to be achieved here. As the children become more experienced in drama, they will require less guidance.

A drama lesson might last five minutes or it might continue for several days, depending on the depth of the activity. In any activity, there are many tempting aspects to be explored; the teacher must decide how to maintain a balance with the rest of the program.

Drama can be integrated with many parts of the curriculum. For example, the children's understanding and appreciation of other cultures is increased by dramatic exploration. When expanded through drama, stories of pioneer life or newspaper items take on new meaning through movement and dialogue, feeling and form. Learning factual content is not the aim of drama; the thoughts and feelings of people are the focus of concern.

Items are selected from pages 82 and 84 relative to the content of this page.

Drama should not be thought of as just another subject to be added to an already busy schedule, but as another means of permitting children to investigate and learn about the world.

### Music

In musical experience, as in any other, children will discover and explore, manipulate and rearrange, create and evaluate, and heighten their awareness of and sensitivity to themselves and others. The special contribution of music is its power to evoke and stir, as well as express, human emotions and moods.

In every aspect of the musical experience, children should be participants and not merely onlookers. They should have the opportunity to hear the music of other times and places as well as of today.

Sounds in the classroom and in the out-of-doors all have potential as musical media; they can be used to give expression to human feeling in the same way as voices and instruments.

To cultivate a child's aural sensitivity is to develop and refine one of his important tools of discovery. The music program develops aural sensitivity through its focus on *singing, playing, creating, discovering, and listening*.

Just as these components of the music program are frequently inseparable, so too is music frequently an integral component of other areas of the school program. All are natural allies in helping the child to grow. For example, where music is combined with movement and drama, there are opportunities not only for creating music, but also for providing children with a wide range of musical styles for use with movement or drama.

In addition, work in rhythm assists some children in developing such apparently unrelated abilities as reading and movement. Conversely, Physical Education activities may enhance both the variety and quality of the movement responses that a child can make to a piece of music.

### Singing and Playing

The major vehicle for making music in the Primary-Junior years is the voice, the child's own musical instrument. The teacher must provide children with opportunities to sing in an easy, natural way, to express the music that is within them, and to build up an awareness of songs of various times and places and of different styles and idioms — everything from nursery rhymes to contemporary folk songs.

Most children like to sing and if they are given frequent opportunities to do so, most of their difficulties with pitch and tone will disappear. In the beginning, teachers should not expect conformity of melody and rhythm from all children. Unison singing will emerge gradually as ears are trained to listen and voices to respond.

- 1-150 Children hear songs of other times and places as well as of to-day.
- 2-092 The focus in music is on singing, creating, playing, discovering and listening.
- 1-151 Children have an opportunity to sing together in an easy, natural way.

The experience of learning new songs, and, for some, the joy of finding their singing voices for the first time, are often the beginning of a lifelong involvement with music. Singing also enables children to experience the demands and rewards of collective effort. Singing with others is one of the timeless, universal forms of sharing emotions and experiences with others.

For teachers who have the background, singing is probably the most appropriate time to introduce some concepts of music in a natural way, as part of the information the children need to know about a particular song. Teachers who are less experienced in formal music terminology can communicate musical concepts by using such simple vocabulary as *softer, louder, smoothly, brightly, slower, or faster*.

#### Instruments

Many musical instruments are suitable for use by children in the Primary and Junior Divisions: these include Orff instruments, cymbals, tone bars, glockenspiels, tambourines, drums, autoharps, metallophones, recorders, and castanets. Lack of funds for this kind of equipment need not inhibit exploration of music through instruments. The teacher can provide much exciting, creative work with *found instruments* such as brake drums, bottles, pails, and corn husks. These and other objects like them can be struck, scraped, shaken, or blown as children explore them for their sound-producing potential and use them to accompany songs or to create small-group compositions.

The tape-recorder is also a versatile instrument. For example, sound textures picked up by the microphone can be replayed at different speeds. Interesting sound collages can be produced by cutting and splicing the tapes.

#### Listening and Discovering

When a child listens and discovers meaning in music that composers have made, in compositions and sounds that he himself has made, and in sounds that he picks up at random from the environment, valid learning situations are created. Such listening requires the active participation of the child. Some activities designed to help teachers stimulate children's creative responses to listening are listed below.

- Encourage children to move freely in response to the music. *What does the music suggest to you? Try out different ways of moving to it. Discuss with a partner how you could move to the music together. Talk about it afterwards. In groups, create a pantomime story suggested by the music.*
- Invite professional musicians to perform at the school, demonstrate various instruments, and discuss their music with the children.
- Ask the children to respond to voices and instruments by identifying them as *light or heavy, sad or gay, blue or red*.
- Set up a sound interest centre where children can exhibit, share, and explore interesting sound materials (pitched and unpitched).
- With the children, carry out sound inventories of spaces (the room, the

1-152 Instruments such as cymbals, tone bars, glockenspiels, tambourines, drums, autoharps, recorders, castanets, are used.

1-153 Found (improvised) instruments such as brake drums, bottles, pails, corn husks, are used in the classroom.

Children's creative responses to listening and discovering are fostered by

2-093 - encouraging children to move freely in response to music

2-094 - inviting professional musicians to perform at the school, demonstrate various instruments and discussing their music with the children

2-095 - asking the children to respond to voices and instruments by identifying them as light or heavy, sad or gay, blue or red

2-096 - setting up a sound interest centre where children can exhibit, share and explore interesting sound materials



hall, the home, any place visited on field trips). Make value judgements on these acoustical environments. *How could we change them?*

- Invite students from neighbouring secondary schools to share their music with the children; the children might share their music with the secondary school students.
- Invent sound games that allow and encourage children to explore the sound potential of an object or the use of sound to give signals.
- Let the children experiment to find out how many sounds they can make with an object; then explore with them how these might be used. Use the objects as puppets and experiment with interaction.
- Set up situations where children can classify sounds in different ways. What sounds are natural? What sounds are man-made? The children can record them, compare them, and discuss. *List all the sounds you can make with a garbage pail. How were they made (scrapping? banging? blowing?)? How did this affect you?*

Much of the listening program will probably involve the use of recordings, either tapes or records. These might be shared with the whole class or set up with headsets for individuals to use when they wish. Tapes of school broadcasts might also be useful.

#### Creating

Playing with sounds, arranging them into significant or interesting patterns, is the essence of the musical process. It provides a challenge to the child's intellect and imagination, helps him or her to become more aware of the process through which a composer works, and gives opportunities for self-expression and exciting experiences in sound.

Using instruments from the sound centre, a group of children can create a sound event (composition) that describes the mood of a story they have read. An enchanted forest can be brought to life as each child contributes a sound to the group montage. Later, the children might attempt to differen-

- 2-097 - carrying out sound inventories or spaces; e.g. hall, room, home, any place visited on field trips
- 2-098 - inviting students from neighbouring secondary schools to share their music
- 2-099 - inventing sound games that allow and encourage children to explore the sound potential of an object or the use of sound to give signals
- 2-100 - letting the children experiment to find out how many sounds they can make with an object
- 2-101 - setting up situations where children can classify sounds in different ways.
- 1-154 Recordings are used; e.g. tapes, records.

tiate the sounds that would be made by sumachs, birch, spruce, and pines. Eventually, each child can assume responsibility for one tree sound and the group can compose a sound collage entitled "A Journey Through the Forest".

If the environment, opportunities, and materials for creative music activities are present, most children will experiment freely and easily. Here are some sample activities designed to encourage experimentation:

- inventing sound conversations between different objects: *how does a corn husk communicate with a glockenspiel?*
- drawing pictures of sounds and sharing the pictures: drawing pictures of unheard but real sounds and playing guessing games as to what sounds they represent;
- making charts (graphs or scores) of the children's own compositions or of short compositions they have heard; exchanging charts and performing each other's charts;
- making up a tune for a given poem, using two notes, then three notes, then four notes;
- carrying on normal conversation through simple invented tunes.
- playing singing games; inventing singing games with the class.

Opportunities to match, make and manipulate sounds can provide experiences that will deeply enrich the child's appreciation of and response to himself and the world around him.

#### Physical Education

In Physical Education, the focus is on the significance of movement in the growth and learning of children. The child's bodily movement is the means through which he or she can immediately respond to the environment and explore it. Children are constantly trying out their normal range of bodily actions as they work towards fluency in movement; in the course of this process they learn a great deal about themselves and their innate abilities. In their desire to exploit these personal discoveries, they often prove inventive in attempting new and original feats. This inventiveness can be encouraged by an observant and sympathetic teacher.

Physical Education uses movement as the child's medium of self-expression. Creative movement can give expression to children's imaginations and can contribute to learning when combined with music, drama, and the visual arts. Stimuli for such integration can come from many sources: the seasons, the elements, and other natural phenomena; observation of such movements as flying, soaring, and wheeling; textures and shapes in natural materials and sculpture; costumes, songs, and dances of different cultures; sounds of trains, of water, and of bells; body sounds - clapping, slapping, breathing, stamping, shouting, percussion instruments, home-made or manufactured; and recorded music.

In attempting to express their feelings and moods through movement, children make a natural transition into the realm of dance. The body be-

Experimentation in creative music activities is encouraged by

- 2-102 - inventing sound conversations between different objects
- 2-103 - drawing pictures of sounds and sharing the pictures
- 2-104 - making charts (graphs or scores) of the children's own compositions or of short compositions they have heard, exchanging charts and performing each others' charts
- 2-105 - making up a tune for a given poem, using two notes, then three notes, then four notes
- 2-106 - carrying out normal conversations through simple invented tunes
- 2-107 - playing singing games, inventing singing games with the class.

1-155 The focus for Physical Education is the child's bodily movement as he or she explores and responds to the environment.

1-156 Creative movement is combined with music, drama and the visual arts to give expression to children's imagination and to contribute to learning.

The integration of Physical Education with other areas is fostered by utilizing such sources as:

- 2-108 - the seasons, the elements and other natural phenomena
- 2-109 - observation of such movements as flying, soaring and wheeling.
- 2-110 - textures and shapes in natural materials and sculpture
- 2-111 - costumes, songs and dances of different cultures.
- 2-112 - sounds of trains, of water and of bells
- 2-113 - body sounds - clapping, slapping, breathing, stamping, shouting
- 2-114 - percussion instruments, home-made or manufactured
- 2-115 - recorded music

comes an instrument of communication and expression, of beauty and grace. Children explore the quality of movement as they do the quality of texture, colour, or sound.

If imagination is encouraged and sensitivity to ideas and feelings valued, the child will be encouraged to strive for the kind of concentration that intense, sincere expression demands. In this way, a child can be helped to understand his or her own feelings and to use expressive movement as a controlled outlet for such emotions as surprise, awe, alarm, fun, wonder, fear, sadness, happiness, anger, and joy.

The teacher guides the child's proclivity for action into directions that will be of benefit to him or her now and in later life. In the Primary and Junior Divisions, children need to develop versatility rather than concentrate on specific skills; this implies a wide range of activities such as gymnastics, games, swimming, dance, and drama, with ample time provided for practice, repetition, modification, consolidation, and application. A sensitive guide will give intelligent direction at the appropriate moment to help children extend their skill, gain confidence, appreciate their own unique attributes, and know their limitations.

The skills of Physical Education often develop from free play. For example, children who have had experience in using balls of various sizes and weights will eventually be able to use them in a wide variety of structured situations.

Any play with equipment such as bats, balls, and targets, incorporating techniques such as *guard and dodge* and *out-playing opponents*, develops the dynamics of more formal games. The gradual increase in complexity, whether with reference to the degree of co-operation needed, as in team games, or the degree of competition involved, as in athletic running, must be developed sensitively and sensibly.

Climbing, swinging, jumping, and rolling provide endless opportunities for developing skill and control of personal response. Purposeful and imaginative action results from floor activities and apparatus work. Body management also grows through the use of games equipment and group work. Body control contributes to a positive self-concept which will have an important bearing on future learning.

There are several ways of organizing concepts related to human movement. The following analysis of some concepts may be of help to teachers planning themes or units of work.

*Body awareness* focuses on the movement of individual parts of the body and the whole body in relation to the use of the parts: parts moving, parts supporting weight, parts prepared to receive weights, transfer of weight.

- 2-116 Rather than concentrating on a few skills a wide range of activities such as gymnastics, games, swimming, dance and drama with ample time for practice, repetition, modification, consolidation and application is provided.
- 1-157 Skills are developed from free play activities.
- 1-158 Children climb, swing, jump and roll to develop skill and control of personal response.
- 1-159 Floor activities and apparatus work are used to develop purposeful and imaginative action.
- 1-160 Games, equipment and group work are used to develop body management.



parts initiating and leading movement, parts moving in succession or simultaneously in action, and parts that stretch or bend or twist as in extension, flexion, and rotation.

Basic action tasks: skipping, spinning, running, walking, rolling, stepping, balancing, travelling, pulling, pushing, bending, and jumping are natural means for focusing the attention of the children on individual parts of the body as well as on the use of the whole body.

**Space.** Spatial organization of movement relates to activities that focus on *personal space* and *general space* (near and far, close and distant, beside, behind, above, below, under, over), *levels* (low, medium-normal, high), *directions* (forward, backward, sideways), *pathways* (curves, straight lines, zig-zags, diagonals), and the *shape* of the body.

**Quality.** Qualitative aspects in movement relate to the way the body is moving in terms of weight, time, space, and flow. These aspects can be developed through movements that focus on pace and time (fast and slow, sudden and sustained, sharp and unhurried), force and weight (firm and light, strong and fine, forceful and delicate), freedom or restraint (fluent, continuous, or controlled), and spatial economy (direct, undeviating, and straight, or flexible, roundabout, indirect, and generous).

**Relationships** are built as movement occurs. A child's body parts relate to one another in a variety of ways; the moving body can also meet and part from other individuals and apparatus such as balls, targets, hoops, benches, and mats. The size and shape of the room or play area also affect movement: adapting and adjusting action to these factors is a very important part of a child's growth and development.

These are only four of many concepts involved in Physical Education. These four, related to one way of structuring a program, are recognized as being particularly appropriate for children in the Primary and Junior Divisions.

By drawing attention to the various factors that affect movement at the appropriate time, the teacher can attend to the needs of individual children, of small groups, or of the whole class. A rich and satisfying vocabulary of movement can be built as isolated actions are expanded, varied, contrasted, and put into sequences. Education through movement relies on repetition, building of patterns, development of movement memory, and refinement of skills. Awkwardness is eradicated, transitions are smoothed, and dull, colourless sequences take on new excitement and colour through the addition or rearrangement of apparatus, sound stimuli, learning groups, or other challenges.

Movement activities in Physical Education are used to develop

- 2-117 - body awareness; i.e., body parts involved in movement
- 2-118 - body awareness, basic body actions such as skipping, spinning, running, balancing, bending
- 2-119 - space awareness; i.e., personal space, general space, levels, pathways, directions
- 2-120 - quality awareness; i.e., weight, time space and flow
- 2-121 - relationships; i.e., balls, targets, hoops, benches, mats.



### Visual Arts

Expression in Visual Arts might be defined as a personal reaction to experience expressed in organized form or design. Such expression comes naturally to children even prior to the use of coherent language. They scribble, draw, and paint long before they read and write.

Through their art, children communicate their attitudes and feelings towards themselves and their environment. The starting point for any such creative activity is the child's personal experience, real or imagined. Each child's approach to experience differs somewhat from that of his or her fellows, and therefore even similar situations are perceived differently. If children are to express their personal reactions to experience effectively, they must become acquainted with the media of art and learn to handle them with a degree of skill. Skills and techniques should be introduced naturally and functionally in response to the child's curiosity or need for a particular tool of expression. Children may not ask overtly for help or even realize precisely what they need, so that the teacher will often have to rely on intuitive judgment to uncover the problem or need. In communicating the appropriate technique or the information required, the teacher should rely on example, imitation, and discussion, and include analysis only as needed. At the same time, the teacher must avoid interference with the child's interpretation and design.

Since both interpretation and design are linked to visual awareness, the teacher must provide opportunities that will help the children to become more visually aware. Activities for this purpose can be as simple as noting, sketching, and recording examples of line, shape, or texture while taking a walk around the block or schoolyard. Perceptions can be further heightened by the use of cameras or cardboard viewfinders that enable children to look at familiar objects or landscapes from a fresh point of view. Adopting a visual theme, such as *patterns of nature*, is another way of encouraging children to look from a different perspective. Activities for such a theme might include

The material on page 90 provides an introduction to the section on Visual Arts. The application can be found on pages 91 and 92. Thus the items are selected from pages 91 and 92 as opposed to page 90.

peering through a magnifying glass or microscope at cells or crystals, examining patterns on a moss-covered rock, and searching for shapes in eroded, hardened clay or for linear rhythms in plant growth or trees.

As children participate in this kind of investigation, they come to understand that visual structure and design are an integral part of the total environment, both natural and man-made; for example, they become aware of the silhouette of a cedar, the arch of a bridge, the graceful line of a Georgian house, or the functional beauty of a modern chair. Such awareness will become the foundation of aesthetic sensitivity in later life.

Older children in the Junior Division may be helped to look at design features in the familiar things around them: toys, classroom furniture, packages, clothes, landscaping. They could make models and sketches, and evaluate and compare. These activities may generate value judgements with regard to shape, texture, and colour.

The younger children design more from intuition than from knowledge. They react sensually, think visually, and approach each new experience with a freshness of view that the teacher must seek to retain and develop. Older children, however, can be helped to look at their own work more objectively and to assess composition, arrangement, balance, and attractiveness of colour.

The materials used by children for creative activity should include the most contemporary media as well as the more traditional ones. Indeed, as in all the arts, one purpose of such activity is to provide children with experiences involving a variety of materials, so that they may learn about the particular characteristics of a medium by solving practical and creative problems.

Materials, therefore, should include not only the usual pencil, chalks, paints, and crayons, but also media such as oil pastels, dyes, stains, paints (poster and acrylic-based tempers), and cameras. For creative stitchery, wool, raffia, and other fibres might be used. For three-dimensional work, materials might include string, wire, cardboard, woods and wood products, metals, expanded plastics, packaging products, and modelling materials. Other resources might be stones, toothpicks, used paper, containers, and other materials the children can find in their own environment. Such experiences may require a construction area with workbench, hand-tools (saws, hammers, files, rasps), measuring tools, and associated hardware, including nails, woodscrews, nuts and bolts, and other fasteners. Even though the whole class may be working on a common theme, each child should have access to the materials and the medium that he or she prefers to use.

The teacher's role is to assist and encourage children to see the possibilities of each material and to explore it with all their senses — to feel it, stroke it, smell it, and experiment with it to discover whether it will bend or break,

- 3-103 Children are helped to look at design features in familiar things around them: toys, classroom furniture, packages, clothes, landscaping.
- 1-161 Children make models and sketches, evaluate and compare familiar things.
- 2-122 Contemporary art media is available.
- 2-123 Traditional art media is available.
- 1-162 Each child has access to the materials and the medium that he prefers to use.
- 2-124 Activities are provided involving a variety of materials.

spring or snap, fly or flop. Can it be cut or drilled, painted or glued? Children need to develop techniques that enable them to improve their personal expression and to extend their sense of control and response to materials.

Some of the stimulus for expression will spring from the materials used, some from Visual Arts activities, and some from activities in other areas of the program. In the Primary years, children tend to choose topics related to home, family, school activities, play, seasonal activities, and special occasions. By the Junior years, their knowledge of the world has grown immensely and they may turn their creative abilities to the interpretation of real experience or the representation of imagined experience (adventure, exploration, distant times and distant places, the future).

Prime emphasis should be given to the *process of creating form* out of materials and to the *process of communicating*, rather than to the *products of creation*. Children may wish to discuss and explore what they consider important in their work. Continued encouragement to talk about interesting themes, materials, and finished works is preferable to passing judgement (let the child pass judgement). The children should also be encouraged to develop an art vocabulary they can understand and to use such words as *texture, balance, and rhythm*.

Children may also look at and compare the design and function of tools and processes used in art and industry. Classroom print-making may stimulate a visit to a printer; the construction of wooden models may lead to a visit to a cabinetmaker.

A child's work should never be exhibited against his or her will or for purposes of comparison or competition. The manner in which the child's work is displayed reflects the teacher's respect for an individual's effort.

Displays should be changed frequently and each child should have his or her work represented from time to time. The children should be encouraged to arrange their own displays, for display arrangement is, itself, a form of design.

Displays should also include original works by professionals. It is vital that children be involved in a rich variety of art forms and that they be given opportunities for personal contact with artists who are creating in their local communities. Such professionals and other volunteers can enrich the arts program of any school. In this manner, the children are continually allowed the opportunity to see the relationship of their own creative activities to the possibilities in the environment and to the creative activities of adult artists.

- 2-125 Each child is encouraged to arrange his or her own displays.
- 2-126 The original works of professionals are displayed and discussed.
- 1-163 Children develop personal techniques that enable them to improve their personal expression and extend their sense of control and response to materials.
- 2-127 The stimulus for expression springs from various areas of the program.
- 2-128 The focus is on the process of creating form out of materials and communicating, rather than on the products of creation.
- 2-129 Children are encouraged to examine and explore what they consider important in their own work through discussion of interesting themes, materials and finished works.
- 2-130 Children develop an art vocabulary so that they can use such words as texture, balance and rhythm.
- 2-131 The decision to display art work is left to the child.
- 1-164 Children meet artists from local and distant communities.
- 1-165 Children compare the design and function of tools and processes used in art and industry.

## Chapter Six Environmental Studies

In the Primary and Junior Divisions, the world with which the child is familiar is used by the teacher as a basis for the development of values, attitudes, concepts, and skills. This involvement with the environment is of prime importance; it stimulates children to communicate because they want to tell others about their experiences and it impels expression in the arts because children want to interpret their experiences through a variety of media.

In Environmental Studies, the focus is on certain aspects of the total environment: the social, biological, and physical relationships of the child's world in time and space.

The general aims for this area of children's experience are:

- to acquaint children with their social and scientific environment so that they may see something of the nature of its parts, while also comprehending something of its patterns as a whole;
- to help children acquire the information and the skills they will need to live and prosper in a multicultural society;
- to build foundations for informed and rational attitudes and decisions;
- to use the enthusiasm generated by active investigation of the environment to stimulate other aspects of learning;
- to lead to a reasoned knowledge of and pride in Canada.

Ideally, children should feel part of their environment, both social and physical. They will gain dignity from the knowledge that they are part of the continuous flow of history, individuals whose actions are reflected, in however small a way, in the geographical and cultural setting in which they live. Each child must retain his or her identity in and loyalty to his or her own culture, yet achieve full citizenship in the diverse Canadian community.

1-166 The teacher uses the world with which the child is familiar as a basis for the development of values, attitudes, concepts and skills.

1-167 Children investigate the environment to stimulate other aspects of learning.

Through Environmental Studies, the child can perceive, understand, and evaluate relationships within the environment; among these relationships are:

- the relationships among people - e.g. social groups and communities, customs, and institutions;
- the relationships among things - both natural and man-made - e.g. the relationship between weather and erosion or that between machinery and air pollution;
- the relationship between people and things - e.g. the relationship between the quality of life and the automobile;
- the relationship of the child to the previous three and to himself or herself.

One part of the child's life is his or her inner self; the other part is the external world of people and things with which he or she is familiar. The teacher's role is to expand the horizons of the child's external world and to provide help and guidance in the process of interpreting and organizing experiences. Out of personal perceptions of the relationships among people and things and attempts to find patterns of orderliness, the child builds individual concepts of the world.

It is the teacher's responsibility to help the children extend and organize their own questions and interests; in addition, the teacher must create situations or construct devices that will stimulate purposeful first-hand investigations. In both cases, the teacher must organize the necessary resources and make them accessible. There will be occasions when he or she must be prepared to admit ignorance or partial knowledge and search for answers with the children. The teacher and children become learners together, demonstrating that there is nothing wrong in not knowing as long as one is trying to find out.

Especially at the beginning of an investigation, children need the chance to handle materials freely. Explanation and instruction are given only when appropriate. Children need the chance to risk making mistakes without penalty. Allowed opportunity and time to explore, they are more spontaneous and produce individual variations in observations and response, thus gaining in self-confidence and creativity. The teacher must make time for this crucial aspect of learning.

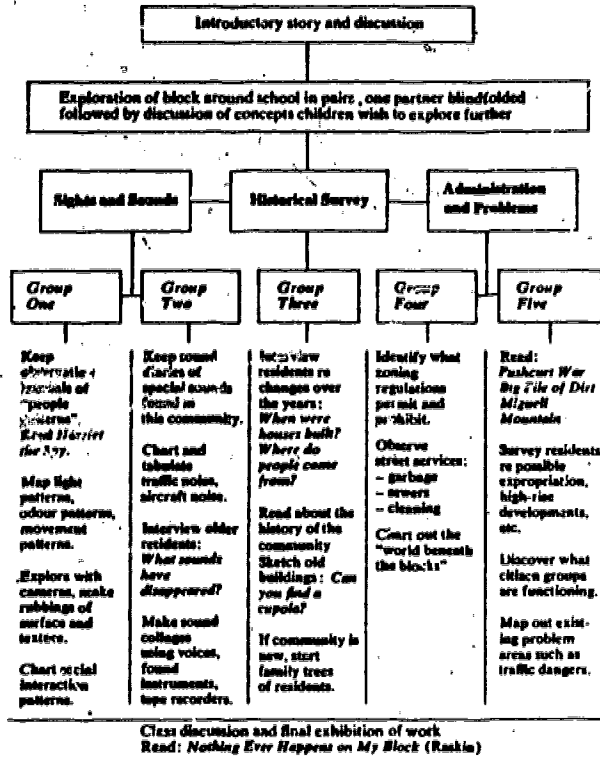
Free exploration will also provide the teacher with clues to the children's interests and needs. Children provide similar clues as they explore the environment, as they interact with people, and, more directly, as they make their own lists of familiar but puzzling things.

Since the interests of children can vary considerably in the exploration of a topic, there will be a tendency for the learning paths of a class to branch out in different directions. As illustrated in the chart on the opposite page, one child follows one path, his fellow another; each trying to impose order and form on the disparate information that he or she acquires. The teacher

- 2-133 Each child is encouraged to impose order and form on acquired disparate information.
- 2-173 The teacher picks up clues to the children's interests and needs as they freely explore their environment.
- 1-174 Children are allowed time for exploration.
- 1-175 Children handle materials freely.
- 2-134 The teacher makes a variety of resources accessible.
- 2-135 Children make mistakes without penalty.
- 2-136 Explanations are given only when appropriate.
- 2-137 Instructions are given only when appropriate.
- 2-138 Children produce individual variations in observation and response.
- 1-176 The teacher utilizes questions to reflect and reconsider hasty conclusions.  
Children perceive, understand and evaluate relationships within the environment:
- 1-168 - relationships among people; e.g. social groups and communities, customs and institutions
- 1-169 - relationships among things, both natural and man-made; e.g. relationships between weather and erosion
- 1-170 - relationships between people and things; e.g. between the quality of life and the automobile
- 1-171 - relationships between themselves and the environment.
- 2-132 The teacher creates situations and constructs devices that stimulate purposeful first-hand investigation.
- 1-172 Learning paths of a class branch out in different directions and children are allowed to follow their own interests.

should act as a balance and, through questioning, encourage reflection and reconsideration of over-hasty conclusions.

**Exploring Your Block**



Page 95 presents a framework for initiating and conducting a neighbourhood study. Therefore no items were selected from this page.

It may be helpful for the teacher to bear in mind the disciplines that adults consider relevant for a particular topic. These can serve as points of departure and guides to content, thus helping to balance the areas of learning. It is important to realize, however, that the children do not think or ask questions in terms of traditional subject categories.



#### **Mental Development: Implications**

The mental development of some children in the Primary years will still be in the transitional stage from intuition to concrete operations. Children at this stage, while unable to think about or imagine the consequences of an action they have not actually carried out, are happy asking questions, handling materials, and collecting things for observation. The teacher can help children begin to be aware of concepts such as change: to notice that yesterday the bean plant was as high as a ruler but today it is higher; that water freezes and becomes ice which can melt and become water again. The teacher can help children to make use of all their senses, to notice, not only real differences, but also apparent differences in shape and size as the position of the observer changes. Classification at this stage is limited to easily observable characteristics: *big/little, hard/soft, red/yellow*. Through the care of plants and animals, the teacher can help children become sensitive to the different needs of living things and to the possibilities of cruelty to them, whether intentional or not.

As children move into the early stage of concrete operations, they demonstrate an ability to manipulate mentally those objects they have manipulated manually. Their increasing desire to find out things, to participate, and to add to their growing command of words can be used to foster awareness of the structure and form of living things and of changes in those forms with time. The teacher can challenge the children's growing ability to predict the effects of a particular change and to formulate notions of the horizontal and vertical, of length and substance, of speed and distance. This process makes children aware of the need for measurement, of the role of force in causing movement, and of the possibility that more than one variable may be involved in a particular change. As their own skills in manipulating tools and materials grow, the children can be helped to appreciate how man's way of life has changed historically through his growing ability to utilize other-living things, to create tools, and to pass on his knowledge through books. Gradually, they come to see that the properties of materials have influenced their use, and thus come to understand how the particular uses of various resources have been determined. These activities foster both their growing skill with words - in recording information and impressions - and their ever-widening concept of the world around them.

Most children in the Junior years will be well into the later stages of concrete operations. They are feeling the power of their own mental manipulations and of their growing ability to deal with variables and to solve problems in more ordered and quantitative ways. At this age, most children enjoy observing objectively and examining critically; they like testing ideas and investigating ambiguity. This helps the teacher to provide opportunities for the development of such concepts as conflict, culture, interdependence, conservation, length, area, and volume, mass, time, temperature, speed, and force. Little by little, they perceive patterns: the structure-function patterns of their own bodies, the interdependence of living things, man's impact on

The mental development of children in the primary years is discussed on page 96. This material provides the principles to be considered when planning programs and selecting activities for children of this age. The actual activities are described on the preceding and following pages.

the environment, the relation of the form and structure of materials to function and properties.

They begin to distinguish between observation and inference and to find satisfaction in making predictions and inferences based upon their own past observations. For many children at this stage, confidence in their growing skills is so important that much of their time out of school is spent model-making, experimenting with games of chance, and playing with puzzles and riddles.

#### **Inquiry Skills**

A few children in the Junior years will have reached the stage of transition from concrete operations to abstract thinking (formal operations). Their increasing ability to deduce, to estimate, to hypothesize, and to manipulate mentally without prior manual manipulation becomes apparent to the teacher through their frequent use of analogy to explain a point. These children will want to make more use of secondary sources, such as reference materials, and need opportunities to do so as they come to recognize the social and scientific consequences of man's activities. However, they still need many concrete experiences if concepts are to be fully developed and understood.

Information from secondary sources is of greatest value when it can be integrated with recent first-hand experience. As the child seeks to find information from secondary sources, other related skills need to be developed: interpreting pictures, charts, and texts; checking information for accuracy and reliability; examining conflicting evidence; drawing reasonable conclusions. Children in the Junior Division need guidance in developing the techniques involved in taking useful notes from reference materials. They should be helped to plan their investigations and to formulate questions specific enough for investigation. They should be helped to locate the main point in a paragraph and to identify, within a paragraph or a book, the particular fact or theme that they are seeking.

They need guidance in preparing lists of facts and topics and in comparing sources when gathering information. They should not be permitted simply to copy paragraphs from sources. Initially, they should be asked to select a main point, explain it orally or in any other form, and then rewrite the information in their own words. Similarly, while participating in out-of-classroom experiences or in investigations in the classroom, children should acquire the habit of listing facts, measurements, and observations which they can later use to build a story, a description, or an exposition.

#### **Reporting Skills**

The techniques used to communicate or report experiences may be extremely varied. For young children, verbal expression will be of tremendous importance. However, if they are to make effective use of notation and records as they mature, they need to experience reporting in a variety of forms (visual, oral, graphic, written). These reporting skills should be closely

3-104 Children use secondary sources such as reference materials.

As the child seeks to find information from secondary sources, related skills need to be developed. To accomplish this children:

3-072 - interpret pictures, charts and texts

3-073 - check information for accuracy and reliability

3-074 - examine conflicting evidence

3-075 - draw reasonable conclusions.

3-105 Children formulate questions and plan specific investigations.

3-106 When gathering information, children receive guidance in preparing lists of facts and topics and in comparing sources.

3-107 Children select a main point in a paragraph, explain it orally and re-write the information in their own words.

3-108 Children translate summaries of information into their own language formats.

3-109 When participating in investigations, children list facts, measurements and observations for later use in reporting.



associated with field work through drawing, sketching, testing, counting, graphing, photographing, and making rubbings or casts. In addition, children should be asked to consider questions such as: *How can we summarize information we have gathered from a day's field study, from a filmstrip or book, or from the group's works on a particular topic? How is information from different sources put together to bring out its significance?*

These are the considerations that remind children of the purposes of writing, of alternative ways of recording, and of the audience to whom they are directing their reporting. Through discussion of these questions, either with the teacher or with a group, children will have an opportunity to assess alternatives and discover the most effective methods of presenting information, of using and reporting references, and of sharing their experiences.

#### **Social Skills**

In Environmental Studies, social skills can be improved through opportunities to work in small groups, to contribute to a class project, and to take

1-177 Children report in a variety of ways.

Children report in a variety of ways:

2-139 - orally

2-140 - written

2-141 - visually

2-142 - graphically

Reporting skills are related to field work through:

2-143 - drawing

2-144 - sketching

2-145 - testing

2-146 - counting

2-147 - graphing

2-148 - photographing

2-149 - making rubbings or casts

1-178 Children choose the means of reporting to reflect the audience to whom they are directing their report.

1-179 Children choose the means of recording to discover the most effective methods of presenting information.

responsibility for a particular task. Through discussion and opportunities to compare experiences and ideas, to glimpse different perspectives, and to see the validity of alternative points of view, children are able to extend their understandings and to begin to make more objective judgements. In the process, they learn how to listen, how to question and answer, and how to organize and plan with others. They learn to recognize and utilize the views of others, and in the process come to realize that their own contributions are appreciated and needed. They also use and develop the social skills of co-operation, and participate and learn to abide gracefully by rules and regulations created and enforced by mutual consent.

The teacher's role is most important. Teachers help children to develop social skills through the example of personal commitment, professional skill, enthusiasm and creativity, and manifest interest in learning.

#### Psychomotor Skills

Exploration of the environment also provides an outlet through which children's desire to test and use their psychomotor skills can be realized. Gross-motor skills are developed as children run, jump, wiggle, slide, or slip through and over obstacles encountered in out-of-class activities or as they discover the function of balance and body posture in such activities as moving a rock or walking along a fallen tree trunk.

The many opportunities they encounter for manipulating materials and objects gradually lead to the acquisition of fine motor skills. As they handle, grip, and finger pens, brushes, cutting tools, and materials, they develop the strength, speed, steadiness, precision, and economy of effort that are the signs of skill.

In summary, the study of the environment provides the child with opportunities to develop skills normally associated with other areas of the program. For example, investigations often require the use of mathematical instruments and techniques such as surveying, map-making, charting, and making and applying simple mathematical models.

#### Health

For children, the environment begins with themselves. It is axiomatic to say that children's capacity to function zestfully and even constructively in their environment depends on their health and vigour. It is essential, therefore, that they acquire some basic understanding of healthy practices and healthy living. Where possible, such learning should be developed to embrace concepts and values on a much broader scale. For example, *diet* can be expanded to demonstrate, through observation where practicable, the nutritional needs of other living things or the living styles that result from different ways of wresting sustenance from the environment; these observations may in turn

- 1-180 Children participate in small group activities.
  - 2-001 Children contribute to class projects.
  - 2-002 Children take responsibility for particular tasks.
  - 2-003 Children organize and plan with others.
  - 2-004 Children listen to others.
  - 2-005 Children discuss and compare experiences and ideas.
  - 2-150 Children realize that their own contributions are appreciated and needed.
  - 2-151 Children learn to recognize and utilize the views of others.
  - 2-152 Children discuss different perspectives to see the validity of alternative points of view.
  - 2-153 Children develop and use the social skill of co-operation.
- Children develop gross motor skills by:
- 2-006 - running
  - 2-007 - jumping
  - 2-008 - wiggling
  - 2-009 - sliding
  - 2-010 - slipping through or over obstacles encountered in out-of-class activities.
- Children develop fine motor skills:
- 2-011 - painting
  - 2-012 - cutting
  - 2-013 - writing

lead to such concepts as *interdependence* and *basic needs* or to such value issues as the rights of the individual versus societal concerns.

In planning a program that incorporates health learning, a sensitive and alert teacher will take advantage of opportune occurrences, such as the arrival of a new baby at home, or opportune moments that give rise to such questions as: *Why do we perspire on hot days? Why do we get hungry? Why do our hearts beat faster at certain times?*

Some ideas the teacher may wish to consider are listed below:

● *the processes of life*, which would include: similarities and differences in the development of plants, animals, fish, birds, and man; the need of all living things for nourishment, air, and water;

● *the relationships between development and abilities and between attitudes and behaviour*, which would include: changes in growth and appearance of plants, animals, and children; effects of age and development on feelings, on social relationships, and on ability to perform mental and motor tasks, with attention to the wide range of differences;

● *The major parts of the body and the mechanisms that allow the body to be nourished and to develop*, based on the following principles: the body works as a unit or one whole even though each part has its own particular use; the senses, the skeleton, the muscles, body fluids, tissues, organs, body thermostats, and periodic processes contribute to the adaptation of the body to its environment;

● *the necessity of good nutrition* based on the following ideas: nutrition depends on the balance of food substances, including vitamins and minerals, and on appetite and eating habits; an individual digests food better if he is happy and relaxed when he eats; nutrition affects teeth; digestion is affected by rest and relaxation; cultural, social, and ethnic factors affect behaviour and attitudes towards food and eating;

● *the use, misuse, and abuse of ability and mood modifiers* would include substances used for therapeutic or social reasons: pain-relieving drugs, inhalants, tobacco, and alcohol;

● *environmental conditions* affecting growth and development, with emphasis on the conditions necessary for optimum growth and development (clean air, unpolluted water, uncontaminated food, warmth, sufficient clothing, and adequate shelter); on hazards in the home, the school, the street, and the locality; and on social, medical, and police services in the local area.

#### Integration

Whether the stimulus for an investigation in Environmental Studies is generated by a child's question or the teacher's initiative, or both, the investigation should lead to the concepts, values, attitudes, and skills that are the

- 2-014 The teacher initiates class discussion related to health learning topics by utilizing current happenings in the lives of the children.
- 2-154 Children learn the processes of life; e.g. similarities and differences in the development of plants, animals, fish, birds and man.
- 2-155 Children learn the major parts of the body and their relationships.
- 2-156 Children learn the necessity of good nutrition.
- 2-157 Children learn the use, misuse and abuse of ability and mood modifiers; e.g. pain-relieving drugs, tobacco, inhalants, alcohol.
- 2-158 Children learn the effect of the environmental conditions on growth and development; e.g. clean air, unpolluted water.
- 2-159 Children learn such concepts as interdependence and basic needs.

objectives of the curriculum. For example, a child may ask, *Do I have to pick up my gum wrapper?* This simple question could be the impetus for activities leading to the development of social skills and concepts as varied as conservation, space, conflict, or co-operation. The stimulus could just as well be a teacher-initiated visit to a polluted stream bed or a class discussion of a fight in a televised hockey game. It is the teacher's task to recognize these opportune moments and to exploit their potential in the pursuit of program objectives.

The approach suggested in this document implies that concepts may be developed from perspectives beyond that of the traditional disciplines. The following items show some dimensions of investigations through which the concept of *change* might be developed. These investigations might encompass such facets of the concept as the *pace*, the *causes*, the *nature*, the *impact*, and *desirability* of change as a *universal condition*:

- *changes in the child* as he or she grows and develops;
- *physical change*: the seasons, aging, weathering, moulting, metamorphosis, erosion, ripening;
- *cultural changes*: immigration, interaction between neighbours, native peoples, music, dances, games, fads, literature, customs;
- *social changes*: communications, transportation, urbanization, food, housing, household gadgets, living standards, laws, new occupations, increased leisure;
- *technological change*: inventions; exploitation of resources, farming, industry (benefits and disadvantages);
- *Man as the instigator of change*: inventors, doctors, scientists, explorers, innovators;
- *natural change*: adaptation, growth, change of state, population changes in insects, animals, and plants.

#### Relevance

Relevance in Environmental Studies is dependent on children's natural curiosity, on their expanding interests, and on their need for explanations about the world in all its dimensions. It is essential that studies follow children's individual levels of understanding and their ways of working and not be rigidly tied to a particular year or age. Learning proceeds from the known to the unknown, from the familiar to the unfamiliar.

For example, a concept such as *community* will begin with ideas and experiences children know, such as their families. They may then be gradually encouraged to observe that there are animal and plant families, that the family serves many functions, that families differ, change, and involve a network of relationships. With time, children in the Primary Division are helped to see that communities have characteristics that are similar to those of the family, that they, too, serve many functions, change, differ in size, composition, and culture, that there are animal and plant communities, and that all involve a network of relationships. By the end of the Junior Division, the children's concept of *community* will have grown to encompass such ideas

- 2-015 The teacher extends discussion into related learning experiences.
- 2-016 The teacher develops learning experiences that cross subject lines; e.g. the concept of change.
- 2-017 The teacher encourages further investigation by students on topics of student interest.
- 2-160 Studies follow the child's individual level of understanding.
- 2-161 Studies proceed from the known to the unknown.

as communities interacting with their environments, the environment affecting the community and the community altering the environment, and communities interacting with other communities. Through such studies, the children will begin to see how they fit into the total pattern and what part they play in the community.

#### **Values**

A long-term objective related to values such as appreciation of man's impact on the environment, particularly as it relates to living things, must also begin with the child. In this case, a probable first step in developing a responsible attitude in Primary children is to provide them with opportunities to observe cause-and-effect relationships, to handle both living and non-living things, and to become sensitive to the need for giving proper care to living things. By the beginning of the Junior Division, children will have developed an awareness of the changes in living things and will find enjoyment in exploring their wide variety; as interest grows, they might wish to discuss and compare physical conditions in different parts of the world. In the later stages of concrete operations, children will develop an appreciation of the interdependence of living things. Finally, in the transition to the stage of abstract thinking, they may develop a deeper appreciation of cause-and-effect relationships and of man's impact on the environment.

Additional information on values will be found in chapter 1, "Values, Goals, and Objectives", and in chapter 3, "Teaching and Learning".

The long-term view of concept or value development does not necessarily indicate that there is a sequence or pattern of learning that each child must follow. Relating individual progress to a general pattern, however, does help the teacher to interpret observations of the child's actions or questions, to see the larger dimensions, and to determine what action should be taken next.

#### **Out-of-classroom activities**

Out-of-classroom education should proceed throughout the year as a natural extension of classroom activity. It encompasses both the world of nature and the urban world of the city. Banks, stores, and bakeries should be as much a part of the learning environment as the nearby stream bed. The council chamber or the courthouse can provide the basis for learning about social institutions; a visit to a factory can help children appreciate the interdependence of the various functions performed by different people. All these areas provide scope for study, interpretation, and investigation.

Small groups of children can gather the data relevant to the particular aspect of a topic that they have chosen to investigate. Each child should be aware of what his or her own contribution is to be. This necessitates preparing the children by providing them with:

- adequate background information, including safety precautions;
- an inventory of questions or a quiz to answer on location;
- a map of the route and the locality;

2-162 Out-of-classroom activities are a natural extension of classroom activity.

In preparing for an out-of-class activity the children are provided with:

2-163 - background information

2-164 - inventory questions

2-165 - map of the route





• a variety of tools for recording (notebooks, cameras, sketch pads, tape recorders);

Although a certain amount of pre planning is desirable and even necessary, flexibility is also important; the experience must accommodate unexpected findings and unforeseen events.

#### Area studies

Out-of-classroom education facilitates area studies; one special area for field work could be selected each year. Areas close to the school are obvious places to start. A study can deal with a ravine, a meadow, a woodlot, an excavation, a street, a factory, or a shopping plaza. By the end of the Primary Division, children can use a simple cross section to record and analyse their observations: they can peg a string across a piece of ground that varies in soil, dampness, and plant life, and they can sample and graph the variations. Or they can tabulate and chart dwellings or traffic flow within a city block.

#### Resources

An effective program requires a pool of resources. With some ingenuity, equipment can be procured very economically; as one example among many, an ordinary kitchen strainer can be converted to a dip net. In many cases,

2-166 - a variety of tools for recording.

2-167 Out-of-classroom experiences accommodate unexpected and unforeseen events.

2-168 To facilitate area studies, one special area outside the classroom is selected for repeated visits throughout the school year.

the children can assist in the conversion. Children can help to contribute some resources: natural materials such as stones and chestnuts; photographs, letters, and books donated or lent by parents and others; tapes of sounds, recordings, and interviews obtained in the course of projects; and pictures and slides of materials and phenomena in the environment.

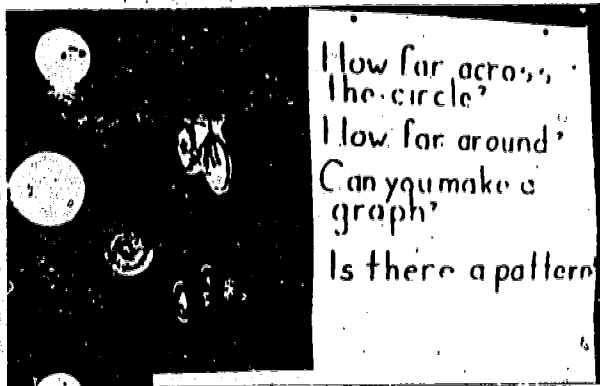
Children pursuing different investigations will need different materials and equipment, some of which may be stored in the classroom. Materials not constantly in use in any one area can be made available through the school library resource centre. Children should have access to some of the following equipment and materials: magnifying glasses, a small microscope; mirrors; safe sources of heat and electricity; tubes, glasses and tweezers, metric measuring rods and tapes; magnetic compass; Celsius thermometers, barometers, simple balances, calipers, pendulum, stop watch, motors, and sets for making models; bicycle pumps, balloons, wires, masses, cogs and gears; common kitchen supplies such as salt, sugar, and flour, along with sand and other inexpensive materials. Ready-made science and ecology kits can be used as a source of ideas.

The problem table is a centre designed to provoke questions and to suggest ways of finding answers. Suggestions are graded in difficulty, from an answer card to which the child can refer directly, on the one hand, to, at the opposite extreme, the use of reference books and materials. Suggestions for finding film materials, photographs, slides, and tapes may also be included. The teacher can use a new display or the addition of new items to an existing display to spark discussion or investigation. Older children may contribute their own puzzle problem material from their investigations and field trips, or from work and interests pursued at home.

Most teachers already use bulletin boards effectively. They display objects as well as pictures, photographs, and newspaper clippings that stimulate investigation, observation, and a variety of activities. Teachers who are successful with environmental mathematics find that it is useful to have a display board; children can be encouraged to contribute such materials as speed records, hockey statistics, and accounts of events that use mathematical references. Social issues and natural phenomena can also be used as points of focus.

It is important, however, that the problem table and the bulletin board be regarded as a joint responsibility by the children and teacher. Criteria for selecting items for display are: *Are they relevant to current interests? Will they provoke questions or present the familiar in a new way? Will they bridge school and community?* It is important that the problem table and bulletin board provide stimulus, novelty, and challenge. Neither should be merely a pretty display or an exhibit of curios; they are working areas.

- 2-018 A variety of resources is available, such as; natural resources such as stones and chestnuts, photographs, letters and books, tapes of sounds, recording and interviews, pictures and slides of materials.
- 2-019 Children have access to a variety of equipment and materials; e.g. magnifying glasses, small microscopes, safe sources of heat and electricity, metric measuring rods and tapes.
- 2-020 Children use ready-made science and ecology kits as a source of ideas.
- 2-169 A problem table is set up in the classroom to stimulate discussion and investigation.
- 2-170 Activities in the problem table are graded in difficulty.
- 2-021 Children contribute materials to the problem table.
- 2-171 Bulletin boards are used for display; e.g. pictures, photographs, clippings.
- 2-022 Children and teacher contribute jointly to the bulletin boards.
- 2-172 The bulletin board and problem table incorporate suggestions for further research.
- 2-173 Bulletin boards and problem tables are working areas.



#### Assignment Cards

Assignment cards are usually designed for use by small groups or by individuals. They can bridge the transition from class work to an individualized program. As with all other devices, the value of assignment cards depends on their suitability for the children who use them. Some of the best questions are those that originate with the children themselves. However, until children become accustomed to working independently, the cards can be designed by teachers, purchased from commercial sources, or made from old textbooks.

Generally, each assignment card should incorporate the following principles:

- the children must be required to do something - organize investigations, guess and test, establish conditions for comparing, or improvise apparatus;
- the children must record their work in some manner that will communicate their procedures and conclusions, that is, orally and/or through drawings, graphs, and written reports.

The great difficulty in preparing assignment cards is to write open-ended questions that challenge children to think, yet are not ambiguous. It is always possible to close an open question if a child shows that the problem is too difficult. Beginning with a closed question, on the other hand, may give the child an unnecessary clue and thus deprive him or her of an opportunity for independent thinking and discovery.

Assignments must vary in degree of difficulty to accommodate the variations in children's abilities. They should also provide different types of learning activities, corresponding to the variety of children's learning styles.

- 2-174 Assignment cards are employed as a teaching strategy.
- 2-175 Assignment cards are used by small groups.
- 2-023 Assignment cards are produced by children.
- 2-024 Assignment cards require the children to do something; e.g. organize investigations, guess and test.
- 2-176 Assignment cards require the children to record the results of their investigation.
- 2-177 Assignment cards vary in degree of difficulty.
- 2-178 Assignment cards suggest open-ended activities.
- 2-179 Assignment cards include a variety of activities for different children's learning styles.

## REFINEMENT OF THE CURRICULUM CHANGE INDICATOR

A. FIELD TESTING OF ITEMS

Prior to the final selection of items to measure content of Education in the Primary and Junior Division Chapters 4-6, it was felt necessary to obtain teacher responses to the items. These data were to be analyzed to determine items which were either defective or too general to elicit a variety of responses. This would enable the researchers to then reduce the number of items in the total item pool. In addition, the data were to be examined to obtain information regarding test reliability, to identify items which appeared to be useful in discriminating among teachers in different levels and at different grades, and to identify any unexpected or unusual response patterns.

Four-hundred sixty-nine items were included in a questionnaire (see Appendix A) EPJD Teacher Behaviour Assessment Instrument. Six of these items provided biographical data describing the respondents. Thirty-nine of the content items were identified as being appropriate for Primary Division teachers only (items 3-001 to 3-039) and sixty-nine items were identified as being appropriate for Junior Division teachers only (items 3-041 to 3-109). The remaining content items were identified as being appropriate for the total group of teachers (items 1-005 to 1-180 and 2-001 to 2-179). It was recognized that the response patterns would not necessarily be alike for both Primary and Junior level teachers.

Two types of response patterns were felt appropriate. For certain items, teachers were asked to indicate the frequency of occurrence of given behaviors. These responses ranged on a five-point scale from "daily", "weekly", "ten times per year", "two to three times per year", to "never". For other items teachers were asked to indicate only if the behavior did or did not occur by responding "yes" or "no".

Because of the large number of items, it was felt unrealistic to expect each teacher to respond to all of the items. Each teacher was asked to answer all the items that applied to his/her division (items 3-001 to 3-039) for Primary Division teachers and items 3-041 to 3-109 for Junior Division teachers). In addition, each teacher was asked to respond to one-half of the remaining items. To accomplish this, these remaining items were divided into four sub-tests as follows:

Sub-test No. 1 - Items 1-005 to 1-093 inclusive

Sub-test No. 2 - Items 1-094 to 1-080 inclusive

Sub-test No. 3 - Items 2-001 to 2-090 inclusive

Sub-test No. 4 - Items 2-091 to 2-179 inclusive

In addition to the items appropriate to their division level, each teacher was asked to respond to items in two of these sub-tests. For this purpose, the teachers were divided into six groups, each group responding to two of these sub-tests.

TABLE 2 - Sub-tests of the Item Pool Assigned to Each Teacher Group

<u>Teacher Group</u>	<u>Sub-tests</u>
1	1, 2
2	1, 3
3	1, 4
4	2, 3
5	2, 4
6	2, 4

For distribution to schools, the questionnaires were then packaged in groups of six in the sequence listed in Table 2. This insured that for each school with six or more teachers, responses were obtained on all possible combinations of sub-tests.

#### B. RESPONDENTS

The principal investigator and the liaison official assigned by the Ministry of Education contacted Directors of Education, Principals, and representatives of teachers federations, to solicit their support in encouraging teachers to respond to the questionnaire. The responses of those contacted were excellent. In making contacts with professional educators, the researchers assured them that anonymity of response would be the rule. In addition, it was agreed that results for each Board of Education would be made available to board officials and principals of the schools participating.

It had been anticipated that questionnaires would be distributed early in May and returned by early June. However, this distribution was delayed because the teacher-ministry consultant group felt it necessary to add additional items to the item pool. It was later agreed that the questionnaires would be distributed just prior to professional development days at the close of the school year and that this would be one of the activities for teachers on these days. Based on principal and board official requests, the researchers distributed 950 questionnaires, each including an "optical scan" answer sheet. The answer sheets were then returned to the principal investigators in self-addressed stamped envelopes which were provided.

The response was disappointing in terms of the total number of respondents. Four-hundred and sixteen completed answer sheets were returned. Of this number 405 were usable. This was approximately one-half the number which had originally been anticipated and necessitated some changes to be made in the analysis of the data.

The time of distribution was found to be inappropriate. It was assumed, initially, that the year end professional activity sessions would provide an excellent opportunity for assessment and planning which would be facilitated by the use of the item pool. In retrospect, it would seem that earlier in June would have been a better time for the distribution of these questionnaires.



Descriptive data for the respondents are given in Table 3.

The breakdown of male and female teachers at the primary and junior levels was as expected. That is, there was a greater proportion of male teachers at the junior level than at the primary level. In fact, at the primary level less than five per cent males were found.

One-hundred eighty-nine or forty-five per cent of the total number of the teachers were between ages forty-five to fifty-four. It was somewhat surprising to observe this age distribution amongst the respondents. However, a possible explanation may be the geographical location of the sample. A larger number of the schools selected were in small towns of northern Ontario. These results also correspond with the Ministry of Education statements that have suggested a trend toward older teachers in classrooms of Ontario. Visits to the schools by the researchers also confirm these results.

It is also most surprising to note that 243 or sixty per cent of the teachers had taught for three years or less. In addition, more than twenty per cent, that is ninety-two teachers, had indicated that they were in their first year of teaching. These statistics do not seem to be consistent with age levels as reported by the teachers. In addition, the limited number of teachers who have been hired over the past three years would lead one to question these results. Perhaps a misinterpretation of the question or concern

TABLE 3

Sex, Age, No. of Years Taught, and Grade Levels of Teachers Responding to the Preliminary Questionnaire

No. of Teachers Preliminary - 405

Level - Primary	223
Junior	174
No Response	8

Sex of Teachers

	Primary	Junior	Total
Male	10	64	74
Female	205	102	313
No Response	8	8	18

Age of Teachers

	Primary	Junior	Total
24 and below	6	9	16
25-34 inclusive	30	26	56
35-44 inclusive	71	34	106
45-54 inclusive	99	86	189
55 or over	8	9	17
No Response	9	10	21

No. of Years Taught

	Primary	Junior	Total
One	51	40	92
2-3	87	63	151
4-7	55	45	103
8-15	18	11	30
More than 15 years	3	7	10
No Response	9	8	19

No. of Teachers at Each Grade

Primary	- Kindergarten	36
	First	39
	Second	40
	Third	47
	Multigrade	49
	No Response	12
Junior	- Fourth	55
	Fifth	40
	Sixth	32
	Multigrade	35
	No Response	12

regarding anonymity could account for this apparent discrepancy.

For the most part, the distribution of the teachers across grade levels is as expected.

It was felt that any discrepancy that may exist regarding age of teachers and number of years taught would not affect the item data. That is, this should not bias any decisions relating to items that would need to be modified, retained or deleted from a finished questionnaire.

### C. RESULTS

Frequencies of responses to each choice for each item were tabulated and appear in Tables 4 to 6. Table 4 (pages 104-124) includes data on the items constructed to represent the content of Chapter 4, "Communication", EPJD; Table 5 (pages 125-130) includes items representing the content of Chapter 5, "The Arts", EPJD and Table 6 (pages 131-137) includes items based on the content of Chapter 6, "Environmental Studies", EPJD. For purposes of clarity, the frequencies of responses are broken down into the Primary and Junior Divisions. In addition, the responses for the total group are included. Since eight teachers did not indicate whether they were in the Primary or Junior Division, the figures for the total group are greater than the summation of the data from the Primary and Junior Division categories. In each case, the responses from those items which were assessed on a five-point scale appear first in each table. They are followed by the results contained from the items

TABLE 4

Frequency of Responses of Teachers to Items Written to Reflect Content  
in Chapter IV, Education in the Primary and Junior Divisions

Frequency of Teacher Responses

Item No.	<u>Primary Division</u>					<u>Junior Division</u>					<u>Total Group</u>				
	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>
1-005	1	1	1	13	108	1	1	2	15	92	2	2	3	28	202
1-006	5	2	5	29	82	7	4	13	32	52	12	6	18	62	135
1-007	12	25	21	27	38	21	32	28	21	8	33	57	49	49	47
1-008	8	25	47	25	18	4	27	37	32	9	12	52	84	58	28
1-009	1	10	20	39	53	2	20	31	31	25	3	30	51	71	79
1-010	1	11	24	52	35	7	19	30	36	18	8	30	55	88	54
1-011			2	21	100	2	7	14	38	48	2	7	16	59	150
1-012			1	15	107			6	19	85			7	35	193
1-013	21	13	16	35	30	1	3	14	46	46	22	16	30	82	77
1-014	2	15	27	57	22	5	28	40	29	7	7	43	67	88	29
1-015		1	5	43	74	12	18	18	49	12	12	19	23	92	88
1-016		1	15	69	38		2	25	59	24		3	40	128	64

TABLE 4 (Continued)

Frequency of Teacher Responses

Item No.	<u>Primary Division</u>					<u>Junior Division</u>					<u>Total Group</u>				
	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>
1-017	6	11	17	35	54	19	21	22	30	18	25	32	39	66	73
1-018	3	43	56	14	7	4	38	46	10	12	7	81	104	24	19
1-019	4	9	18	36	54	2	7	22	39	39	6	16	40	76	94
1-020	6	13	25	27	51	5	12	21	31	41	11	25	47	58	93
1-021			6	22	95	1		7	31	70	1		13	53	167
1-022	4	16	28	41	34	12	17	30	37	13	16	33	58	79	48
1-023	49	33	27	8	6	43	39	18	5	4	92	72	47	13	10
1-024	75	29	11	6	2	75	20	7	6	1	151	50	18	12	3
1-025	71	24	11	12	5	64	24	9	9	3	136	48	21	21	8
1-026	21	33	36	23	10	23	41	24	15	6	44	75	60	38	17
1-027	87	21	5	3	3	68	25	11	4	2	156	46	17	7	5
1-028			1	10	112		5	9	32	64		5	10	43	177
1-029	5	7	18	51	42	7	14	20	43	25	12	21	38	96	67
1-030	3	10	23	54	33	14	11	24	44	17	17	22	47	98	51

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TABLE 4 (Continued)

Frequency of Teacher Responses

Item No.	<u>Primary Division</u>					<u>Junior Division</u>					<u>Total Group</u>				
	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>Weekly</u>	<u>Daily</u>	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>Weekly</u>	<u>Daily</u>	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>Weekly</u>	<u>Daily</u>
1-031	2	13	26	48	34	13	21	32	34	9	15	34	58	84	43
1-032	8	14	19	50	32	6	17	25	41	20	14	31	45	91	53
1-033	1	1	1	13	107		2	6	15	87	1	3	7	29	195
1-034	6	2	10	37	65	4	6	15	32	49	10	8	25	70	114
1-035	18	7	16	25	47	15	14	15	19	48	33	21	31	44	88
1-036		1	5	12	104		3	7	19	81		4	12	31	187
1-037		1	2	8	110		1	2	19	88		2	4	27	200
1-038			4	7	112			3	14	93			7	21	207
1-039	1	2	2	11	107	4	2	3	27	72	5	4	5	38	181
1-040		1	1	30	91	1	1	4	32	71	1	2	5	63	163
1-041	2	8	8	51	53	2	6	11	50	41	4	14	19	102	95
1-042	27	17	25	32	20	6	8	22	44	30	33	25	48	76	51
1-043	20	14	17	26	46	44	16	21	19	8	64	30	38	47	54

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TABLE 4 (Continued)

Frequency of Teacher Responses

Item No.	<u>Primary Division</u>					<u>Junior Division</u>					<u>Total Group</u>				
	Never	2-3 Times per Year	10 Times per Year	weekly	Daily	Never	2-3 Times per Year	10 Times per Year	weekly	Daily	Never	2-3 Times per Year	10 Times per Year	weekly	Daily
1-044	1	2	6	32	81		3	14	35	58	1	5	21	68	139
1-045		6	18	33	66	4	6	22	43	34	4	12	40	77	101
1-046	5	9	10	28	69	5	9	15	35	46	10	18	26	63	115
1-047	27	50	24	9	13	32	42	17	11	7	59	93	41	21	20
1-048		20	49	26	28		28	48	22	11		49	98	48	39
1-049	12	7	25	46	33	2	9	24	45	30	14	17	49	91	64
1-050		2	12	41	66	1	1	10	39	58	1	3	22	81	125
1-051	1	2	23	39	56	1	8	25	55	20	2	11	48	95	76
1-052		8	22	54	39	2	11	35	43	19	2	19	58	98	58
1-053		1	8	39	74		1	15	37	57		2	23	77	132
1-054	25	27	35	23	13	27	31	22	23	7	52	59	57	47	20
1-055	60	19	21	17	4	57	22	23	5	2	118	42	44	22	6
1-056	98	13	3	3	2	72	28	5	3	1	171	41	8	6	3

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TABLE 4 (Continued)

Frequency of Teacher Responses

No.	<u>Primary Division</u>					<u>Junior Division</u>					<u>Total Group</u>				
	Never	2-3 Times per Year	10 Times per Year	Weekly	Daily	Never	2-3 Times per Year	10 Times per Year	weekly	Daily	Never	2-3 Times per Year	10 Times per Year	weekly	Daily
57	100	12	5	2	2	83	18	6	1		184	30	11	3	2
58	98	12	4	4	3	63	32	9	4	1	162	44	13	8	4
59	5	13	26	45	34	9	33	37	25	4	14	47	63	70	38
60	29	38	29	16	10	22	38	29	9	1	51	86	59	25	11
61	18	6	8	63	28	19	12	11	38	30	37	18	19	102	59
62	42	4	5	44	25	28	5	13	31	31	70	9	18	76	57
63	53	2	2	9	49	69	1	3	8	23	123	3	5	17	73
64	54	2		8	51	68	2	2	9	23	123	4	2	17	75
65	51	1	4	6	53	68	1	3	9	23	120	2	7	15	77
66	54		5	10	46	69	4	5	5	20	124	4	10	15	67
67	69	5	3	10	27	74	5	5	5	14	144	10	8	15	42
68	53	2	12	21	26	67	6	6	8	16	121	8	18	29	43
69	58	4	13	27	13	70	3	6	15	10	129	7	19	43	23

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TABLE 4 (Continued)

Frequency of Teacher ResponsesPrimary DivisionJunior DivisionGroup Total

Item No.	Primary Division				Junior Division				Group Total						
	Never	2-3 Times per Year	10 Times per Year	weekly	Daily	Never	2-3 Times per Year	10 Times per Year	weekly	Daily	Never	2-3 Times per Year	10 Times per Year	weekly	Daily
1-070	51		4	5	55	67	2	1	9	25	119	2	5	14	81
1-071	9	1	1	18	91		1		24	85	9	2	1	42	178
1-072	11	5	21	47	37	6	17	24	44	18	17	22	45	93	55
1-073	12	2	5	27	75	2	4	8	44	52	14	6	13	72	128
1-074	24	4	14	25	53	3	2	15	48	42	27	6	30	73	96
1-075	7	4	17	29	64	1	8	16	40	44	8	13	33	69	109
1-076	7	1	8	51	54	6	13	22	49	19	13	14	30	101	74
1-077	27	10	10	42	30		9	26	38	38	27	20	36	79	68
1-078	24	11	16	35	34	7	18	34	21	29	31	29	50	57	64
1-079	43	29	18	21	9	19	31	36	16	7	62	61	54	37	16
1-080	14	15	28	38	25	1	7	33	46	23	15	23	61	85	48
1-081	11	7	18	63	20	1	7	34	51	17	12	14	52	115	38
1-082	11	5	10	70	24		2	8	67	33	11	7	18	138	58
1-083	64	15	16	12	11	12	18	36	21	23	76	33	53	33	34

TABLE 4 (Continued)

Frequency of Teacher Responses

Item No.	<u>Primary Division</u>					<u>Junior Division</u>					<u>Total Group</u>				
	Never	2-3 Times per Year	10 Times per Year	weekly	Daily	Never	2-3 Times per Year	10 Times per Year	weekly	Daily	Never	2-3 Times per Year	10 Times per Year	weekly	Daily
1-084	42	22	15	32	7	3	10	33	41	23	45	33	48	74	30
1-085	18	10	20	47	26	6	16	21	46	21	24	26	41	95	47
1-086	7	2	6	37	70		4	7	43	55	7	6	13	81	126
1-087	21	11	12	56	21	6	9	16	49	29	27	20	28	106	51
1-088	6	5	13	58	40	2	13	23	58	13	8	18	36	118	53
1-089	30	4	7	46	32	2	8	12	54	31	32	12	19	101	64
1-090	5	4	20	61	32	3	9	23	58	14	8	13	43	121	46
1-091	5	2	14	53	46		9	24	56	21	5	11	38	109	69
1-092	49	20	23	16	11	12	19	39	28	11	61	39	62	46	22
1-093	26	9	16	48	20	4	18	28	42	15	30	27	44	92	35
1-094				9	132		1	10	32	65		1	10	42	201
1-095	11	1	1	29	98		1	2	38	66	11	2	3	67	169
1-096	12	1	10	48	68		2	17	61	28	12	3	27	111	99

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TABLE 4 (Continued)

Frequency of Teacher Responses

Primary Division                      Junior Division                      Total Group

<u>Item No.</u>	<u>Primary Division</u>					<u>Junior Division</u>					<u>Total Group</u>				
	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>
1-097	24	6	15	33	60	11	14	16	35	31	35	20	32	70	93
1-098	20	3	8	33	73	1	5	9	50	42	21	8	17	85	118
1-099	18	1		7	113	4	2	5	34	62	22	3	5	42	179
1-100	18	3	10	53	56	1	8	18	52	28	19	11	30	105	87
1-101	22	3	7	37	69	1	1	15	48	42	23	4	22	87	114
1-102	17	3	14	58	47		3	20	56	28	17	6	35	117	76
1-103	23	9	12	62	32		9	19	60	19	23	18	31	126	52
1-104	26	4	16	29	64	21	19	19	24	24	47	24	35	55	90
1-105	6	2	4	25	103	10	6	18	36	37	16	8	22	62	144
1-106	3	3	9	59	66	3	6	30	37	30	6	9	41	97	98
1-107		1	14	52	73		9	18	46	33		10	33	100	103
1-108	32	9	34	39	22	14	22	26	35	8	46	31	63	76	30
1-109	3	2	20	48	67	3	3	32	38	30	6	5	53	88	99

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TABLE 4 (Continued)

Frequency of Teacher Responses

<u>Item No.</u>	<u>Primary Division</u>					<u>Junior Division</u>					<u>Total Group</u>				
	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>
1-110	29	11	17	50	32	3	5	26	47	35	32	16	47	97	62
1-111	42	10	19	43	23	10	7	37	36	16	52	17	56	81	42
1-112	27	9	23	52	27	8	19	31	37	11	35	29	55	92	38
1-113	21	7	25	42	43	7	12	45	35	6	28	19	71	79	51
1-114	45	10	25	31	27	34	22	18	15	16	80	32	44	47	44
1-115	50	10	12	23	40	44	20	18	15	7	96	30	30	39	48
1-116	49	11	19	20	35	34	21	22	16	13	83	32	43	37	49
1-117	69	16	19	8	18	10	17	29	21	29	81	33	49	30	48
1-118	12		9	30	88	6	9	24	30	35	19	9	35	60	125
1-119	25		9	22	80		3	17	34	51	25	3	27	58	133
1-120	41	9	14	16	56	1	6	16	35	49	42	14	31	50	108
1-121	60	5	13	8	47	2	2	17	35	50	62	7	31	44	100
1-122	66	5	19	17	24	16	12	28	27	21	83	17	48	45	47

TABLE 4 (Continued)

Frequency of Teacher Responses

Item No.	<u>Primary Division</u>					<u>Junior Division</u>					<u>Total Group</u>				
	Never	2-3 Times per Year	10 Times per Year	weekly	Daily	Never	2-3 Times per Year	10 Times per Year	weekly	Daily	Never	2-3 Times per Year	10 Times per Year	weekly	Daily
1-123	73	9	15	20	12	22	30	26	17	11	97	39	41	39	23
1-124	48	12	21	23	28	7	20	25	30	23	57	32	47	54	51
1-125	13	5	10	38	72		6	15	43	42	13	11	25	83	117
1-126	10	15	35	41	36	1	16	41	27	21	12	32	76	69	59
1-127	14	22	46	27	26	5	22	42	20	17	19	44	90	49	44
1-128	28	14	33	30	31	2	13	28	22	41	30	27	63	53	74
1-129	51	17	20	30	17	20	23	30	19	13	72	40	53	49	31
1-130	7	17	38	35	42	3	17	41	24	21	10	35	80	60	65
1-131	12	18	38	35	34	4	18	37	26	21	16	37	76	62	57
1-132	18	18	43	29	30	3	17	39	28	18	21	36	83	58	50
1-133	13	8	19	32	68	1	7	14	17	67	14	15	33	51	138
1-134	70	26	21	10	5	28	32	29	11	6	100	58	51	21	12
1-135	54	43	19	11	8	38	35	22	6	6	94	79	41	17	15

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TABLE 4 (Continued)

Frequency of Teacher Responses

<u>Item No.</u>	<u>Primary Division</u>					<u>Junior Division</u>					<u>Total Group</u>				
	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>
1-136	54	37	20	15	8	37	36	20	10	4	93	75	40	25	12
1-137	1	13	40	35	50	4	17	45	25	16	5	33	85	61	67
1-138	54	20	19	27	15	26	32	29	10	9	82	53	49	38	24
1-139	58	36	26	14	3	35	25	29	13	5	94	62	57	28	8
1-140	98	19	7	5	5	48	27	20	5	6	149	46	27	10	12
		<u>No</u>		<u>Yes</u>		<u>No</u>		<u>Yes</u>			<u>No</u>		<u>Yes</u>		
2-025		20		110		36		59			57		171		
2-026		25		103		59		33			86		137		
2-027		20		108		7		93			27		204		
2-028		44		81		53		44			97		128		
2-029		30		95		42		52			73		149		
2-030		53		71		38		56			92		129		

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TABLE 4 (Continued)

Frequency of Teacher Responses

<u>Item No.</u>	<u>Primary Division</u>		<u>Junior Division</u>		<u>Total Group</u>	
	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>
2-031	49	73	40	53	90	128
2-032	39	82	39	53	80	136
2-033	74	43	55	37	129	83
2-034	19	108	9	95	28	206
2-035	17	111	10	91	27	205
2-036	21	105	8	95	29	203
2-037	11	118	20	80	31	201
2-038	21	107	20	76	41	186
2-039	22	106	36	64	59	172
2-040	12	116	10	92	22	211
2-041	27	99	12	91	39	193
2-042	24	102	17	86	41	191
2-043	17	106	19	84	36	193
2-044	18	106	21	81	39	190
2-045	26	103	53	44	80	149
2-046	20	108	44	55	65	165
2-047	7	122	9	94	17	218
2-048	4	122	8	93	12	218

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TABLE 4 (Continued)

Frequency of Teacher Responses

<u>Item No.</u>	<u>Primary Division</u>		<u>Junior Division</u>		<u>Total Group</u>	
	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>
2-049	18	110	17	85	35	198
2-050	17	109	20	81	37	193
2-051	32	95	12	89	44	187
2-052	18	108	14	88	32	199
2-053	47	78	40	62	88	142
2-054	14	114	39	62	53	179
2-055	4	123	9	95	13	221
2-056	25	97	9	94	34	194
2-057	22	100	5	98	27	201
2-058	44	77	9	94	53	174
2-059	57	66	30	70	90	136
2-060	17	107	3	99	20	209
2-061	66	56	43	61	110	119
2-062	90	29	70	30	162	60
2-063	52	69	25	76	78	147
2-064	77	46	50	51	128	99
2-065	72	50	67	32	141	83
2-066	36	89	24	76	61	167

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TABLE 4 (Continued)

Frequency of Teacher Responses

<u>Item No.</u>	<u>Primary Division</u>		<u>Junior Division</u>		<u>Total Group</u>	
	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>
2-067	40	78	20	79	60	160
2-068	49	70	9	92	58	165
2-069	43	87	23	78	57	168
2-070	23	100	16	83	39	186
2-071	39	86	9	93	48	182
2-072	29	94	4	98	33	195
2-073	48	73	9	93	57	169
2-074	92	27	60	36	155	63
2-075	65	53	42	55	108	110
2-076	90	28	35	99	128	87
2-077	83	35	32	64	118	99
2-078	45	72	23	74	69	148
2-079	59	62	40	57	100	121

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TABLE 4 (Continued)

Frequency of Teacher Responses

<u>Item No.</u>	<u>Primary Division</u>		<u>Junior Division*</u>		<u>Total Group</u>
	No	Yes	No	Yes	
3-041			22	143	
3-042			149	14	
3-043			42	122	
3-044			6	160	
3-045			19	147	
3-046			32	132	
3-047			1	163	
3-048			10	154	
3-049			4	162	
3-050			66	94	
3-051			50	113	
3-052			8	158	
3-053			9	158	
3-054			30	133	
3-055			25	138	
3-056			2	162	

\* Questions answered by Junior Teachers only

TABLE 4 (Continued)

Frequency of Teacher Responses

<u>Item No.</u>	<u>Primary Division</u>	<u>Junior Division*</u>		<u>Total Group</u>
		<u>No</u>	<u>Yes</u>	
3-057		59	101	
3-058		34	129	
3-059		28	136	
3-060		6	157	
3-061		33	130	
3-062		20	143	
3-063		49	112	
3-064		10	152	
3-065		48	112	
3-066		74	87	
3-067		38	122	
3-068		74	86	
3-069		24	139	
3-070		58	102	
3-071		77	84	

\* Questions answered by Junior Teachers only

TABLE 4 (Continued)  
Frequency of Teacher Responses

<u>Item No.</u>	<u>Primary Division</u>	<u>Junior Division*</u>				<u>Total Group</u>
		<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>
3-076	4	4	12	37	107	
3-077		1	6	45	115	
3-078	8	12	30	50	67	
3-079	4	8	15	53	87	
3-080	1	1	1	36	128	
3-081	9	4	16	58	79	
3-082	5	13	29	56	63	
3-083	3	14	34	50	65	
3-084	5	11	35	44	70	
3-085	4	5	20	53	85	
3-086	3	6	19	55	83	
3-087	3	3	19	56	86	
3-088	3	7	18	59	79	

\* Questions answered by Junior Teachers only

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TABLE 4 (Continued)

Frequency of Teacher Responses

Primary Division

Junior Division\*

Total Group

<u>Item No.</u>	<u>Junior Division*</u>					<u>Total Group</u>
	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>	
3-089	15	17	26	54	49	
3-090	2	2	12	48	102	
3-091	3	7	47	63	47	
3-092	83	22	6	34	17	
3-093	3	6	30	67	61	
3-094	8	17	46	58	37	
3-095	8	29	72	23	34	
3-096	6	21	37	59	42	
3-097	7	14	53	49	42	
3-098	6	16	40	60	43	
3-099	3	15	48	59	41	
3-100	6	14	49	60	37	
3-101	30	25	51	33	25	
3-102	18	18	59	36	32	

\* Questions answered by Junior Teachers only



TABLE 4 (Continued)

Frequency of Teacher Responses

<u>Item No.</u>	<u>Primary Division*</u>		<u>Junior Division</u>	<u>Total Group</u>
	<u>No</u>	<u>Yes</u>		
3-001	40	173		
3-002	40	173		
3-003	45	167		
3-004	92	115		
3-005	9	204		
3-006	27	181		
3-007	29	186		
3-008	10	206		
3-009	22	191		
3-010	33	181		
3-011	37	177		
3-012	82	127		

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\* Questions answered by Primary Teachers only

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TABLE 4 (Continued)

Frequency of Teacher Responses

<u>Item No.</u>	<u>Primary Division*</u>		<u>Junior Division</u>	<u>Total Group</u>
	<u>No</u>	<u>Yes</u>		
3-013	82	127		
3-014	47	162		
3-015	47	161		
3-016	53	158		
3-017	62	146		
3-018	9	203		
3-019	127	77		
3-020	95	110		
3-021	137	71		
3-022	78	133		
3-023	42	172		
3-024	42	172		
3-025	36	176		
3-026	38	173		

\* Questions answered by Primary Teachers only

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TABLE 4 (Continued)

Frequency of Teacher Responses

<u>Item No.</u>	<u>Primary Division*</u>			<u>Junior Division</u>		<u>Total Group</u>
	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>	
3-029	21	22	26	40	103	124
3-030	1	2	8	30	171	
3-031	1		11	33	168	
3-032	3	2	5	44	159	
3-033	9	10	14	55	125	
3-034	2		9	50	152	
3-035	57	18	17	73	47	
3-036	11	28	46	25	98	
3-037	6	26	26	40	113	
3-038	27	41	26	50	67	

\* Questions answered by Primary Teachers only

TABLE 5

Frequency of Responses of Teachers to Items Written to Reflect Content  
in Chapter V, Education in the Primary and Junior Divisions

Frequency of Teacher Responses

Item No.	<u>Primary Division</u>					<u>Junior Division</u>					<u>Total Group</u>				
	Never	2-3 Times per Year	10 Times per Year	weekly	Daily	Never	2-3 Times per Year	10 Times per Year	weekly	Daily	Never	2-3 Times per Year	10 Times per Year	weekly	Daily
1-141	1	20	39	44	35	6	26	45	22	8	7	48	87	66	43
1-142	11	34	33	37	24	14	29	38	19	6	25	65	74	56	30
1-143	8	12	47	41	32	18	30	38	19	2	26	43	88		34
1-144	17	27	40	39	17	26	40	27	11	3	44	69	67	51	21
1-145	2	19	47	44	27	16	35	40	13	3	18	56	88	58	31
1-146	4	14	20	37	65	4	17	32	26	28	9	31	53	64	95
1-147	6	34	39	39	22	14	32	41	13	7	20	68	81	53	30
1-148	3	31	43	42	21	13	44	33	15	2	16	77	77	59	23
1-149	2	15	28	43	50	6	26	34	26	13	8	43	63	70	64
1-150	9	22	45	43	20	3	27	36	35	6	12	49	85	79	26
1-151		2	4	43	91		5	12	72	18		7	16	118	111
1-152	27	14	50	39	10	33	22	20	27	5	60	38	72	67	15

TABLE 5 (Continued)

Frequency of Teacher Responses

<u>Item No.</u>	<u>Primary Division</u>					<u>Junior Division</u>					<u>Total Group</u>				
	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>
1-153	77	26	21	10	4	59	29	12	5	1	138	57	34	15	5
1-154	1	6	30	58	44	2	14	39	38	14	3	20	70	98	60
1-155	5	3	5	68	58	4	7	21	56	17	9	10	27	127	76
1-156	5	15	40	64	16	15	29	36	24	1	21	44	77	91	17
1-157	5	8	15	45	66	13	14	36	31	11	18	22	53	78	78
1-158	5	1	15	50	69	7	7	27	42	22	12	8	42	96	92
1-159	6	6	21	76	31	4	8	37	48	7	10	14	60	126	39
1-160	5	1	10	88	36	3		20	68	12	8	1	31	160	48
1-161	6	14	23	56	41	3	18	47	31	7	9	32	71	91	48
1-162	1	9	23	34	73	2	12	38	38	16	3	21	63	75	89
1-163	3	3	22	46	63	4	6	33	46	16	7	9	56	94	81
1-164	97	32	8	2		61	33	9	2		162	66	17	4	
1-165	99	25	10	3	1	52	32	16	4	2	153	59	26	7	3

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TABLE 5 (Continued)

Frequency of Teacher Responses

<u>Item No.</u>	<u>Primary Division</u>		<u>Junior Division</u>		<u>Total Group</u>	
	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>
2-080	26	96	28	74	54	173
2-081	30	93	38	60	63	156
2-082	21	105	28	71	49	179
2-083	36	88	39	62	75	153
2-084	37	86	20	81	57	170
2-085	81	36	70	29	153	66
2-086	30	94	32	69	63	165
2-087	107	12	73	15	193	27
2-088	15	109	54	46	71	156
2-089	30	96	41	59	73	156
2-090	33	90	42	60	75	153
2-091	16	115	19	79	36	199
2-092	5	127	18	83	23	216
2-093	13	119	31	66	45	190
2-094	58	72	32	64	92	140
2-095	41	89	44	51	87	144
2-096	89	42	71	24	163	69
2-097	94	38	72	24	170	64

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TABLE 5 (Continued)

Frequency of Teacher Responses

<u>Item No.</u>	<u>Primary Division</u>		<u>Junior Division</u>		<u>Total Group</u>	
	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>
2-098	66	61	43	52	112	116
2-099	70	59	65	30	138	92
2-100	61	67	57	38	121	108
2-101	68	62	61	35	133	99
2-102	107	23	78	16	191	39
2-103	84	44	69	24	157	70
2-104	108	21	70	22	183	44
2-105	87	41	64	29	157	70
2-106	68	62	70	23	142	87
2-107	20	111	37	56	59	171
2-108	27	105	26	70	54	180
2-109	26	105	39	57	68	165
2-110	61	68	44	51	108	122
2-111	64	66	39	56	103	128
2-112	56	75	62	33	119	113
2-113	10	122	17	79	28	206
2-114	49	82	57	38	108	124
2-115	6	125	13	82	20	212

TABLE 5 (Continued)

Frequency of Teacher Responses

<u>Item No.</u>	<u>Primary Division</u>		<u>Junior Division</u>		<u>Total Group</u>	
	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>
2-116	25	106	14	85	40	196
2-117	3	128	9	93	13	226
2-118	1	129	4	98	5	233
2-119	6	125	10	92	17	222
2-120	30	101	23	78	54	184
2-121	6	125	6	93	13	223
2-122	31	97	24	76	56	178
2-123	17	111	18	84	35	201
2-124	7	125	7	95	14	226
2-125	47	83	29	71	76	160
2-126	103	26	54	46	160	75
2-127	10	122	10	89	20	217
2-128	17	114	13	88	30	207
2-129	24	105	21	81	45	192
2-130	71	52	31	71	110	127
2-131	48	83	36	64	85	152
3-027*	103	109				
3-028*	171	39				

\* Questions answered by Primary Teachers only



TABLE 5 (Continued)

Frequency of Teacher Responses

<u>Item No.</u>	<u>Primary Division*</u>					<u>Junior Division**</u>					<u>Total Group</u>
	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>	
3-039	18	24	27	36	107						
3-103						16	40	42	38	29	

\* Questions answered by Primary Teachers only

\*\* Questions answered by Junior Teachers only

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TABLE 6

Frequency of Responses of Teachers to Items Written to Reflect Content  
in Chapter VI, Education in the Primary and Junior Divisions

Frequency of Teacher Responses

<u>Item No.</u>	<u>Primary Division</u>					<u>Junior Division</u>					<u>Total Group</u>				
	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>
1-166	1	7	33	99		3	12	37	53		4	19	71	156	
1-167	11	18	61	50	4	6	26	48	22	4	17	45	110	75	
1-168	14	18	37	42	29	1	10	36	43	15	15	29	74	85	47
1-169	14	21	43	43	16	5	9	42	38	10	19	31	86	82	28
1-170	25	22	44	34	14	3	23	34	36	9	28	46	79	70	25
1-171	9	13	22	46	50	3	10	31	42	20	12	23	54	89	73
1-172	8	28	37	28	38	6	22	39	20	16	14	50	78	49	55
1-173	7	20	29	32	51	6	23	34	21	20	13	43	64	55	72
1-174	6	21	24	41	48	3	21	38	25	17	9	42	64	67	66
1-175	3	11	18	31	76	2	10	27	35	29	5	21	45	69	102
1-176	2	8	12	42	75	2	3	23	38	39	4	11	35	83	116
1-177	11	11	23	36	58	1	8	23	34	40	12	19	48	71	100

TABLE 6 (Continued)

Frequency of Teacher Responses

<u>Item No.</u>	<u>Primary Division</u>					<u>Junior Division</u>					<u>Total Group</u>				
	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times Per Year</u>	<u>weekly</u>	<u>Daily</u>	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>
1-178	45	22	19	25	26	18	20	35	23	8	63	43	55	49	36
1-179	38	25	24	26	19	14	28	29	22	10	53	53	55	49	30
1-180	5	10	15	23	85	7	28	28	43		5	17	44	53	130
2-001		16	30	46	40	2	13	26	44	19	2	29	57	91	60
2-002	4	6	9	36	78	1	5	5	29	63	5	11	14	66	143
2-003	8	17	33	42	30	1	12	24	45	22	9	29	59	88	52
2-004		3	8	26	96		4	11	19	70		7	20	45	163
2-005	2	3	13	37	78	1	8	16	28	52	3	12	29	66	131
2-006	2		2	30	99	3		2	43	56	5		4	74	157
2-007	2		3	35	93	3		5	44	52	5		8	81	14
2-008	3	3	6	30	91	5	4	12	37	44	8	7	18	69	13
2-009	4	9	11	41	68	11	9	11	36	35	15	18	24	77	10
2-010	6	13	17	33	63	5	8	23	28	38	11	21	41	63	10
2-011	1	1	22	48	61	2	9	30	53	10	3	10	52	104	71

TABLE 6 (Continued)

Frequency of Teacher Responses

<u>Item No.</u>	<u>Primary Division</u>					<u>Junior Division</u>					<u>Total Group</u>				
	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>	<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>
2-012			2	56	75		3	11	71	19		3	13	129	93
2-013	6	2	5	5	114			2	18	89	6	2	7	19	203
2-014	1	5	31	53	43	1	5	25	53	20	2	10	56	107	65
2-015	1	2	17	49	62	1	2	16	45	41	2	4	33	94	106
2-016	4	10	21	50	45		8	20	35	41	4	18	41	86	88
2-017	2	11	22	53	44	1	9	20	42	34	3	20	42	96	80
2-018	5	7	24	28	68	3	6	26	31	40	8	13	50	60	110
2-019	15	21	32	28	35	3	14	28	26	35	18	35	60	56	71
2-020	70	30	20	10	2	33	22	27	13	11	103	53	48	24	13
2-021	26	22	40	25	18	23	29	29	16	8	49	51	69	44	26
2-022	6	4	19	66	37	3	12	27	40	23	9	16	46	108	61
2-023	84	23	16	3	5	55	24	15	8	4	139	48	33	11	9
2-024	43	22	23	21	22	22	22	25	19	18	65	44	49	41	41

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TABLE 6 (Continued)

Frequency of Teacher Responses

<u>Item No.</u>	<u>Primary Division</u>		<u>Junior Division</u>		<u>Total Group</u>	
	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>
2-132	17	114	17	84	34	203
2-133	51	78	21	79	72	162
2-134	9	124	8	94	17	223
2-135	8	122	8	92	16	219
2-136	20	110	16	85	36	200
2-137	25	105	23	79	49	188
2-138	5	126	6	95	11	226
2-139	2	130	2	100	4	235
2-140	29	101	3	100	32	206
2-141	7	123	4	99	11	227
2-142	65	64	21	81	87	149
2-143	7	123	5	98	12	227
2-144	46	84	10	92	56	182
2-145	55	74	13	88	70	166
2-146	18	112	13	88	33	204
2-147	63	66	22	79	87	149
2-148	108	17	75	27	188	45
2-149	92	37	59	42	156	80

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TABLE 6 (Continued)

Frequency of Teacher Responses

<u>Item No.</u>	<u>Primary Division</u>		<u>Junior Division</u>		<u>Total Group</u>	
	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>
2-150	0	133	2	101	2	240
2-151	2	131	2	101	4	238
2-152	25	107	12	90	37	202
2-153	1	132	3	98	4	235
2-154	16	116	4	99	21	219
2-155	21	111	10	91	32	206
2-156	4	128	7	93	11	226
2-157	86	42	33	68	123	111
2-158	17	115	5	97	22	217
2-159	16	115	6	96	22	216
2-160	6	125	8	94	14	224
2-161	9	120	4	99	13	224
2-162	9	122	11	91	21	217
2-163	4	128	9	94	13	227
2-164	40	90	22	79	63	173
2-165	78	50	38	62	117	116
2-166	6	67	29	72	91	143
2-167	9	120	18	83	28	207

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TABLE 6 (Continued)

Frequency of Teacher Responses

<u>Item No.</u>	<u>Primary Division</u>		<u>Junior Division</u>		<u>Total Group</u>	
	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>
2-168	79	50	58	44	141	95
2-169	75	54	62	40	139	97
2-170	87	40	71	31	161	73
2-171	4	127	3	100	7	232
2-172	67	61	42	60	110	125
2-173	57		38	64	96	140
2-174	57		21	80	79	154
2-175	51	76	21	80	73	160
2-176	62	65	19	82	82	151
2-177	55	71	16	85	72	160
2-178	63	64	26	73	90	141
2-179	55	87	23	74	79	145
3-072*			7	151		
3-073*			22	142		
3-074*			32	132		
3-075*			11	154		

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\* Questions answered by Junior Teachers only

TABLE 6 (Continued)

Frequency of Teacher Responses

<u>Item No.</u>	<u>Primary Division</u>	<u>Junior Division*</u>				<u>Total Group</u>
		<u>Never</u>	<u>2-3 Times per Year</u>	<u>10 Times per Year</u>	<u>weekly</u>	<u>Daily</u>
3-104		1	9	38	58	59
3-105		8	33	48	39	36
3-106		4	17	53	43	47
3-107		15	25	40	52	32
3-108		9	19	47	51	40
3-109		9	27	46	46	37

\* Questions answered by Junior Teachers only



Table 7

## Items with 80% or More of Respondents Choosing "Daily" or "Yes" Responses

Item No.	% of Respondents		Group			Item
	80-90%	90% or More	Primary Only	Junior Only	Total	
1-005	X				X	The teacher asks open-ended questions that stimulate a variety of responses.
1-011	X		X			Children use such materials as paint, crayons, pencils, papers and scrap to extend their language development.
1-012	X				X	Children discuss their activities with other children.
1-028		X	X			Someone reads aloud to children from a variety of books.
1-033	X				X	Children listen to oral directions, messages and reports.
						The teacher demonstrates the attributes of a model listener by
1-036	X				X	- becoming sensitive to the differences in meaning and feeling of children's responses
1-037	X				X	- accepting and working with the fact that children normally understand better than they express themselves orally

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Table 7 (Continued)

Item No.	% of Respondents		Group			Item
	80-90%	90% or More	Primary Only	Junior Only	Total	
1-038	X				X	- finding out whether anything in the situation, materials or manner of presentation has confused a child
1-039	X		X			- using the child's own forms of oral expression and expanding and improving them without criticism that discourages the child
1-094	X				X	The teacher reads to the children.
1-099	X		X			Phonic experiences and investigations of spelling patterns are made part of the reading program.  Children develop fine motor skills
2-013	X				X	- writing
2-025	X		X			A variety of activity centres is provided for creative expression.
2-026	X		X			The classroom has centres that include such materials as sand, clay, paint, water and toys to stimulate language usage.
2-027	X				X	The classroom contains display boards with constantly renewed materials.

Table 7 (Continued)

Item No.	% of Respondents		Group			Item
	80-90%	90% or More	Primary Only	Junior Only	Total	
2-034	X				X	Children read various kinds and levels of materials; for example, stories, verses, directives, assignments, reference books.
2-035	X				X	Children are exposed to a variety of good literature; for example, modern classics, folk tales myths, legends.
2-036	X				X	Children read a variety of quality books that are geared to their interests and maturity.
						Which of these do you do?
2-037	X				X	- match children's real experiences with oral and printed language
2-038	X				X	- draw on children's language experiences, vocabulary and sentence structure in providing reading experiences
2-039	X		X			- use children's own responses to create reading experiences and materials
2-040	X		X			- relate reading to real life situations that demonstrate how much we depend on our ability to read

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Table 7 (Continued)

Item No.	% of Respondents		Group			Item
	80-90%	90% or More	Primary Only	Junior Only	Total	
2-041	X				X	- move the child on to books that are not primers
2-042	X				X	- make use of structural clues in reading materials by using experiences or materials so that the child can contrast and change work orders and patterns
2-043	X				X	- adopt a rational phonic system in dealing with early code-breaking aspects
2-044	X				X	- use brief intensive practice periods, games and activities to reinforce particular aspects of reading which have already been approached actively
2-046	X		X			- use the children's own stories, vocabulary and structure for reading in the early stages
2-047		X			X	- provide a flexible response that can accommodate the individual needs of children at different stages of reading
2-048		X			X	- use the child's capacities and needs for discriminating and classifying

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Table 7 (Continued)

Item No.	% of Respondents		Group			Item
	80-90%	90% or More	Primary Only	Junior Only	Total	
						Children use language games in the following ways
2-049	X				X	- grouping words with similar patterns
2-050	X				X	- grouping letter symbols or spelling patterns
2-051	X				X	- making new sentences by altering order or by using new words
2-052	X				X	- making new words by altering order or substituting letters.
2-054	X		X			- associating letters with sounds and objects
2-055		X			X	The teacher provides collections of books in the classroom geared to the needs of children at different stages of development.
						Personal writing is expressed through
2-056	X				X	- a personal letter or note
2-057	X				X	- an imaginative or fanciful story
2-058		X		X		- a poem

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Table 7 (Continued)

Item No.	% of Respondents		Group		Total	Item
	80-90%	90% or More	Primary Only	Junior Only		
2-060		X			X	- a description of an experience
2-068		X		X		Some children have addition and multiplication tables available for ready use.  Children are assessed for
2-070	X				X	- readiness to attempt written calculations  To facilitate use of metric units children
2-071		X		X		- estimate in metric units
2-072	X				X	- measure in metric units
2-073		X		X		- solve problems in metric units
2-082	X		X			Children are stimulated in movement activities by a variety of roles, ideas and emotions.  The following methods of classroom drama are used
2-084	X			X		- group oral reading
2-088	X		X			- puppetry

Table 7 (Continued)

Item No.	% of Respondents		Group			Item
	80-90%	90% or More	Primary Only	Junior Only	Total	
2-091	X		X			Drama activities allow children to create for themselves rather than cause them to imitate the teacher's ideas.
2-092		X			X	The focus in music is on singing, creating, playing, discovering and listening.  Children's creative responses to listening and discovering are fostered by
2-093	X				X	- encouraging children to move freely in response to music  Experimentation in creative music activities is encouraged by
2-107	X		X			- playing singing games, inventing singing games with the class  The integration of Physical Education with other areas is fostered by utilizing such sources as
2-108	X		X			- the seasons, the elements and other natural phenomena
2-109	X		X			- observation of such movements as flying, soaring and wheeling

Table 7 (Continued)

Item No.	% of Respondents		Group			Item
	80-90%	90% or More	Primary Only	Junior Only	Total	
2-113	X				X	- body sounds - clapping, slapping, breathing, stamping, shouting
2-115		X			X	- recorded music
2-116	X				X	Rather than concentrating on a few skills a wide range of activities such as gymnastics, games, swimming, dance and drama with ample time for practise, repetition, modification, consolidation and application is provided.
						Movement activities in Physical Education are used to develop
2-117		X			X	- body awareness; that is, body parts involved in movement
2-118		X			X	- body awareness, basic body actions such as skipping, spinning, running, balancing, bending
2-119		X			X	- space awareness; that is, personal space, general space, levels, pathways, directions.
2-121		X			X	- relationships; that is, balls, targets, loops, benches, mats



Table 7 (Continued)

Item No.	% of Respondents		Group			Item
	80-90%	90% or More	Primary Only	Junior Only	Total	
2-123	X				X	Traditional art media is available.
2-124		X			X	Activities are provided involving a variety of materials.
2-127		X			X	The stimulus for expression springs from various areas of the program.
2-128	X				X	The focus is on the process of creating form out of materials and communicating, rather than on the products of creation.
2-129	X				X	Children are encouraged to examine and explore what they consider important in their own work through discussion of interesting themes, materials and finished works.
2-132	X				X	The teacher creates situations and constructs devices that stimulate purposeful first-hand investigation.
2-134		X			X	The teacher makes a variety of resources accessible.
2-135		X			X	Children make mistakes without penalty.
2-136	X				X	Explanations are given only when appropriate.

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Table 7 (Continued)

Item No.	% of Respondents		Group			Item
	80-90%	90% or More	Primary Only	Junior Only	Total	
2-138		X			X	Children produce individual variations in observation and response.
						Children report in a variety of ways
2-139		X			X	- orally
2-140	X				X	- written
2-141		X			X	- visually
						Reporting skills are related to field work through
2-143		X			X	- drawing
2-146	X				X	- counting
2-150		X			X	Children realize that their own contributions are appreciated and needed.
2-151		X			X	Children learn to recognize and utilize the views of others.
2-152	X				X	Children discuss different perspectives to see the validity of alternative points of view.
2-153		X			X	Children develop and use the social skill of cooperation.

Table 7 (Continued)

Item No.	% of Respondents		Group		Total	Item
	80-90%	90% or More	Primary Only	Junior Only		
2-154		X			X	Children learn the processes of life; for example, similarities and differences in the development of plants, animals, fish, birds and man.
2-155	X				X	Children learn the major parts of the body and their relationships.
2-156		X			X	Children learn the necessity of good nutrition.
2-158		X			X	Children learn the effect of the environmental conditions on growth and development; for example, clean air, unpolluted water.
2-159		X			X	Children learn such concepts as interdependence and basic needs.
2-160		X			X	Studies follow the child's individual level of understanding.
2-161		X			X	Studies proceed from the known to the unknown.
2-162		X			X	Out-of-classroom activities are a natural extension of classroom activity.

Table 7 (Continued)

Item No.	% of Respondents		Group			Item
	80-90%	90% or More	Primary Only	Junior Only	Total	
						In preparing for an out-of-class activity the children are provided with
2-163		X			X	- background information
2-167	X				X	Out-of-classroom experiences accommodate unexpected and unforeseen events.
2-171		X			X	Bulletin boards are used for display; for example, pictures, photographs, clippings.
2-174	X			X		Assignment cards are employed as a teaching strategy.
2-175	X			X		Assignment cards are used by small groups.
2-176	X			X		Assignment cards require the children to record the results of their investigation.
2-177	X			X		Assignment cards vary in degree of difficulty.
3-001	X		X			Young children use puppets in a variety of ways to practice speaking.
3-002	X		X			Children use puppets as an extension of themselves to interact with each other.

Table 7 (Continued)

Item No.	% of Respondents		Group			Item
	80-90%	90% or More	Primary Only	Junior Only	Total	
						Children are diagnosed for reading readiness
3-005		X	X			- by the teacher based on observation
3-006	X		X			In learning to read children are allowed to make errors in guessing new words.
						Children use and extend their word knowledge by
3-007	X		X			- building new sentence patterns
3-008		X	X			- grouping words in familiar or rhyming sets
3-009	X		X			- seeing little words in larger words
3-010	X		X			- making new words by adding prefixes and suffixes
3-011	X		X			- collecting and grouping words in alphabetical order or in categories
3-018		X	X			Writing or printing materials are available in a variety of media; for example, felt pens, crayons, newsprint.

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Table 7 (Continued)

Item No.	% of Respondents		Group			Item
	80-90%	90% or More	Primary Only	Junior Only	Total	
3-023	X		X			Children use a variety of materials to extend their understanding of mathematics  - structural materials such as rods, blocks and interlocking cubes to introduce basic ideas of counting, measuring, classification and number bases
3-025	X		X			Children in the Primary Division use measuring activities that lead to the use of metric units in length, area, volume and mass.
3-026	X		X			Early experiences with fractions emphasize equivalence through a variety of activities.  In learning to read
3-030	X		X			- children are provided with visual and auditory stimuli through real experiences such as books, films, filmstrips, records, music, songs and poetry
3-042		X		X		Children observe the language of others by attending such events as community committee meetings and court hearings.

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Table 7 (Continued)

Item No.	% of Respondents		Group			Item
	80-90%	90% or More	Primary Only	Junior Only	Total	
						Different abilities and interests in reading and language development are accommodated by
3-044		X		X		- grouping according to ability
3-045	X			X		- making group membership flexible
3-046	X			X		- meeting with groups at various times of the day
3-047		X		X		- relating group activities and materials to individual needs
3-048		X		X		Program skill-builders and basal readers are used as one method to supplement active teaching so that the child may develop a variety of techniques and interest.
3-049		X		X		High interest books are available.
3-052		X		X		Reading includes a wide range of materials; for example, newspapers, magazines, directions for models, recipes, instruction, sports, manuals, cartoons.
3-053		X		X		Children are given time to read a wide selection of materials.

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Table 7 (Continued)

Item No.	% of Respondents		Group			Item
	80-90%	90% or More	Primary Only	Junior Only	Total	
3-054	X			X		Children study our heritage and poetry to gain sensitivity and precision of expression.
3-055	X			X		Children use books and collections of poetry to help them develop imaginative forms of expression.
3-056		X		X		Children have practise in writing about experiences that are real and relevant to them.
						Children write
3-059	X			X		- short reports of study activities (with each child contributing at his or her particular level)
3-060		X		X		- summaries of information gathered on a field trip or from a filmstrip or book
3-061	X			X		- outlines of main ideas for an oral presentation to the class
3-062	X			X		- sequential instructions for specific operations such as baking a cake, building a model, or conducting a science experiment

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Table 7 (Continued)

Item No.	% of Respondents		Group			Item
	80-90%	90% or More	Primary Only	Junior Only	Total	
3-064		X		X		- descriptions of interesting trips or experiments
3-069	X			X		Children use simple algebraic notations for number relationships.  As the child seeks to find information from secondary sources, related skills need to be developed. To accomplish this, children
3-072		X		X		- interpret pictures, charts and texts
3-073	X			X		- check information for accuracy and reliability
3-074	X			X		- examine conflicting evidence
3-075		X		X		- draw reasonable conclusions

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requiring simply "yes" or "no" responses. Those items that were for Primary or Junior teachers only are indicated in the tables.

In examining these data, it was noted that for a number of items an excessively large number of the respondents made the same choices. These choices which attracted an extremely large number of responses tended to be the "daily" response for those items where the responses were on a five-point scale, and "yes" for those items which required either a "yes" or "no" response. Items were therefore identified where more than eighty per cent of the respondents made the same selection. Data relating to those items where eighty per cent or more of the respondents made the same choice appear in Table 7 (pages 138-154). For each item number it is indicated whether eighty per cent or ninety per cent or more of the respondents made the specific choice of either "daily" or "yes". The group to which this applies is also indicated. In most instances, these data applied to the total group; however, in some instances it applied to the Primary group only or to the Junior group only. In order to facilitate the understanding, the items themselves are also included in the table. It is interesting to note that a majority of the items required a "yes" or "no" response. This, of course, is not surprising when one understands that four of the choices on the five-point scale (daily, weekly, 10 times per year, 2-3 times per year) are equivalent to a "yes" response. Only the "never" response

on the five-point scale items is equivalent to the "no" response.

The items that are listed in Table 7 were later considered as possible items for deletion or revision. It was felt that if one obtained a large number of identical responses that little information would be obtained from such items. The usual revision when these items were revised was to change the "yes" - "no" response to a five-point response scale. The researchers suggest the following reasons why such a great percentage of the respondents chose the "daily" or "yes" response. These reasons are as follows:

- 1) Certain teacher behaviours are a "given". That is to say that these behaviours will undoubtedly be found in most classrooms regardless of the quality of teaching.
- 2) Many items were too general in nature so that the respondents could agree that these were behaviours that were present in their classrooms.

Item means and variances were calculated for each item. These, of course, will be directly related to the frequency of responses reported in Tables 4 to 6. For the items on the five-point scale, "daily" was assigned a value of five and "never" a value of one. For the "yes" - "no" items, "yes" responses were given a score of one and "no" responses a score of zero. The mean and variance for each item are reported in Table 8 (pages 159-173).

It will be noted in examining the item means, that these means tend to be quite high. This, of course, is

because a high percentage of the teachers are doing these things on a regular basis. These item means reflect frequencies of responses. For most of the items it can be concluded that one would hope for and expect a high item mean. For a few of the items an average score would be expected since teachers would not be expected to do these on a daily basis. However, in each case it will be noted that an extremely low score represents undesirable behaviour. It will be noted that for items on a five-point scale, the mean item scores range from 1.30 to 4.85. For items where response choices were "yes" - "no" the mean item scores range from .17 to .983 with the majority of these item means being above .70.

Item variances are large as response choices are spread. If one wishes to be able to differentiate amongst respondents or groups of respondents, then a variety of responses (high variance) is generally desirable. For those items on the five-point scale it will be noted that the maximum possible variance is equal to four. This would occur only when one-half of the respondents chose "never" and the other half chose "daily". For this group of items, the actual variances range from .187 to 3.63. For the items with the "yes" - "no" response, the maximum possible variance was .25. This occurred if one-half of the subjects chose "no" and the other half of the subjects chose "yes". Variances for this group of items range from .017 to .249.

For each of the six sub-tests (items 3-001 to 3-039 were identified as Sub-test Five and items 3-041 to 3-109 were identified as Sub-test Six) a total score was calculated. Item scores for the sub-test were then correlated with the total score for the sub-test. These correlations were then used as a measure of item discrimination and are also reported in Table 8. If one wishes to discriminate amongst respondents or groups of respondents one generally desires items with high discrimination coefficients. In effect, these are considered to be measures of item quality. They are a measure of whether the item itself is measuring what the sub-test measures. Generally speaking, coefficients of .4 or larger are considered quite satisfactory. Coefficients in the range of .2 to .4 may be indicative that the item is in need of revision. Item discrimination coefficients lower than .2 generally are suggestive of a need for items revision. However, this may not be true when one expects a large number of the respondents to choose a given response. That is, as item means are especially high or especially low, an upper limit is placed on the maximum possible value one can obtain for a discrimination coefficient. Even though the discrimination coefficient may be considered low, the item may still be considered satisfactory since it is presumably measuring what one wishes to measure. These discrimination coefficients were examined and again used as a basis for later decisions regarding deletion or revision of certain items. Of the 469 items, only seventeen had an item

Table 8

Descriptive Item Statistics -  
Mean, Variance and Item Discrimination

<u>Item No.</u>	<u>Mean</u>	<u>Variance</u>	<u>Discrimination*</u>
1-005	4.797	.34	.293
1-006	4.296	1.14	.376
1-007	3.085	1.813	.446
1-008	3.162	1.132	.484
1-009	3.825	1.158	.490
1-010	3.638	1.155	.560
1-011	4.487	.671	.422
1-012	4.791	.226	.248
1-013	3.775	1.582	.377
1-014	3.380	1.035	.568
1-015	3.961	1.265	.276
1-016	4.077	.490	.414
1-017	3.553	1.787	.501
1-018	2.860	.873	.431
1-019	4.017	1.091	.426
1-020	3.842	1.430	.412
1-021	4.645	.393	.304
1-022	3.470	1.357	.543
1-023	2.047	1.204	.573
1-024	1.573	.864	.486
1-025	1.791	1.299	.496
1-026	2.611	1.380	.483
1-027	1.524	.842	.402
1-028	4.668	.436	.303
1-029	3.791	1.231	.518
1-030	3.613	1.298	.437
1-031	3.453	1.296	.515
1-032	3.590	1.324	.498
1-033	4.762	.370	.204

\* Correlation of Item Scores with Subtest Score

Table 8 (Continued)

<u>Item No.</u>	<u>Mean</u>	<u>Variance</u>	<u>Discrimination*</u>
1-034	4.189	1.119	.270
1-035	3.613	2.164	.210
1-036	4.714	.411	.263
1-037	4.824	.232	.158
1-038	4.851	.187	.209
1-039	4.657	.632	.290
1-040	4.645	.376	.352
1-041	4.154	.860	.258
1-042	3.373	1.744	.334
1-043	2.987	2.366	.485
1-044	4.449	.609	.295
1-045	4.107	.954	.370
1-046	4.099	1.302	.463
1-047	2.359	1.433	.471
1-048	3.328	.983	.333
1-049	3.740	1.244	.471
1-050	4.403	.563	.429
1-051	4.000	.805	.486
1-052	3.813	.862	.553
1-053	4.446	.498	.371
1-054	2.677	1.579	.600
1-055	1.969	1.325	.561
1-056	1.368	.595	.446
1-057	1.301	.492	.475
1-058	1.476	.781	.314
1-059	3.306	1.313	.543
1-060	2.392	1.183	.472
1-061	3.547	1.868	.355
1-062	3.183	2.563	.40
1-063	2.618	3.506	.432
1-064	2.624	3.554	.409
1-065	2.670	3.549	.418

\* Correlation of Item Scores with Subtest Score

Table 8 (Continued)

<u>Item No.</u>	<u>Mean</u>	<u>Variance</u>	<u>Discrimination</u>
1-066	2.532	3.355	.419
1-067	2.096	2.705	.461
1-068	2.384	2.797	.488
1-069	2.206	2.358	.433
1-070	2.710	3.625	.395
1-071	4.628	.765	.262
1-072	3.634	1.341	.522
1-073	4.262	1.185	.441
1-074	3.874	1.691	.444
1-075	4.112	1.139	.418
1-076	3.900	1.194	.467
1-077	3.611	1.721	.466
1-078	3.407	1.860	.554
1-079	2.493	1.540	.518
1-080	3.552	1.253	.464
1-081	3.668	.988	.476
1-082	3.970	.882	.379
1-083	2.627	2.085	.379
1-084	3.048	1.775	.380
1-085	3.494	1.501	.582
1-086	4.343	.856	.461
1-087	3.598	1.522	.496
1-088	3.815	.974	.538
1-089	3.670	1.744	.265
1-090	3.796	.884	.577
1-091	3.974	.851	.517
1-092	2.690	1.732	.471
1-093	3.329	1.561	.529
1-094	4.744	.294	.224
1-095	4.512	.848	.394
1-096	4.119	.966	.394

\* Correlation of Item Scores with Subtest Score



Table 8 (Continued)

<u>Item No.</u>	<u>Mean</u>	<u>Variance</u>	<u>Discrimination*</u>
1-097	3.664	1.975	.372
1-098	4.088	1.428	.391
1-099	4.406	1.410	.329
1-100	3.913	1.315	.469
1-101	4.060	1.438	.364
1-102	3.912	1.144	.471
1-103	3.664	1.340	.430
1-104	3.466	2.290	.352
1-105	4.23	1.309	.143
1-106	4.084	.909	.435
1-107	4.219	.676	.332
1-108	3.053	1.675	.361
1-109	4.072	.898	.498
1-110	3.564	1.644	.285
1-111	3.177	1.887	.357
1-112	3.277	1.588	.465
1-113	3.427	1.493	.525
1-114	2.769	2.284	.381
1-115	2.642	2.536	.317
1-116	2.742	2.390	.563
1-117	2.714	2.330	.415
1-118	4.060	1.482	.407
1-119	4.102	1.610	.432
1-120	3.686	2.249	.418
1-121	3.463	2.661	.311
1-122	2.817	2.401	.401
1-123	2.381	1.959	.376
1-124	3.041	2.157	.498
1-125	4.124	1.206	.461
1-126	3.528	1.279	.627
1-127	3.224	1.358	.690

\*Correlation of Item Scores with Subtest Score

Table 8 (Continued)

<u>Item No.</u>	<u>Mean</u>	<u>Variance</u>	<u>Discriminatio</u>
1-128	3.461	1.802	.543
1-129	2.702	1.964	.494
1-130	3.540	1.294	.596
1-131	3.431	1.396	.669
1-132	3.323	1.426	.636
1-133	4.131	1.411	.307
1-134	2.120	1.409	.556
1-135	2.106	1.368	.577
1-136	2.135	1.379	.506
1-137	3.600	1.157	.459
1-138	2.473	1.816	.588
1-139	2.166	1.318	.555
1-140	1.719	1.224	.531
1-141	3.353	1.125	.490
1-142	3.004	1.375	.579
1-143	3.112	1.326	.437
1-144	2.732	1.434	.542
1-145	3.097	1.221	.400
1-146	3.804	1.371	.470
1-147	3.012	1.268	.605
1-148	2.976	1.164	.588
1-149	3.561	1.317	.468
1-150	3.229	1.054	.521
1-151	4.323	.515	.214
1-152	2.752	1.561	.300
1-153	1.755	1.046	.398
1-154	3.758	.897	.403
1-155	4.004	.910	.401
1-156	3.138	1.115	.529
1-157	3.701	1.444	.336
1-158	3.979	1.119	.316

\* Correlation of Item Scores with Subtest Score

Table 8 (Continued)

<u>Item No.</u>	<u>Mean</u>	<u>Variance</u>	<u>Discrimination*</u>
1-159	3.703	.480	.358
1-160	3.963	.626	.307
1-161	3.539	1.127	.492
1-162	3.900	1.042	.384
1-163	3.939	.955	.432
1-164	1.449	.484	.372
1-165	1.580	.777	.411
1-166	4.512	.504	.250
1-167	3.928	.890	.532
1-168	3.486	1.219	.563
1-169	3.275	1.147	.585
1-170	3.077	1.312	.575
1-171	3.750	1.241	.571
1-172	3.320	1.420	.460
1-173	3.528	1.507	.478
1-174	3.557	1.342	.431
1-175	4.020	1.146	.486
1-176	4.189	.898	.502
1-177	3.916	1.327	.596
1-178	2.799	1.964	.608
1-179	2.786	1.781	.644
1-180	4.146	1.138	.514
2-001	3.745	.989	.194
2-002	4.385	.885	.262
2-003	3.612	1.154	.367
2-004	4.558	.591	.189
2-005	4.286	.897	.374
2-006	4.575	.530	.202
2-007	4.512	.569	.198
2-008	4.336	.958	.189
2-009	3.996	1.413	.267
2-010	3.937	1.373	.161

\* Correlation of Item Scores with Subtest Score

Table 8 (Continued)

<u>Item No.</u>	<u>Mean</u>	<u>Variance</u>	<u>Discrimination*</u>
2-011	3.958	.793	.108
2-012	4.317	.401	.123
2-013	4.736	.607	.270
2-014	3.929	.744	.317
2-015	4.247	.666	.330
2-016	3.996	1.004	.380
2-017	3.954	.952	.413
2-018	4.041	1.182	.346
2-019	3.529	1.589	.332
2-020	2.133	1.499	.249
2-021	2.778	1.610	.313
2-022	3.817	1.021	.357
2-023	1.762	1.186	.347
2-024	2.787	2.084	.422
2-025	.75	.188	.398
2-026	.614	.239	.403
2-027	.883	.103	.502
2-028	.569	.245	.440
2-029	.671	.221	.472
2-030	.584	.243	.495
2-031	.587	.242	.474
2-032	.629	.234	.462
2-033	.358	.230	.427
2-034	.880	.106	.425
2-035	.884	.102	.490
2-036	.875	.109	.470
2-037	.866	.116	.459
2-038	.819	.148	.471
2-039	.745	.190	.440
2-040	.906	.085	.540
2-041	.832	.140	.594
2-042	.823	.146	.616

\* Correlation of Item Scores with Subtest Score

Table 8 (Continued)

<u>Item No.</u>	<u>Mean</u>	<u>Variance</u>	<u>Discrimination*</u>
2-043	.843	.132	.506
2-044	.83	.141	.538
2-045	.651	.227	.433
2-046	.717	.203	.515
2-047	.93	.065	.448
2-048	.95	.047	.536
2-049	.85	.127	.552
2-050	.839	.135	.537
2-051	.81	.154	.607
2-052	.86	.121	.583
2-053	.617	.236	.538
2-054	.772	.176	.534
2-055	.944	.053	.412
2-056	.851	.127	.538
2-057	.882	.104	.550
2-058	.767	.179	.557
2-059	.602	.240	.625
2-060	.913	.079	.633
2-061	.520	.249	.505
2-062	.270	.197	.673
2-063	.653	.227	.551
2-064	.436	.246	.494
2-065	.371	.233	.679
2-066	.732	.196	.586
2-067	.727	.199	.612
2-068	.74	.192	.489
2-069	.747	.189	.488
2-070	.827	.143	.604
2-071	.791	.165	.541
2-072	.855	.124	.513
2-073	.748	.188	.527
2-074	.289	.205	.676

\* Correlation of Item Scores with Subtest Score

Table 8 (Continued)

<u>Item No.</u>	<u>Mean</u>	<u>Variance</u>	<u>Discrimination*</u>
2-075	.505	.249	.664
2-076	.405	.241	.653
2-077	.456	.248	.651
2-078	.682	.217	.632
2-079	.548	.247	.665
2-080	.762	.181	.604
2-081	.712	.205	.642
2-082	.785	.169	.585
2-083	.671	.221	.575
2-084	.749	.188	.620
2-085	.301	.210	.661
2-086	.724	.200	.569
2-087	.123	.108	.594
2-088	.687	.215	.609
2-089	.681	.217	.614
2-090	.671	.221	.401
2-091	.847	.130	.388
2-092	.904	.087	.462
2-093	.809	.154	.385
2-094	.603	.240	.392
2-095	.623	.235	.332
2-096	.297	.209	.349
2-097	.274	.199	.292
2-098	.509	.250	.288
2-100	.472	.249	.362
2-101	.427	.245	.341
2-102	.17	.141	.478
2-103	.308	.213	.581
2-104	.194	.156	.563
2-105	.308	.213	.597
2-106	.38	.236	.470
2-107	.743	.191	.398

\* Correlation of Item Scores with Subtest Score

Table 8 (Continued)

<u>Item No.</u>	<u>Mean</u>	<u>Variance</u>	<u>Discrimination*</u>
2-108	.769	.178	.470
2-109	.708	.207	.483
2-110	.530	.249	.476
2-111	.554	.247	.502
2-112	.487	.250	.446
2-113	.88	.106	.516
2-114	.534	.249	.361
2-115	.914	.079	.475
2-116	.831	.140	.484
2-117	.946	.051	.439
2-118	.979	.021	.415
2-119	.929	.066	.387
2-120	.773	.175	.457
2-121	.949	.048	.467
2-122	.761	.182	.389
2-123	.855	.124	.361
2-124	.942	.055	.462
2-125	.678	.218	.439
2-126	.319	.217	.414
2-127	.916	.077	.440
2-128	.873	.111	.413
2-129	.810	.154	.501
2-130	.536	.249	.465
2-131	.641	.230	.247
2-132	.857	.122	.444
2-133	.692	.213	.537
2-134	.929	.066	.213
2-135	.932	.063	.232
2-136	.847	.130	.252
2-137	.792	.165	.037
2-138	.954	.044	.256
2-139	.983	.017	.241

\* Correlation of Item Scores with Subtest Score

Table 8 (Continued)

<u>Item No.</u>	<u>Mean</u>	<u>Variance</u>	<u>Discrimination*</u>
2-140	.866	.116	.316
2-141	.954	.044	.443
2-142	.631	.233	.488
2-143	.949	.048	.488
2-144	.765	.18	.397
2-145	.703	.209	.483
2-146	.861	.120	.503
2-147	.631	.233	.527
2-148	.193	.156	.339
2-149	.332	.224	.403
2-150	.992	.003	.086
2-151	.983	.017	.280
2-152	.845	.131	.370
2-153	.983	.017	.266
2-154	.913	.079	.341
2-155	.866	.116	.397
2-156	.954	.044	.241
2-157	.474	.249	.447
2-158	.908	.084	.247
2-159	.908	.084	.291
2-160	.941	.056	.301
2-161	.945	.052	.090
2-162	.912	.080	.176
2-163	.946	.051	.079
2-164	.733	.196	.350
2-165	.498	.250	.494
2-166	.611	.238	.593
2-167	.881	.098	.374
2-168	.403	.240	.424
2-169	.411	.242	.480
2-170	.312	.215	.558
2-171	.971	.028	.176

\* Correlation of Item Scores with Subtest Score



Table 8 (Continued)

<u>Item No.</u>	<u>Mean</u>	<u>Variance</u>	<u>Discrimination*</u>
2-172	.532	.249	.392
2-173	.593	.241	.453
2-174	.661	.224	.611
2-175	.687	.215	.650
2-176	.648	.228	.637
2-177	.690	.214	.646
2-178	.610	.238	.639
2-179	.620	.235	.690
3-001	.812	.153	.473
3-002	.812	.153	.475
3-003	.788	.167	.467
3-004	.556	.247	.323
3-005	.958	.040	.305
3-006	.870	.113	.314
3-007	.865	.117	.224
3-008	.954	.044	.200
3-009	.897	.093	.240
3-010	.846	.130	.162
3-011	.827	.143	.138
3-012	.44	.247	.322
3-013	.608	.238	.381
3-014	.775	.174	.467
3-015	.776	.174	.431
3-016	.749	.188	.415
3-017	.702	.209	.479
3-018	.958	.040	.431
3-019	.377	.235	.473
3-020	.537	.248	.474
3-021	.341	.225	.443
3-022	.630	.233	.476
3-023	.804	.158	.317
3-024	.782	.170	.497

\* Correlation of Item Scores with Subtest Score

Table 8 (Continued)

<u>Item No.</u>	<u>Mean</u>	<u>Variance</u>	<u>Discrimination*</u>
3-025	.830	.097	.327
3-026	.820	.148	.346
3-027	.514	.250	.453
3-028	.186	.151	.421
3-029	3.854	1.894	.498
3-030	4.724	.388	.419
3-031	4.714	.3734	.415
3-032	4.652	.4934	.488
3-033	4.283	1.155	.493
3-034	4.642	.427	.574
3-035	3.178	2.370	.586
3-036	3.801	1.733	.602
3-037	4.045	1.451	.559
3-038	3.411	2.082	.527
3-039	3.871	1.836	.344
3-041	.867	.116	.487
3-042	0.86	.079	.404
3-043	.744	190	.458
3-044	.964	.035	.302
3-045	.886	.101	.364
3-046	.805	.157	.326
3-047	.994	.006	.443
3-048	.939	.057	.396
3-049	.974	.023	.199
3-050	.588	.242	.187
3-051	.693	.213	.256
3-052	.952	.046	.289
3-053	.946	.051	.161
3-054	.816	.150	.501
3-055	.847	.130	.489
3-056	.988	.012	.475
3-057	.631	.233	.352

\* Correlation of Item Scores with Subtest Score

Table 8 (Continued)

<u>Item No.</u>	<u>Mean</u>	<u>Variance</u>	<u>Discrimination*</u>
3-058	.791	.165	.523
3-059	.829	.42	.521
3-060	.963	.036	.574
3-061	.798	.161	.590
3-062	.877	.108	.509
3-063	.696	.211	.486
3-064	.938	.058	.543
3-065	.700	.210	.540
3-066	.540	.249	.384
3-067	.763	.181	.472
3-068	.538	.248	.513
3-069	.853	.125	.388
3-070	.638	.237	.459
3-071	.522	.249	.393
3-072	.956	.042	.532
3-073	.866	.116	.406
3-074	.805	.157	.430
3-075	.933	.063	.487
3-076	4.483	.800	.297
3-077	4.659	.327	.418
3-078	3.901	1.285	.607
3-079	4.307	.922	.585
3-080	4.749	.302	.489
3-081	4.202	1.100	.448
3-082	3.994	1.147	.474
3-083	3.989	1.079	.597
3-084	4.028	1.159	.569
3-085	4.277	.906	.626
3-086	4.273	.897	.570
3-087	4.322	.776	.616
3-088	4.250	.874	.621
3-089	3.684	1.617	.569

\* Correlation of Item Scores with Subtest Score

Table 8 (Continued)

<u>Item No.</u>	<u>Mean</u>	<u>Variance</u>	<u>Discrimination*</u>
3-090	4.497	.596	.486
3-091	3.898	.927	.588
3-092	2.306	2.344	.511
3-093	4.103	.868	.608
3-094	3.682	1.241	.665
3-095	3.307	1.311	.620
3-096	3.709	1.219	.618
3-097	3.684	1.165	.681
3-098	3.759	1.132	.718
3-099	3.761	1.028	.728
3-100	3.649	1.182	.600
3-101	2.988	1.744	.624
3-102	3.283	1.576	.503
3-103	3.201	1.595	.630
3-104	4.040	.843	.440
3-105	3.420	1.378	.673
3-106	3.705	1.174	.650
3-107	3.411	1.508	.653
3-108	3.600	1.322	.664
3-109	3.488	1.351	.667

discrimination coefficient lower than .2, thirty-nine had discrimination coefficients between .2 and .3, and ninety had discrimination coefficients between .3 and .4. The remainder of the items or sixty-nine per cent of them had coefficients larger than .4. Since one did not expect a great amount of discrimination on many of the items, these coefficients are remarkably high.

For each sub-test, an "Alpha" reliability coefficient was calculated. These coefficients serve as an estimate of the internal consistency of the questionnaire items. That is, if the items within the sub-test tend to be measuring the same construct, then these coefficients should be quite high. These sub-tests and items were considered to be measures of quality of teacher behaviour. Therefore, one would hope for high reliability coefficients. These alpha reliability coefficients are reported in Table 9. Each is very high with the range being .95 to .98.

Table 9

Alpha Reliability Coefficients for Each of the  
Sub-Tests of the Original Questionnaire

<u>Sub-test No.</u>	<u>Alpha Coefficient</u>
1	.95
2	.96
3	.98
4	.98
5	.97
6	.98

Since it was assumed that each item was written in a positive fashion, the responses "never" or "no" were considered undesirable responses. It seemed unlikely that there would be a large number of respondents choosing either of these two responses. It was therefore felt useful to examine items where large proportions of the respondents chose these responses. In Table 10 (pages 176-182), items are identified where forty per cent or more of the respondents chose either the "never" or the "no" response. It is surprising that 130 of the items had forty per cent or more of the respondents choosing "no" or "never". The researchers suggest the following causes.

1) The items may relate to a specific subject area that is taught by a specialist teacher. This might occur more frequently in the Junior Division.

2) The items were stated in such specific terms that teachers did not identify the skill as comprising part of the program for that particular year.

3) The item may have described a behaviour common to the Junior but not the Primary panel or vice versa.

4) The item may have specified the use of particular equipment which is not readily available to the teacher.

5) It is possible that for a number of these behaviours Ontario teachers are not responding in a desired fashion.

The field testing of the instrument provided valuable information in assessing quality of specific items, in

Table 10

Items from the Original Item Pool with at Least 40%  
Choosing the "No" or "Never" Response

<u>Item No.</u>	<u>Item</u>
Language Development	
1-023	Children record a variety of natural, mechanical, animal and human sounds.
1-024	Children produce a sound story by placing their own recorded sounds in sequence.
1-025	Children interpret and respond to sound stories of other children.
1-027	Older children produce their own sound stories, combining recorded sounds and their own sound effects with an imaginative script.
1-055	The telephone is used in ways such as asking for information, making appointments, conducting interviews.
1-056	Older children translate their ideas from verbal to visual forms of communications by taking photographs, making movies or videotapes, putting together a simple television program or making a set of slides.
1-057	Children produce a "book of friends" in which they record candid descriptions of people whom they have interviewed.
1-058	Children run a simulated radio station or newspaper in which they feature items of current interest, interviews, surveys and descriptions of personalities.
	The teacher assists children who are learning English as a second language by
1-063	- linking language with concrete situations, gestures, and pictorial information
1-064	- offering names and suggestions
1-065	- helping the children to discriminate and practice words and expressions

Table 10 (Continued)

- 1-066 - gaining the cooperation of English-speaking children in using play and conversation to reinforce language patterns and words in context
- 1-067 - trying to find out which features of the child's first language hinders him or her in English
- 1-068 - using the child's interest in devising appropriate materials
- 1-069 - using slides, films, audio-tapes
- 1-070 - simplifying and pacing the language to suit the needs of the learner
- 2-028 Materials at curiosity centres and/or problem tables are renewed constantly.
- Children use listening centres to
- 2-030 - get information
- 2-031 - practice language skills
- 2-033 Special programs are in effect for children with limited competence in spoken English.
- 2-061 Children develop personal spelling lists.
- 2-062 Children classify words from their personal lists according to common patterns or rules.
- 2-064 Children return to their personal writing folder to correct spelling and punctuation.
- 2-065 A writing or printing model is provided for individual children to keep on their writing surface.
- Children are diagnosed for reading readiness
- 3-004 - by a reading readiness test
- 3-012 Children's poems, stories and books are edited, typed and featured in a library or resource centre.
- 3-019 Children are given only a single base line to guide their printing rather than being forced to print between two lines.



Table 10 (Continued)

- 3-020 Children are not pressured for precise form and accuracy of handwriting.
- 3-021 A class news book is used in the Primary Division to record events of current interest to the children; for example, the arrival of a new baby, a trip to another town.
- 3-042 Children observe the language of others by attending such events as community committee meetings and court hearings.
- The school library resource centre includes
- 3-050 - an index of community resources
- 3-092 Older children are stimulated to search for words, phrases and expressions by visits and discussions with artists, poets, and authors.

#### Mathematics

- 1-115 In using a variety of bases children first work with structural material and then proceed to working with less concrete material such as an abacus or number board.
- 1-123 Children are helped to find patterns that give structure to number; for example, "casting out nines".
- 1-134 Children gain experience in abstracting plane figures from solid objects by investigating ideas such as convexity, interior and exterior, simple properties of symmetry, number of line segments and the number of regions, etc.
- 1-135 Children investigate line symmetry through paper-folding activities or by examining images with mirrors or semi-transparent plastics.
- 1-136 Children study congruent figures by the sliding, turning or flipping of a tracing of a figure to produce new figures.
- 1-139 Children illustrate simple algebraic relationships by means of a graph.
- 1-140 Children investigate symmetry through the use of a variety of materials; for example, parallel rules, set squares, semi-transparent mirrors.

Table 10 (Continued)

Children have a variety of experiences in abstracting plane figures from solid objects by investigating ideas such as

- 2-074 - convexity
- 2-075 - interior and exterior
- 2-076 - relation between the number of vertices of a figure and the number of intersections of the lines joining those vertices
- 2-077 - the number of line segments and the number of regions
- 2-079 The concept of similar figures is introduced with three-dimensional models and later in two-dimensional drawings.
- 3-066 Children in the Junior Division use number lines with two scales to illustrate the relationship between fractions and their decimal equivalents.
- Activities and experiences with graphs and maps progress
- 3-068 - to patterns of relationships between areas of squares or volumes of cubes and length of edges
- 3-071 Children are introduced to the idea of relating the measurement of an angle to a rotation.

#### The Arts

- 1-153 Found (improvised) instruments such as brake drums, bottles, pails, corn husks, are used in the classroom.
- 1-164 Children meet artists from local and distant communities.
- 1-165 Children compare the design and function of tools and processes used in art and industry.
- The following methods of classroom drama are used
- 2-085 - circle theatre
- 2-087 - vocal jazz

Table 10 (Continued)

Children's creative responses to listening and discovering are fostered by

- 2-094 - inviting professional musicians to perform at the school, demonstrate various instruments and discuss their music with the children
- 2-096 - setting up a sound interest centre where children can exhibit, share and explore interesting sound materials
- 2-097 - carrying out sound inventories of spaces; for example, hall, room, home, any place visited on field trips
- 2-098 - inviting students from neighbouring secondary schools to share their music
- 2-099 - inventing sound games that allow and encourage children to explore the sound potential of an object or the use of sound to give signals
- 2-100 - letting the children experiment to find out how many sounds they can make with an object
- 2-101 - setting up situations where children can classify sounds in different ways

Experimentation in creative music activities is encouraged by

- 2-102 - inventing sound conversations between different objects
- 2-103 - drawing pictures of sounds and sharing the pictures
- 2-104 - making charts (graphs or scores) of the children's own compositions or of short compositions they have heard, exchanging charts and performing each other's charts
- 2-105 - making up a tune for a given poem, using two notes, then three notes, then four notes
- 2-106 - carrying out normal conversation through simple invented tunes

Table 10 (Continued)

The integration of Physical Education with other areas is fostered by utilizing such sources as

- 2-110 - textures and shapes in nature materials and sculpture
- 2-111 - costumes, songs and dances of different cultures
- 2-112 - sounds of trains, of water and of bells
- 2-113 - body sounds - clapping, slapping, breathing, stamping, shouting
- 2-126 The original words of professionals are displayed and discussed.
- 2-130 Children develop an art vocabulary so that they can use such words as texture, balance and rhythm.
- 3-027 A play corner containing suitable props such as a simple red cape, toys, hats, is available to permit social play and interaction.
- 3-028 Small portable platforms are available to allow children to work with vertical space.

#### Environmental Sciences

- 2-020 Children use ready-made science and ecology kits as a source of ideas.
- 2-023 Assignment cards are produced by children.  
Reporting skills are related to field work through
- 2-148 - photographing
- 2-149 - making rubbings or casts
- 2-157 Children learn the use, misuse and abuse of ability and mood modifiers; for example, pain-relieving drugs, tobacco, inhalants, alcohol.  
  
In preparing for an out-of-class activity the children are provided with
- 2-164 - inventory questions
- 2-165 - map of the route

Table 10 (Continued)

- 2-167 Out-of-classroom experiences accommodate unexpected and unforeseen events.
- 2-168 To facilitate area studies, one special area outside the classroom is selected for repeated visits throughout the school year.
- 2-169 A problem table is set up in the classroom to stimulate discussion and investigation.
- 2-170 Activities in the problem table are graded in difficulty.
- 2-172 The bulletin board and problem table incorporate suggestions for further research.
- 2-173 Bulletin boards and problem tables are working areas.

identifying items which would need to be changed or deleted, and in identifying behaviours which are not practised by all teachers or as many teachers as desired. The information obtained to this date has been useful. Based on the data, certain conclusions can be stated.

- 1) In its totality, the questionnaire has shown many desirable qualities.
- 2) Certain specific items should be revised or deleted.
- 3) If one's purpose is to discriminate, a number of items are not providing that information even though they may have many desirable qualities.
- 4) It should be possible to assemble a curriculum change indicator which would provide valuable information regarding the quality of teaching behaviour.

#### D. DEVELOPMENT OF THE INSTRUMENT

One of the major purposes for this research was to develop an assessment instrument which would be useful to teachers in assessing their own particular strengths and weaknesses. For this purpose, it was felt desirable to have items which would discriminate amongst teachers, that is, elicit a variety of responses. These items were determined by examining item discrimination, coefficient item variances, item means, and distributions of frequency of responses. In addition, items were examined for content to determine if the wording was clear and if the behaviour was specific enough to be meaningful.

On the basis of the above, a large number of items were deleted from the assessment instrument. Table 11 (pages 185-196) includes a listing of the items. It will be noted that many of these items are quite general in nature, being the sort of item to which most people can agree. Other more specific items are present in this list. However, these items either did not discriminate well amongst the group or were practiced by most of the teachers and therefore provide little information regarding total teacher performance.

In assembling the other items into a "Curriculum Change Indicator" the following procedures were followed:

- 1) Many items which have adequate statistical properties were retained.
- 2) It was felt that in many instances, behaviours described were too specific. As a result several of these related specific items were grouped together into one item.
- 3) Response patterns were changed for a number of items. In most instances where these changes were made, the "yes" - "no" response was changed to a "daily" to "never" type of response.
- 4) In reassembling all the items by content, it was found that there was a certain amount of redundancy. This caused certain additional items, which had desirable properties, to be eliminated.
- 5) Items that were too general to elicit a variety of responses were eliminated.

Table 11

Items from the Original Item Pool Deleted Prior to  
Development of the Curriculum Change Indicator

- 1-005 The teacher asks open-ended questions that stimulate a variety of responses.
- 1-011 Children use such materials as paint, crayons, pencils, papers and scrap to extend their language development.
- 1-012 Children discuss their activities with other children.
- 1-028 Someone reads aloud to children from a variety of books.
- 1-033 Children listen to oral directions, messages and reports.
- The teacher demonstrates the attributes of a model listener by
- 1-034 - listening more than talking in class
- 1-035 - listening to herself or himself
- 1-036 - becoming sensitive to the differences in meaning and feeling of children's responses
- 1-037 - accepting and working with the fact that children normally understand better than they express themselves orally.
- 1-038 - finding out whether anything in the situation, materials or manner of presentation has confused a child
- 1-039 - using the child's own forms of oral expression and expanding and improving them without criticism that discourages the child
- 1-040 - discussing with children alternative and better ways of expressing ideas and feelings
- Children discuss such things as
- 1-041 - favourite programs
- 1-042 - television documentaries, media interviews, news broadcasts



Table 11 (Continued)

- 1-043 Listening centres are used by the children.
- 1-044 Opportunities are provided for free, spontaneous interchange among children in small or large groups.
- 1-045 Many interesting things are available to stimulate discussion among children; for example, collections, hamster, photography.
- 1-046 Children practice verbal reasoning, sequencing and problem-solving skills by thinking aloud as they discuss a question with another child.
- 1-047 Opportunities are provided to witness natural phenomena such as baby chickens hatching.
- 1-048 Children share the experiences of holidays and field trips to gain practice at giving explanations, descriptions and reports.
- 1-049 Discussions of current happenings, such as a last minute goal in a hockey game, are held to encourage the language of argument, persuasion, explanation and emotion.
- The teacher invites communication on a personal level by
- 1-050 - sharing personal experiences
- 1-051 - sharing favourite collections, books, poetry and music
- 1-052 - helping children to feel poetry, music and literature by taking time to play with the words, expressions and ideas presented
- 1-053 The teacher encourages dialogue among children by listening, assessing, suggesting, probing, extending ideas, pointing out relationships and communicating personal pleasures.
- 1-071 Children read for personal interest and satisfaction.
- 1-094 The teacher reads to the children.
- 1-100 Spelling and word games are used.
- 1-105 Children develop printing and/or writing skills by copying materials appropriate to their development level.

Table 11 (Continued)

- 1-151 Children have an opportunity to sing together in an easy, natural way.
- 1-166 The teacher uses the world with which the child is familiar as a basis for the development of values, attitudes, concepts and skills.
- 2-001 Children contribute to class projects.
- 2-002 Children take responsibility for particular tasks.
- 2-004 Children listen to others.
- Children develop gross motor skills by
- 2-006 - running
- 2-007 - jumping
- 2-008 - wiggling
- 2-009 - sliding
- 2-010 - slipping through or over obstacles encountered in out-of-class activities.
- Children develop fine motor skills
- 2-011 - painting
- 2-012 - cutting
- 2-013 - writing
- 2-015 The teacher extends discussion into related learning experiences.
- 2-033 Special programs are in effect for children with limited competence in spoken English.
- 2-034 Children read various kinds and levels of materials; for example, stories, verses, directives, assignments, reference books.
- 2-035 Children read a variety of quality books that are geared to their interests and maturity.

Table 11 (Continued)

Which of these do you do?

- 2-037 - match children's real experiences with oral and printed language
- 2-038 - draw on children's language experiences, vocabulary and sentence structure in providing reading experiences

Which of these do you do?

- 2-039 - use children's own responses to create reading experiences and materials
- 2-040 - relate reading to real life situations that demonstrate how much we depend on our ability to read
- 2-041 - move the child on to books that are not primers
- 2-042 - make use of structural clues in reading materials by using experiences or materials so that the child can contrast and change word orders and patterns
- 2-043 - adopt a rational phonic system in dealing with early code-breaking aspects using English spelling patterns
- 2-044 - use brief intensive practice periods, games and activities to reinforce particular aspects of reading which have already been approached actively
- 2-047 - provide a flexible response that can accommodate the individual needs of children at different stages of reading
- 2-048 - use the child's capacities and needs for discriminating and classifying

Children use language games in the following ways

- 2-049 - grouping words with similar patterns
- 2-050 - grouping letter symbols or spelling patterns
- 2-051 - making new sentences by altering order or by using new words

Table 11 (Continued)

Children use language games in the following ways

- 2-052 - making new words by altering order or substituting letters
- 2-053 - playing stepping stones from one word to another by changing one letter at a time
- 2-054 - associating letters with sounds and objects
- 2-055 The teacher provides collections of books in the classroom geared to the needs of children at different stages of development.

Children are assessed for

- 2-069 - readiness to memorize number facts
- 2-070 - readiness to attempt written calculations
- 2-079 The concept of similar figures is introduced with three-dimensional models and later in two-dimensional drawings.
- 2-081 Children associate drama with learning in the classroom setting.
- 2-091 Drama activities allow children to create for themselves rather than cause them to imitate the teacher's ideas.
- 2-092 The focus in music is on singing, creating, playing, discovering and listening.
- Children's creative responses to listening and discovering are fostered by
- 2-093 - encouraging children to move freely in response to music
- 2-101 - setting up situations where children can classify sounds in different ways
- The integration of Physical Education with other areas is fostered by utilizing such sources as
- 2-108 - the seasons, the elements and other natural phenomena
- 2-109 - observation of such movements as flying, soaring and wheeling

Table 11 (Continued)

- 2-113 - body sounds - clapping, slapping, breathing, stamping, shouting
- 2-115 - recorded music
- 2-116 Rather than concentrating on a few skills a wide range of activities such as gymnastics, games, swimming, dance and drama with ample time for practice, repetition, modification, consolidation and application is provided.
- 2-123 Traditional art media is available.
- 2-124 Activities are provided involving a variety of materials.
- 2-127 The stimulus for expression springs from various areas of the program.
- 2-128 The focus is on the process of creating form out of materials and communicating, rather than on the products of creation.
- 2-129 Children are encouraged to examine and explore what they consider important in their own work through discussion of interesting themes, materials and finished works.
- 2-133 Each child is encouraged to impose order and form on acquired disparate information.
- 2-134 The teacher makes a variety of resources accessible.
- 2-135 Children make mistakes without penalty.
- 2-136 Explanations are given only when appropriate.
- 2-137 Instructions are given only when appropriate.
- 2-138 Children produce individual variations in observation and response.
- Reporting skills are related to field work through
- 2-143 - drawing
- 2-144 - sketching
- 2-145 - testing

Table 11 (Continued)

- 2-146 - counting
- 2-147 - graphing
- 2-148 - photographing
- 2-149 - making rubbings or casts
- 2-150 Children realize that their own contributions are appreciated and needed.
- 2-151 Children learn to recognize and utilize the views of others.
- 2-152 Children discuss different perspectives to see the validity of alternative points of view.
- 2-153 Children develop and use the social skill of cooperation.
- 2-154 Children learn the processes of life; for example, similarities and differences in the development of plants, animals, fish, birds and man.
- 2-155 Children learn the major parts of the body and their relationships.
- 2-156 Children learn the necessity of good nutrition.
- 2-157 Children learn the use, misuse and abuse of ability and mood modifiers; for example, pain-relieving drugs, tobacco, inhalants, alcohol.
- 2-158 Children learn the effect of the environmental conditions on growth and development; for example, clean air, unpolluted water.
- 2-159 Children learn such concepts as interdependence and basic needs.
- 2-160 Studies follow the child's individual level of understanding.
- 2-161 Studies proceed from the known to the unknown.
- In preparing for an out-of-class activity the children are provided with
- 2-163 - background information

Table 11 (Continued)

- 2-167 Out-of-classroom experiences accommodate unexpected and unforeseen events.
- 2-171 Bulletin boards are used for display; for example, pictures, photographs, clippings.
- 2-172 The bulletin board and problem table incorporate suggestions for further research.
- 2-175 Assignment cards are used by small groups.
- 2-176 Assignment cards require the children to record the results of their investigation.
- 2-177 Assignment cards vary in degree of difficulty.
- 2-178 Assignment cards suggest open-ended activities.
- 2-179 Assignment cards include a variety of activities for different children's learning styles.
- 3-001 Young children use puppets in a variety of ways to practise speaking.
- 3-002 Children use puppets as an extension of themselves to interact with each other.
- Children are diagnosed for reading readiness
- 3-004 - by a reading readiness test
- 3-005 - by the teacher based on observation
- 3-006 In learning to read children are allowed to make errors in guessing new words.
- Children use and extend their word knowledge by
- 3-007 - building new sentence patterns
- 3-008 - grouping words in familiar or rhyming sets
- 3-009 - seeing little words in larger words
- 3-010 - making new words by adding prefixes and suffixes
- 3-011 - collecting and grouping words in alphabetical order or in categories

Table 11 (Continued)

- 3-014 Much of the writing activity consists of making booklets containing stories, news, verse, accounts of visits and experiments and other personal writings.
- 3-015 The emphasis in the Primary Division is on quality of expression rather than neatness and correctness.
- 3-018 Writing or printing materials are available in a variety of media; for example, felt pens, crayons, newsprint.
- 3-020 Children are not pressured for precise form and accuracy of handwriting.
- 3-025 Children in the Primary Division use measuring activities that lead to the use of metric units in length, area, volume and mass.
- 3-026 Early experiences with fractions emphasize equivalence through a variety of activities.
- 3-027 A play corner containing suitable props such as a simple red cape, toys, hats, is available to permit social play and interaction.
- 3-029 Puppets are used by children.
- In learning to read
- 3-030 - children are provided with visual and auditory stimuli through real experiences such as books, films, filmstrips, records, music, songs and poetry
- 3-031 - children are given the opportunity to respond to things that interest them and express their ideas in writing, drawing, painting, modelling, movement and dance
- 3-033 The children's words and phrases are recorded on a group or individual basis.
- 3-036 Children develop the concept of magnitude of measurement by experiencing activities involving the concept of whole and part.
- 3-037 Children become aware of the properties of solids by handling and observing a variety of objects.



Table 11 (Continued)

- 3-039 Toys and dress-up materials are used by children.
- 3-040 At which of the following grade levels do you teach?
- A - Kindergarten  
 B - Grade 1  
 C - Grade 2  
 D - Grade 3  
 E - Grade 4
- Different abilities and interests in reading and language development are accommodated by
- 3-044 - grouping according to ability .
- 3-047 - relating group activities and materials to individual needs
- 3-048 Program skill-builders and basal readers are used as one method to supplement active teaching so that the child may develop a variety of technique and interest.
- 3-049 High interest books are available.
- 3-052 Reading includes a wide range of materials; for example, newspapers, magazines, directions for models, recipes, instruction, sports, manuals, cartoons.
- 3-053 Children are given time to read a wide selection of materials.
- 3-055 Children use books and collections of poetry to help them develop imaginative forms of expression.
- 3-056 Children have practise in writing about experiences that are real and relevant to them.
- 3-057 Children return to their writing later when their perception has matured.
- Children write
- 3-060 - summaries of information gathered on a field trip or from a filmstrip or book
- 3-065 - a diary or log book recording the development of a particular unit of study or project

Table 11 (Continued)

- 3-069 Children use simple algebraic notations for number relationships.
- 3-070 Children develop ways of representing geometric ideas such as angles, parallels and perpendiculars.
- 3-071 Children are introduced to the idea of relating the measurement of an angle to a rotation.
- As the child seeks to find information from secondary sources, related skills need to be developed. To accomplish this, children
- 3-072 - interpret pictures, charts and texts
- 3-073 - check information for accuracy and reliability
- 3-074 - examine conflicting evidence
- 3-075 - draw reasonable conclusions
- 3-076 Different abilities and interests in reading and language development are accommodated by having children assume responsibility for helping one another.
- Interest in new words is generated through
- 3-077 - discussion
- 3-080 - use of the dictionary
- 3-089 Children assess writing in terms of function and literary value during discussion with peers and adults.
- 3-090 Children are free to read without continual checks and formal testing of comprehension and vocabulary.
- 3-091 Children write stories and verse and produce booklets dealing with their activities and investigations.
- 3-093 Children discuss their writing with other children and with the teacher.

Table 11 (Continued)

## Children write

- 3-094 - booklets of various kinds containing stories, news reports and accounts of visits and experiments
- 3-095 - letters for permission and information and personal letters to friends and pen pals.
- 3-110 At which of the following grade levels do you teach?
- A - Grade 4
  - B - Grade 5
  - C - Grade 6
  - D - Multilevel

The revised instrument "A Curriculum Change Indicator" appears in Appendix B. It should be noted that the instrument is divided into three major content areas based on Chapters 4, 5 and 6 in EPJD. Based on the above criteria, these items seemed to be appropriate.

While it is recognized that the new instrument "A Curriculum Change Indicator" needs additional testing so that one can be confident of its validity and reliability the evidence to date indicates that a good quality instrument has been developed. Additional data from other parts of Ontario and from larger more representative groups of teachers are desirable. It is suggested that this is an important next step in the validation of the instrument.

#### E. IMPLICATIONS

The purpose of this study was to develop a Curriculum Change Indicator based on Chapters 4 to 6 of EPJD. This task was accomplished by establishing and testing an item pool representative of the content found in the text. An analysis of the data obtained from field-testing led to the revision of some items and the omission of others in the formulation of the Curriculum Change Indicator found in Appendix B.

On the basis of data analysis, it became evident that this Curriculum Change Indicator, as reported in the research, is in need of further refinement. Several concerns became apparent. What follows is a discussion of the most obvious of these concerns.

Table 10 lists the items for which forty per cent of the respondents chose "no" or "never". The question arises as to whether or not the responses should be low for these items. In other words does the document support a "no" or "never" response in the case of particular teachers. Second language items refer to a select group of teachers. The expectation in terms of response would be low in this situation. Further refinement in terms of a codification system for the items might accommodate the responses of particular teachers. In relation to this, it is possible that scaling procedures might have to be refined on the basis of the specialization of the teachers involved.

An analysis of the demographic data suggested the need for further study. The average age of the teachers in this sample reflects a mean higher than would be expected. An inconsistency seems to exist between actual age and the reported age. This inconsistency could be the result of misinterpretation of the directions on the

questionnaire relating to that particular item or a concern on the part of the teacher in regard to identification.

There is a marked discrepancy between mean age and years of experience. The years of experience are much lower than anticipated (see Table 3). Consideration should be given to the inclusion of a larger sample which might be representative of a wider age range with a more diversified experiential background.

A further testing of the instrument and analysis of the data might reveal that certain types of behaviour are more consistent with one teacher group than another within and between each division. Behaviour prominent in the kindergarten might not be evident or even desirable at the end of the Primary Division. Teachers of a particular age group or having similar years of experience or of a similar sex might show differences in terms of specified behaviours.

Another contribution might be the establishment of norms for the various grade levels in the Primary/Junior Division. The latter arises from the felt needs of administrators in the field. The establishment of norms for particular items might provide the focus for further research. Such norms are essential for the totalling of scores in a given situation.

In its present form the Curriculum Change Indicator is not an evaluation tool and should not be construed as such. Suggestions for use are found elsewhere in this report. No means of comparison of school with school or class with class is possible using any score obtained from the items as they now exist.

The researchers also envision the possibility of using the item pool established in this study as a source for criterion-referenced instrumentation.

## CHAPTER IV

### SUMMARY

This study focuses on Education in the Primary and Junior Divisions, adopted by the Ontario Ministry of Education in 1975. This document, an extensive philosophical and psychological backup for The Formative Years, provides educators with an overall general framework for the justification of curricular decisions. Permeating the content is the concept of teaching and learning as being based on a process of continual interaction in which the teacher and the learner are partners. It is an explication of the ideal and the desirable in three major areas; namely, Communication, The Arts, and Environmental Studies.

This project concerns the questions: How can one ascertain that this document will be translated into a meaningful statement for the agents expected to utilize it? How can this document be bridged with the real world of the classroom? How may relevant learning experiences result from it?

The project team, in conjunction with the Ministry of Education, established the following parameters; namely,

- 1) To develop an item pool to reflect the universe of content set down in Education in the Primary and Junior Division;



2) To provide a curriculum change indicator, a diagnostic instrument for determining how closely a given classroom reflects the content set down in EPJD.

3) To produce a manual of instructions to accompany (1) and (2) for use by teachers and administrators;

4) To prepare a report for the Minister of Education describing the process, the results, and the findings of the study.

The curriculum change indicator would serve at least two purposes:

1) provide a convenient means of assessing the school (and/or classroom) environment relative to key indicators extracted from the document so that initial decisions may be made about priority targets for affecting change, and

2) serve as a benchmark against which a school might measure change. It could be specifically for the primary and junior years.

Consideration was given to comprehensiveness, utility, and applicability. The ensuing paragraphs delineate the tasks involved in the realization of the project.

The first major task was the selection of an item pool representing the universe of content in Chapters 4, 5, and 6, EPJD.

Following an orientation period during which time the researchers became thoroughly familiar with EPJD and related documents, criteria for preliminary item selection were developed.

Items representative of the universe of content in the selected chapters of EPJD were then screened according to the criteria and translated into observable behaviours. This resulted in a preliminary list of approximately three hundred twenty-five items.

The next task entailed clarification of the items by teachers and principals. Rewording followed.

On the basis of their familiarity with EPJD, judges representing the Ministry of Education, Faculties of Education, and consultants employed by school boards, participated in the validation process of the individual items. Items from particular chapters were matched to each respondent, on the basis of subject expertise.

All responses from the judges were considered individually and the research team decided to include all returned items. The list now contained approximately 600 items, including a number which did not meet the criteria. The research team approved a procedure for further revision of the total list of items; namely, (a) refinement in accordance with original criteria, (b) submission of refined items to teachers, the potential users,

(c) submission of complete list to eight judges for their analysis. The resultant list would form the basis for the proposed curriculum change indicator.

As a result of feedback from the eight judges, meetings were scheduled with them by the researchers to review the total item pool. Two major recommendations ensued; namely, (a) that each item must stand by itself and be recognizable out of context, and (b) that further attention be given to the means-end dichotomy relating to the items; some of the items appeared use ends statements; others, means statements. It was decided that each item was to be a specific means for accomplishing certain ends. These recommendations led to further refinement and elimination. Select judges were contacted for further review of the items. The item pool was then considered finalized and ready for field testing.

Prior to the final selection of items to incorporate in the Curriculum Change Indicator, it was deemed necessary to obtain teacher responses to the items. In addition, the data were to be examined to obtain information regarding reliability, to identify items which appear to be useful in discriminating amongst teachers at different levels and in different grades, and to identify any unexpected or unusual response patterns.

A questionnaire consisting of 469 items was distributed to 950 teachers; the latter were asked to answer all the items that applied to his/her Divisions (Primary, Junior). For certain items, teachers were asked to indicate the frequency of given behaviours; for others, teachers were asked to indicate only if the behaviour did or did not occur. A total of 416 completed answer sheets was returned; of this number, 405 were usable. The data, resulting from the responses to the questionnaire, were assembled into Tables 2 to 12.

Prior to the final selection of items which would reflect content of Education in the Primary and Junior Division, it was felt necessary to obtain teacher responses to the items.

Four hundred and sixty-nine items were included in the questionnaire with the recognition that the response patterns would not necessarily be alike for both Primary and Junior level teachers. Three types of responses were elicited; namely, Primary, Junior, and both.

Each teacher was asked to answer all the items that applied to his/her Division along with half of the remaining items (divided into four subtests).

Based on principal and board official requests, the researchers distributed 950 questionnaires. Four hundred and sixteen completed answer sheets were returned, of which 405 were usable.

The time of distribution (year-end professional development days) was found to be inappropriate. Demographic data relative to respondents is included in the section on Field Testing of Items.

In examining these data, it was noted that for a number of items an excessively large number of respondents made the same choices. These choices which attracted an extremely large number of responses tended to be the "daily" response for those items where the responses were on a five-point scale, and the "yes" for those responses which required either a "yes" or "no" response. Items were therefore identified where more than eighty percent of the respondents made the same selection.

The researchers suggest the following reasons why such a great percentage of the respondents chose the "daily" or "yes" response; namely,

- 1) Certain teachers' behaviours are given. That is to say, that these behaviours will undoubtedly be found in most classrooms regardless of quality of teaching.

- 2) Many items were too general in nature.

For each of the six subtests, a total score was calculated. Item scores for the subtest were then correlated with the total score for the subtest. These correlations were then used as a measure of item

discrimination. Discrimination coefficients were examined and used as a basis for later decisions regarding deletion or revision of certain items. Of the 469 items, only seventeen had item discrimination coefficients lower than .2, and thirty-nine had discrimination coefficients between .2 and .3 and ninety had discrimination coefficients between .3 and .4. The remainder of the items or sixty-nine percent of them had coefficients larger than .4. For questions where one did not expect a great amount of discrimination on many of the items, these coefficients are remarkably high.

For each subtest, an "Alpha" reliability coefficient was calculated. These coefficients serve as an estimate of the internal consistency of the questionnaire items. (see Table 9)

Since it was assumed that each item was written in a positive fashion, the responses "never" or "no" were considered undesirable responses. It seemed unlikely that there would be a large number of respondents choosing either of these two responses. It was therefore felt useful to examine items where large proportions of the respondents chose these responses. One hundred thirty items are identified where forty percent or more of the respondents chose either the "never" or the "no" response. Although these results were unexpected for many of the items, the researchers suggest the following causes:

1) The items may relate to a specific subject area that is taught by a specialist teacher.

2) The items were stated in such specific terms that teachers did not identify the skill as comprising part of the program for that particular year.

3) The item may have described a behaviour common to the Junior, but not the Primary panel or vice versa.

4) The item may have specified the use of particular resources not readily available to the teacher.

5) It is possible that for a number of these behaviours, teachers are not responding in a desired fashion.

The field testing of the instrument provided valuable information in assessing the quality of specific items, in identifying items which would need to be changed or deleted, and in identifying behaviours which are not practised by all teachers or as many teachers as desired. Based on the data, certain conclusions can be stated; namely,

1) In its totality, the test has shown many desirable qualities.

2) Certain specific items should be revised or deleted.

3) If one's purpose is to discriminate, a number of items are not providing that information even though they may have many desirable qualities.

4) It should be possible to assemble a curriculum change indicator which would provide valuable information regarding the quality of teaching behaviour.

One of the major objectives of this research was the development of an assessment instrument which would be useful to teachers in identifying their own particular strengths and weaknesses. For this purpose, it was felt desirable to have items which would discriminate amongst teachers, that is, elicit a variety of responses. These items were determined by examining item discrimination, item variance, item means, and a distribution of frequency of responses. In addition, items were examined for content to determine that the wording was clear, and that the behaviours were specific enough to be meaningful.

The following procedures were followed in developing the curriculum change indicator:

1) Many items which have the adequate statistical properties were retained as is.

2) It was felt that in many instances, behaviours described were too specific. Several of these items could be grouped together into one item.

3) Response patterns were changed for a number of items.



4) In reassembling all the items by content, it was found that there was a certain amount of redundancy which resulted in further eliminations.

5) Items that were too general to elicit a variety of responses were eliminated.

While it is recognized that the curriculum change indicator needs additional testing, the evidence to date indicates that a qualitative instrument has been developed. An important next step in its validation would be to obtain additional data from other parts of Ontario and from larger, more representative groups of teachers.

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The typical steps involved in the gathering, analyzing, and using of data on test items is this chapter's topic. The first sections give a simple and non-technical presentation of the general principles and concepts involved. In the latter parts, some alternative techniques of item analysis are discussed, along with consideration of other more special problems and methods.

Miller, John P., Humanizing the Classroom: Models of Teaching in Affective Education, New York, Praeger Publishers, 1976.

Provides conceptual framework for classifying teaching approaches in affective education; this is accomplished according to the orientation of each model and the amount of structure associated with it.

Nunnally, Jim C. Jr., Introduction to Psychologic Measurement, Toronto, McGraw-Hill Book Company, 1970.

Issues concerning reliability, validity, psychological scaling, test construction are discussed along with parallels between problems of psychological measurement in studies of individual differences and in controlled experiments. Good background information relating to project.

Ontario Ministry of Education, Education in the Primary and Junior Divisions, Toronto, The Ministry, 1975.

Provides an extensive philosophical basis and rationale for the program in junior kindergarten through grade six. It indicates how the program expectations set out in The Formative Years may be achieved in an integrated and child-centered framework.

Ontario Ministry of Education, The Formative Years, Circular P1J1, Toronto, The Ministry, 1975.

Sets out the goals for the Primary and Junior Divisions of the public and separate schools of Ontario and states the expectations of the Ministry of Education with regard to the programs developed at the local level to meet these goals.

Stanley, Julian C., "Reliability", Educational Measurement, 2nd ed., Robert L. Thorndike (Ed.), Washington, American Council on Education, 1971, p. 356-442.

Excellent chapter with an in-depth discussion of reliability.

Talmdage, Harriet, Statistics as a Tool for Educational Practitioners, Berkeley, McCutchan Publishing Corporation, 1976.

Evaluation is defined in this book as collecting information systematically and arranging the data in meaningful ways in order to decide from among alternatives and to study the effects of the decision on the educational process.

Tillman, Murray, Donald Bersoff and John Dolly, Learning to Teach: A Decision-Making System, Toronto, D. C. Heath, 1976.

Provides a rationale for psychological study in educational settings; focus in relation to this study is on Chapter 10, "Gagné's Hierarchical Model of Learning."

Thorndike, Robert L. (ed.), Educational Measurement, 2nd ed., Washington, American Council on Education, 1971.

Book of readings which takes a look at the techniques, the theory and the issues underlying educational measurement. Following questions are answered: What developments have taken place during the past twenty years? How have approaches to measurement problems changed? What new technologies have emerged, and have they modified the testing enterprise? How have the concepts underlying measurement theory developed? What new issues and problems have arisen with changing concepts of social functioning and of education's role in it?

Walberg, Herbert J. and Susan Christie Thomas, Characteristics of Open Education, Toward an Operational Definition, Newton, Massachusetts, Education Development Center, 1971.

This book provides a systematic description of the concept of open education from a synthesis of the related literature. This review led to the development of an analytical framework composed of eight dimensions that were used to select items for an instrument intended to give an operational measure of the openness concept.

SECTION TWO

MANUALS FOR USE OF THE CURRICULUM  
CHANGE INDICATOR AND THE ITEM POOL

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## CHAPTER I

### MANUAL FOR USE OF THE CURRICULUM CHANGE INDICATOR

**NOTE:** This instrument is in the preliminary stages of development. The items have been selected as a result of field testing the original item pool. Further testing and subsequent refinement are essential to determine instrument validity and reliability. The researchers suggest that care should be taken in the interpretation of any results derived from the use of this instrument.

The items in the curriculum change indicator have been selected from the item pool as a result of the preliminary field testing. These items collectively represent the content of EPJD in terms of statement of means. Using this instrument a global score can be obtained for the total document or for selected sections of the document. This score can be viewed only as an indication of individual implementation of the strategies outlined in EPJD and should not be used as a comparative measure.

The following suggestions for use are presented:

1) Principals. A principal could use this questionnaire to gain a rough estimate of the level of implementation of EPJD in the school. The analysis of the results would identify the level of implementation for individuals, groups, and content areas. A discussion of these results would therefore provide a focus for professional development.

2) Teachers. Individual teachers or teams of teachers could use this questionnaire to assess their level



of implementation of EPJD. Teachers could observe and assess on another by comparing their self-assessment rating with the observer assessment rating the discussion should lead to clarification and behaviour change.

3) Family of Schools. Coordinators for staff development within the concept of "family of schools" or other school groupings could utilize this questionnaire as a basis for inservice education. Prior to the days set aside the teachers would complete the questionnaire which assesses the school level of implementation. School strengths in terms of content areas could be identified and used as a resource for programming.

These suggestions are not intended to be exhaustive. Many other ideas for use will become evident as educators become familiar with the questionnaire. Additional uses for this instrument could possibly be provided following further testing and refinement.

#### TEACHER-PRINCIPAL COMPARISON OF A CLASSROOM

During the year individual teachers may wish to assess their classrooms in relation to the principles outlined in EPJD. The principal, as curriculum leader in the school, may assist the teacher in this important task. The item pool presented in this report could be used in such an assessment. Although there are many ways this could be accomplished, the researchers suggest the following format.

The teacher and principal mutually agree upon a specific section of the item pool for the initial assessment.



It would demand considerable time to consider the global list of items therefore, partial use is suggested. For example, a teacher and principal may wish to compare their perceptions of the program in Environmental Studies. A specific section of the item pool would be selected to accomplish this objective.

The teacher and principal then will individually assess the particular classroom. This could take place during the regular day or at a specific time set aside for the activity. Understandably, the assessment would take place at a time of year when the principal was familiar with the classroom program.

Following the individual assessments the teacher and principal should discuss their perceptions. Comparisons could be made between the teacher and the principals' observation. In the dialogue the teacher and principal could discuss the entire program in that subject. A review of objectives could constitute part of the discussion. The teacher will obtain important information from an outsider on the program in the classroom. The principal will become more familiar with the curriculum in that particular classroom. Since each teacher is presenting an individualized program, the researchers recommend that comparisons not be made between classrooms.

The discussion which takes place following the comparison could be utilized to set objectives for particular programs in the next term. The teacher and principal would

have a mutual understanding of the situation at present and therefore a basis for setting targets for the particular classroom.

Use of the item pool in this manner will facilitate professional growth among teachers and principals.

#### PEER ASSESSMENT

A basic tenet of EPJD is that children have individual needs and styles of learning and that they require a variety of learning experiences to accommodate these differences. An environment providing the greatest flexibility in terms of methodology is essential to provide a variety of learning experiences. Organizational structures incorporating team teaching models have been used to provide flexibility. Basically two or more teachers plan, present and evaluate the learning experiences of a group of pupils.

There has been considerable literature published on the efficacy of team teaching. Agreement is evident on the importance fact of continuous assessment. To operate this organizational structure successfully it is essential that some form of peer assessment and teacher self-evaluation take place. The researchers suggest that the item pool contained in this report could be utilized in peer assessment.

A process of peer assessment must go beyond conversations and faculty meetings. A peer-centred approach provides the means for pooling and sharing information between and among staff members. During this project the

researchers have noted that one of the greatest reservoirs for staff improvement exists in the competence of excellent teachers in the classrooms of our schools. It is the opinion of the researchers that the item pool could be utilized to realize this potential. A possible format for use of the item pool in peer assessment is suggested below.

1) Initially, the team members should discuss the general objectives of their program. The section in this report could be used as a basis for the discussion. The researchers suggest that the initial discussion concentrate on one section of the document, for example, Mathematics. From this discussion the team members will formulate a list of objectives for their classroom as well as specific objectives for their particular aspect of the program.

2) The team members at this time would individually complete the item pool assessment. Each teacher would assess the classroom as they perceive it, in terms of the items identified by the researchers. It is recommended that this assessment take place on an individual basis. In effect, the responses of the team members will provide an indication of how closely the classroom is incorporating the principles of EPJD.

3) An opportunity is provided for the team members to compare their responses. The resulting comparisons will suggest areas of congruence as well as differences in perception. The discussion would pursue the major differences in order to identify target areas.

4) Following the discussion the members would have an assessment of the program and how closely the objectives were being met. In addition the assessment has not been provided by an authority figure; instead it has been provided by one of the team members. The results of the assessment could be used to set new objectives or initiate plans of action to accomplish the original objectives. Team members have been provided with a more objective assessment of their program.

The peer assessment obtained will be less threatening to the participants than an evaluation by superiors.

As outlined earlier, it is recommended that a previous discussion be held by the participants. At this time they should decide the purpose of the exercise as well as the format to be followed. The item pool would act as the vehicle for carrying out the assessment. The initiative for such an assessment would be the responsibility of the team members. Several teachers in team situations have indicated to the researchers the desirability of some form of peer assessment. The item pool presented in this report could be used to facilitate this task.

## CHAPTER II

### MANUAL FOR USE OF THE ITEM POOL

#### INSTRUCTION FOR USE

It is recognized that schools and/or individuals will assess their needs and select the appropriate procedure. The following ideas are presented to facilitate the use of the item pool. Such uses should result in a further understanding and application of the principles enunciated in EPJD. The item pool is found on pages 18-96.

1) Self-Assessment for Classroom Teachers.

Assessment is an ongoing activity for teachers in the classroom. Often assessment is intuitive and/or based on student achievement or response. This item pool provides criteria for viewing the classroom as a learning center consistent with the principles set down in EPJD. The content of Chapter 4 through 6 of EPJD is matched with specific observable behaviours. Individual teachers should be able to determine the congruence between the expectations stated in EPJD and current classroom practise by:

a) Selecting a program area such as Communications, Arts, Environmental Studies or any section thereof.

b) Stating a question to provide a focus for the exercise such as: What am I not doing? What am I doing well? What am I doing less/more often than desired?

c) Proposing a plan for action which would provide answers to such queries as: Where is change suggested and/or feasible? How can this change be made? How will it be introduced? How long will it take? Why am I doing it?.

2) Inservice Education. Inservice education plays a significant role in the professional development of the classroom teacher. A long-range goal of such programs is the improvement of classroom experiences both for the teacher and the students. Such programs should provide an opportunity to assess current practise, to present the ideal, and to discuss strategies to bridge the existing gap.

EPJD could be considered the ideal toward which primary/junior teachers are striving. The item pool is made up of the key behaviours which represent the universe totality of the content found on the pages of this document. Therefore, the item pool provides a focus for the examination of the ideal in terms of primary/junior education.

As an inservice device this item pool could be used:

- 1) to provide discussion material related to the session focus — communication, the arts, environmental studies, or any subsection of these areas;
- 2) to provide teachers with precision material related to classroom experience;

3) to provide the input to a chart in which teachers set up the "real" and the "ideal" as suggested by EPJD. This exercise could result in program evaluation and goal-setting by using headings such as resources needed, suggest implemented time, etc.;

4) to provide items for discussion of rationale on which suggestions are based. This exercise would lead to a study of the theatrical perspective found in Chapters 1 to 3.

The ideas presented above are not intended to be exhaustive. Individuals and groups will be able to explore other possibilities for the application of these items to further the individual and collective understanding of EPJD by people at all areas of educational endeavour.

APPENDIX A

EPJD

TEACHER BEHAVIOUR  
ASSESSMENT INSTRUMENT

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The Ontario Ministry of Education publications, The Formative Years and Education in the Primary and Junior Divisions, have outlined objectives and provided a philosophical basis for school criteria. In order for teachers to more easily define appropriate learning experiences and to evaluate their own progress in providing these experiences a team of educators has been developing a questionnaire.

The attached questionnaire is the result of work to date. The items have been taken from Chapters 4, 5 and 6 of Education in the Primary and Junior Divisions. The final form of the questionnaire will differ somewhat from this questionnaire and will likely contain a fewer number of items. Your responses will be important to our analysis in making appropriate changes.

The final form of the questionnaire should be useful to all Ontario educators in evaluating what we are doing. However, it should be stressed that the purpose is to help in improving programs not to evaluate the performance of any particular individual. This must be the underlying philosophy if one hopes to obtain honest responses.

You will note that it is not necessary to identify yourself as you answer the questionnaire. Anonymity of responses is guaranteed. During the summer we will be summarizing the data and will return to your school a summary of the results. A discussion of these results could well serve as the basis for a P.D. day. In the

meantime you are invited to retain the questionnaire. It may well provoke some interesting discussions.

We realize that the questionnaire is long and presents a tedious task to you. Your honest responses are important. So please stay with the task and do your very best.

As you respond please think of your total program over the past year. There are no right or wrong answers. The responses of the total group will present the views of teachers concerning the relative importance of various learning experiences.

Thank you for your patience and your honest appraisals.

## INSTRUCTIONS FOR COMPLETING QUESTIONNAIRES

- 1 - Each of you must be a teacher in the Primary or Junior Divisions and be fulltime in the classroom. If you teach a speciality subject only, you need not respond.
- 2 - Some of the items should be answered only by teachers of the Primary Division while other items should be answered only by teachers of the Junior Division. These items are identified.
- 3 - You will be provided a set of answer sheets. You will show your response to each item by blacking in the appropriate response.
- 4 - You will note that each of the answer sheets has an identification number. Please make sure that the same identification number is present on each sheet. Its only purpose is to identify the school and to identify the answer sheets as belonging to the same person.
- 5 - Be sure to use one of the pencils provided. If none should be available please be sure to use an "H-B" lead pencil.
- 6 - Now take answer sheet #1. You will see a number 1 in the upper right hand corner. The other two sheets are numbered 2 and 3 respectively. You will note that each item on the questionnaire is identified by four digits. The first digit identifies the number of the answer sheet. The next three digits identify the item number on the answer sheet. For example item number 1-083

would be responded to by marking your answer for item 83 on answer sheet #1.

- 7 - If you change an answer please erase completely.
- 8 - Do not spend a great deal of time on any question.  
Your first reaction will generally be the best.
- 9 - In each of the items a particular behaviour or situation is described. For many of these items you will indicate the relative frequency of occurrence by choosing from among five possible responses ranging from Daily to Never. You must think of your students this past year and choose the response that comes closest to describing what happened. If, by chance, the item is not applicable to your situation please answer by selecting the "Never" response.

Other items will simply be responded to by indicating yes or no.

BE SURE YOU ARE USING ANSWER SHEET #1

1-001 - In which Division do you teach

A - Primary

B - Junior

(If you are a Primary Teacher black in A beside numeral 1 on the answer sheet. If you are a Junior Teacher black in the B).

1-002 - Your sex

A - Female

B - Male

1-003 - Your age

A - 24 and below

B - 25-34 inclusive

C - 35-44 inclusive

D - 45-54 inclusive

E - 55 and over

1-004 - No. years taught (including this year)

A - one

B - 2-3

C - 4-7

D - 8-15

E - More than 15 years

Because there are so many items we are not asking you to complete all of them. Please answer the following items which are checked below.

Item Nos 1-005 to 1-093 inclusive \_\_\_ (see pages 6-13)

Item Nos 1-094 to 1-180 inclusive \_\_\_ (see pages 14-21)

Item Nos 2-001 to 2-090 inclusive \_\_\_ (see pages 22-28)

Item Nos 2-091 to 2-179 inclusive \_\_\_ (see pages 29-35)

In addition please respond to -

Item Nos 3-001 to 3-040 inclusive (see pages 36-40)

IF YOU ARE A PRIMARY TEACHER OR

Item Nos 3-041 to 3-110 inclusive (see pages 41-46)

IF YOU ARE A JUNIOR TEACHER

BE SURE YOU ARE USING ANSWER SHEET #1

- Please check page 5 to determine if you are to answer these items.

- For each item on this page choose an answer selected from the following responses -

- |                             |                                    |
|-----------------------------|------------------------------------|
| A - Daily Occurrence        | D - Two to Three Times<br>Per Year |
| B - Weekly                  | E - Never                          |
| C - About 10 Times Per Year |                                    |

ITEM NO.

- 1-005 The teacher asks open-ended questions that stimulate a variety of responses.
- 1-006 The teacher intervenes as children play and experiment to give new words and expressions.
- 1-007 Children are provided with opportunities to participate in manipulative experiences in the classroom, starting with such activities as splashing, dripping, pouring at a water table and proceeding to where they experiment with filter water pressure, etc.
- 1-008 Children handle, discuss and experiment with such things as balloons, pendulums, magnetic compasses, map-measurers, thermometers and other resource materials.
- 1-009 Children use all of their senses to discriminate, compare and match as they experiment with different materials.
- 1-010 With the teacher's guidance, children classify a variety of concrete objects to find such relationships as pattern, symmetry, order, size, number, use and cause-effect.
- 1-011 Children use such materials as paint, crayons, pencils, papers and scrap to extend their language development.
- 1-012 Children discuss their activities with other children.
- 1-013 Older children plan and organize ideas before expressing them through oral or written language.
- 1-014 The children use dramatization to respond to stories.
- 1-015 Children are exposed to selected songs and nursery rhymes to extend their language development.

BE SURE YOU ARE USING ANSWER SHEET #1

- For each item on this page choose an answer selected from the following responses -

- |                             |                                 |
|-----------------------------|---------------------------------|
| A - Daily Occurrence        | D - Two to Three Times Per Year |
| B - Weekly                  | E - Never                       |
| C - About 10 Times Per Year |                                 |

ITEM NO.

- 1-016 Selected audio-visual media are used to stimulate discussion and to broaden children's verbal experience.
- 1-017 The children use curiosity centres and/or problem tables.
- 1-018 Children interact with people from the community.
- 1-019 The teacher provides children with examples of different forms of language; for example, personal, social, heuristic, imaginative, regulatory.
- 1-020 Children practise using different registers of language appropriate to given situations; for example, polite, formal, familiar.
- 1-021 The teacher asks questions that lead to continuing and purposeful dialogue; for example, explaining, guessing, discussing, testing.
- 1-022 Children practise listening to a variety of sounds.
- 1-023 Children record a variety of natural, mechanical, animal and human sounds.
- 1-024 Children produce a sound story by placing their own recorded sounds in sequence.
- 1-025 Children interpret and respond to sound stories of other children.
- 1-026 Children experiment with natural, man-made and musical sounds.
- 1-027 Older children produce their own sound stories, combining recorded sounds and their own sound effects with an imaginative script.
- 1-028 Someone reads aloud to children from a variety of books.

BE SURE YOU ARE USING ANSWER SHEET #1

- For each item on this page choose an answer selected from the following responses -

- |                             |                                 |
|-----------------------------|---------------------------------|
| A - Daily Occurrence        | D - Two to Three Times Per Year |
| B - Weekly                  | E - Never                       |
| C - About 10 Times Per Year |                                 |

ITEM NO.

1-029 The teacher tells favourite stories to the children.

1-030 Reading aloud involves the children as participants by character imitation, role-playing or direct participating.

1-031 Reading aloud is followed by expressive activities such as movement, drama, puppetry, painting and music; playing with the rhythms of interesting words and phrases, and by dialogue.

1-032 Children interpret things they have listened to; for example, speaker, story, newscast.

1-033 Children listen to oral directions, messages and reports.

The teacher demonstrates the attributes of a model listener by -

1-034 - listening more than talking in class

1-035 - listening to herself or himself

1-036 - becoming sensitive to the differences in meaning and feeling of children's responses

1-037 - accepting and working with the fact that children normally understand better than they express themselves orally

1-038 - finding out whether anything in the situation, materials or manner of presentation has confused a child

The teacher demonstrates the attributes of a model listener by -

1-039 - using the child's own forms of oral expression and expanding and improving them without criticism that discourages the child



BE SURE YOU ARE USING ANSWER SHEET #1

- For each item on this page choose an answer selected from the following responses -

- |                             |                                    |
|-----------------------------|------------------------------------|
| A - Daily Occurrence        | D - Two to Three Times<br>Per Year |
| B - Weekly                  |                                    |
| C - About 10 Times Per Year | E - Never                          |

ITEM NO.

The teacher demonstrates the attributes of a model listener by -

- 1-040 - discussing with children alternative and better ways of expressing ideas and feelings
- Children discuss such things as
- 1-041 - favourite programs
- 1-042 - television documentaries, media interviews, news broadcasts
- 1-043 Listening centres are used by the children.
- 1-044 Opportunities are provided for free, spontaneous interchange among children in small or large groups.
- 1-045 Many interesting things are available to stimulate discussion among children; for example, collections, hamster, photography.
- 1-046 Children practise verbal reasoning, sequencing and problem-solving skills by thinking aloud as they discuss a question with another child.
- 1-047 Opportunities are provided to witness natural phenomena such as baby chickens hatching.
- 1-048 Children share the experiences of holidays and field trips to gain practise at giving explanations, descriptions and reports.
- 1-049 Discussions of current happenings, such as a last minute goal in a hockey game, are held to encourage the language of argument, persuasion, explanation and emotion.

BE SURE YOU ARE USING ANSWER SHEET #1

- For each item on this page choose an answer selected from the following responses -

- |                             |                                    |
|-----------------------------|------------------------------------|
| A - Daily Occurrence        | D - Two to Three Times<br>Per Year |
| B - Weekly                  |                                    |
| C - About 10 Times Per Year | E - Never                          |

ITEM NO.

The teacher invites communication on a personal level by -

- 1-050 - sharing personal experiences
- 1-051 - sharing favourite collections, books, poetry and music
- 1-052 - helping children to feel poetry, music and literature by taking time to play with the words, expressions and ideas presented
- 1-053 The teacher encourages dialogue among children by listening, assessing, suggesting, probing, extending ideas, pointing out relationships and communicating personal pleasures.
- 1-054 Tape recorders are used for such things as reading personal stories and poems, telling stories, describing experiences, reporting, giving directions for a game, dictating a recipe, or giving a news report or a sportscast.
- 1-055 The telephone is used in ways such as asking for information, making appointments, conducting interviews.
- 1-056 Older children translate their ideas from verbal to visual forms of communication by taking photographs, making movies or videotapes, putting together a simple television program or making a set of slides.
- 1-057 Children produce a "book of friends" in which they record candid descriptions of people whom they have interviewed.
- 1-058 Children run a simulated radio station or newspaper in which they feature items of current interest, interviews, surveys and descriptions of personalities.

BE SURE YOU ARE USING ANSWER SHEET #1

- For each item on this page choose an answer selected from the following responses -

- |                             |                                    |
|-----------------------------|------------------------------------|
| A - Daily Occurrence        | D - Two to Three Times<br>Per Year |
| B - Weekly                  | E - Never                          |
| C - About 10 Times Per Year |                                    |

ITEM NO.

- 1-059 The importance of the spoken word in human relations is developed through role-playing, mime, movement, drama and puppetry.
- 1-060 Children or groups of children generate diverse oral language experiences through such activities as making puppets, preparing scripts and sets, and producing sound and light effects.
- 1-061 Extra practise in oral language is provided for children with speech immaturities.
- 1-062 Extra practise in oral language is extended to older children who continue to have language difficulties.
- The teacher assists children who are learning English as a second language by -
- 1-063 - linking language with concrete situations, gestures, and pictorial information
- 1-064 - offering names and suggestions
- 1-065 - helping the children to discriminate and practise words and expressions
- 1-066 - gaining the cooperation of English-speaking children in using play and conversation to reinforce language patterns and words in context
- 1-067 - trying to find out which features of the child's first language hinders him or her in English
- 1-068 - using the child's interests in devising appropriate materials
- 1-069 - using slides, films, audio-tapes
- 1-070 - simplifying and pacing the language to suit the needs of the learner

BE SURE YOU ARE USING ANSWER SHEET #1

- For each item on this page choose an answer selected from the following responses -

- |                             |                                    |
|-----------------------------|------------------------------------|
| A - Daily Occurrence        | D - Two to Three Times<br>Per Year |
| B - Weekly                  |                                    |
| C - About 10 Times Per Year | E - Never                          |

ITEM NO.

1-071 Children read for personal interest and satisfaction.

1-072 Children develop some of their own reading material.

1-073 Children interpret things they have read.

1-074 Children read critically.

1-075 Children use reading material in the environment; for example, signs, labels, newspapers, magazines, billboards, recipes, directions, letters, initials.

1-076 Children use language games.

Children practise their reference skills by -

1-077 - defining questions or problems in terms so that answers can be found

1-078 - getting information through conversation, interview and discussion

1-079 - getting information about places and things through observation, using a tape recorder, a camera, and survey techniques

1-080 - getting information from graphic sources such as pictures, cartoons, diagrams, charts, maps, tables

1-081 - getting information from audio-visual sources

1-082 - using the school library and other libraries as sources of information

1-083 - checking information for relevance, authenticity and bias

1-084 - paraphrasing and summarizing pertinent information

1-085 - translating information into another form; for example, a note into a picture

BE SURE YOU ARE USING ANSWER SHEET #1

- For each item on this page choose an answer selected from the following responses -

- |                             |                                 |
|-----------------------------|---------------------------------|
| A - Daily Occurrence        | D - Two to Three Times Per Year |
| B - Weekly                  | E - Never                       |
| C - About 10 Times Per Year |                                 |

ITEM NO.

Children express their personal responses to written material by -

- 1-086 - talking about their observations and feelings
- 1-087 - recording their observations and feelings
- 1-088 - expressing their interpretations through painting, dramatization, models, maps or diagrams

Comprehension is assessed by asking the child to -

- 1-089 - read a page and define some of the words
- 1-090 - tell a story
- 1-091 - predict a story outcome
- 1-092 - relate reading to a report
- 1-093 - review creative writing, drama or painting

BE SURE YOU ARE USING ANSWER SHEET #1

- Please check page 5 to determine if you are to answer these items.

- For each item on this page choose an answer selected from the following responses -

- |                             |                                    |
|-----------------------------|------------------------------------|
| A - Daily Occurrence        | D - Two to Three Times<br>Per Year |
| B - Weekly                  | E - Never                          |
| C - About 10 Times Per Year |                                    |

ITEM NO.

- 1-094 The teacher reads to the children.
- 1-095 Children are given the opportunity and time to write.
- 1-096 Children's own experiences provide the base for writing.
- 1-097 The emphasis in teaching writing is directed toward individual and small groups rather than the class as a unit.
- 1-098 The teacher helps the children develop standard forms of grammar by working from their own writing.
- 1-099 Phonic experiences and investigations of spelling patterns are made part of the reading program.
- 1-100 Spelling and word games are used.
- 1-101 The teacher uses the child's own writing to develop a knowledge of correct punctuation.
- 1-102 Children discuss and share their writing with others.
- 1-103 Children read aloud what they have written in order to communicate stress, intonation and feeling.
- 1-104 Individual and small group instruction is utilized to teach hand writing.
- 1-105 Children develop printing and/or writing skills by copying materials appropriate to their development level.
- 1-106 Children participate in activities that require mathematical language to describe qualities such as size, shape, quantity.

BE SURE YOU ARE USING ANSWER SHEET #1

- For each item on this page choose an answer selected from the following responses -

- |                             |                                    |
|-----------------------------|------------------------------------|
| A - Daily Occurrence        | D - Two to Three Times<br>Per Year |
| B - Weekly                  | E - Never                          |
| C - About 10 Times Per Year |                                    |

ITEM NO.

- 1-107 Activities in mathematics are related to real experiences.
- 1-108 Children's own pictures and sketches are discussed to discover contradictions or lack of accuracy.
- 1-109 A knowledge of number facts is accomplished through experience gained from practical activities involving measurement, use of money, time, etc.
- 1-110 Oral tests of number facts are given.
- 1-111 Children do calculations mentally, recording only the answers needed in written solutions to problems.
- 1-112 Group computation games are used by children.
- 1-113 Individual computation games are used by children.
- 1-114 Children organize numbers by groupings other than ten.
- 1-115 In using a variety of bases children first work with structural material and then proceed to working with less concrete material such as an abacus or number board.
- 1-116 When performing additions or subtractions that require regrouping materials such as structural apparatus, the spike abacus and diagrams are used to show relationship between the values assigned to neighbouring columns.
- 1-117 Children's experience in the use of money is used as a basis when teaching decimal notation.
- 1-118 The child's understanding of number is achieved through the mental organization of many experiences of that number.
- 1-119 Addition and subtraction of the same numbers are seen as inverse operations.

BE SURE YOU ARE USING ANSWER SHEET #1

- For each item on this page choose an answer selected from the following responses -

- |                             |                                 |
|-----------------------------|---------------------------------|
| A - Daily Occurrence        | D - Two to Three Times Per Year |
| B - Weekly                  | E - Never                       |
| C - About 10 Times Per Year |                                 |

ITEM NO.

- 1-120 Multiplication is seen as repeated addition of equal groups.
- 1-121 Division is seen as the inverse of multiplication.
- 1-122 The two types of division, partitive and quotitive, are experienced in situations that involve sharing (finding the size of each equal part) or grouping (to find the number of equal parts).
- 1-123 Children are helped to find patterns that give structure to number; for example, "casting out nines".
- 1-124 The children discover and understand the distributive and associative laws.
- 1-125 Children are assessed for need for practise.
- 1-126 Children develop the concept of magnitude of measurement by matching and comparing sizes; for example, of length, area, capacity and volume.
- 1-127 Children develop the concept of arbitrary units; for example, by making visual or body comparisons as a unit of length.
- 1-128 Children use standard units to compare results and to communicate results to others.
- 1-129 Number lines based on selected units are constructed and then used in measurement problems.
- To develop competence in measurement children -
- 1-130 - see and feel measurable quantities
- 1-131 - estimate sizes of measurable quantities
- 1-132 - check the estimates of the measurable quantities
- 1-133 Metric units of measure are used in the classroom.



BE SURE YOU ARE USING ANSWER SHEET #1

- For each item on this page choose an answer selected from the following responses -

- |                             |                                    |
|-----------------------------|------------------------------------|
| A - Daily Occurrence        | D - Two to Three Times<br>Per Year |
| B - Weekly                  | E - Never                          |
| C - About 10 Times Per Year |                                    |

ITEM NO.

- 1-134 Children gain experience in abstracting plane figures from solid objects by investigating ideas such as convexity, interior and exterior, simple properties of symmetry, number of line segments and the number of regions, etc.
- 1-135 Children investigate line symmetry through paper-folding activities or by examining images with mirrors or semi-transparent plastics.
- 1-136 Children study congruent figures by the sliding, turning or flipping of a tracing of a figure to produce new figures.
- 1-137 Children are made aware of geometric shapes.
- 1-138 Children play games such as battleship and tic-tac-toe that locate position by means of a pair of coordinates.
- 1-139 Children illustrate simple algebraic relationships by means of a graph.
- 1-140 Children investigate symmetry through the use of a variety of materials; for example, parallel rules, set squares, semi-transparent mirrors.
- 1-141 Children participate in creative drama activities.
- 1-142 Drama provides practise in organizing ideas by giving children the opportunity to create stories for group improvisation.
- 1-143 Children practise moving to sound through participation in movement activities in which each child reacts individually and moves independently in his or her own space.
- 1-144 Children practise moving to sound through small group activities in which children share a common space, influence each other's movements and interact through movement.

**BE SURE YOU ARE USING ANSWER SHEET #1**

- For each item on this page choose an answer selected from the following responses -

- |                             |                                    |
|-----------------------------|------------------------------------|
| A - Daily Occurrence        | D - Two to Three Times<br>Per Year |
| B - Weekly                  | E - Never                          |
| C - About 10 Times Per Year |                                    |

**ITEM NO.**

- 1-145 Children practise moving in large groups or as a class to strong simple rhythms.
- 1-146 Children become involved in speech activities such as describing, defending, persuading, comforting, instructing, reporting, factually and communicating emotions.
- 1-147 Children participate in story dramatization where they improvise and play out their own stories.
- 1-148 Children play out familiar stories using their own words and movements.
- 1-149 Some of the following are used by children as vehicles to extend the interpretation of the printed word; poems, situations, dialogue, action verse, songs, plays, skipping, games, nursery rhymes and direct narration.
- 1-150 Children hear songs of other times and places as well as of today.
- 1-151 Children have an opportunity to sing together in an easy, natural way.
- 1-152 Instruments such as cymbals, tone bars, glockenspiels, tambourines, drums, autoharps, recorders, castanets, are used.
- 1-153 Found (improvised) instruments such as brake drums, bottles, pails, corn husks, are used in the classroom.
- 1-154 Recordings are used; for example, tapes, records.
- 1-155 The focus for Physical Education is the child's bodily movement as he or she explores and responds to the environment.
- 1-156 Creative movement is combined with music, drama and the visual arts to give expression to children's imagination and to contribute to learning.

**BE SURE YOU ARE USING ANSWER SHEET #1**

- For each item on this page choose an answer selected from the following responses -

- |                             |                                    |
|-----------------------------|------------------------------------|
| A - Daily Occurrence        | D - Two to Three Times<br>Per Year |
| B - Weekly                  | E - Never                          |
| C - About 10 Times Per Year |                                    |

**ITEM NO.**

- 1-157 Skills are developed from free play activities.
- 1-158 Children climb, swing, jump and roll to develop skill and control of personal response.
- 1-159 Floor activities and apparatus work are used to develop purposeful and imaginative action.
- 1-160 Games, equipment and group work are used to develop body management.

**Visual Arts -**

- 1-161 - Children make models and sketches, evaluate and compare familiar things.
- 1-162 - Each child has access to the materials and the medium that he prefers to use.
- 1-163 - Children develop personal techniques that enable them to improve their personal expression and extend their sense of control and response to materials.
- 1-164 - Children meet artists from local and distant communities.
- 1-165 - Children compare the design and function of tools and processes used in art and industry.

**Environmental Studies -**

- 1-166 - The teacher uses the world with which the child is familiar as a basis for the development of values, attitudes, concepts and skills.
- 1-167 - Children investigate the environment to stimulate other aspects of learning.

**BE SURE YOU ARE USING ANSWER SHEET #1**

- For each item on this page choose an answer selected from the following responses -

- |                             |                                    |
|-----------------------------|------------------------------------|
| A - Daily Occurrence        | D - Two to Three Times<br>Per Year |
| B - Weekly                  | E - Never                          |
| C - About 10 Times Per Year |                                    |

**ITEM NO.****Environmental Studies -**

Children perceive, understand and evaluate relationships within the environment:

- 1-168 - relationships among people; for example, social groups and communities, customs and institutions
- 1-169 - relationships among things, both natural and man-made; for example, relationships between weather and erosion
- 1-170 - relationships between people and things; for example, between the quality of life and the automobile
- 1-171 - relationships between themselves and the environment
- 1-172 - Learning paths of a class branch out in different directions and children are allowed to follow their own interests.
- 1-173 - The teacher picks up clues to the children's interests and needs as they freely explore their environment.
- 1-174 - Children are allowed time for exploration.
- 1-175 - Children handle materials freely.
- 1-176 - The teacher utilizes questions to reflect and re-consider hasty conclusions.
- 1-177 Children report in a variety of ways.
- 1-178 Children choose the means of reporting to reflect the audience to whom they are directing their report.

**BE SURE YOU ARE USING ANSWER SHEET #1**

- For each item on this page choose an answer selected from the following responses -

A - Daily Occurrence

D - Two to Three Times  
Per Year

B - Weekly

C - About 10 Times Per Year

E - Never

**ITEM NO.**

1-179 Children choose the means of recording to discover the most effective methods of presenting information.

1-180 Children participate in small group activities.

**BE SURE YOU ARE USING ANSWER SHEET #2**

- Please check page 5 to determine if you are to answer these items.

- For each item on this page choose an answer selected from the following responses -

- |                             |                                    |
|-----------------------------|------------------------------------|
| A - Daily Occurrence        | D - Two to Three Times<br>Per Year |
| B - Weekly                  | E - Never                          |
| C - About 10 Times Per Year |                                    |

**ITEM NO.****Environmental Studies -**

- 2-001 - Children contribute to class projects.  
 2-002 - Children take responsibility for particular tasks.  
 2-003 - Children organize and plan with others.  
 2-004 - Children listen to others.  
 2-005 - Children discuss and compare experiences and ideas.

**Children develop gross motor skills by -**

- 2-006 - running  
 2-007 - jumping  
 2-008 - wiggling  
 2-009 - sliding  
 2-010 - slipping through or over obstacles encountered in out-of-class activities.

**Children develop fine motor skills -**

- 2-011 - painting  
 2-012 - cutting  
 2-013 - writing  
 2-014 The teacher initiates class discussion related to health learning topics by utilizing current happenings in the lives of the children.

**BE SURE YOU ARE USING ANSWER SHEET #2**

- For each item on this page choose an answer selected from the following responses -

- |                             |                                    |
|-----------------------------|------------------------------------|
| A - Daily Occurrence        | D - Two to Three Times<br>Per Year |
| B - Weekly                  | E - Never                          |
| C - About 10 Times Per Year |                                    |

**ITEM NO.****Environmental Studies**

- 2-015 The teacher extends discussion into relating learning experiences.
- 2-016 The teacher develops learning experiences that cross subject lines; for example, the concept of change.
- 2-017 The teacher encourages further investigation by students on topics of student interest.
- 2-018 A variety of resources is available such as natural resources (stones and chestnuts), photographs, letters and books, tapes of sounds, recording and interviews, pictures and slides of materials.
- 2-019 Children have access to a variety of equipment and materials; for example, magnifying glasses, small microscope, safe sources of heat and electricity, metric measuring rods and tapes.
- 2-020 Children use ready-made science and ecology kits as a source of ideas.
- 2-021 Children contribute materials to the problem table.
- 2-022 Children and teacher contribute jointly to the bulletin boards.
- 2-023 Assignment cards are produced by children.
- 2-024 Assignment cards require the children to do something; for example, organize investigations, guess and test.

**BE SURE YOU ARE USING ANSWER SHEET #2**

- For each item indicate whether it was done or not this past year by choosing from the two choices -

A - YES

B - NO

**ITEM NO.**

- 2-025 A variety of activity centres is provided for creative expression.
- 2-026 The classroom has centres that include such materials as sand, clay, paint, water and toys to stimulate language usage.
- 2-027 The classroom contains display boards with constantly renewed materials.
- 2-028 Materials at curiosity centres and/or problem tables are renewed constantly.
- Children use listening centres to -
- 2-029 - listen for enjoyment
- 2-030 - get information
- 2-031 - practise language skills
- 2-032 The listening centres are equipped so that they may be used by individual children and small groups.
- 2-033 Special programs are in effect for children with limited competence in spoken English.
- 2-034 Children read various kinds and levels of materials; for example, stories, verses, directives, assignments, reference books.
- 2-035 Children are exposed to a variety of good literature; for example, modern classics, folk tales, myths, legends.
- 2-036 Children read a variety of quality books that are geared to their interests and maturity.
- Which of these do you do? -
- 2-037 - match children's real experiences with oral and printed language
- 2-038 - draw on children's language experiences, vocabulary and sentence structure in providing reading experiences



**BE SURE YOU ARE USING ANSWER SHEET #2**

- For each item indicate whether it was done or not this past year by choosing from the two choices -

A - YES

B - NO

**ITEM NO.**

Which of these do you do? -

- 2-039 - use children's own responses to create reading experiences and materials
- 2-040 - relate reading to real life situations that demonstrate how much we depend on our ability to read
- 2-041 - move the child on to books that are not primers
- 2-042 - make use of structural clues in reading materials by using experiences or materials so that the child can contrast and change word orders and patterns
- 2-043 - adopt a rational phonic system in dealing with early code-breaking aspects using English spelling patterns
- 2-044 - use brief intensive practise periods, games and activities to reinforce particular aspects of reading which have already been approached actively
- 2-045 - use nursery rhymes and songs for early reading and for supplementary material
- 2-046 - use the children's own stories, vocabulary and structure for reading in the early stages
- 2-047 - provide a flexible response that can accommodate the individual needs of children at different stages of reading
- 2-048 - use the child's capacities and needs for discriminating and classifying

Children use language games in the following ways -

- 2-049 - grouping words with similar patterns
- 2-050 - grouping letter symbols or spelling patterns
- 2-051 - making new sentences by altering order or by using new words

**BE SURE YOU ARE USING ANSWER SHEET #2**

- For each item indicate whether it was done or not this past year by choosing from the two choices -

A - YES

B - NO

**ITEM NO.**

Children use language games in the following ways -

- 2-052 - making new words by altering order or substituting letters
- 2-053 - playing stepping stones from one word to another by changing one letter at a time
- 2-054 - associating letters with sounds and objects
- 2-055 The teacher provides collections of books in the classroom geared to the needs of children at different stages of development.

Personal writing is expressed through -

- 2-056 - a personal letter or note
- 2-057 - an imaginative or fanciful story
- 2-058 - a poem
- 2-059 - a series of impressions
- 2-060 - a description of an experience
- 2-061 Children develop personal spelling lists.
- 2-062 Children classify words from their personal lists according to common patterns or rules.
- 2-063 Children collect and store their writing in a personal folder.
- 2-064 Children return to their personal writing folder to correct spelling and punctuation.
- 2-065 A writing or printing model is provided for individual children to keep on their writing surface.
- 2-066 Mathematical and language activities are integrated in the program; for example, discussing possible sizes and ways to build a rink.

**BE SURE YOU ARE USING ANSWER SHEET #2**

- For each item indicate whether it was done or not this past year by choosing from the two choices -

A - YES

B - NO

**ITEM NO.**

- 2-067 Some children are encouraged to construct tables that organize number facts.
- 2-068 Some children have addition and multiplication tables available for ready use.

Children are assessed for -

- 2-069 - readiness to memorize number facts
- 2-070 - readiness to attempt written calculations

To facilitate use of metric units children -

- 2-071 - estimate in metric units
- 2-072 - measure metric units
- 2-073 - solve problems in metric units

Children have a variety of experiences in abstracting plane figures from solid objects by investigating ideas such as -

- 2-074 - convexity
- 2-075 - interior and exterior
- 2-076 - relation between the number of vertices of a figure and the number of intersections of the lines joining those vertices
- 2-077 - the number of line segments and the number of regions
- 2-078 - simple properties of symmetry
- 2-079 The concept of similar figures is introduced with three-dimensional models and later in two-dimensional drawings.
- 2-080 Drama is utilized as a learning tool by integrating it with the learning process and content of other subjects.

BE SURE YOU ARE USING ANSWER SHEET #2

- For each item indicate whether it was done or not this past year by choosing from the two choices -

A - YES

B - NO

ITEM NO.

- 2-081 Children associate drama with learning in the classroom setting.
- 2-082 Children are stimulated in movement activities by a variety of roles, ideas and emotions.
- The following methods of classroom drama are used -
- 2-083 - choral dramatization
- 2-084 - group oral reading
- 2-085 - circle theatre
- 2-086 - playmaking (without an audience)
- 2-087 - vocal jazz
- 2-088 - puppetry
- 2-089 Children have time to calm down at the end of each dramatic experience through such activities as discussion, listening to music, or expressing some part of the experience in clay, paint, fabric or words.
- 2-090 Drama activities are cumulative in nature; they build on previous activities.

BE SURE YOU ARE USING ANSWER SHEET #2

- Please check page 5 to determine if you are to answer these items.

- For each item indicate whether it was done or not this past year by choosing from the two choices -

A - YES

B - NO

ITEM NO.

- 2-091 Drama activities allow children to create for themselves rather than cause them to imitate the teacher's ideas.
- 2-092 The focus in music is on singing, creating, playing, discovering and listening.  
Children's creative responses to listening and discovering are fostered by -
- 2-093 - encouraging children to move freely in response to music
- 2-094 - inviting professional musicians to perform at the school, demonstrate various instruments and discuss their music with the children
- 2-095 - asking the children to respond to voices and instruments by identifying them as light or heavy, sad or gay, blue or red
- 2-096 - setting up a sound interest centre where children can exhibit, share and explore interesting sound materials
- 2-097 - carrying out sound inventories of spaces; for example, hall, room, home, any place visited on field trips
- 2-098 - inviting students from neighbouring secondary schools to share their music
- 2-099 - inventing sound games that allow and encourage children to explore the sound potential of an object or the use of sound to give signals
- 2-100 - letting the children experiment to find out how many sounds they can make with an object
- 2-101 - setting up situations where children can classify sounds in different ways

BE SURE YOU ARE USING ANSWER SHEET #2

- For each item indicate whether it was done or not this past year by choosing from the two choices -

A - YES

B - NO

ITEM NO.

Experimentation in creative music activities is encouraged by -

- 2-102 - inventing sound conversations between different objects
- 2-103 - drawing pictures of sounds and sharing the pictures
- 2-104 - making charts (graphs or scores) of the children's own compositions or of short compositions they have heard, exchanging charts and performing each other's charts
- 2-105 - making up a tune for a given poem, using two notes, then three notes, then four notes
- 2-106 - carrying out normal conversation through simple invented tunes
- 2-107 - playing singing games, inventing singing games with the class
- The integration of Physical Education with other areas is fostered by utilizing such sources as -
- 2-108 - the seasons, the elements and other natural phenomena
- 2-109 - observation of such movements as flying, soaring and wheeling
- 2-110 - textures and shapes in natural materials and sculpture
- 2-111 - costumes, songs and dances of different cultures
- 2-112 - sounds of trains, of water and of bells
- 2-113 - body sounds - clapping, slapping, breathing, stamping, shouting
- 2-114 - percussion instruments, home-made or manufactured
- 2-115 - recorded music

BE SURE YOU ARE USING ANSWER SHEET #2

- For each item indicate whether it was done or not this past year by choosing from the two choices -

A - YES

B - NO

ITEM NO.

2-116 Rather than concentrating on a few skills a wide range of activities such as gymnastics, games, swimming, dance and drama with ample time for practise, repetition, modification, consolidation and application is provided.

Movement activities in Physical Education are used to develop -

2-117 - body awareness; that is, body parts involved in movement

2-118 - body awareness, basic body actions such as skipping, spinning, running, balancing, bending

2-119 - space awareness; that is, personal space, general space, levels, pathways, directions

2-120 - quality awareness; that is, weight, time space and flow

2-121 - relationships; that is, balls, targets, loops, benches, mats

Visual Arts -

2-122 - Contemporary art media is available.

2-123 - Traditional art media is available.

2-124 - Activities are provided involving a variety of materials.

2-125 - Each child is encouraged to arrange his or her own displays.

2-126 - The original works of professionals are displayed and discussed.

2-127 - The stimulus for expression springs from various areas of the program.

2-128 - The focus is on the process of creating form out of materials and communicating, rather than on the products of creation.

BE SURE YOU ARE USING ANSWER SHEET #2

- For each item indicate whether it was done or not this past year by choosing from the two choices -

A - YES

B - NO

ITEM NO.

## Visual Arts -

- 2-129 - Children are encouraged to examine and explore what they consider important in their own work through discussion of interesting themes, materials and finished works.
- 2-130 - Children develop an art vocabulary so that they can use such words as texture, balance and rhythm.
- 2-131 - The decision to display art work is left to the child.

## Environmental Studies -

- 2-132 - The teacher creates situations and constructs devices that stimulate purposeful first-hand investigation.
- 2-133 - Each child is encouraged to impose order and form on acquired disparate information.
- 2-134 - The teacher makes a variety of resources accessible.
- 2-135 - Children make mistakes without penalty.
- 2-136 - Explanations are given only when appropriate.
- 2-137 - Instructions are given only when appropriate.
- 2-138 - Children produce individual variations in observation and response

## Children report in a variety of ways -

- 2-139 - orally
- 2-140 - written
- 2-141 - visually
- 2-142 - graphically



BE SURE YOU ARE USING ANSWER SHEET #2

- For each item indicate whether it was done or not this past year by choosing from the two choices -

A - YES

B - NO

ITEM NO.

Reporting skills are related to field work through -

- 2-143 - drawing
- 2-144 - sketching
- 2-145 - testing
- 2-146 - counting
- 2-147 - graphing
- 2-148 - photographing
- 2-149 - making rubbings or casts

Environmental Studies -

- 2-150 - Children realize that their own contributions are appreciated and needed.
- 2-151 - Children learn to recognize and utilize the views of others.
- 2-152 - Children discuss different perspectives to see the validity of alternative points of view.
- 2-153 - Children develop and use the social skill of co-operation.
- 2-154 Children learn the processes of life; for example, similarities and differences in the development of plants, animals, fish, birds and man.
- 2-155 Children learn the major parts of the body and their relationships.
- 2-156 Children learn the necessity of good nutrition.
- 2-157 Children learn the use, misuse and abuse of ability and mood modifiers; for example, pain-relieving drugs, tobacco, inhalants, alcohol.

BE SURE YOU ARE USING ANSWER SHEET #2

- For each item indicate whether it was done or not this past year by choosing from the two choices -

A - YES

B - NO

ITEM NO.

## Environmental Studies

- 2-158 Children learn the effect of the environmental conditions on growth and development; for example, clean air, unpolluted water.
- 2-159 Children learn such concepts as interdependence and basic needs.
- 2-160 Studies follow the child's individual level of understanding.
- 2-161 Studies proceed from the known to the unknown.
- 2-162 Out-of-classroom activities are a natural extension of classroom activity.
- In preparing for an out-of-class activity the children are provided with -
- 2-163 - background information
- 2-164 - inventory questions
- 2-165 - map of the route
- 2-166 - a variety of tools for recording
- 2-167 Out-of-classroom experiences accommodate unexpected and unforeseen events.
- 2-168 To facilitate area studies, one special area outside the classroom is selected for repeated visits throughout the school year.
- 2-169 A problem table is set up in the classroom to stimulate discussion and investigation.
- 2-170 Activities in the problem table are graded in difficulty.
- 2-171 Bulletin boards are used for display; for example, pictures, photographs, clippings.

**BE SURE YOU ARE USING ANSWER SHEET #2**

- For each item indicate whether it was done or not this past year by choosing from the two choices -

A - YES

B - NO

**ITEM NO.**

- 2-172 The bulletin board and problem table incorporate suggestions for further research.
- 2-173 Bulletin boards and problem tables are working areas.
- 2-174 Assignment cards are employed as a teaching strategy.
- 2-175 Assignment cards are used by small groups.
- 2-176 Assignment cards require the children to record the results of their investigation.
- 2-177 Assignment cards vary in degree of difficulty.
- 2-178 Assignment cards suggest open-ended activities.
- 2-179 Assignment cards include a variety of activities for different children's learning styles.

**BE SURE YOU ARE USING ANSWER SHEET #3**

- These items are for Primary level teachers only. If you teach at the Junior level go to item 3-041 on page 41.

- For each item indicate whether it was done or not this past year by choosing from the two choices -

A - YES

B - NO

**ITEM NO.**

- 3-001 Young children use puppets in a variety of ways to practise speaking.
- 3-002 Children use puppets as an extension of themselves to interact with each other.
- 3-003 Children use puppets to dramatize personal experiences, stories, poems or plays.
- Children are diagnosed for reading readiness -
- 3-004 - by a reading readiness test
- 3-005 - by the teacher based on observation
- 3-006 In learning to read children are allowed to make errors in guessing new words.
- Children use and extend their word knowledge by -
- 3-007 - building new sentence patterns
- 3-008 - grouping words in familiar or rhyming sets
- 3-009 - seeing little words in larger words
- 3-010 - making new words by adding prefixes and suffixes
- 3-011 - collecting and grouping words in alphabetical order or in categories
- 3-012 Children's poems, stories and books are edited, typed and featured in a library or resource centre.
- 3-013 Children collect words, phrases, idioms and expressions from their own experiences, discussions and reading.
- 3-014 Much of the writing activity consists of making booklets containing stories, news, verse, accounts of visits and experiments and other personal writings.

**BE SURE YOU ARE USING ANSWER SHEET #3**

- For each item indicate whether it was done or not this past year by choosing from the two choices -

A - YES

B - NO

**ITEM NO.**

- 3-015 The emphasis in the Primary Division is on quality of expression rather than neatness and correctness.
- 3-016 Adults act as scribes to record ideas and thoughts of small children.
- 3-017 The captions recorded by the adults are used as a printing model.
- 3-018 Writing or printing materials are available in a variety of media; for example, felt pens, crayons, newsprint.
- 3-019 Children are given only a single base line to guide their printing rather than being forced to print between two lines.
- 3-020 Children are not pressured for precise form and accuracy of handwriting.
- 3-021 A class news book is used in the Primary Division to record events of current interest to the children; for example, the arrival of a new baby, a trip to another town.
- Children use a variety of materials to extend their understanding of mathematics -
- 3-022 - sand and water to explore aspects of pouring, comparing, classifying, putting in order of size, counting and estimating
- 3-023 - structural materials such as rods, blocks and interlocking cubes to introduce basic ideas of counting, measuring, classification and number bases
- 3-024 - blocks, boxes, loops, glue, string, tape, hammer and nails to make things
- 3-025 Children in the Primary Division use measuring activities that lead to the use of metric units in length, area, volume and mass.

**BE SURE YOU ARE USING ANSWER SHEET #1**

- For each item indicate whether it was done or not this past year by choosing from the two choices -

A - YES

B - NO

**ITEM NO.**

- 3-026 Early experiences with fractions emphasize equivalence through a variety of activities.
- 3-027 A play corner containing suitable props such as a simple red cape, toys, hats, is available to permit social play and interaction.
- 3-028 Small portable platforms are available to allow children to work with vertical space.

**BE SURE YOU ARE USING ANSWER SHEET #3**

- For each item on this page choose an answer selected from the following responses -

- |                             |                                    |
|-----------------------------|------------------------------------|
| A - Daily Occurrence        | D - Two to Three Times<br>Per Year |
| B - Weekly                  | E - Never                          |
| C - About 10 Times Per Year |                                    |

**ITEM NO.**

- 3-029 Puppets are used by children.  
In learning to read -
- 3-030 - children are provided with visual and auditory stimuli through real experiences such as books, films, filmstrips, records, music, songs and poetry
- 3-031 - children are given the opportunity to respond to things that interest them and express their ideas in writing, drawing, painting, modelling, movement and dance
- 3-032 Children express their ideas in forms other than writing; for example, art, discussion, construction, drama, movement and sound.
- 3-033 The children's words and phrases are recorded on a group or individual basis.
- 3-034 Specific activities such as drawing, painting, modelling to develop fine sensori motor skills are used.
- 3-035 Individual children record events of current interest in a news book.
- 3-036 Children develop the concept of magnitude of measurement by experiencing activities involving the concept of whole and part.
- 3-037 Children become aware of the properties of solids by handling and observing a variety of objects.
- 3-038 Children classify solid objects to become aware of such terms as cone, cylinder, sphere, cube, prism, pyramid.

**BE SURE YOU ARE USING ANSWER SHEET #3**

- For item J-039 on this page choose an answer selected from the following responses -

A - Daily Occurrence

D - Two to Three Times  
Per Year

B - Weekly

C - About 10 Times Per Year

E - Never

**ITEM NO.**

J-039 Toys and dress-up materials are used by children.

J-040 At which of the following grade levels do you teach?

- A - Kindergarten

B - Grade 1

C - Grade 2

D - Grade 3

E - Grade 4



BE SURE YOU ARE USING ANSWER SHEET #1

- These items are for Junior level teachers only. If you teach at the Primary level you need not proceed further.

- For each item indicate whether it was done or not this past year by choosing from the two choices -

A - YES

B - NO

ITEM NO.

- 3-041 Children seek information through conversations, interviews and discussions with other people.
- 3-042 Children observe the language of others by attending such events as community committee meetings and court hearings.
- Different abilities and interests in reading and language development are accommodated by -
- 3-043 - grouping according to interest
- 3-044 - grouping according to ability
- 3-045 - making group membership flexible
- 3-046 - meeting with groups at various times of the day
- 3-047 - relating group activities and materials to individual needs
- 3-048 Program skill-builders and basal readers are used as one method to supplement active teaching so that the child may develop a variety of technique and interest.
- 3-049 High interest books are available.
- The school library resource centre includes -
- 3-050 - an index of community resources
- 3-051 - an inter-library loan system linking the resource centre with other information services
- 3-052 Reading includes a wide range of materials; for example, newspapers, magazines, directions, for models, recipes, instruction, sports, manuals, cartoons.
- 3-053 Children are given time to read a wide selection of materials.

BE SURE YOU ARE USING ANSWER SHEET #3

- For each item indicate whether it was done or not this past year by choosing from the two choices -

A - YES

B - NO

ITEM NO.

- 3-054 Children study our heritage and poetry to gain sensitivity and precision of expression.
- 3-055 Children use books and collections of poetry to help them develop imaginative forms of expression.
- 3-056 Children have practise in writing about experiences that are real and relevant to them.
- 3-057 Children return to their writing later when their perception has matured.
- Children write -
- 3-058 - records of facts such as distances, directions, addresses and telephone numbers
- 3-059 - short reports of study activities (with each child contributing at his or her particular level)
- 3-060 - summaries of information gathered on a field trip or from a filmstrip or book
- 3-061 - outlines of main ideas for an oral presentation to the class
- 3-062 - sequential instructions for specific operations such as baking a cake, building a model, or conducting a science experiment
- 3-063 - news items or scripts for a radio broadcast, a slide presentation, or a dramatization
- 3-064 - descriptions of interesting trips or experiments
- 3-065 - a diary or log book recording the development of a particular unit of study or project
- 3-066 Children in the Junior Division use number lines with two scales to illustrate the relationship between fractions and their decimal equivalents.

BE SURE YOU ARE USING ANSWER SHEET #3

- For each item indicate whether it was done or not this past year by choosing from the two choices -

A - YES

B - NO

ITEM NO.

Activities and experiences with graphs and maps progress -

3-067 - from early block graphs to straight-line relationships

3-068 - to patterns of relationships between areas of squares or volumes of cubes and length of edges

3-069 Children use simple algebraic notations for number relationships.

3-070 Children develop ways of representing geometric ideas such as angles, parallels and perpendiculars.

3-071 Children are introduced to the idea of relating the measurement of an angle to a rotation.

As the child seeks to find information from secondary sources, related skills need to be developed. To accomplish this, children -

3-072 - interpret pictures, charts and texts

3-073 - check information for accuracy and reliability

3-074 - examine conflicting evidence

3-075 - draw reasonable conclusions

BE SURE YOU ARE USING ANSWER SHEET #3

- For each item on this page choose an answer selected from the following responses -

- |                             |                                    |
|-----------------------------|------------------------------------|
| A - Daily Occurrence        | D - Two to Three Times<br>Per Year |
| B - Weekly                  | E - Never                          |
| C - About 10 Times Per Year |                                    |

ITEM NO.

3-076 Different abilities and interests in reading and language development are accommodated by having children assume responsibility for helping one another.

Interest in new words is generated through -

3-077 - discussion

3-078 - investigation of the origin of words

3-079 - recognition of the variety of context and stylistic clues that the author uses to help the reader get the meaning

3-080 - use of the dictionary

3-081 The school library resource centre is used to generate personal inquiries and questions.

Children use literature in which they examine -

3-082 - beginnings of conflict in character

3-083 - conflicts in ideas and values

3-084 - emotional and ethical problems

Children use factual prose to -

3-085 - infer

3-086 - go beyond the statements

3-087 - to predict results

3-088 - to evaluate

3-089 Children assess writing in terms of function and literary value during discussion with peers and adults.

BE SURE YOU ARE USING ANSWER SHEET #3

- For each item on this page choose an answer selected from the following responses -

- |                             |                                    |
|-----------------------------|------------------------------------|
| A - Daily Occurrence        | D - Two to Three Times<br>Per Year |
| B - Weekly                  |                                    |
| C - About 10 Times Per Year | E - Never                          |

ITEM NO.

- 3-090 Children are free to read without continual checks and formal testing of comprehension and vocabulary.
- 3-091 Children write stories and verse and produce booklets dealing with their activities and investigations.
- 3-092 Older children are stimulated to search for words, phrases and expressions by visits and discussions with artists, poets, and authors.
- 3-093 Children discuss their writing with other children and with the teacher.
- Children write -
- 3-094 - booklets of various kinds containing stories, news reports and accounts of visits and experiments
- 3-095 - letters of permission and information and personal letters to friends and pen pals
- Children undertake comparative and experimental investigations of their own language by -
- 3-096 - listing words
- 3-097. - experimenting with word order
- 3-098 - comparing kinds of words that are used together
- 3-099 - studying the ways in which changes in sentences and word structure change meaning
- 3-100 Children in the Junior Division use maps and graphs as major forms of recording and representing information.
- 3-101 Children in the Junior Division practise measurement skills through the use of protractors, simple clinometers, magnetic compasses and other surveying instruments.

BE SURE YOU ARE USING ANSWER SHEET #3

- For each item on this page choose an answer selected from the following responses -

- |                             |                                 |
|-----------------------------|---------------------------------|
| A - Daily Occurrence        | D - Two to Three Times Per Year |
| B - Weekly                  | E - Never                       |
| C - About 10 Times Per Year |                                 |

ITEM NO.

- 3-102 Children experiment with composite numbers, square numbers and primes.
- 3-103 Children are helped to look at design features in familiar things around them: toys, classroom furniture, packages, clothes, landscaping.
- 3-104 Children use secondary sources such as reference materials.
- 3-105 Children formulate questions and plan specific investigations.
- 3-106 When gathering information, children receive guidance in preparing lists of facts and topics and in comparing sources.
- 3-107 Children select a main point in a paragraph, explain it orally and re-write the information in their own words.
- 3-108 Children translate summaries of information into their own language formats.
- 3-109 When participating in investigations children list facts, measurements and observations for later use in reporting.
- 3-110 At which of the following grade levels do you teach?
- A - Grade 4
  - B - Grade 5
  - C - Grade 6
  - D - Multilevel

APPENDIX B

CURRICULUM CHANGE INDICATOR BASED ON CONTENT  
FOUND IN EDUCATION IN THE PRIMARY AND  
JUNIOR DIVISIONS (EPJD)

## CURRICULUM CHANGE INDICATOR

	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
<b>COMMUNICATION</b>							
<b><u>GENERAL</u></b>							
1. The teacher intervenes as children play and experiment to give new words and expressions.						X	X
2. Children are provided with opportunities to participate in manipulative experiences in the classroom, starting with such activities as splashing, dripping, pouring at a water table and proceeding to where they experiment with filters, water pressure, etc.						X	X
3. Children handle, discuss and experiment with such things as balloons, pendulums, magnetic compasses, map-measures, thermometers and other resource materials.						X	X
4. Children use all of their senses to discriminate, compare and match as they experiment with different materials.						X	X
5. With the teacher's guidance children classify a variety of concrete objects to find such relationships as pattern, symmetry, order, size, number, use and cause-effect.						X	X
6. The children use dramatization to respond to stories.						X	X



	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
7. Children are exposed to selected songs and nursery rhymes to extend their language development.						X	X
8. Selected audio-visual media are used to stimulate discussion and to broaden children's verbal experience.						X	X
9. The children use curiosity centres and/or problem tables.						X	X
10. The materials at curiosity centres and/or problem tables are renewed.						X	X
11. For creative expression children use a variety of activity centres that include materials such as sand, clay, paint and water.						X	X
12. The materials on classroom display boards are renewed.						X	X
13. Children interact with people from the community.						X	X
14. The teacher provides children with examples of different forms of language, for example, personal, social, heuristic, imaginative, regulatory.						X	X
15. Children practise using different registers of language appropriate to given situations, for example, polite, formal, familiar.						X	X

	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
16. The teacher asks questions that lead to continuing and purposeful dialogue, for example, explaining, guessing, discussing testing.						X	X
17. Children practise listening to a variety of sounds.						X	X
18. Children record a variety of natural, mechanical, animal and human sounds.						X	X
19. Children produce a sound story by placing their own recorded sounds in sequence.						X	X
20. Children interpret and respond to sound stories of other children.						X	X
21. Children experiment with natural, man-made and musical sounds.						X	X
22. Older children produce their own sound stories, combining recorded sounds and their own sound effects with an imaginative script.						X	X
23. The teacher tells favourite stories to the children.						X	X
24. Reading aloud involves the children as participants by character imitation, role-playing or direct participating.						X	X

	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
25. Reading aloud is followed by expressive activities such as movement, drama, puppetry, painting and music; playing with the rhythms of interesting words and phrases, and by dialogue.						X	X
26. Children interpret things they have listened to, for example, speaker, story, newscast.  Children discuss such things as						X	X
27. - favourite programs						X	X
28. - television documentaries, media interviews, news broadcasts  Children use listening centres to						X	X
29. - listen for enjoyment						X	X
30. - get information						X	X
31. - practice language skills  The listening centres are used by						X	X
32. - individual children						X	X
33. - small groups						X	X
34. Opportunities are provided for free, spontaneous interchange among children in small or large groups.						X	X

	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
35. Many interesting things are available to stimulate discussion among children, for example, collections, photographs.						X	X
36. Children practise verbal reasoning, sequencing and problem-solving skills by thinking aloud as they discuss a question with another child.						X	X
37. Opportunities are provided to witness natural phenomena such as baby ducks hatching.						X	X
38. Children share the experiences of holidays and field trips to gain practice at giving explanations, descriptions and reports.						X	X
39. Discussions of current happenings, such as a last minute goal in a hockey game, are held to encourage the language of argument persuasion explanation.						X	X
The teacher invites communication on a personal level by							
40. - sharing personal experiences with the children						X	X
41. - sharing favourite collections, books, poetry and music						X	X

	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
42. - helping children to feel poetry, music and literature by taking time to play with the words, expressions and ideas presented						X	X
43. Tape recorders are used for such things as reading personal stories and poems, telling stories, describing experiences, reporting, giving directions for a game, dictating a recipe, or giving a news report or a sportscast.						X	X
44. The telephone is used in ways such as asking for information, making appointments, conducting interviews.						X	X
45. Older children translate their ideas from verbal to visual forms of communication by taking photographs, making movies or videotapes, putting together a simple television program or making a set of slides.						X	X
46. Children produce a "book of friends" in which they record candid descriptions of people whom they have interviewed.						X	X
47. Children run a simulated radio station or newspaper in which they feature items of current interest, interviews, surveys and descriptions of personalities.						X	X

	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
48. The importance of the spoken word in human relations is developed through role-playing, mime, movement, drama and poetry.						X	X
49. Children or groups of children generate diverse oral language experiences through such activities as making puppets, preparing scripts and sets, and producing sound and light effects.						X	X
50. Extra practice in oral language is provided for children with speech immaturities.						X	X
51. Extra practice in oral language is extended to older children who continue to have language difficulties.						X	X
The teacher assists children who are learning English as a second language by							
52. - linking language with concrete situations, gestures, and pictorial information						X	X
53. - offering names and suggestions						X	X
54. - helping the children to discriminate and practise words and expressions						X	X

	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
55. - gaining the cooperation of English-speaking children in using play and conversation to reinforce language patterns and words in context						X	X
56. - trying to find out which features of the child's first language hinders him or her in English						X	X
57. - using the child's interests in devising appropriate materials						X	X
58. - using slides, films, audio-tapes						X	X
59. - simplifying and pacing the language to suit the needs of the learner						X	X
60. Children develop some of their own reading material.						X	X
61. Children interpret things they have read.						X	X
62. Children read critically.						X	X
63. Children use reading material in the environment, for example, signs, labels, newspapers, magazines, bill-boards, recipes, directions, letters, initials.						X	X
64. Children use language games.						X	X

	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
Children practise their reference skills by							
65. - defining questions or problems in terms so that answers can be found						X	X
66. - getting information through conversation interview and discussion						X	X
67. - getting information about places and things through observation, using a tape recorder, a camera, and survey techniques						X	X
68. - getting information from graphic sources, such as pictures, cartoons, diagrams, charts, maps, tables						X	X
69. - getting information from audio-visual sources						X	X
70. - using the school library and other libraries as sources of information						X	X
71. - checking information for relevance, authenticity and bias						X	X
72. - paraphrasing and summarizing pertinent information						X	X
73. - translating information into another form, for example, a note into a picture						X	X



	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
Children express their personal responses to written material by							
74. - talking about their observations and feelings						X	X
75. - recording their observations and feelings						X	X
76. - expressing their interpretations through painting, dramatization, models, maps or diagrams						X	X
Comprehension is assessed by asking the children to							
77. - read a page and define some of the words						X	X
78. - tell a story						X	X
79. - predict a story outcome						X	X
80. - relate reading to a report						X	X
81. - review creative writing, drama or painting						X	X
82. Children are given the opportunity and time to write.						X	X
83. Children's own experiences provide the base for writing.						X	X
84. The emphasis in creative writing is directed toward individual and small groups rather than the class as a unit.						X	X

	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
85. The teacher helps the children develop standard forms of grammar by working from their own writing.						X	X
86. Investigations of spelling patterns are made part of the reading program.						X	X
87. Phonic experiences are made part of the reading program.						X	X
88. The teacher uses the child's own writing to develop a knowledge of correct punctuation.						X	X
89. Children discuss and share their writing with others.						X	X
90. Children read aloud what they have written in order to communicate stress, intonation and feeling.						X	X
91. Individual and small group instruction is utilized to teach hand writing.						X	X
92. Personal writing such as personal letters, imaginative stories, poems, descriptions of impressions and experiences, etc. is a part of the program.						X	X
93. Children develop personal spelling lists.						X	X
94. Children classify words from their personal lists according to common patterns or rules.						X	X

	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
95. Children collect and store their writing in a personal folder.	X	X	X	X	X		
96. Children return to their personal writing folder to correct spelling and punctuation.	X	X	X	X	X		
97. A writing or printing model is available for individual children to keep on their writing surface.	X	X	X	X	X		
98. Children participate in activities that require mathematical language to describe qualities such as size, shape, quantity.						X	X
99. Activities in mathematics are related to real experiences.						X	X
100. Children's own pictures and sketches are discussed to discover contradictions or lack of accuracy.						X	X
101. A knowledge of number facts is accomplished through experience gained from practical activities involving measurement, use of money, time, etc.						X	X
102. Oral tests of number facts are given.						X	X
103. Children do calculations mentally, recording only the answers needed in written solutions to problems.						X	X

	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
104. Group computation games are used by children.						X	X
105. Individual computation games are used by children.						X	X
106. Children organize numbers by groupings other than ten.						X	X
107. In using a variety of bases children first work with structural material such as an abacus or number board.						X	X
108. When performing additions or subtractions that require regrouping materials such as structural apparatus, the spike abacus and diagrams are used to show relationship between the values assigned to neighbouring columns.						X	X
109. Children's experience in the use of money is used as a basis when teaching decimal notation.						X	X
110. The child's understanding of number is achieved through the mental organization of many experiences of that number.						X	X
111. Addition and subtraction of the same numbers are seen as inverse operations.						X	X
112. Multiplication is seen as repeated addition of equal groups.						X	X

	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
113. Division is seen as the inverse of multiplication.						X	X
114. The two types of division, partitive and quotitive, are experienced in situations that involve sharing (finding the size of each equal part) or grouping (to find the number of equal parts).						X	X
115. Children are helped to find patterns that give structure to number, for example, "casting out nines".						X	X
116. The children discover and understand the distributive and associative laws.						X	X
117. Children are assessed individually for need to practise computational skills.						X	X
118. Children develop the concept of magnitude of measurement by matching and comparing sizes, for example, of length, area, capacity and volume.						X	X
119. Children develop the concept of arbitrary units, for example, by making visual or body comparisons as a unit of length.						X	X
120. Children use standard units to compare results and to communicate results to others.						X	X

	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
121. Number lines based on selected units are constructed and then used in measurement problems.  To develop competence in measurement children						X	X
122. - see and feel measurable quantities						X	X
123. - estimate sizes of measurable quantities						X	X
124. - check the estimates of the measurable quantities  To facilitate use of metric units children						X	X
125. - estimate in metric units						X	X
126. - measure in metric units						X	X
127. - solve problems in metric units						X	X
128. Children gain experience in abstracting plane figures from solid objects by investigating ideas such as convexity, interior and exterior, simple properties of symmetry, number of line segments and the number of regions, etc.						X	X
129. Children investigate line symmetry through paper-folding activities or by examining images with mirrors or semi-transparent plastics.						X	X

	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
130. Children study congruent figures by the sliding, turning or flipping of a tracing of a figure to produce new figures.						X	X
131. Children are made aware of geometric shapes.						X	X
132. Children play games such as battleship and tic-tac-toe that locate position by means of a pair of coordinates.						X	X
133. Children illustrate simple algebraic relationships by means of a graph.						X	X
134. Children investigate symmetry through the use of a variety of materials, for example, parallel rules, set squares, semi-transparent mirrors.						X	X
135. Some children are encouraged to construct tables that organize number facts.						X	X
136. Some children have addition and multiplication tables available for ready use.						X	X
137. Mathematical and language activities are integrated in the program, for example, discussing possible sizes and ways to build a rink.						X	X

	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
<u>Primary Level</u>							
138. Nursery rhymes and songs are used for early reading and for supplementary material.						X	X
139. Children's own stories, vocabulary and structure are used for reading in the early stages.						X	X
140. Children collect words, phrases, idioms and expressions from their own experiences, discussions and reading.						X	X
141. Children use puppets to dramatize personal experiences, stories, poems or plays.						X	X
142. Adults act as scribes to record ideas and thoughts of small children.						X	X
143. Children express their ideas in forms other than writing, for example, art, discussion, construction, drama, movement and sound.						X	X
144. Specific activities such as drawing, painting, modelling to develop fine sensori-motor skills are used.						X	X
145. Children are given only a single base line to guide their printing rather than printing between two lines.						X	X



	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
146. The captions recorded by adults are used as a printing model.	X	X	X	X	X		
147. Children's poems, stories and books are edited, typed and featured in a library or resource centre.	X	X	X	X	X		
148. A class news book is used in the Primary division to record events of current interest to the children, for example, the arrival of a new baby, a trip to another town.	X	X	X	X	X		
149. Individual children record events of current interest in a news book.	X	X	X	X	X		
150. Children classify solid objects to become aware of such terms as cone, cylinder, sphere, cube, prism, pyramid.	X	X	X	X	X		
151. Children use materials such as: (sand and water), (rods, blocks and interlocking cubes), (blocks, boxes, loops, glue, string, and hammer and nails) to extend their understanding of mathematics.						X	X
<u>Junior Level</u>							
152. Children seek information through conversations, interviews and discussions with other people.						X	X

	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
153. Children observe the language of others by attending such events as community committee meetings and court hearings.	X	X	X	X	X		
Different abilities and interests in reading and language development are accommodated by							
154. - grouping according to interest	X	X	X	X	X		
155. - making group membership flexible	X	X	X	X	X		
156. - meeting with groups at varied times of the day	X	X	X	X	X		
The school library resource centre includes							
157. - an index of community resources						X	X
158. - an inter-library loan system linking the resource centre with other information services						X	X
Children write							
159. - records of facts such as distances, directions, addresses and telephone numbers	X	X	X	X	X		

	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
160. - short reports of study activities (with each child contributing at his or her particular level)	X	X	X	X	X		
161. - outlines of main ideas for oral presentation to the class	X	X	X	X	X		
162. - sequential instructions for specific operations such as baking a cake, building a model, or conducting a science experiment	X	X	X	X	X		
163. - news items or scripts for a radio broadcast, a slide presentation, or a dramatization	X	X	X	X	X		
164. - descriptions of interesting trips or experiments	X	X	X	X	X		
165. Children study our heritage and poetry to gain sensitivity and precision of expression.  Interest in new words is generated through						X	X
166. - investigation of the origin of words						X	X
167. - recognition of the variety and stylistic clues that the author uses to help the reader get the meaning						X	X

	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
168. The school library resource centre is used to generate personal inquiries and questions.  Children use literature in which they examine						X	X
169. - beginnings of conflict in character						X	X
170. - conflicts in ideas and values						X	X
171. - emotional and ethical problems						X	X
172. Children use factual prose to make predictions and/or evaluate.						X	X
173. Children are stimulated to search for words, phrases and expressions by visits and discussions with artists, poets, and authors.						X	X
174. Children undertake comparative and experimental investigations of their own language by listing words, experimenting with word order, comparing kinds of words that are used together and/or examining how changes in sentence and word structure change meaning.						X	X
175. Older children plan and organize ideas before expressing them through oral or written language.						X	X

	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
176. Children use maps and graphs as major forms of recording and representing information.						X	X
177. Children practise measurement skills through the use of protractors, simple clinometers, magnetic compasses and other surveying instruments.						X	X
178. Children experiment with composite numbers, square numbers and primes.						X	X
179. Children use number lines with two scales to illustrate the relationship between fractions and their decimal equivalents.	X	X	X	X	X		
Activities and experiences with graphs and maps progress							
180. - from early block graphs to straight-line relationships						X	X
181. - to patterns of relationships between areas of squares or volumes of cubes and length of edges						X	X

## THE ARTS

General

182. Children participate in creative drama activities.
183. Drama provides practice in organizing ideas by giving children the opportunity to create stories for group improvisation.
184. Drama is integrated with the content of other subjects.
185. Children practise moving to sound through participation in movement activities in which each child reacts individually and moves independently in his or her own space.
186. Children practise moving to sound through small group activities in which children share a common space, influence each other's movements and interact through movement.
187. Children practise moving in large groups or as a class to strong simple rhythms.
188. In movement activities children play out a variety of roles, ideas and emotions.

	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
						X	X
						X	X
						X	X
						X	X
						X	X
						X	X
						X	X

	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
The following methods of classroom drama are used							
189. - choral dramatization						X	X
190. - group oral reading						X	X
191. - circle theatre						X	X
192. - playmaking (without an audience)						X	X
193. - vocal jazz						X	X
194. - puppetry						X	X
195. Children have time to calm down at the end of each dramatic experience through such activities as discussion, listening to music, or expressing some part of the experience in clay, paint, fabric or words.						X	X
196. Drama activities are cumulative in nature; they build on previous activities.						X	X
197. Children become involved in speech activities such as describing, defending, persuading, comforting, instructing, reporting, factually and communicating emotions.						X	X
198. Children participate in story dramatization where they improvise and play out their own stories.						X	X

	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
199. Children play out familiar stories using their own words and movements.						X	X
200. Some of the following are used by children as vehicles to extend the interpretation of the printed word; poems, situations, dialogue, action verse, songs, plays, skipping, games, nursery rhymes and direct narration.						X	X
201. Children hear songs of other times and places as well as of today.						X	X
202. Instruments such as cymbals, tone bars, glockenspiels, tambourines, drums, autoharps, recorders, castanets, are used.						X	X
203. Found (improvised) instruments such as brake drums, bottles, pails, corn husks, are used in the classroom.						X	X
Children broaden their interest in music by							
204. - listening to tapes, records, etc.						X	X
205. - having professional musicians perform at the school, demonstrate various instruments and discuss their music with the children						X	X



	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
206. - having students from neighbouring secondary schools share their music  Children experiment in creative music activities by						X	X
207. - playing games that allow and encourage them to explore the sound potential of an object or the use of sound to give signals						X	X
208. - finding out how many sounds they can make with an object						X	X
209. - responding to voices and instruments by identifying them as light or heavy, sad or gay, blue or red						X	X
210. - using a sound interest centre to exhibit, share and explore interesting sound materials						X	X
211. - carrying out sound inventories of spaces, for example, hall, room, home, any place visited on field trips						X	X
212. - inventing sound conversations between different objects						X	X
213. - drawing pictures of sounds and sharing the pictures						X	X

	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
214. - making charts (graphs or scores) of their own compositions or of short compositions they have heard, exchanging charts and performing each others' charts						X	X
215. - making up a tune for a given poem, using two notes, then three notes, then four notes						X	X
216. - carrying out normal conversation through simple invented tunes						X	X
217. - playing singing games						X	X
Movement activities in Physical Education are used to develop							
218. - body awareness, that is, body parts involved in movement						X	X
219. - body awareness, basic body actions such as skipping, spinning, running, balancing, bending						X	X
220. - space awareness, that is, personal space, general space, levels, pathways, directions						X	X
221. - quality awareness; that is, weight, time space and flow						X	X

	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
222. - relationships, that is, balls, targets, loops, benches, mats						X	X
223. The focus for Physical Education is the child's bodily movement as he or she explores and responds to the environment.						X	X
224. Creative movement is combined with music, drama and the visual arts to give expression to children's imagination and to contribute to learning.						X	X
225. Skills are developed from free play activities.						X	X
226. Children climb, swing, jump and roll to develop skill and control of personal response.						X	X
227. Floor activities and apparatus work are used to develop purposeful and imaginative action.						X	X
228. Games, equipment and group work are used to develop body management.						X	X
229. The integration of Physical Education with other areas is fostered by utilizing sources such as (a) natural materials and sculpture (b) costumes, songs, and dances of different cultures (c) sounds of differing materials (d) use of percussion instruments.						X	X

	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
The integration of Physical Education with other areas is fostered by using							
230. - textures and shapes in natural materials and sculpture	X	X	X	X	X		
231. - costumes, songs and dances of different cultures	X	X	X	X	X		
232. - sounds of trains, of water and of bells	X	X	X	X	X		
233. - percussion instruments, home-made or manufactured	X	X	X	X	X		
234. Children develop an art vocabulary so that they can use such words as texture, balance and rhythm.	X	X	X	X	X		
235. The decision to display art work is left to the child.	X	X	X	X	X		
236. Each child is encouraged to arrange his or her own art displays.	X	X	X	X	X		
237. The original works of professionals are displayed and discussed.	X	X	X	X	X		
238. Contemporary art media is available.	X	X	X	X	X		
239. Children make models and sketches, evaluate and compare familiar things.						X	X

	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
240. Each child has access to the materials and the medium that he prefers to use.						X	X
241. Children develop personal techniques that enable them to improve their personal expression and extend their sense of control and response to materials.						X	X
242. Children meet artists from local and distant communities.						X	X
243. Children compare the design and function of tools and processes used in art and industry.						X	X
<u>Primary Level</u>							
244. Small portable platforms are available to allow children to work with vertical space.						X	X
<u>Junior Level</u>							
245. Children are helped to look at design features in familiar things around them: toys, classroom furniture, packages, clothes, landscaping.						X	X

	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
<b>ENVIRONMENTAL STUDIES</b>							
<u>General</u>							
246. The teacher develops learning experiences that cross subject lines.						X	X
247. The teacher encourages further investigation by students on topics of student interest.						X	X
248. A variety of resources is available such as natural resources (stones and chest-nuts), photographs, letters and books, tapes of sounds, recording and interviews, pictures and slides of materials.						X	X
249. Children have access to a variety of equipment and materials, for example, magnifying glasses, small microscope, safe sources of heat and electricity, metric measuring rods and tapes.						X	X
250. Children use ready-made science and ecology kits as a source of ideas.						X	X
251. Children contribute materials to the problem table.						X	X
252. Children and teacher contribute jointly to the bulletin boards.						X	X

	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
253. Assignment cards are employed as a teaching strategy.						X	X
254. Assignment cards are produced by children.						X	X
255. Assignment cards require the children to do something, for example, organize investigations, guess and test.						X	X
256. A problem table is set up in the classroom to stimulate discussion and investigation.						X	X
257. Activities in the problem table are graded in difficulty.						X	X
258. Bulletin boards and problem tables are working areas.						X	X
259. Children investigate the environment to stimulate other aspects of learning.						X	X
Children perceive, understand and evaluate relationships within the environment							
260. - relationships among people, for example, social groups and communities, customs and institutions						X	X
261. - relationships among things, both natural and man-made, for example, relationships between weather and erosion						X	X

	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
262. - relationship between people and things, for example, between the quality of life and the automobile						X	X
263. - relationships between themselves and the environment						X	X
264. Learning paths of a class branch out in different directions and children are allowed to follow their own interests.						X	X
265. The teacher picks up clues to the children's interests and needs as they <u>freely</u> explore their environment.						X	X
266. Children are allowed time for exploration.						X	X
267. Children handle materials freely.						X	X
268. The teacher utilizes questions to reflect and reconsider hasty conclusions.						X	X
269. Children report in a variety of ways (orally, written, visually, graphically).						X	X
270. Children choose the means of reporting to reflect the audience to whom they are directing their report.						X	X



	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
271. Children choose the means of recording to discover the most effective methods or presenting information.						X	X
272. Children participate in small group activities.						X	X
273. Children organize and plan with others.						X	X
274. Children discuss and compare experiences and ideas.						X	X
275. The teacher initiates class discussion related to health learning topics by utilizing current happenings in the lives of the children.						X	X
276. Reporting skills are related to field work through drawing, sketching, counting, testing, etc.	X	X	X	X	X		
277. The teacher creates situations and constructs devices that stimulate purposeful first-hand investigation.						X	X
278. Out-of-classroom activities are a natural extension of classroom activity.						X	X
In preparing for an out-of-class activity the children are provided with							
279. - inventory questions	X	X	X	X	X		

	DAILY	WEEKLY	10 TIMES PER YEAR	2-3 TIMES PER YEAR	NEVER	YES	NO
280. - map of the route	X	X	X	X	X		
281. - a variety of tools for recording	X	X	X	X	X		
282. To facilitate area studies, a special area outside the classroom is selected for repeated visits throughout the school year.	X	X	X	X	X		
<u>Junior Level</u>							
283. Children use secondary sources as reference materials.						X	X
284. Children formulate questions and plan specific investigations.						X	X
285. When gathering information, children receive guidance in preparing lists of facts and topics and in comparing sources.						X	X
286. Children select a main point in a paragraph and explain it orally or in writing.						X	X
287. Children translate summaries of information into their own language formats.						X	X
288. When participating in investigations children list facts, measurements and observations for later use in reporting.						X	X