EVALUATING THE USE OF LEARNING ACTIVITY PACKAGES BASED ON THE LEARNING OBJECTIVE AS THE BASIC CRITERION UNIT

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ABSTRACT

Student teacher designed Learning Activity Packages as one approach to individualized instruction were evaluated for effectiveness through a pilot study and field testing using a procedure of tryout-revision-tryout on 162 pupils aged 10 to 12 years in the 5th and 6th grade levels.

Results in this exploratory investigation showed that out of 17 Learning Activity Packages, four were 80% effective without revisions, four were effective after revisions and the remaining nine needed further revisions and testing. Results of a student questionnaire showed a definite preference for this form of individualized instruction. Further results indicate that classroom teachers need professional training in instructional design and in evaluating instructional materials.

In this thesis, evaluation was studied as a technological problem. The outcomes of this evaluation study are not intended to be generalized to other instructional materials. The investigation and interpretation of results apply only to the program of particular Learning Activity Packages used in or having access to a school resource center where they were tested.

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CHAPTER I

INTRODUCTION

The problem of individualizing instruction has not been solved. Many educators believe that there is a great demand for an educational system that can meet the needs of students at all ability levels. They think that the goal can only be achieved through some form of individualized instruction. Supporters of "status quo" will argue that in theory individualized instruction is good but that in practice it will not work. This is an absurd contradiction. If one accepts the validity of the theory, then he must accept the idea that it can be successfully applied. The problem is to determine how.

Educators such as Bloom, Gagne, Goodlad, Kapfer, and others have recognized the need for individualization of instruction and have put forth concrete theories and an effective instrument for implementation. They are in agreement that if a student is given the tools and these tools are necessary skills which have to be taught, then the problem of individualized instruction can be solved. Bloom (1971) looks at individual differences as variations in the type of instruction a student needs and the time it takes him to master a subject. He found in research studies with children that carefully planned sequential learning, with frequent diagnostic and progress testing was essentially the answer to mastery (pp. 43-56).

The necessary skills can now be taught through an existing instrument called Learning Activity Package or LAP. Though the instrument is readily available and has proven its effectiveness in many schools in the U.S.A., it is believed that an exploratory investigation which forms the basis for this thesis marks the first time that the LAP system of

instruction as such has been introduced in the Province of Quebec. Therefore an exploratory study in the implementation of an individualized learning system is justified at this time.

It is the purpose of this thesis to discuss, evaluate and disseminate the purposes of LAPs in terms of individualizing instruction and learning. However, the primary purpose of LAPs is to assist teachers in creating more humanized learning environments or using a humanitarian approach.

> Individuality must be preserved in the emerging, highly organized, centralized, and technologically automated society. Although innovations (particularly those connected with technological advancements) hold great promise, they also pose the threat of undermining the potential and self-determination of individuals. Properly integrated, these innovations may provide the basis for a continuous progress curriculum which promotes individuality (Kapfer, 1971, p. 8)

The LAP is one method of individualizing instruction for students and it has important affective implications. It is an innovation in human-based instruction in our schools.

> An important focal point for the teaching profession now is the humanization of the means of instruction. We have reiterated truly human ends for education but we have not done too well by the means. Two opportunities lie open to us. The first is the humanization of content. The second is the humanization of the entire instructional environment (Goodlad, 1971, p. 346).

Even though the LAP is written with a specific performance objective or objectives, i.e. a content objective, as its base, it also contains implications of humanitarian objectives of values, attitudes and feelings (Goodlad, 1971). These "by-products" of the content objective include reinforcement of previous skills, acquisition of new skills, and application of new skills, e.g. higher level of thinking and feeling. A LAP offers a student levels of learning so that every student can master the concepts or processes being presented (Bloom, 1971

& Gagne, 1965). Self-esteem is developed (Jackson, 1969, p.]). LAPs permit students, with the help of teachers, to plan their own learning sequences. Students are offered the opportunity to choose their own paths and pace for learning which is a form of decision making and independent action. LAPs through successful learning experiences at varying levels provide for decision making and self-motivation.

Regardless of what is stressed, a LAP in essence includes multiple objectives. The acquisition of the content objective leads to skills which in turn lead to a change in student attitude.

Individualization

The definition of individualization used for LAPs in short is that: the 'individualization' of instruction requires the adaptation of the educational environment to individual differences in learners.

In the discussion of ways to improve education, there is frequent reference to individualizing instruction. To quote from a few experts:

> The desirability of individualizing instruction is no longer questioned by anyone. The objections to it are concerned chiefly with the application of the theory to classroom conditions. Among the many partial solutions offered to the problem is that of differentiated requirements, or the practice of varying the amount of work to be accomplished in accordance with the ability of the individual pupils of a group. While differentiating requirements makes possible a high degree of individualization, its successful administration in the classroom presupposes on the part of the teacher (1) knowledge of the educational status of his pupils as individuals, (2) organization of the materials of instruction so as to permit flexible assignments, and (3) the adoption of a technique of instruction which will enable the teacher to use a large share of his teaching time in directing work rather than hearing lessons.
>
> The classroom then becomes a workshop in which the instructor is the director ...individuals advance at their own rate and the instructor assigns to each the amount of assimilative material which in his judgment is needed to insure the understanding desired (Reavis, 1925, p. 49).

Washburne who published his findings at the same time or concurrently has written:

> Under the old regime in the effort to give different children the same subject matter in the same length of time, the quality of the children's work, the degree of their mastery, varied from poor to excellent, as attested by their report cards. But under the new technique of individual education, instead of quality varying, time varies: a child may take as much time as he needs to master a unit of work, but master it he must. The common essentials, by definition, are those knowledges and skills needed by everyone. To allow many children, therefore to pass through school with hazy and inadequate grasp of them, as one must under the class lock-step scheme, is to fail one of the functions of the school. (Washburne, 1925, p. 79).

Wilhelms (1962) says analysis of various systems including the Winnetka plan, and "the individual system" of Burk,

> ... reveals a disappointing amount of true individualization. In both schemes there has been far too much tendency to individualize with respect to little more than rate of progress. ...And one must have a meager conception of individualization to settle for students merely being able to do these same things at a different pace. Such "individualization" largely fails to come to grips with the fundamental differences among students--differences in their interests and purposes, their personal needs, and their whole modes of thinking and learning (p. 65).

According to Cooley and Glaser (1971), individualized education

> ...is essentially the adaptation of instructional practices to individual requirements. Three major factors are involved, each of which defines a set of variables in the system: (i) educational goals, (ii) individual capabilities, and (iii) instructional means. Goals are defined to suit the individual, as when individuals choose different courses of instruction for different desired vocations. The term individual capabilities refers to the capabilities that the individual brings to a particular instructional situation; these are influenced by prior background and schooling. Instructional means, which include what is taught and how it is taught, are dictated by both the nature of the individual's capabilities and the nature of his educational goals. These three factors may change in the course of one's education or one's life, but in any particular span of time, during a specific teaching act, it is assumed that a particular educational goal or level of competence is to be attained; that the individual has particular capabilities; and that there is available a set of instructional means and conditions

> relevant to assessed capabilities and to criteria of competence (p. 95).

Thus, in the 1970's as 50 years ago, educational leaders see a very great need for the individualization of instruction because of individual differences among our students. Flanagan (1971) asks: What efforts have been made in the last 50 years to adapt education to individual differences? What are the important considerations educational psychologists must keep in mind in approaching this problem (p. 7)?

Educators have been attempting to adapt for individual differences in terms of differentiated assignments, rate of learning, and varying instruction in terms of methods and media (Flanagan, p. 7) primarily through technological advances of team teaching, programmed instruction, flexible scheduling, open-area schools, differentiated staffing, and the like (Kapfer, 1971). However, little has been done to get to the heart of the problem in providing the opportunities to individualize instruction provided by these innovations (Goodlad, 1968; Talbert, 1968; Kapfer, 1971). STUDENTS NEED OPPORTUNITIES TO DEVELOP INDIVIDUAL RESPONSIBILITY AND THE SKILLS OF INDEPENDENT STUDY.

Individualized instruction need not be the same thing as teaching students individually. An instructional system is individualized when the traits of each student play a major part in the selection of materials, procedures and time. Robert Glaser (1969), delineates the salient characteristics of individualized instruction. For effective individualized instruction, he feels that behaviourally defined objectives are needed. The teaching program should be adapted to the requirements and readiness of each student, and, as well, students should proceed at their own rate in each subject. Glaser also stresses that criteria are needed so that the student can evaluate his own performance. Detailed information about each student is also required in order to design

an appropriate instructional program.

Learning Activity Packages prepared by education students were used by the investigator to explore the problem of the implementation of a LAP system of instruction. These LAPs were evaluated for effectiveness through pre-trail and field testing. The particular set of revision procedures included tryout-revision-tryout.

WHAT IS A LAP?

In this thesis Learning Activity Packages are considered as one approach to individualized instruction. It is probably safe to predict that LAPs will become more educationally sophisticated and widely used as expertise develops in this medium. As educators, we would be well advised to examine the concept of "package" critically and objectively and to continue to learn more about it.

LAPs are Student Oriented

One opportunity to individualize instruction is the "package". "The Learning Package is student oriented. It tells the student what he is going to do. The package puts the responsibility for learning where it belongs: on the student" (Talbert, 1968, p. 21).

A LAP is a form of communication between the student and the teacher that contains instructions for student activities leading toward specified performance outcomes. The LAP is designed to individualize instruction consistent with the factors in the definition of "individualization and individualized instruction" stated in the previous section. "It does not teach the student but rather guides him in learning what he needs to learn.... By giving direction to the student, rather than information, the program for each individual student may be fitted to his needs, abilities and preferences" (Arena, 1971, p. 14).

The LAP is neither a teaching unit, nor a course of study. It is a flexible and individualized learning guide which is focused, at the most discrete level, on the component parts of a major concept, skill or value (Kapfer, 1971, p. 53). However, as such a LAP conforms easily to the framework of "courses" and "units" as these are commonly and currently defined. The package does not contain instructional materials to any great extent and cannot stand alone, but it is the basic instrument for individualizing instruction.

LAPs are Structured

Actual programs for independent study and individualizing the curriculum have been developed in various formats but are labelled quite differently. Chief among those studied by this investigator include Individualized Learning Packages (ILPs) by Kapfer (1971); the UNIPAC Program by Field and Swenson (1972), and LAP by Smith (1962). However, all of the above formats emphasize the relationship between subject matter, learning objectives, learning materials and activities, and tests. The LAP format as used in this study contains curricular elements from Smith and Kapfer as follows: Rationale, Learning Objective, Pretest, Learning Activities, Self-test, Posttest, Quest, and Teacher's Section.

How are the parts of a Learning Activity Package interrelated?

Rationale. The rationale is a statement to the student. This statement communicates to the learner why the LAP should be of interest to him and is included in the course of study. The rationale relates the present topic to topics previously studied and to those which will be studied later. In this way, the student can see continuity in the topics he is studying (Arena, 1971; Baker, 1970; Smith, 1972). The rationale is written for the student. It is short, easy to read,

free from educational jargon and does not include vague statements.

Learning Objective. The learning objective or performance objective is the most fundamental component for guiding or structuring the behavior of the learner (Smith, 1972, p. 16). The objective or objectives are behaviorally stated and should specify the intent, performance conditions and the minimum acceptable level of performance (Mager, 1962). The idea of the LAP is to change the student's behavior (so that he can perform certain tasks or demonstrate his knowledge). The objective(s) should provide for diversity in levels of learning (i.e. recall, application, synthesis) so that the student is directed toward higher level thought processes rather than confined to recall of facts. A learning objective can be in any of the cognitive, affective or psychomotor domains. With behaviorally stated objectives, both the student and teacher can accurately evaluate progress and the teacher can determine the effectiveness of the instructional program.

Pretest. A pretest is designed to determine what the student has already achieved in the learning objectives (knowledge, skills, etc.) as a result of his earlier learning experiences. Each question is keyed to a particular objective and a test key is included so that the student can evaluate the results. If he successfully does the work on the pretest, that means he has most probably achieved the objective at some prior time and if in the teacher's opinion, there is no need for him to do the activities, then he goes directly on to the next LAP. If he does not perform satisfactorily, then he must improve on his weaknesses by completing the appropriate activities of the LAP before attempting the posttest.

Learning Activities. The learning activities component is the

"heart" or core of the LAP. These activities "provide each student with a choice of alternatives, concerning not only how, what, when and where to learn but also opportunities for the efficient use of a wide range of learning resources." (Smith, 1972). The core of the LAP implies that the student will have access to a resource center. Every classroom can be turned into a resource center by having study carrels and appropriate materials. According to Smith learning activities incorporate the following alternatives or "multis" (cf p. 16):

1. Multi-media: the use of various kinds of audio-visual equipment and the performance of sensory-oriented tasks;

2. Multi-mode: variations in process goals that determine the size of the learning group and methodology (i.e., large-group instruction, small-group instruction, individual work);

3. Multi-content: differing levels of sophistication or difficulty of all resource materials, whether printed or audio-visual; and

4. Multi-activities: variations in terms of paper-and-pencil activities, such as listening, viewing, discussing, playing games, manipulating, etc.

Self-test. Upon completion of the learning activities, the student takes a self-test. Each question is keyed to a specific objective and the student is provided with a key so he can evaluate the results. The self-test can serve the following purposes: (Smith, p. 16).

1. allow the student to bypass the LAP if he can already (similar to the Pretest) meet the performance criteria;

2. guide the student to those portions of the LAP that he needs to study; and,

3. allow the student to check his own progress level prior to the posttest administered by the teacher.

Self-evaluation may be paper-and-pencil, product oriented, group discussion oriented, or manipulative performance oriented. If the student is successful he may proceed to the next LAP; if not, he must be re-

directed into activities within the LAP or be prescribed a different LAP. i.e. he should complete or redo suggested activities wherein he was not successful.

Posttest. The posttest has only one purpose: to determine if the learner can perform the learning objective(s). The learning objective dictates the posttest format and content. All test items are criterion-referenced. That is, each item is keyed to the specific objective. The posttest is included in the teacher's section of the LAP.

Quest. Quest provides the opportunity for students to pursue related, enriched, or in-depth areas. Hopefully these will be pupil initiated and could well differ for each student. It should be emphasized that the quest activities are not assigned. They are intended to be pupil-initiated, self-directed and fall in the category commonly defined as independent study (cf. Kapfer, 1971, pp. 171-4).

All of the above components were built into each package. An attempt had been made to have congruence between the Pretest, Objective, Activities, Self-test, Posttest and Quest. In other words, the investigator tried to (a) specify the level and conditions of acceptable performance, (b) provide learning activities incorporating the "multis" which relate to the objective, (c) ensure that all forms of assessment, at the stated level and under the stated conditions, measure that which the designer indicated would be measured, and (d) permit in-depth or further work which would indicate the student's self-motivation and interest.

Teacher's Section. The teacher's section of the LAP is written for the teacher. It includes:

1. Identification of the learner: Methods of identifying the

learners, prerequisities, limitations, or special characteristics of learners are noted here;

2. keys to the pre- and posttests, only if they are objective-type tests;

3. the Posttest which is housed on a separate page;

and, 4. any special instructions or comments such as special cautions that other teachers need to know before proceeding with any of the text materials; informing them of subsequent LAPs teacher's references, resources, etc. (cf. Swenson, 1971, pp. 28-32).

LAPs fit Present Schools

A LAP is a new approach in the use of educational materials which could readily fit into the present physical structure and administration of schools and universities. However, the teacher's role (which will be dealt with in more detail in a succeeding chapter) is significantly changed (Lindvall & Bolvin, 1970). His function as a dispenser of information is considerably reduced as the student moves into a more active role in the learning process. Basic to the theory of individualized instruction is the principle that the teacher assumes a diagnostic-prescriptive role where he can apply professional competence in helping each individual learner to find success. Implicit in this role is the opportunity to create an effective learning environment to solve learning problems and to provide enrichment for individual students.

Even though study is carried out largely by having each pupil pursue a unique set of activities, it is necessary for the teacher to give careful thought to his own schedule of classroom activities, students access to a resource center and allocating certain amount of time for resource center learning. He must allocate time for general supervision of activities, for small group instruction, for individual tutoring and for counseling. The teacher must also be concerned with such details

as seating arrangements, the accessibility of supplies and equipment, and the availability of supplementary learning materials. For effective implementation of LAPs, it is essential that the teacher as decision maker facilitates and manages a total learning environment including time for resource center learning.

Using student teachers and paraprofessionals to help with non-teaching tasks can be of invaluable assistance to the teacher or resource librarian in this type of learning environment (Friedman, 1969).

An objective-based LAP provides direction for the student-learner including measurement for its success. Only when educators and students know specifically what they are trying to accomplish can they tell whether or not they have been successful. Implicit in the LAP objective is the fact that the student knows precisely what is expected of him. In its final development stage the LAP is tested on students (Baker, 1971) and revised until it demonstrates that it really is self-instructional, and that students do learn from it.

The existence of objectives means that the LAP can be empirically tested and by using formative[1] evaluation it can then be revised until it achieves the desired results. (Bloom, 1971, pp. 117-191).

In this study the formative evaluation procedures employed in the development and production of LAPs were as follows: The teacher generates a set of concepts[2] (or skills, or values) and from these he formulates the learning objectives, which he thinks will teach these

[1] Formative evaluation is concerned with program improvement. Formative evaluation seeks information for the development of a curriculum or instructional device. (Stufflebeam, 1971).

[2] A concept is a word, phrase, or symbol representing a generalized idea of a class of objects, qualities or relationships based on one's experiences with instances of the class; may be relatively concrete or highly abstract. e.g. Concept - "commutative property"; Skill - "tell time to the hour"; Value - "Poetry is enjoyable." (Kapfer, 1971).

concepts. From this the teacher generates a criterion test for each of these objectives. He then pretests the learner to see if he can meet the criterion. At the same time, he identifies the instructional problem, makes an analysis of the learning task and generates the rest of the ingredients of the package, (his instructional strategies) choosing the best one within his limits to develop and implement, and adapt to his learners. Afterwards he posttests each learner. For those who fail, he revises and recycles the LAP or selects another LAP (or other ways and means to meet the criterion) and at the same time reassesses the effectiveness of LAPs as an approach to individualized instruction.

Performance standards are set for an objective prior to instruction by designating a single minimum acceptable raw score or percentage score for all learner responses to all criterion items for that objective. The student performance for an objective refers to the desired minimal score that students are expected to attain on that objective following instruction. For example a pupil might be told "you must get 9 out of 10 questions correctly."

Many good teachers probably have been doing something similar, intuitively, and perhaps not so rigorously, for some time. The investigator suggests that there is a clear need for further refinement and study of the efficacy of evaluation procedures as applied to LAPs as an effective approach toward individualized instruction.

One benefit teachers will derive is in the selection of individualized learning materials and activities for a LAP. A LAP can be held accountable for students success through built-in mechanisms for evaluation and modification. IF TOO MANY STUDENTS DO NOT ACHIEVE A GIVEN OBJECTIVE IN A LAP, SOMETHING IS WRONG WITH THE LAP OR WITH THE WAY THE

LAP IS BEING USED BY THE STUDENT OR BY THE TEACHER.

Objective-based procedures for conducting formative evaluation with new curricula and for individualizing instruction and learning are in the early formative evaluation stages. Their refinement is possible upon evaluation of their use in the development of curricular changes and in ongoing classroom instruction. When evaluation procedures have been adequately refined, there will still be a need for summative[3] evaluation (Bloom, 1971, pp. 61-84) to compare with other types of learning packages such as the Supplemental LAP[4] and the Instructional LAP[5] (Arena, 1971). Ultimately the evaluation procedures and instructional program must be evaluated on the basis of their effects on learner performance.

Specifically then the purpose of this exploratory investigation is to evaluate student teacher designed Learning Activity Packages for effectiveness through a pilot study and field testing using a procedure of tryout-revision-tryout on approximately 190 pupils in age 10 to 12 years in the 5th and 6th grade levels. Further, this study and evaluation of LAPs as a technological problem should produce evidence that improved learner performance results from the use of specific learning objectives both to evaluate and revise instruction and to diagnose and remedy individual student weaknesses. Consequently, a teacher who is knowledgable

[3]Summative evaluation is concerned with determining overall program effectiveness. It is aimed at giving answers to an educator about the merits and shortcomings of a particular curriculum or a specific set of instructional materials. e.g. Geography LAPs for the seventh grade level. (Stufflebeam, 1971).

[4]A Supplemental LAP is instructional and can stand alone as its objective can be reached without recourse to other materials. Its purpose is to supplement a regular LAP. (Arena, 1971).

[5]An Instructional LAP can be used independently of any other materials. The purpose of this type of LAP is to broaden the curriculum in areas not included in the student's typical course of study. (Arena, 1971).

in this technique of curriculum design can write a LAP, try it out, revise it, and try it out again in his own school. He can make use of the materials and resources on hand to the best advantages. He can adapt the LAP to a particular group of students, school, or regional area.

Evaluation as a Technological Problem

Educational evaluation and measurement is fast becoming one of the many diverse forms of educational technology. Oliver defines technology as a "principle of methodological decision" (Oliver, 1969, p. 5). Though he regards science and technology as complementing each other, he insists that a more meaningful and practical technological methodology (rather than scientific theorizing) is needed in education. Oliver writes:

> While science focuses on investigating the behavior in abstract and surrogate environments, in order to reduce variability and confoundedness, technology investigates the behavior of components in real world septic environments in order to maximize this variability and confoundedness. (2) While the goals of science are the control and/or the explanation and understanding of phenomena, those of technology are focused on optimizing the control of environments.... (3) While the scientist processes data in a manner calculated to lead him from a set of causal conditions to be related set of effects, the technologist reverses this order... Starting with a desired effect, the technologist attempts to identify the required set of independent causal conditions.... (4) While scientific theorizing depends for its power primarily upon empirical sensory data inputs, the technological theorizing depends primary upon the "hunches" of the technologist. (5) While outputs of the scientist are inductive and deductive explanatory statements, those of the technologist are forecasts.... (6) Finally, while scientific theories are evaluated in terms of their relative power for relating facts within a theoretical framework, technological theories are evaluated in terms of the probability of their forecasts" (Oliver, 1969, pp. 7-8).

The term "evaluation" used in this thesis is described ". . . as a procedure for gathering and analyzing data in such a way that it leads to improvements in LAP materials and in the instructional system. Individualized instruction, with its need for extensive information concerning pupil progress, provides an excellent opportunity for studying

and improving instructional resources on the basis of such data" (Lindvall & Cox, 1969, pp. 156-7). The emphasis here is of the importance of evaluation in both a formative and summative sense (Bloom, 1971, pp. 43-84).

Assessing the effectiveness of an instructional program cannot rest on such simple and traditional criteria as significant differences in the mean achievement scores of experimental and control groups because standardized testing is based on the assumption of fixed exposure to a common content (Dunn, 1971, p. 30). In an individualized educational program there is the necessity for moving toward an ungraded program, toward individualized rather than group testing, and toward criterion normed rather than group normed tests. The teacher must know what the student has accomplished and not just his estimated success or failure represented by percentages or grade letters.

> Evaluation is basically not a research activity. As opposed to traditional research, evaluation does not concern itself with hypothesis testing, generalizing results, replication, or control of all relevant variables. It is heavily influenced by the constraints of the situation feasibility, and demands of constituents (Payne, 1973, pp. 344-5).

And Morgan (1971) argues that evaluation results, in the language of research-oriented writers, fail to communicate with many educators.

> . . . many people interpret "significant difference" to mean "important difference", which may or may not be the case. In the event that a significant difference is of no practical importance, the findings can lead to a "Type Three Error" -- the belief that the observed difference is important because it is statistically significant (p. 46).

The application of criterion-referenced measures in mastery learning is illustrative of the fact that very often groups can serve as their own controls. Flanagan (1969), for example describes how the application of formative procedures resulted in the reduction of training time in

an in-service program from 45 to 20 to 9 working days. Cronbach (1963) has for many years argued that the most significant use of educational measurement and evaluation data is in the improvement of curricula.

According to Payne, he writes:

> Evaluation information is most helpful when it can be used to do the most good in making for greater effectiveness--not after the fact. Just as evaluation viewed in the formative way can improve product development, so can it be used to provide better individualized learning programs for students (Payne, 1973, p. 344).

> Evaluation projects will always show positive results within certain limits. The mere participation in a curriculum development project tends to rejuvenate and inject revitalized interest, motivation, and enthusiasm. Description of what happened may be the greatest contribution that can be made by evaluation (Payne, 1973, p. 345).

Evaluation of LAPs in this thesis is considered as a technological problem and is described in general terms as follows: The problem is to evaluate effectiveness of LAP as an approach to individualizing instruction; the outcomes (observations and results) apply only to the LAP program being evaluated and therefore cannot be generalized to other activities; total orientation of the LAP evaluation program, process and product, can be attempted to be understood only in the existing conditions in an actual situation in the participating schools; no control group was present and only posttest type data were included in the evaluation data necessary for opinion and interpretation analysis; data were collected periodically to modify the ongoing activity and improvement through timely feedback was an important function of evaluation; quantititive data was combined with qualitative information in an attempt to gain an understanding of LAP system in individualized instruction; any information deemed relevant to LAP evaluation was acceptable and was collected if needed; and it

was anticipated that the evaluated LAP system of instruction would be judged to bring about a positive change in the participants' mastery of the learning process.

Survey of Related Literature

Educational evaluation includes many diverse topics and in 1973 evaluation was still going through the defining stage. One of the functions of evaluation is to determine the effectiveness of the instructional methods and materials. This trend is continuing very strongly at the present time. The importance of empirical feedback for improving programs of individualized instruction and individualized education are discussed. The investigator will attempt to cite the author(s), and comment briefly on the contents, using three categories of studies in: Theory and Methodology, Empirical Models and Empirical Studies.

Theory and Methodology

Scriven (1967), recognizing that evaluation can serve as number of functions, has termed one function as formative evaluation. It is the gathering of data while a program is being developed for the purpose of guiding the development process. Another role of evaluation within an instructional program, particularly an individualized system in monitoring pupil progress, has been studied by Glaser (1967) and Lindvall and Cox (1969). In this latter case, evaluative information is used to adjust the curriculum to the needs of the individual and might be viewed as a type of continuing formative evaluation.

"In recent years, research and development workers in education and psychology have adopted the words 'formative' and 'summative' evaluation to differentiate the evaluation used to improve the instructional materials while they are in the process of development from the terminal

evaluation of the final product (Weisgerber, 1971, p. 14)." If instructional materials and methods for individualized education are to improve substantially, much formative evaluation will have to be done.

Briggs (1972) reminds us that the quality of local school evaluation is still at a low level and states firmly that increased participation of external evaluators from corporations, consulting firms and universities in the evaluation efforts of school districts will only prolong a condition that needs radical changing. He proposes that new infusions of money, a broader definition of evaluation and an administrative restructuring of evaluation activities can change the system.

Stake (1972) asks this question of the evaluator of an instructional program: "Which is more important: to tell of some very special things about the program or to provide the most accurate portrayal of the program?" He opts for giving the client a substantive portrayal of the program rather than a focus on the more prominent features. According to Stake, "if the program glows, the evaluation should reflect some of it. If the program wobbles, the tremor should pass through the evaluation report."

Womble (1972) labels public school research a "two-faced profession." Researchers have the responsibility to find possible solutions to current educational problems and, at the same time, have the responsibility to communicate their findings to people other than public school researchers to be "two-faced" in order to have maximum impact on the advancement of education as well as the state of the art.

Popham (1973) believes that much of the educational ineffectiveness which exists in our schools can be attributed directly to teachers' preoccupation with devising new and exciting ways (instructional process)

of teaching, without ever verifying what effects those procedures have on children. ". . . too many educators succumb to the lure of an attractive instructional process without checking the quality of its impact on learners." This should be the reason we search for better instructional procedures.

Empirical Models

"It has been an unquestioned truism among educators that better instructional materials produce an improvement in learning (Eash, 1969, p. 18)." Despite this belief, little has been done to aid classroom teachers to assess learning materials and to test their effectiveness. The problem of assessing curriculum materials is compounded by the increasingly wider choice of commercially prepared instructional materials, lack of local guidelines to assist the teacher in analyzing, judging, and selecting instructional materials. Also, the fact there is the urgent need in teacher education programs to insure that certain skills related to individualized instruction are acquired by all trainees is implied by Eash and corroborated by Steen (1971, pp. 83-92).

Instructional materials embody a particular view of curriculum and the manner in which it will be implemented through instruction. To assess instructional materials it is necessary to determine the view of curriculum fostered by the developer, the manner in which the materials are arranged for presentation, the emphasis placed on the content and the process for involving the learner, and the learning expectations. It is on these bases Eash designed an instrument[6] to assess curriculum materials. Eash's design for evaluating the instructional materials

[6]This instrument, with minor adaptations, has been used by this investigator in evaluating LAPs.

includes four constructs of instructional design: A. Objectives; B. Organization; C. Methodology; and D. Evaluation. (cf. Eash, 1969 and Appendix A).

The concept of "quality of instruction" can be easily extended to indicate the degree to which the task to be learned is structured or sequenced in such a way that it is optimally efficient for the specific learner. This problem of adapting learning methods and materials to a specific individual is discussed by Cronbach (1967). He includes four procedures or types for adapting instruction to individual differences: (a) Given a fixed set of instructional materials, simply vary the time given the student for completion; (b) matching goals to the individual; (c) erasing individual differences and (d) altering instructional methods. In discussing type (b) Cronbach points out a number of limitations and possible dangers of too much emphasis on dropping goals for individuals because of their difficulty in attaining them. In type (c) he suggests that if a requisite ability has not been adequately developed that attention be given to the development of the ability prior to initiating work with the instructional materials. In type (d) he discusses such items as interactions between learning abilities and performance and designing alternative treatments to interact with variables which seem likely to show differential results.

Carroll (1967) in discussion of Cronbach's points suggests that psychologists must do a great deal of research before we can be sure that the achievement of all pupils seeking a given educational goal will be optimal and significantly better than if we had used a single best method to teach all of them.

Hess and Wright (1972) list the stages through which curriculum

development projects typically move. Initial State, Hot House--the initial tryout of a prototype product, pilot test, field test, and public diffusion. They identify five major dimensions of a comprehensive evaluation of curriculum products: Desirability/Feasibility, Management/Procedural Cost, Product Worth, Usability and Generalizability. Issues relating to the continuation or termination of a program concern statement and fulfillment of objectives, establishing a rationale for the use of particular measuring instruments, determination of whether or not different effects result from alternative procedures. When the product enters the diffusion stage, formative evaluation is ended and summative ought to begin.

Klein (1972) devised a formula to help decision makers compare the effectiveness of differing instructional programs. The formula is based on the rationale that general program effectiveness will increase if one or more of the following variables increases: number of objectives, success on the objectives, relative importance of the objective, number of students in the program; or if pupil time and/or program costs decrease.

Abedor (1972) describes the development and field testing of a flow chart model for formative evaluation of self-instructional multi-media learning systems.

Light (1972) presents specified procedures for evaluating materials during their in-content tryout. She concludes that systematic formative evaluation is feasible even though classical experimental designs are not practical in formative evaluation. The systematic elimination of rival hypotheses is one design which appears useful in identifying inadequacies within an instructional system and in generating appropriate

revisions.

Jacobs (1972) reports on a four-stage model for program development and evaluation at the local school level. The fundamental thrust of the model is for more educational programming to be initiated at the local school level.

Empirical Studies

One main purpose of evaluation of educational innovation is to provide information as input for decision-making by the schools about adoption of course-content-improvement packages. One type of investigation which would help immeasureably with the development of curriculum materials, and in this case could add valuable information for the adoption-rejection decision in the school, is exemplified by some studies by Stake and Sjogren (1964). The general import is that they were investigating the relative advantages for individuals with varying characteristics, of different modes of studying the same materials.

Two teams of psychologists of the American Institutes for Research, one headed by Markle and the other by Short, undertook the development of specific instructional programs in which one of the major goals was efficiency in attaining a high level of mastery. In both instances it was found that the major gains in efficiency in the program came not from insights and applications of psychological principles, but from repeated empirical tryouts and feedback as to the effectiveness of the initial attempts to assist the student to learn. In Markle's study (1967) the procedures of empirical tryout and revision resulted in a program which enabled the least apt student using the new instructional materials and methods to learn as much as the most apt student using the earlier materials. In Short's study (1968), using a somewhat similar procedure,

a high level of mastery of all important objectives was obtained in a fraction of the time required by the program previously in use. The very dramatic improvement obtained in these courses as a result of a series of empirical tryouts emphasizes the great inadequacy of our present knowledge regarding learning. Both Carroll (1968) and Gagne (1965) as reported by Lange (1968), acknowledge the serious limitations of our present knowledge regarding the conditions of learning in the classroom, and point out that presently available instructional material does not make use of the many well-established principles of learning.

The Learning Research and Development Center (LRDC) at the University of Pittsburgh, in its work on the development of new educational programs, has given considerable attention to the role of evaluation in such programs. Three types of evaluation were carried in one Center project, the program of Individually Prescribed Instruction (IPI) by Lindvall and Bolvin, (1967). These types consisted of:

1. Individual pupil monitoring. The regular and systemic evaluation of pupil achievement for the purpose of adapting instruction to individual needs.

2. Formative evaluation. The continuing evaluation of all elements of a developing educational program as an aid to the development process.

3. Summative evaluation. The evaluation of the results produced by an educational program for purposes of making judgments concerning its value.

A school that has utilized Learning Activity Packages (LAPs) as a basis for individualizing the curriculum is NOVA, an innovative school at Fort Lauderdale, Florida. Its program is described by McNeil and Smith (1971, pp. 203-211). This prototype developed by Smith has been successfully applied to a wide variety of disciplines.

Under its director, John E. Arena (1971), The Interrelated Mathematics-Science Project had two major goals. One goal involved

development of programs in high school science and mathematics where the two disciplines are interrelated at points of commonality. The second goal, involved development of a systems approach to individualized learning that would be measurably more effective and beneficial to both the teacher and the student.

During the 1969-70 school year, the principal focus was on the actual writing of the LAPs using commercially prepared materials. The GENETICS LAP was implemented and comparisons were made between a group of students working independently with the GENETICS LAP (experimental group) and a group of students learning in a more traditional lecture manner (control group). The results of the GENETIC LAP should be regarded as providing constructive initial feedback to persons responsible for developing LAPs.

During 1970-71 school year, LAPs were implemented in different schools with teachers with algebra and geometry classes. This study was focused on just which variables would have the greatest effect on student achievement with LAPs, behavior of students after using LAPs, attitude toward the subject, and how students would regard or rate the LAPs. Only students who were using LAPs were involved in this study. All five teachers were in agreement about the influence the LAP form of individualized instruction had on their teaching in the regular classroom. The average rating given to LAPs by students was 3.1 using a 5-point scale.

Significant findings in the search for individual learning styles have been reported by Beard (1967), Kropp (1967) , and Tallmadge (1968). The very great number of patterns of individual differences indicate that an enormous amount of research needs to be done to even approach

being able to prescribe the optimal instructional materials and methods for each student to learn each type of educational objective (Flanagan, 1971, p. 13). Briggs' (1968) surveys suggest that sequencing and the selection of the most appropriate media may be of great importance in achieving efficiency in instructional programs.

CHAPTER II

EXPERIMENTAL DESIGN, METHODS AND MATERIALS

Problem Statement

The purpose of this study is to evaluate LAP effectiveness as an innovative program for assessing and instructing 10 to 12 year old pupils using a procedure of formative evaluation. The general problem under study might be stated as follows:

> If a student fails to perform the specific objective as expressed in behavioral terms in a LAP, there exists the possibility that the LAP designer did not provide a desirable, learning environment (learning experiences, existing materials, media, and an open ended feeling of acceptance on the part of the student) to facilitate learning for each student according to his capabilities.

Specifically the problem to be tested is stated as follows:

> A LAP which is less than 80 percent effective with a given student population on a first tryout will be adequately revised and tried out the second time to see if the LAP meets the 80 percent criterion.

Several terms in the problem need clarification. First the term "less than 80 percent effective" refers to the number of pupils who have failed to achieve the stated criterion performance level of a LAP objective.

The term "will be adequately revised" implies the time and effort needed by the investigator to revise an unacceptable LAP. The investigator assuming the role of a classroom teacher with limited time, limited resources, deadlines to meet, etc. must be careful with reference to

expending excessive time on revision of LAPs.

Population and Sample:

Pilot study of prepared LAPs by education students took place at the resource center of Peretz School, second branch of the Jewish People's School, involving 35 pupils in one 5th grade level and one 6th grade level classrooms. Each LAP was tried out with three or more learners followed by necessary revisions.

In field testing, the subjects were pupils in age group of 10 to 12 years, in the 5th (105 pupils and four teachers) and 6th (45 pupils and two teachers) grade levels enrolled in the Jewish People's School, Montreal, Canada. These pupils are tri-lingual, culturally privileged and come largely but not totally, from middle and upper socio-economic backgrounds.

Planning, Organization, and Preparation of the Approach to the Problem

The investigator conducted one general orientation session with teachers, librarians and other interested teachers and administrators of the two respective schools. This session of approximately 90 minutes included explanation of the theory of LAPs, a display of sample LAPs and discussion of pertinent questions concerning implementation of the activities involved in the research. The primary purpose of this orientation session was to give the school administrators, resource center librarians and participating teachers an opportunity to obtain their consent or refusal to participate. Within two weeks all grade five and six teachers agreed with the school Administration that the exploratory investigation would be of mutual benefit and that they were ready to participate.

A second orientation session took place in the respective schools and their participating teachers. The primary purpose of this orientation session concerned the completion of "An Instrument to Assess Learning Activity Packages" (see Appendix A) prior to students being assigned to LAPs. This session was approximately 45 minutes, and the agenda (see Appendix G) included assumptions using the instrument, teacher involvement in this study (particularly selecting a pupil for a particular LAP), the constructs of the instrument, and short detailed explanation of some of the terminology used in the instrument.

Student orientation sessions preceded any attempt to use LAPs to individualize instruction. Twenty-minute orientations were given by a competent teacher-intern. The primary purpose was to give each student an opportunity to understand the procedures employed in this new system of learning. The orientation session included a display of a sample LAP, what individualized instruction is, what a LAP is and how it is used. To assist the student in explaining the procedures employed in going through a LAP, a large cardboard flow chart had been prepared showing all seven parts of the LAP. Pupils were encouraged to ask questions. Two orientation sessions were presented in the Peretz School (35 students) and six were offered at the Jewish People's School (155 students).

Once the student had gone through the first LAP, the system became clear and very little difficulty was encountered in using succeeding LAPs.

Evaluation System

Field testing of 17 LAPs was offered to real students under the conditions of the particular schools. As the heart of any system is its testing and evaluation scheme, it is important that these stages provide

for gathering the data necessary to determine how the system is operating, and what adjustments or modifications are needed to improve it. These two stages of the system, (Fig. 1) evaluation, together with the revision stage, form a loop which is in constant operation to provide this data (Fig. 2).

LAP SYSTEM BLOCK DIAGRAM

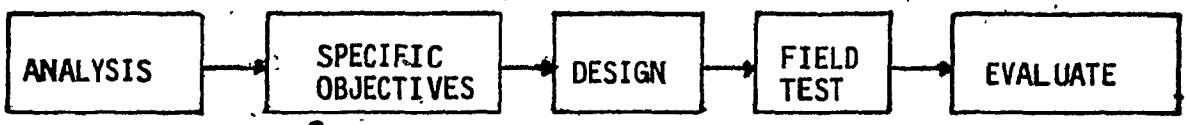

Figure 1.

FEEDBACK LOOP

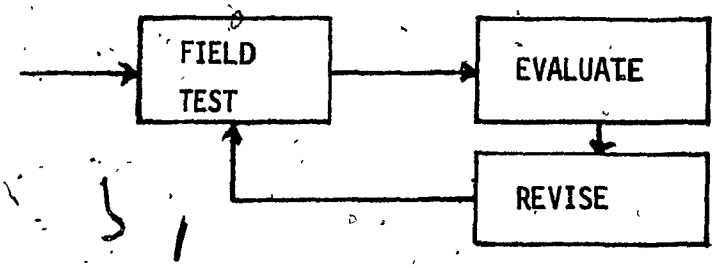

Figure 2.

In field testing, the LAP had to follow the prescribed objective(s) and design created during the previous stages. There was little merit in changing objectives or methods in midstream, unless of course the situation became catastrophic. If a design had been carefully worked out, its overall effect should have been observed before complete dissection occurred.

Three basic elements of the evaluation system, then, included the investigator's observations, student feedback, and changes in the field. These were examined after each LAP was used and guided whatever revision seemed to be warranted before the LAP was used by the next learner.

Therefore, since the students and the field testing itself were in a relative state of flux, due to the fact that this experiment was in addition to students' and teachers' regular programs, and since perfection was rarely achieved, this loop within the system continued to operate as long as the LAP experiment continued.

Basic Rules followed for LAP Development

Learning Activity Packages used in this study were initially produced by education students who had at least five or six weeks of instruction as part of a curriculum development course in theory and practice. The investigator chose, developed and checked all LAPs as to the extent they followed basic rules.

Instructional Specifications

1. All learning objectives should be stated in terms of the learner's post-instructional behavior.
2. Criteria, for judging the adequacy of the learner's response should be specified.

Assessment and Evaluations

1. The criterion test (pretest, posttest) must be completely prepared prior to the development of the LAP.
2. Test items should not deviate from the behaviors described in the learning objectives .

LAP Development

1. The LAP should follow the format of seven curricular elements.
2. The LAP should supply the learner with appropriate practice during an instructional sequence.
3. The LAP should provide the learner with an opportunity to obtain knowledge of results.
4. The LAP should contain provisions for promoting the learner's interest in the LAP.
5. Selection of the "multis" should be made in the light of the desired learning objective(s), intended target

population, cost, and other relevant considerations.

6. The time devoted to the development of the LAP should be commensurate with the importance of the concept, skill, or value.

LAP Tryouts

1. At least three learners are to use the LAP in the pilot study and at least five when field testing.

2. Data from the pilot study and field trials should be efficiently summarized for use by those who (investigator and two assistants) will revise the LAP.

LAP Revision

1. Base LAP revision on legitimate inferences from pilot and field test data.

2. The primary inferences regarding LAP revision should be made from criterion data.

3. Learner response data during the program should be considered a valuable source of cues for LAP improvement.

4. Excessive time should not be spent in revision. (e.g. not more than 90 minutes per LAP).

Field Testing and Revision

This study outlines the technological problem investigated as follows: Seventeen education student designed LAPs were evaluated for effectiveness through a procedure of tryout-revision-tryout on a defined student population. The LAP was deemed effective if it came up to a predetermined level of student performance. For example, if 80 percent of the students achieved the LAP objective on a posttest for the first time, it would be judged effective. No particular reason is given for choosing 80 % level of effectiveness other than an expediency in completing the experiment in a relatively short time. However, in revising a LAP to the desired level of effectiveness, the investigator asked himself: "Have I been wasting time on this LAP, or should it justifiably

be taking this long?"

Therefore the investigator kept the following rule as his focal point: A LAP is a module with a single or multiple learning objectives. An objective states what the student will be able to do as a result of the learning. The objective must be testable. To be useful, the objective must be phrased in terms of observable, measurable performance, i.e., what must the learner do to prove that he has learned? e.g., the child will be able to spell (type of behavior), in formal and informal writing (condition under which it will appear), 98 percent of the words in his written work (level of performance). (cf. Mager, 1962).

The LAP reviser, therefore, looked first to the learning objectives, in order to determine whether performance on the criterion test had been satisfactory. If certain of the stated objective(s) had not been achieved, this suggested that those portions of the LAP which dealt with those particular objectives should be modified.

Additional practice exercises were added, en-route behaviors were identified more adequately or sequenced differently. However, it must be pointed out that Popham's (1971) Rules for The Development of Instructional Products played a vital role in influencing this investigator's procedural attempts in the LAP cycle of development, tryout and revision. These included such as providing relevant practice for the learner, providing knowledge of results and promoting interest, prior to the testing of LAPs. Some LAPs were adequately revised prior to testing, while others were subjected to revision while being tested. But most of the modifications were made as direct results of inferences derived from learner performance on criterion measures.

In addition to information gained from criterion data, namely,

pretests and posttests, many cues regarding LAP modifications were obtained from the responses made by the learner during completion of the program. The LAP reviser noted the kinds of responses which the learner made as he completed the instructional materials.

There was also an opportunity for elaboration after each LAP (see Appendix C) on any other point a student felt would be helpful. It was important in such an evaluation situation to point out to students that the purpose of the feedback was to gather data useful in improving the LAP and that no reprisals were forthcoming.

It must further be pointed out that because this LAP experiment was not fully implemented in the short period given to this study, several revisions to LAPs were not attempted. For example, the schools did not have the prescribed texts or audio-visual materials; the schools lacked the physical facilities or resources to carry out the LAP learning activities; even minor revisions to the scope and sequence were not possible due to the rigidity of the learning activities.

At the end of the experiment, students were queried about their reactions to the LAP system of instruction and its elements. This evaluation was rather simple. Questions such as (see Appendix D), "Why did you prefer working with LAPs?" What did you especially like about LAPs?" and "What did you especially dislike about the LAPs?" usually comprised the extent of the investigation.

Formative evaluation of LAPs was carried out by the investigator and two teacher interns. As revisers, they assumed to have the same latitude as a typical classroom teacher. Formative evaluation data of LAPs was based on the following:

1. A teacher will complete an evaluation questionnaire for

each LAP before it is assigned to a student (Eash, 1969) (see Appendix A).

2. Someone other than the individual who designed the LAP will make revision recommendations in the light of field testing results.

3. The primary inferences regarding LAP revision shall be made from criterion data (posttest scores) (see Appendix B).

4. Learner response data during the use of a LAP will be considered a valuable source of cues (student protocol) for LAP improvement (see Appendix B).

5. The student will complete a questionnaire on each completed LAP (see Appendix C).

6. Even the best developed LAP will almost always need revision.

It can be concluded that the role of revision of LAPs included revision of the instructional process and product. Any component in the LAP was subject to revision in the ongoing evaluation. The students who participated in the entire study, pilot and tryout, were involved throughout the entire process by means of pretests, posttests, questionnaires and interviews.

Generally, the LAP was finally evaluated by having students work through it and then take the criterion test. If they performed well, then the LAP was accepted and put into regular use (although it was still reviewed at intervals). If the test results were unsatisfactory, however, the LAP then had to be revised until it proved to be an effective teaching medium. Records were kept of both successes and failures (see Appendix H).

Major revisions to LAPs were as follows:

LAP Title	Revisions Noted and Made
A VISIT TO OLD MONTREAL	Noted: A vocabulary sheet would help; Activity No. 3 or 4 could have been made into a game.

LAP Title	Revisions Noted and Made
COME TO PRINCE EDWARD ISLAND	Noted: Audio-cassette barely audible and no script available for retaping. Made: Textbook reference had to be supplied as none were in schools' libraries; Learning activity instructions clarified and sequenced; revision time: 45 minutes.
DID YOU KNOW?	Noted: Pretest items were in paper-and-pencil while posttest was to demonstrate a skill. Made: Level of performance stated; microscope had to be borrowed from high school and only daylight lighting was used.
DRUMS	Noted: Needs special facilities for concentrated listening of the tape. Made: Learning objective clarified; instructions for learning activities modified; a new audio-cassette tape made to correspond to the pretest, activity, self-evaluation, and post-test sections so that the learner could identify these more easily; revision time: 75 minutes.

LAP Title	Revisions Noted and Made
EXPORTING CANADIAN WHEAT	Noted: Objective not clear. Made: Learning activities were sequenced and included one additional activity; instructions were clarified; revision time: 25 minutes.
METRIC LENGTHS	Noted: Overhead projectuals difficult to read due to smudging; objective not clear. Made: Instructions clarified and activities sequenced; revision time: 30 minutes.
METRIC SYSTEM OF WEIGHTS	Made: Rationale and learning objective was modified; learning activities sequenced; revision time: 45 minutes.
NUTRITION: HOW TO PLAN A BALANCED DIET	Noted: Objective vague; posttest not relevant to the objective; Too many learning activities required to be done at home. Made: Instructions clarified; revision time: 10 minutes.
NUTRITION: PROTEINS YOU EAT	Noted: Objective not clear. Made: New audio-cassette tape to rectify the heavy non-English accent on the original; revision time: 30 minutes.

LAP Title	Revisions Noted and Made
PLANTS: VEGETATIVE REPRODUCTION	Made: Learning Objective restated; instructions for learner; activities sequenced; posttest constructed; revision time: 90 minutes
PROBLEMS OF AN IMMIGRANT	Made: Posttest made easier and paralleled to pretest; revision time: 40 minutes.
(THE) ROLE OF RELIGION IN MONTREAL AND QUEBEC	Noted: Pretest and posttest not parallel; pretest not keyed to objective.
SEED DISPERSAL	Made: Learning Objective stated; pretest constructed; instructions clarified; revision time: 65 minutes
SIGHTS AND SOUNDS OF PLACE DES ARTS	None
TELEVISION IN MONTREAL	None
TRANSPORTATION IN MONTREAL	Noted: Some test items in pre- and posttests were vague.
TRIANGLES	Noted: Posttest not relevant or keyed to objective; posttest multi-objective. Made: Learning objective modified, instructions clarified; learning activities sequenced; revision time: 45 minutes.

Instruments of Evaluation:

Learning Activity Packages developed by education students were used for this study. The subject matter included cultural appreciation, social studies, language arts, science and mathematics. Efforts were made within each LAP to integrate several disciplines. LAPs, singly and collectively were subjected to the instruments of evaluation described below.

Appendix A. "An instrument to Assess Learning Activity Packages." It was assumed that the participating teachers were not professionally trained in LAP design and production. Individual teachers were asked to predict their expectations of the relative effectiveness (quality) of particular LAPs for their student population. All teacher's predictions were to be subsequently compared with the pooled experimental measures of the student population using one particular LAP. The teachers' expectations of effectiveness were to be correlated with measured LAP effectiveness (pupils scores).

It was further assumed that a teacher usually knows her students' learning characteristics and therefore she will direct a student to use a particular LAP. The individual student was the unit selected for participation in this study. Therefore randomness in assignment of students to treatment was not applied, as it was assumed that LAPs were designed for a variety of learning levels.

The instrument included four constructs:

1. Objectives: rationale for the development of the materials; general and specific objectives.
2. Organization of the Materials (Scope and Sequence): the arrangement and inclusion of materials in a teaching-learning sequence.

3. Methodology: major teaching strategies employed or mode of transaction used for focusing, engaging, and directing the learner.

4. Evaluation: guiding the learning through feedback as well as evaluation plans for measuring student gains on accomplishment of objectives.

After the teacher had subjected the LAP to detailed examination, he was asked to give it a summary quantitative rating on that construct. Having completed his examination of the LAP, the rater was asked to give an overall quantitative and qualitative rating.

The teachers' instrument on expectations of the quality of a LAP was based on a 0 - 10 scale. After receiving the teachers' ratings, the investigator determined the extent to which the LAP was meeting the standards. A score of 0-3 indicated that the standard was not being met, or being met to an insignificant degree. A score of 4-6 indicated that the standard was being satisfied approximately half the time, or in about half the instances. A score of 7-10 indicated that the standard was being achieved or was being satisfied most of the time. Teachers as raters were judged to be in agreement if they were one point or less in deviation from the mean rating.

A correlation between teachers' estimated LAP effectiveness and measured LAP achievement is shown on a scatter diagram (see Figure 3, p. 54).

Appendix B. "Pupil Record Form Using a LAP". Pre- and Posttest scores and observations were recorded.

All students assigned a LAP were required to take a pretest. A student had to achieve 100 percent on the pretest to be exempt from taking the LAP.

Posttesting of learners provided a more valid indication of LAP

effectiveness than the teachers' opinions regarding whether the LAP was good for 80 percent of their students. Need for revision would be indicated if LAP effectiveness fell below the 80 percent criterion. Thus the investigator gave first priority to posttest scores to assess relative effectiveness of a given LAP with the defined population.

Observations of the LAP system of learning and consensus by class participants were equivalent sources of data, each of which may have been preferable in a specific instance. Both participant teachers and outside observers (monitors and investigator) recorded information about teaching-learning transactions. Also a record of time for each revision was kept. The tests were hand marked and scored according to test keys. Each test was graded independently to eliminate grading errors (teacher, monitor, investigator).

Appendix C. "Student Evaluation Form for LAPs." The "Student Evaluation Form" served as a secondary source for formative evaluation. How high a student will rate LAPs was dependent on how successful he was with LAPs or how well he was achieving. The LAP achievement score was used to predict how students rate LAPs. Students from the two schools responded to this form after completing a particular LAP which attempted to evaluate their experiences with LAPs. Pupils rated LAPs on a five-point scale; One (1) meaning "no good"; Three (3) meaning "OK"; Five (5) meaning "very good"; Two (2) and four (4) between "no good" and "OK" and "very good".

Appendix D. "Baisc Interview Questions of LAP Acceptability by Pupils." Basic interview questions were composed by the investigator. A teacher intern served as an interviewer and the interviews were recorded on audio-cassettes. The interview consisted of three questions

concerned with attitudes toward using LAPs. The 35 pupils in the pilot study conducted at the Peretz School were divided into four interview groups. In the Jewish People's School, groups of not more than six pupils per classroom, six groups in all, were also interviewed.

Appendix E. "Basic Interview Questions for LAP Compatability within the School." Five teachers whose students used LAPs and one administrator and one librarian responded to "Basic Interview Questions" concerning the influence this form of individualized instruction had on their teaching in the regular classrooms and in their school. Each teacher interviewed responded to ten questions which were recorded on audio-cassettes.

Appendix F. "Selecting a LAP for your Pupil." The participating teachers were asked to complete a form describing the reason why they chose a particular LAP for their pupils. The primary purpose was to establish further evidence in addition to the audio-taped interviews whether the participatory teachers had accepted LAPs as one approach to individualized instruction.

Appendix G. "Agenda of 45 minute Orientation Session of the Teachers on: 'An Instrument to Assess Learning Activity Packages'." The primary purpose of this meeting was to give the teachers a working knowledge of the instrument which they were asked to use in evaluating LAPs prior to assigning them to their respective students.

Appendix H. "LAP Record Sheet for Statistical Analysis." This record sheet for each LAP was used to collate the pertinent data of Appendicies A, B, and C. The relevant data then were summarized into Tables 1 to 5 inclusive and are included in Chapter III.

Appendix I. "Learning Activities Package: TV in Montreal." The

LAP format used in the above package is typical of those used in this study.

CHAPTER III

PRESENTATION OF OBSERVATIONS AND INTERPRETATION OF RESULTS

Pilot Study

Table 1 summarizes the scores obtained by the Peretz and Jewish People's School students using nine LAPs in a pilot study or first try-out before revision and after revision. Matching Pre-and Posttest items were determined for each LAP. This was done so as to give a more reliable gain score and it was found that many of the test items in the pre- and posttests were not keyed to the learning objective. It was later revealed that many of the objectives were vague for the LAPs which were placed directly into field testing without the pre-trial study. The gain scores ranged from .30 to .70. Some Peretz School students' scores when compared with the Jewish People's School student scores seem to be higher. This may be due to two reasons: one, pupils at the Peretz School were given a free hand to choose a LAP whereas in the Jewish People's School teachers chose LAPs for their respective students, and secondly, the number of students using LAPs in the Peretz School was small. However, the increase in gain scores for the Jewish People's School students may be due to revisions of the LAPs and pupils having a better grasp of the LAP individualized system of learning.

The gain score for the LAP, Did You Know?, could not be calculated as the posttest was a demonstration [7] in the use of a microscope and as such could not be compared to a pencil-and-paper pretest. Also the gain score for the LAP, Role of Religion in Montreal and Quebec was not

[7] It was noted that this LAP was highly popular and successful without revisions. The achievement mean was 94% and it was 92% effective.

TABLE 1

COMPARISON OF PILOT STUDY AND FIELD-TESTING LAP MEAN GAIN SCORES OF MATCHING TEST ITEMS

		Peretz School Pre-trial		JPS[d] Revised LAPs	
LAP Title	K[a]	N[b]	Gain Score[c]	N[b]	Gain Score
COME TO P.E.I.	8/10	3	.57	11	.63
DID YOU KNOW	0/6	5	---	18	---
DRUMS	5/15	2	.70	10	.61
NUTRITION: HOW TO CHOOSE A BALANCED DIET	4/10	5	.60	15	.45
NUTRITION: THE PROTEINS YOU EAT	4/10	5	.40	17	.57
PROBLEMS OF BEING AN IMMIGRANT	3/14	5	.30	17	.09
ROLE OF RELIGION IN MONTREAL AND QUEBEC	0/5	5	---	17	---
TELEVISION IN MONTREAL	9/11	6	.50	18	.41

[a]Number of matching Pre- and Posttest items on which gain was calculated.

[b]Number in total group.

[c]Gain score formula is:

$$G = \frac{\text{Actual Gain}}{\text{Maximum Possible Gain}} = \frac{\text{Posttest \% - Pretest \%}}{\text{100\% - Pretest \%}}$$

[d]Jewish People's School

calculated as there were no matching pre- and posttest items. However, the posttest was keyed to the objective and the LAP was designed for broadening of cross-cultural horizons. No revisions were made and the achievement mean was 83% with 92% effective for its target population.

Field Testing

Table 2 shows a sample comparison of scores due to revision of LAPs. The selected sampling was based on the comparable number of students using the LAP in the first tryout and the second tryout, and having at least one-third of the matching pretest items included in the posttest. Table 2 indicates that with adequate revisions of LAPs based on formative evaluations it is possible to increase the gain scores. Only a modest amount of revision of LAPs was undertaken due to the lack of time and the lateness in the school year.

The record of simple learning gains as change from pre- to post-test percents serves as an index of a student's learning gain from a LAP. This evaluative small group tryout data would give teachers an opportunity to decide which LAPs would be retained, revised, or dropped. If gains are not forthcoming under proper learning conditions for the intended school population on a small scale tryout, the LAP should not become a regular part of the curriculum for most other students.

Seventeen LAPs were field tested and percent of gain and gain scores responding correctly to each item on both the pre- and posttest are reported in Table 3. The range of mean percentage gains is 0 to 68 and the gain scores range from 0.0 to .84. The gain below a preset score, for example .25, indicates that these LAPs would have to be drastically revised or dropped; those in the range say between .25 and .74 should be revised to increase the gain score to at least .75. However, due

TABLE 2

SELECTED LAPs COMPARING MEAN GAIN SCORES OF MATCHING TEST ITEMS DUE TO REVISION

LAP Title	TO[d]	RT[e]	N[b]	K[a]	% Pre-	% Post	% Gain	Gain Score[c]	% E[f]
COME TO P.E.I.	1		6	8/10	20.9	60.6	40.8	.53	33
	2	35	5		12.5	77.5	60.0	.75	60
DRUMS	1		4	5/15	10.0	75.0	65.0	.75	50
	2	75	6		16.3	67.0	50.0	.51	50
EXPORTING OF CANADIAN WHEAT	1		4	4/11	25.0	56.0	-7.0	.00	25
	2	25	7		75.0	89.0	14.5	.36	100
NUTRITION: THE PROTEINS YOU EAT	1		9	4/10	50.0	81.0	30.5	.57	67
	2	30	8		56.0	81.0	25.0	.56	75
SEED DISPERSAL	1		8	6/7	37.5	70.8	33.0	.53	25
	2	65	6		75.0	97.0	22.0	.63	100

[a,b,c] See Table 1

[d] First and second tryout

[e] Revision time in minutes

[f] Effectiveness was set at 80%. e.g. if 8 out of 10 students met the minimum performance level for said LAP it was deemed effective for that target population.

TABLE 3

LAP FIELD TESTING MEAN GAIN SCORES OF MATCHING TEST ITEMS

LAP Title	N[b]	K[a]	% Pre-	% Post	% Gain	Gain[c] Score
A VISIT TO OLD MONTREAL	6	4/8	0.0	54	54	.59
COME TO P.E.I.	8	8/10	11	69	55	.66
DID YOU KNOW?	13	0/6	-	-	-	-
DRUMS	8	5/16	13	70	58	.58
EXPORTING OF CANADIAN WHEAT	11	4/11	72.5	77	45	.14
METRIC LENGTHS	6	5/6	86	66	-33	.00
METRIC SYSTEM OF WEIGHTS	6	4/10	45	88	42	.78
NUTRITION: HOW TO CHOOSE A BALANCED DIET	10	4/10	65	85	18	.38
NUTRITION: THE PROTEINS YOU EAT	12	4/10	48	83	35	.64
PLANTS: VEGETATIVE REPRODUCTION	6	12/14	18	86	68	.84
PROBLEMS OF BEING AN IMMIGRANT	12	3/14	56	58	28	.00
ROLE OF RELIGION IN MONTREAL AND QUEBEC	13	0/5	-	-	-	-
SEED DISPERSAL	14	6/7	54	82	29	.57
SIGHTS AND SOUNDS OF PLACE DES ARTS	12	8/12	16	74	58	.60
TELEVISION IN MONTREAL	15	9/11	63	84	21	.48
TRANSPORTATION IN MONTREAL	12	4/8	35.5	59	19	.36
TRIANGLES	13	2/10	25	41	15	.14

[a]Number of matching Pre- and Posttest items on which gain was calculated.

[b]Number in total group.

[c]Gain score formula is:

$$G = \frac{\text{Actual Gain}}{\text{Maximum Possible Gain}} = \frac{\text{Posttest \% - Pretest \%}}{\text{100\% - Pretest \%}}$$

to the small number of matching items in both the pre- and posttests in most LAPs, guessing may have taken place. In some LAPs students responded correctly on the pretest items and did not on the corresponding post-test items. For example, in the LAP Exporting of Canadian Wheat there were 3 out of 11 students; in Metric Lengths there were 4 out of 6 students; and in Problems of Being an Immigrant there were 3 out of 17 students (see Appendix H). This may be due to more guessing that takes place on the pretest. It was observed particularly in students using the LAP, Did You Know? that guessing took place on the pretest even though they had no or very little experience in using a microscope. Students may have had a strong tendency to guess on a test item whether they have been exposed to the readings, activities and materials which may be necessary for attaining the learning objective or not.

It is inferred from the above observations that the pre- and posttests need to be very scientifically related to minimize or eliminate the possibility of guessing. Both student teachers and teachers need training in writing a variety of test items which are consistent with the learning objectives.

Teacher Evaluation of LAPs

Since it was assumed that the participating teachers have not been trained in evaluating educational materials and in LAP design and production in particular, it was unlikely that these teachers for the most part could evaluate LAPs effectively for their particular school population. The column head, Teachers' Overall Rating in Table 4 shows a prediction of their expectations of the relative effectiveness (quality) of particular LAPs for their student population.

Each teacher had been asked to evaluate at least 10 LAPs prior to

TABLE 4

SUMMARY OF TEACHERS RESPONDING TO RATING OF LAPs COMPARED WITH ACHIEVEMENT, EFFECTIVENESS, AND MINIMUM PERFORMANCE

LAP Title	Teachers' overall rating[a]	A%[b]	E%[f]	M%[c]
A VISIT TO OLD MONTREAL	6	43.59	0.0	77.0
COME TO PRINCE EDWARD ISLAND	8.5	68.79	50.0	71.43
DID YOU KNOW?	6	94.25	92.3	87.5
DRUMS	7.5	65.8	27.5	73.3
EXPORTING OF CANADIAN WHEAT	6	73.60	72.4	70.0
METRIC LENGTHS	7	72.16	50.0	83.0
METRIC SYSTEM OF WEIGHTS	6	78.3	83.3	70.0
NUTRITION: HOW TO CHOOSE A BALANCED DIET	7	67.0	75.0	70.0
NUTRITION: THE PROTEINS YOU EAT	6	78.30	80.0	70.0
PLANTS: VEGETATIVE REPRODUCTION	7	83.3	100.0	71.43
PROBLEMS OF BEING AN IMMIGRANT	9	58.3	33.3	70.0
ROLE OF RELIGION IN MONTREAL AND QUEBEC	6	83.0	92.3	70.0
SEED DISPERSAL	8	76.4	61.7	78.6
SIGHTS AND SOUNDS OF PLACE DES ARTS	7	76.7	83.3	70.0
TELEVISION IN MONTREAL	9	79.13	86.66	73.3
TRANSPORTATION IN MONTREAL	8	45.0	33.3	70.0
TRIANGLES	9	79.2	100.0	70.0

Note.- Range for LAP rating is 6 to 9; achievement 45 to 94%, effectiveness 0 to 100% and minumum performance is 70 to 88%.

[a]Rating was based on a 11-point scale, 0 to 10. e.g. a teacher's rating of 6 would indicate that the LAP should be effective for 60% of her class or target population.

[b]Actual achievement during field testing

[c]Minimum mastery level set for said LAP

[f]See table 2.

assigning LAPs to their respective students. It was observed that this was not being done and the investigator then suggested a reduction in the number of evaluations per teacher from ten to six to three and even this did not entice some of the teachers to evaluate more than one LAP. Seven LAPs were evaluated by one teacher, four by three, five by two and one by four teachers (see Appendix H). Consequently the LAPs were not evaluated prior to being assigned to the teacher's respective pupils. Instead it was observed that the teachers made a cursory inspection (without the form) of each LAP and on this basis assigned the LAP to their students.

In Table 4 the teachers' mean predictions are compared with the pooled student achievement posttest measures (see Column A%) using the particular LAP and with the calculated LAP effectiveness (see Column E%) for their student population. Eight LAPs were 80 percent effective for the target population.

Though the number of participating teachers was small, the almost even split of teachers in "underrating" or "overrating" LAPs would most likely remain with a large number of participating teachers due to the assumption that most teachers were not trained to evaluate educational materials. The scatter diagram (see Figure 3) may lead one to interpret that the range of performance is greater than the teachers' expectations. Correlations indicated by clustering immediately above or below the regression line may suggest that some teachers were highly successful in predicting effectiveness of LAPs. This implies that there is a need for teachers to participate in decision-making rather than follow a rigid regime set up by the Board of Education. We have not been giving teachers or students sufficient credit. Teachers seem to have a slight

SCATTERGRAM [a]

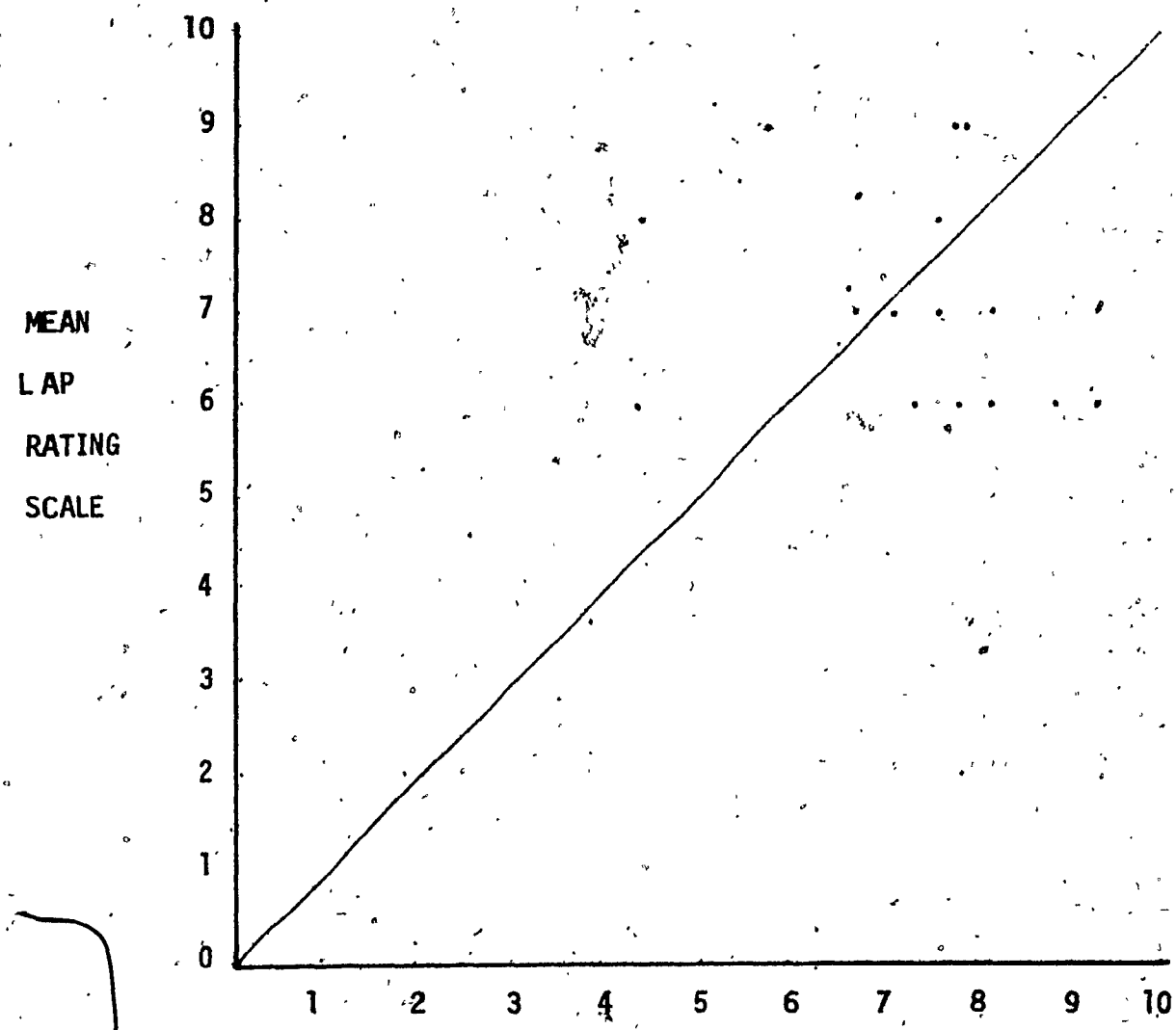

Figure 3

[a]One can plot the degree of relationship, or correlation, between two measures, the teachers' mean prediction of effectiveness of LAPs and the pupils' mean posttest scores by use of a scattergram. The closer the points fall to a single line (regression line) which might be drawn through the points, the higher will be the correlation between the two variables. By plotting the pairs of scores on a scattergram one can predict about what the relationship might be.

SCATTERGRAM [a]

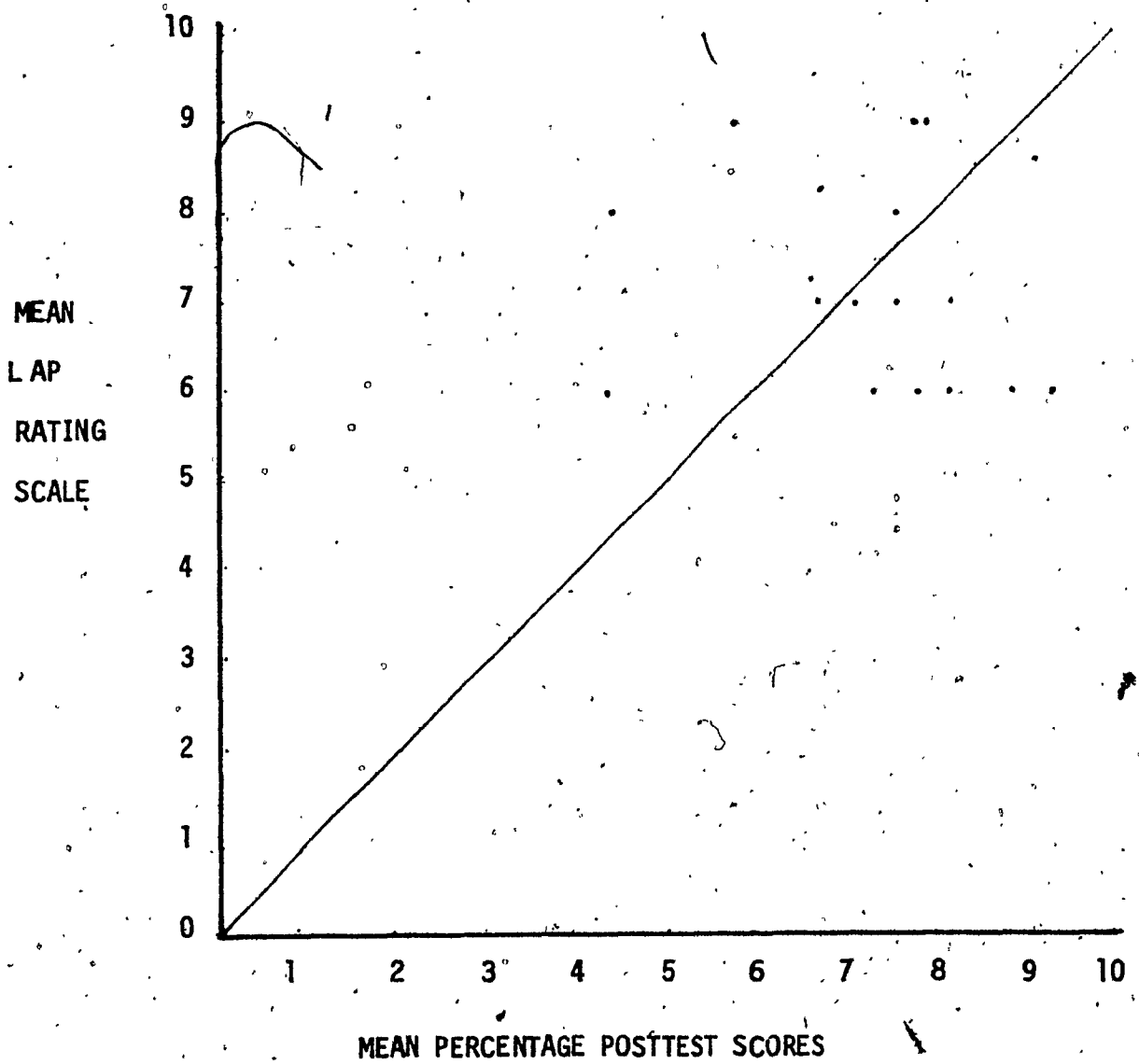

Figure 3

[a]One can plot the degree of relationship, or correlation, between two measures, the teachers' mean prediction of effectiveness of LAPs and the pupils' mean posttest scores by use of a scattergram. The closer the points fall to a single line (regression line) which might be drawn through the points, the higher will be the correlation between the two variables. By plotting the pairs of scores on a scattergram one can predict about what the relationship might be.

tendency to underrate LAPs (below the line) but this is not statistically significant due to lack of range.

"...don't go by my evaluation at all...", "I don't understand it", and "I haven't the time" were typical teachers' reactions to using the evaluating form "An instrument to Assess Learning Activity Packages" (see Appendix A). No doubt the complexity of the form and the lack of free time in the teacher's daily duties contributed to the smaller number of teachers participating in the evaluation of LAPs than had been expected. Teachers had to take this on as an added load while still fulfilling their curriculum commitments set by the school. A difference would have been found in laboratory or demonstration school affiliated to a university where innovation is part of the program and not an additional load for the teachers.

These factors and others led to a prevailing consensus of opinions from both teachers and administrators that there should be a teachers' workshop in "How to produce a LAP". This was evident in informal chats with individual teachers and with groups. Consequently the investigator was invited to act as consultant to organize and hold a one-day workshop in the development and production of LAPs for all teachers of the two schools. The objectives of a one-day workshop were achieved and the teachers' enthusiasm into this new venture appeared to be reassuring for the coming months. One former participating teacher in the experiment who acted as one of the group leaders remarked, "I wish we had had this workshop before the experiment. I would have been better informed."

Student Acceptability of LAPs

Students in the two schools who used LAPs responded to an eight-item questionnaire or "Student Evaluation Form" (see Appendix C).

Table 5 summarizes the responses for items 4,5,6,7 and 8 on the questionnaire. The table indicates that the students preference for LAPs is extremely high. Twenty out of 35 in the Peretz School and 126 out of 155 in the Jewish People's School preferred the LAP method of learning. These students gave the LAPs an average rating of 4.21 and 4.09 respectively using a five-point scale. This high rating may be due to the novelty of this form of learning. The LAPs aroused curosity, offered individual opportunity to study, to persevere and accept new challenges. They gave the student the desire for self-direction. One particular boy, who according to his teacher was having learning difficulties and incapable of independent study, was observed working through a particular LAP after more than ninety minutes. "I would have never believed it," remarked his teacher. The prevalent lack of competition gave this boy the desire for self-improvement and self-motivation.

Most students had only one opportunity to use LAPs. However, the assumption that a student will rate the LAP according to how successful he is with LAPs or how well he is achieving may be questioned in this survey. Out of 49 students who achieved posttest scores below the required minimum performance level, 20 rated LAPs as 5, (meaning "very good"), 12 as 4 and 17 as 3 (meaning "OK"). Therefore it can be interpreted that approximately 33 percent of the student population responding to the questionnaire preferred the LAP system of instruction even though they did not achieve the mastery level as required. Before one accepts this interpretation it must be pointed out that almost all the students completed the evaluation form before they received knowledge of their posttest scores.

A high number of students showed a desire to use LAPs for the

TABLE 5

SUMMARY OF STUDENTS RESPONDING TO THE STUDENT EVALUATION FORM

		Total Group	Peretz School	Jewish People's School
		n-190	n=35	n=155
			LAPs=9	LAPs=17
STUDENTS PREFERRING LAP METHOD OF LEARNING			20	126
STUDENTS PREFERRING REQUIRED DAILY ASSIGNMENTS			2	9
	No response		1	4
STUDENTS WHO THOUGHT THEY LEARN AS MUCH FROM LAPs	Yes		21	125
	No		1	12
	No response		1	2
STUDENTS HAVING TIME TO WORK INDIVIDUALLY WITH TEACHER OR SMALL GROUP	Yes		8	81
	No		13	52
	No response		2	6
STUDENTS DESIRING TO USE LAPs THE FOLLOWING YEAR	Yes		21	131
	No		1	1
	No response		1	7
STUDENTS GIVING FOLLOWING RATINGS OF LAPs	5 Very Good		14	63
	4		2	34
	3 O.K.		7	31
	2		0	7
	1 No Good		0	2

Average rating given to LAPs = 4.21 and 4.09 respectively

NOTE.- 23 out of a possible 35 in the Peretz School completed a questionnaire. 139 out of a possible of 155 in the Jewish School completed a questionnaire.

following year. A two to six hour learning experience in using LAPs cannot be expected to change the attitude of students to a great degree. It may take as long as a year of learning by means of a LAP method to convince the student that this form of individualized instruction may be one of the best forms of learning for him.

How a Teacher Chooses a LAP for his Student

The investigator asked the participating teachers which reasons were crucial to the LAP system of instruction. In the two schools seven out of a possible eight teachers responded to the check list (see Appendix F). In Table 6 seven teachers checked reasons (1) relevant to the student's interests, abilities, and needs; and (2) to arouse interest, attention, and awareness to describe their choosing of a particular LAP for their respective pupils. Six teachers chose reasons (3) to foster independent work, and (4) it has the most interesting activities in selecting a LAP. Reasons such as (5) as for punishment, (6) busy work, (7) remedial work, and (8) it was the only one available were totally disapproved in LAP selection. One teacher chose a LAP because it was recommended by another teacher, or requested by a student. It would appear that teachers chose LAPs as "carrots" rather than as "sticks" for their pupils.

It is implied from the above summary that there is a strong desire on the part of the teachers to learn the LAP system as part of a course in curriculum development. Therefore there is a need for educating teachers in how LAPs can be used in curriculum content, enrichment and supplemental work, remedial work and filling in gaps of knowledge and information.

TABLE 6

SUMMARY OF TEACHERS' REASONS IN SELECTING A LAP

7 - Relevant to the student's interests, abilities, and needs (physical, emotional, social).

7 - To arouse interest, attention, and awareness.

6 - To foster independent work.

6 - It has the most interesting activities.

4 - Demands of the subject.

4 - It uses materials I like.

3 - Level of difficulty (e.g. it was the easiest)

3 - Activities require little teacher help.

2 - To prepare an individual report and report to a group.

2 - As a reward.

2 - As supplementary work.

1 - Another teacher recommended it.

1 - Other students recommended it.

1 - Request from a pupil.

0 - As busy work.

0 - As a punishment.

0 - As remedial work.

0 - It was the only one available.

0 - Other (specify)

Pupil Group Interviews

Four groups of eight or less students in the Peretz School and six groups of six or less students in the Jewish People's School responded to Basic Interview Questions of LAP Acceptability by Pupils (see Appendix D). The primary purpose of the interviews was to ascertain whether pupils liked working with LAPs and why.

The pupil responses to "Why do you prefer working with LAPs on your own rather than working in large groups with a teacher guiding you?" were in general agreement with the characteristics of individualized instruction such as "you learn by yourself at your own speed"; "It is more fun"; "you have your own responsibilities"; "more interesting and many things to do"; "no competition" from or with other people; you learned "quicker" and "faster" by yourself without a teacher "bugging you"; no one "to make fun of you" when you give the wrong answer; and "it was more enjoyable".

The question dealing with the format of LAPs produced a wide variety of responses to the question "which part or parts you liked 'best' or 'least' and why?". Some liked the Rationale "because it creates interest and introduces the LAP". About half of the students interviewed preferred the Learning Activities and some preferred all evaluations, especially the progress test because it gave them immediate knowledge of results. Only one student made reference for liking the Objective best because "it told him what he must learn". This implies that there is a need to let students know specifically what they will be learning at the time of the lesson period. i.e. teachers should get into the habit of informing students the objective(s) of each lesson. Some did not like the Pretest because "it made me fail" and the Posttest because "I got very nervous".

Some did not like the Learning Activities which involved "look and research" because it "took many pages of reading in an encyclopedia". An implication here is that there is a specific need to teach research skills as tools of learning to students so that 'reading many pages' will not deter them from achieving the learning objectives.

Student responses to "which type of activity did you enjoy doing?" were many and varied. Such responses as "I liked reading", "I don't like reading", "I liked tapes", "I wish there were more slides", "I liked games and crossword puzzles", I liked pictures with explanations", "I liked making my own lenses" (meaning slides), are all indicative that each individual student has a preference for a learning mode of his choice. The pictorial and sound media were popular with learners especially those who had expressed that they did not like reading (probably due to reading difficulties). A variety of multi-media, multi-modal learning activities (at least five) from which the learner selects for himself appealed to individual differences.

Teacher Interviews

Five teachers, one administrator and one resource center librarian responded to a Basic Interview Questions for LAP Compatability within the School (see Appendix E). All were in strong agreement that the LAP method of learning fits in with the present objectives of the school program. With the exception of one teacher, all agreed that the LAP method enhances and strengthens the operation and/or goal attainment of the present school program. The administrator commented that LAPs "fit in very well" and it is now not a matter of "if" but "when we have LAPs" the goal attainment of "our school" will be enhanced.

Varied responses such as "none", "was surprised that they (students)

worked very well on their own", "I wish I had more LAPs", "I have used something the same but not called LAPs", and "not earth shaking" were received for the question "How did experience with individualized instruction through LAPs influence your teaching?" However, three of the teachers strongly agreed about the influence this form of individualized instruction had on their teaching in the regular classrooms, indicating a transfer of learning for the teachers as well as students.

The resource center has a variety of "hardware" and "software" which is presently used in a variety of ways. Teachers felt the allocation of facilities and media are now available for a LAP program but they foresaw that a fully implemented LAP program would need "more materials" and "equipment" and "a quieter place to work" or "a specific area where they can work". The librarian saw it as "not a big problem -- must be fitted in -- should be much more organized". There is no doubt in the investigator's mind that with proper planning this school can embark on such a program in the near future.

Almost all were in strong agreement that students gained the benefit of independence (of working and learning on their own) in using LAPs in a resource center.

Only one teacher wasn't sure of the gains for students anticipated for the LAP method of instruction. The remaining six felt that the LAP program should be part of the school program and the gains for students anticipated by the LAP method were at least equal to under the present educational objectives of their school. The variety of learning modes offered through LAP activities would certainly make for betterment. Teachers can also detect individual learning patterns.

The responses to the question "What do you think is the teacher's

role in the LAP method of individualized instruction?" varied from "a very important role" to "a very minor role". One teacher saw the teacher's role as that of "marking time - an observer -- noting the interest or lack of it - not a dominant role". Another teacher felt there was little for a teacher to do but to "check" and "provide additional information" when needed. Still another, felt that her role was to select a LAP for a particular child's "level and interest" and "to guide the child through the particular thematic program" pursued in the regular classroom and that the "librarian's role (e.g. supplying "particular materials") is greater than a teacher's". The administrator and one teacher felt that the teacher's role should include "producing and revising LAPs", "a chance to discuss with someone" (meaning a student discussing his problem with a teacher) and "must be familiar with the LAP and with information above and beyond". Teachers wanting 'to know more about LAPs' is in keeping with the investigator's prediction discussed under section "What is a LAP?" (cf. Chapter I).

The librarian saw her role greatly reduced in showing and telling students how and where to find materials and equipment. She felt her job would be much easier because students "using LAPs would become much more independent in seeking and using materials and equipment". This is actually an incorrect assumption on the part of the librarian. The investigator, in conversation with her, suggested that she list all the Quest activities in the LAPs and thereby recognize how her role will become more important and more productive.

These interviews clearly indicate that even though the teachers are aware of the characteristics of individualized instruction in terms of the student they are quite unaware that a truly individualized

system of instruction implies a change in the teacher's present role (and in the librarian's). Teachers have to become more familiar with the librarians' role and librarians have to confer more with what teachers are doing in the classroom. Dual planning can offer enrichment to the students' curriculum.

According to Lindvall and Bolvin (1970?), the teacher's changing role can be outlined in terms of functions. These are: (a) The teacher's role in operating the system. (b) The teacher's role in supplementing the system to enhance adaptation to individual needs. (c) The teacher's role in providing for the achievement of goals possible only with teacher intervention. (d) The teacher's role as a developer and evaluator of the system, and (e) The role of the teacher as a member of the total school faculty. If the goal is to have each pupil operating as a self-directed learner within an individualized instructional program, then the teacher and the librarian (functioning as a teacher-librarian) have a major part in helping to achieve the overall goal of this individualized system.

Summary of Gain Scores

Table 7 summarizes a comparison of the average gain scores from LAP pretests to immediate LAP posttests and the range or measure of variability of gain scores from pre- and posttests. The variability of gain as measured by the range of scores was calculated by subtracting the lowest gain score from the highest gain score for a particular LAP. The reason that any particular range is greater than 1.0 was due to the fact that some students scored higher on the pretests than they did on the posttests. For example, for LAP, Nutrition: The Proteins You Eat, the individual student gain scores varied from a low of -2.0 to a high of 1.0 and thus the range or measure of variability equals 3.0 (cf. Appendix H). The range of average gain scores was fairly high, from 0.0 to .84. The ranges of gain were from .35 to 3.00 with an average of 1.37 for 15 LAPs.

Whereas the gain scores indicate that learning in some instances did not show the expected increase due to lack of matching pre- and posttest items based on the learning objective, and whereas, the range of average gain scores was fairly high, from 0.0 to .84, therefore the conclusion can be drawn that the learning which was not indicated but which took place could fall into the realm of bonus or byproduct learning (cf. p. 2) from unstated objectives either in the categories of content, skills, attitudes, appreciation and/or values, or higher level thinking.

TABLE 7

SUMMARY OF AVERAGE AND RANGE OF GAIN SCORES OF LAPs

LAP Title	Average gain score	Range of gain scores
A VISIT TO OLD MONTREAL	.59	.35
COME TO P.E.I.	.66	.62
DID YOU KNOW?[a]	---	---
DRUMS	.58	1.00
EXPORTING OF CANADIAN WHEAT	.14	2.00
METRIC LENGTHS	.00	1.75
METRIC SYSTEM OF WEIGHTS	.78	1.00
NUTRITION: HOW TO CHOOSE A BALANCED DIET	.38	1.00
NUTRITION: THE PROTEINS YOU EAT	.64	3.00
PLANTS: VEGETATIVE REPRODUCTION	.84	.40
PROBELMS OF BEING AN IMMIGRANT	.00	3.00
ROLE OF RELIGION IN MONTREAL AND QUEBEC[b]	---	---
SEED DISPERSAL	.57	1.00
SIGHTS AND SOUNDS OF PLACE DES ARTS	.60	1.00
TELEVISION IN MONTREAL	.48	2.00
TRANSPORTATION IN MONTREAL	.36	1.00
TRIANGLES	.14	1.50

[a,b]Matching pre- and posttest items were not available for these LAPs

Comparison with the Nova LAP Project

Though the initial educational research and development in the use of Learning Activity Packages in the Nova School District (cf. The School Board, 1970 & 1971) was relatively longer in duration, wider in scope in organization and methodology, and different in the use of evaluation techniques, several comparisons can be made. While the Nova experiments dealt only in mathematics and science, similar assertions could be made for almost any combination of subject areas.

In the Nova project it was shown that the eighth-graders achieved about 85% of the test items (of the LAP objectives) in algebra on their first attempt while the ninth-graders, who were with lower ability, achieved almost 66%. The geometry students, who were higher in ability than the ninth-grade algebra students achieved almost 70% of their objectives on the first attempt. This is compared with the investigator's findings that 24% (4 out of 17 LAPs) of the LAPs were effective on the first attempt and another 24% were effective after a second attempt.

The students at Nova High School, who have used LAPs for several years, preferred the LAP method of learning as did the students at the Jewish People's School (JPS). The Nova students gave the LAPs (in algebra) an average rating of 3.00 and the JPS students gave the LAPs an average rating of 4.09 using a five-point scale.

Since their experiences with LAPs seem to have been more successful, a large percent of the Nova school students expressed a desire to use LAPs again the following school year. This expression of desire to use LAPs again was evidenced from the JPS students when 131 out ot 139 students in the field testing of LAPs responded with "yes" to the same question.

The following similarities are held to be self-evident and, therefore, have not been ascertained or supported by formal objective evaluation.

Both the Nova project and this exploratory investigation found that teachers were in agreement about the influence the LAP system of individualized instruction had on their teaching in the regular classroom. They felt they would prefer having students work independently with LAPs where the teacher-librarian acts as a guide and/or faciliator rather than participate in the traditional large group instruction.

Both projects assert that because most students are accustomed to traditional teaching methods, a careful orientation to the individualized program is a necessity. Failure to provide this can result in discouragement, disappointment, and possible failure of the entire program.

Further, both projects confirm that a plan to individualize instruction must include provisions for teacher education. The need for formal training and for workshops to familiarize the teachers with the LAP and its use in the classroom is of utmost importance. If LAPs are to be written by the teacher, then training programs should include the use of consultants having experience in this area.

CHAPTER IV

CONCLUSIONS AND RECOMMENDATIONS

Summary of Findings

1. It was found that many of the test items in the pre- and post-tests did not match the learning objectives. The breakdown was as follows: five LAPs had 80% or more, one had 66%, two had 50%, three had 40%, two had 30%, two had 20% and two had 0% of matching test items.
2. In the pre-trial study the average gain scores ranged from .30 to .70 prior to revision. After revision they ranged from .09 to .63.
3. According to Table 2, revision of LAPs based on formative evaluation did not seem to increase the effectiveness of LAPs as had been expected. However, it is noted that there was a modest increase in learning gains for the five LAPs with an average gain of .48 before revision and .56 after revision. Further, according to the set 80% criterion for effectiveness of LAPs, it is noted that before revisions the average percentage effectiveness for these LAPs ranged from 25 to 67 with an average percent at 40, whereas after revisions the average percentage effectiveness ranged from 50 to 100 with an average percent at 77.
4. According to the set criterion, it was found that out of 17 LAPs, four were 80% effective without revisions; four were

effective without revisions, four were effective after revisions and the remaining nine needed further revisions and testing.

5. In field testing the range of mean percentage gains was 0 to 68 and the average gain scores ranged from 0.0 to .84. The range or variability of gain scores was .35 to 3.00 with a mean at 1.37.
6. In teacher evaluation of LAPs it was found that there was an even split of teachers in 'underrating' or 'overrating' LAPs according to the relative effectiveness of particular LAPs for their student population. Further, very few LAPs were evaluated by more than one teacher. Seven were evaluated by one teacher, four by three, five by two and one by four teachers.
7. Twenty out of 35 students in the Peretz School and 126 students out of 155 in the Jewish People's School preferred the LAP method of learning. The students gave the LAPs an average rating of 4.21 and 4.09 respectively using a five-point scale.
8. All participating teachers had an awareness of the characteristics of individualized instruction in selecting LAPs for their students.
9. All teachers interviewed were in strong agreement that the LAP method of learning fits in with the present objectives of their school program.
10. All teachers interviewed were lacking in fundamental knowledge and understanding of the implied change in the teacher's present role (and in the librarian's) in implementing a LAP system of instruction.

Based on the foregoing observations and interpretation of results the following conclusions and recommendations may be arrived at.

LAPs Allow Students to Learn Through Their Environment

Learning was propagated through "hands on" experiences, rather than lecturing by a teacher. Prepared LAP materials allowed the students to learn through their environment. Though the period for this study was relatively short, it was shown that the environment can be structured in sequence to maximize the probability that the desired learning will take place. Based on the postulate that learning is maximized when one interacts with one's environment, it follows that in order to maximize learning, one would want to structure the environment in such a way that the probability of learning particular concepts, skills, attitudes and values, or higher level thinking from interaction with a particular environment will be maximized. To this end writing Learning Activity Packages involving participation exercises provided a vehicle for learning experiences to occur by means of a relevant curriculum which was meaningful to the student in his daily life in and out of school. In other words, one can expect a transfer of learning in this type of environment.

Selection and Organization of Learning Activities

Making decisions about the selection and organization and content and learning experiences for a LAP should be made <u>with</u> the learner, rather than <u>for</u> him. In selecting content, student-teachers as LAP writers and educational product designers attempted to provide alternative

sets of content items which aimed at the attainment of learning tasks. In general these alternatives related to the potential individual differences and, thus did provide for variations in levels of sophistication or abstraction, degrees of complexity, gradedness, length, extent of coverage, and topics of interest. These alternatives were not prescribed for the learner, but the learner was used as a component for selecting the one most appropriate for him. He, himself, had the opportunity to test the alternatives in order to find out which he could best respond to or which stimulated him the most.

Since LAPs are not meant to be completely self-instructional, it is recommended that a teacher should be available at all times to prescribe alternative learning sequences and to help individual students in case of difficulty. Initially the student should spend about 50 percent of his time working independently or with a partner on the LAP materials. The remainder of the class time should be devoted to large group instruction and small group interaction. Essentially the LAP is designed for independent study but it is not meant to be completely self-instructional. A teacher or consultant should be available to the student for help whenever help is needed. However, the student should be encouraged to assume the responsibility for learning.

Assessment Provides Feedback for Curriculum (LAP) Development and Student Self Assessment

The record keeping design provided considerable data that were valuable in evaluating the effectiveness of LAPs. The LAP was held accountable for student success through built-in mechanisms for evaluation and modification. All testing was based on measurable objectives. If too many students did not achieve a given learning objective in a

LAP, something was wrong with the LAP or with the way the LAP was being used by the student or by the teacher. Due to the lack of time devoted to this study it can be concluded that only a moderate amount of success had been achieved in increasing the effectiveness of some LAPs through formative evaluation. Nonetheless, it can be concluded that without good record keeping formative evaluation of LAPs or curriculum materials in general would be virtually impossible.

One LAP innovation which, according to student interviews, and very popular and of much help to the student, was self-evaluation or the progress test. It was observed that most students were quick to appreciate that these tests were built into the LAP in order that they might see for themselves how they were progressing. These self-evaluations or assessments which came before the posttest gave the student an opportunity to improve his performance by looking at his deficiencies and working specifically on them. It was observed that some students tried the self-test as many as three times before they asked for a posttest. Therefore it is inferred that a student was becoming responsible for diagnosing his own strengths and weaknesses and prescribing for himself, or seeking teacher consultation in prescription.

A 'good' LAP can be identified by measuring through the actual performance whether the specific behavioral objective has the intended outcome and whether learning activities (experiences) have implemented the objective. A measurable objective helps both the pupil and writer. Although its main purpose was to help the student know what he was expected to do, it also served as a guide for the LAP writer. As the writer gathered materials for the LAP, he was to be continually referring to the objective. The investigator accepted this premise in identifying

acceptable LAPs.

Unacceptable LAPs were identified by the use of ambiguous language and vocabulary[8] level in stating the learning objective and instructions in using the LAP. Learning activities not relevant to the objective or poorly sequenced were other means of identifying unacceptable LAPs.

However, the most discriminating means of identifying unacceptable LAPs in this study was to compare pretest and posttest items. Each item was to be representative of a performance objective. It was found that the posttest was different than the pretest although corresponding items were supposed to measure the same objective. Some items on the posttest, however, were of much greater difficulty than corresponding items on the pretest. 'Good' LAPs invariably should have pre- and post-tests which are keyed to the objective and are parallel.

Personnel and Facilities

The success of the LAP program depends heavily upon the materials used. It was pointed out in the preceding sections that teachers can write LAPs if they have been professionally trained to do so. The LAP program must be carefully designed for their learning tasks. There is the need for materials to be adapted by teachers to fit the needs of the particular group and regional area. "The lack of common agreement on the part of the teachers as to what content should be taught or what objectives are really important, or the lack of common learning resources" are some of the reasons why teachers should write their own LAPs (Smith, 1971, p. 17). A school district must provide for such materials by giving teachers time to produce and/or plan the necessary LAP program. Although different arrangements can be suggested, the only successful

[8] Inclusion of glossaries are very important in improving student vocabulary.

one may be using teachers during the summer, or relieving them of other responsibilities so that they can devote full-time to producing the needed LAPs within a period of the school session.

Not only must time be available for the teachers, but paraprofessionals (Friedman, 1969 and 1971) for non-teaching tasks and certain physical facilities must also be provided. A visual and materials center is imperative. Although a great variety of instructional materials are available commercially, much of it cannot match specific objectives set by the teacher. Therefore, a media production and duplication center must be established locally to help develop the kinds of LAP materials necessary to ensure achievement of the objective. A paraprofessional or teacher aide can implement the objective specified by the teacher by working on tapes, slides, home movies or video-taped recordings. Then, too, personnel are needed to type, duplicate, and assemble materials for the LAPs.

Who Should Write LAPs?

> It should be kept in mind that the LAP is the reflection of an attitude towards students and will, when written, do only that which the writer allows it to do - no more and no less. (Smith, 1972, p. 17)

It was inferred in the previous discussion that there is a lack of common agreement on the part of the teachers with reference to commercially prepared LAPs or curriculum materials. Therefore it is recommended that the staff within a school or district write their own LAPs. The following procedure as suggested by Smith is recommended:

1. A process-oriented workshop should be conducted, helping all professional staff members develop at least one complete LAP. This process should be individualized to serve as a model for

the staff as to how they in turn might work best with their students in their particular environment.

2. The most effective and efficient LAP writers should be identified from those participating in the workshop.
3. A plan should be developed that schedules the development of LAPs over a two or more year period involving teachers who wish to do this kind of work.
4. All teachers in a school should be involved in identifying content, objectives and learning activities; in evaluating the LAPs before they are used; in using LAP; in providing feedback for revising. i.e. decision making by the teacher in order to provide relevancy in the curriculum.

The Changing Role of the Teacher

As the function of the teacher in the LAP system of instruction differs from that of his conventional role as dispenser of information, there will be little "talk and chalk". The new function of the teacher will be to diagnose learning problems, to prescribe the best learning sequences, to conduct small group discussions and train the students to engage independently, in similar discussions, and to assist students via individual conferences.

In the LAP system, if the teacher's job becomes one of educational diagnostician and prescriber to fit individual needs he will need to develop the following skills:

1. to specify definite learning objectives without using such vague and non-measurable terms as understanding, appreciation for, etc;

2. to design pretests which will identify a student's need for a specific remedial work or advance placement.
3. to be a director of learning resources - selecting media and combining them because they are considered to provide the most effective means of satisfying specified pupil needs - i.e. 'arranging for learning to take place' in a meaningful and relevant fashion.
4. to make sure tests are valid and that they actually measure course content as specified in the behavioral or performance objective.

Therefore it is recommended that teachers need training in playing a diagnostic-prescriptive role and it is vital that this training be included in courses of curriculum design and individualized instruction in teacher education programs.

Teacher Education

The teacher education program today in teachers' colleges, universities or in-service should include the study of solid criteria which would guide the teacher in gathering data to clarify the instructional design of learning materials. A knowledge of such criteria would put to scrutiny the developmental procedures used by commercial producers and it would guide the teacher in analyzing instructional materials and educate him to produce such materials. It is recommended that a full course in curriculum development should be of at least two semesters if teachers are to be taught to make their own LAPs, and/or evaluate educational materials of which LAPs are a part. Without such a program, intelligent implementation of instructional materials in the classroom context to bring about individualized education would be no further

ahead as analyzed by Wilhelms (1962).

This study did not come up with a basic model of evaluating materials but it can be concluded that educational materials have to be tested, and revised for each particular area or local school. This is a rather lengthy procedure. However, if a teacher is trained in curriculum design and individualized instruction, he can adapt educational materials for his specific needs. Teachers, including administration, in a proper environment and properly qualified can rate educational materials before use, but teachers without training might have difficulty.

Effects on the Students

The students reactions to the LAP system of instruction was very positive. This conclusion is based on pupils' responses in completing the Student Evaluation Form (see Appendix C), group interviews, and on the observations made by the investigator and his assistants. Even though a student was required to work towards only one objective there were many "by-products" particularly in student attitudes. The student worked at a pace commensurate with his ability; the student attempted to study only the material which he did not already know; the student had a choice of modes in achieving a particular objective. The Quest section offered the opportunity for greater in-depth investigation and enrichment. One student's remark "I wish they have LAPs when I go to high school" typifies the future acceptance of LAPs as a form of individualized instruction. Given the proper environmental setting, relevancy of materials related to interest and self-motivation, there is very little doubt in this investigator's mind that pupils will readily 'lap' the LAPs.

Gain Scores as a Measure for LAPs Acceptability

The basic purpose for developing criteria to assess the quality of specific LAPs is to increase their potential use in individualized instruction. This can be done both through improving the selection and use of existing LAPs and through stimulating the development of more effective LAPs in the future. Both the wise selection and the effective utilization of LAP programs in schools clearly requires a dependable way to assess the merit of any given LAP program.

In this exploratory investigation the investigator set the 80 percent criterion as a measure for effectiveness of LAPs. However, another way to measure for LAP acceptability came to light after the experiment and merits discussion. This way is by comparing the average gain scores and the range of gain scores. (cf. Table 8). This alternative means, as a useful criteria for assessing LAP effectiveness, only became apparent after the average gain score and its variability for each LAP had been calculated. The investigator feels that in any future replication of this study the use of mean gain scores and the range of gain scores in assessing LAP effectiveness is warranted. This can be done by using decision rules based on a comparison of learning gain scores with their variability of gain scores for each LAP. The investigator recommends the following decision rules as a measure of LAP acceptability.

DECISION RULES FOR ACCEPTABILITY OF LAPs BASED ON GAIN AND VARIABILITY OF SCORES

1. High gain with low variability - an ideal LAP
2. High gain with medium variability - acceptable
3. High gain with high variability - acceptable

4. Medium gain with low variability - more acceptable than #3
5. Medium gain with medium variability - acceptable
6. Medium gain with high variability - need revision
7. Low gain with low varaibility - need revision
8. Low gain with medium variability - need revision
9. Low gain with high variability - unacceptable.

This hierarchy of conditions is on the assumption that any given LAP shall meet the needs of all students in the target population.

If one chooses an arbitrary classification range to include both the gain scores and their variability, say, low gain and variability from 0.0 to .33, medium from .34 to .66, and high from .67 to 1.00 and greater, it is then possible to use the above decision rules as sub-classifications in ascertaining acceptability of LAPs. If Table 8 is used for illustrative purposes in applying the above decision rules the acceptability of the 15 LAPs used in this investigation is revealed as follows:

Rule no.	No. of LAPs	Remarks
1	0	An ideal LAP
2	1	Acceptable
3	1	Acceptable
4	0	More acceptable than #3
5	2	Acceptable
6	7	need revision
7	0	need revision
8	0	need revision

Rule no.	No. of LAPs	Remarks
9	4	Unacceptable

The use of gain scores as a measure for acceptability of LAPs has limitations, nonetheless, a record of simple learning gains serves as an index of a student's learning gain from a LAP. The use of gain scores is a comparison measure of what students achieved as opposed to what they might have achieved.

The implication is that teachers are not statisticians or generally research oriented and it is not to be expected that they will willingly conduct statistical analyses of student tryout data which contributes little more to the LAP program's effectiveness than the simplified recommendations presented here (cf. McGuigan & Peters, 1965). The teachers can use this simple procedure, with little time investment to evaluate LAPs or other self-instructional materials. It leads to great rapidity and simplicity in assessing relative effectiveness of given LAP programs with a defined student population. It is recommended that teachers be given simple, duplicated columnar sheets directing them to organize and record simple learning gains. This serves as an index of a student's learning gain from using a Learning Acitvity Package.

Decisions about further implementation of locally validated LAPs have many facets. The problem of correctly handling evaluative data is one such example. Teachers should give first priority to learning gains of LAP instruction. Merely handing down edicts by administrators to teachers about which LAPs will be retained and which dropped without full attention to tryout data defeats the entire purpose of rapid, small group tryout and all the time and investment of staff personnel and students in the above recommended procedure.

Summary and Questions for Further Research

The following is a summary of the observed results and some recommendations utilizing a LAP system approach in individualizing teaching and learning:

1. Students prefer a behavioral objective based LAP as it tells them exactly what is expected of them.
2. Since the basic requirements of a LAP are specified, students tend to use their time more efficiently. Many choose to delve more deeply into one or more aspects of special interest to them, which too frequently in a traditional system, they fail to do.
3. Students seem to do better work and learn from the materials more thoroughly since any unsatisfactory efforts were corrected by trying again without fear of reprisal.
4. The LAP can be continually made current and relevant with a minimum of effort on the part of the instructor and a maximum of available data.
5. Although the teacher necessarily spends some time working out the first stages of the LAP system, the overall saving of time through the elimination of continual planning seems to offset the amount of necessary initial preparation.
6. A great satisfaction on the part of the teacher is derived as a by-product, in the knowledge that the students (the most important part of the teaching/learning process) are receiving the best possible personal guidance without the usual busy-work and frustration which accompanies most traditional teaching.

7. A word of caution: Since the initial exposure to the very detailed and highly structured LAP tends to give uninitiated students a feeling of being somewhat overwhelmed, care must be taken to properly prepare them beforehand. Therefore preparation for adequate orientation of students who will be participating is mandatory.
8. Some of the teachers, "because the administration made them take part in this experiment," did not get involved to determine the extent and effect of the LAP program. This was particularly noticeable in the lack of teacher response to evaluating and rating of LAPs (see Appendix A) prior to the students use. Therefore, a plan must be formulated to allow a slow but cautious and deliberate entrance into this endeavour. An adequate in-service training of teachers is recommended. A "crash program" must be avoided. Orientation is essential.
9. Plans should be made ahead for possible conversion of existing space to include resource centers, special media rooms and small group facilities.
10. If economically feasible, make use of teacher aides, student teachers and paraprofessionals to release the teacher from clerical chores (Friedman, 1969, pp. 2-9) in order that he may have the necessary time to devote to individualizing.
11. LAPs do not need a specially built school and LAPs can fit into a variety of school building designs which have a resource center or facilities for a resource center. The resourceful teacher can turn his classroom into a resource

center by setting up "learning stations" or "centers of interest" in various themes or disciplines. However, when the teacher assigns a LAP, the assigned materials must be readily available without fail.

12. All teachers as potential users of educational materials should be professionally trained to evaluate educational materials for effectiveness. The development and application of an evaluation model at the local or regional level is recommended.

13. If a LAP system is to be implemented, all teachers should be asked to work in a summer LAP workshop for which they are given due credit. The job-in-training should associate a new teacher with an experienced person for a short period of time. Special materials should be ordered to permit the individualization of teacher training.

14. A LAP system of instruction has some implications for teacher-education. Courses in colleges and universities should include child psychology, child behavior and learning patterns, testing and measurements, curriculum development, small group dynamics, tutorial instruction, individual progress diagnosis, and prescription writing.

15. Further study and research should be made on LAPs developed along thematic lines. e.g. a theme such as "Cultural Heritage of Canada" can include a study of various ethnic groups' contributions to Canada with the view of providing young Canadians with an opportunity to meet and to develop a close understanding of Canadians living and working in regions

other than their own. Such an undertaking may be somewhat difficult without an experimental or demonstration school affiliated to a university.

16. Research is invited for the following possible questions: (a) Does an individual student perform the LAP learning objective more successfully if he consults with the teacher than a student who uses the LAP independently? (b) Are LAPs more suitable as a form of individualized instruction for high ability pupils than for pupils of average or low capabilities? (c) Can a typical professional educator functioning as a classroom teacher select suitable educational materials for her students? (d) Should teachers write their own LAPs?

17. The relatively small number of teachers included in this study, the non-random assignment of classes to treatment, other unknown sources of variation associated with the implementation of the treatment, and the unknown validity of the criterion-referenced tests are factors which make it inadvisible to attempt any further interpretation of the enclosed data. This was an exploratory investigation and can only be considered in that framework for further experimental study.

18. This exploratory investigation showed that out of 17 LAPs, four were 80% effective without revisions, four were effective after revisions and the remaining nine needed further revisions and testing. The evaluation procedure of tryout-revision-tryout was observed to be effective.

Therefore this is indicative as to the degree in the solution of evaluation as a technological problem in this particular study.

Value as a Thesis Project

The purpose of this study was to evaluate LAP effectiveness as an innovative program for assessing and instructing 10 to 12 year old pupils using a procedure of formative evaluation. After twenty years of experience in the field of education as a teacher and supervisor, the investigator had always looked forward to innovative changes in education. However, in his career, (almost all of it in a modern secondary school), all that was seen and experienced was little more than "lip service" given to curriculum development, individualizing instruction, and evaluating instructional materials.

In most conventional classrooms, all students are treated alike. All must learn the same material, in the same way and in the same amount of time. This is the way individual differences were treated in school. The teaching of a rigid school curriculum to pass external examinations was the order of the school day. Added to the inflexibility of the curriculum was the inaccessibility of a modern library and media services to individuals or small groups of students. Further, even though the library was increasing year by year in new additions of books, films, slides, records, tapes and various pieces of hardware, little has been done in a formal way to evaluate and utilize library materials and equipment effectively and efficiently. It is a known fact that many regional areas, including Montreal, have spent huge sums in purchasing educational hardware, which are lying dormant because the teachers have not been trained how to use them effectively. "Resource Center" and

"individualization of instruction" were vague and meaningless terms even though the teachers were ready to claim that they worked in a modern school.

The value of this thesis project is to narrow the wide communications gap between the creative and imaginative people, who conceive ideas or create significant changes in educational procedures and processes, and the people upon whom we rely to apply them. "Unless this gap is closed, the theorist operates without the practitioner and chaos results" (Arena, 1970, p. i).

Learning Activity Packages are but one approach to individualized instruction. LAPs in today's elementary and secondary schools can really assist students to be able to do or be. The learner, using LAPs, will find them to be one effective and efficient way in attaining learning objectives.

This thesis will serve as a motivation for teachers to enroll in curriculum courses for the purposes of upgrading in the present reclassification crisis in the Province of Quebec. There may be increased interest for holding teachers' workshops to deal with the writing of learning packages. Given the professional background writing a LAP oneself is an excellent way to learn about LAP system of instruction. Even experienced teachers will find that their ideas about the learning process and about effective ways of organizing their materials (curriculum content) are modified when they develop LAPs themselves.

The teacher will be able to identify an unacceptable LAP because of such oversights as ambiguous language, nonrelevant learning experiences, lack of sequencing, and to study the value of a particular set of revision procedures for these LAPs.

This thesis will make evident that further research is needed for finding a means for establishing product development guidelines to ensure that students learn with the assistance of educational materials of proven effectiveness. In this regard, here are some of the things Komoski (1971) observed:

> At this time of national concern over consumer protection, the largest single group of unprotected consumers is made up of the 50 million school children now required to use thousands of inadequately evaluated, and frequently ineffective, educational materials purchased by schools.
>
> The quantity of learning materials on the market has increased by a factor of twenty in the last twenty years. However, an estimated 99 percent of the learning materials now being used by school children have not been put through even the initial phases of systematic evaluations with learners.
>
> Both developers and purchasers of educational materials use committee decisions to judge a product's learning effectiveness. In most cases, neither group makes use of systematically gathered evidence of how well children learn from the materials in question. While such committees are often well-equipped to judge content and scope of materials, existing research indicates that decisions regarding learning effectiveness cannot be made reliably without the benefit of data gathered from systematic evaluations of learners. (p. 10).

In summary, then, the value of this thesis is to convince the teachers that learning through the LAP method may be one of the best forms of individualized instruction for their students in their present schools, and that research is needed in the development and application of an evaluation model at the local school level of curriculum products and of self-instructional multi-media learning systems.

This study was a technological problem of evaluation. Student teacher designed Learning Activity Packages were tested for effectiveness. This exploratory investigation attempted to show that there is a need for each and every product to be evaluated and adapted to the specific needs of a group or regional area. It is hoped that the

investigator has left the classroom teacher, as an educational consumer, a few guidelines to assist him in analyzing, judging and selecting materials.

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APPENDICES

APPENDIX A

AN INSTRUMENT TO ASSESS LEARNING ACTIVITY PACKAGES

Note: Appendix A includes:

1. Instructions to the teacher.
2. A Glossary of terms used in this instrument
3. An instrument to assess Learning Activity Packages.

Instructions to the Teacher:

This questionnaire/opinionaire is part of an educational research project carried out at Sir George Williams University in Montreal.

This instrument is designed to guide thepotential user in analyzing Learning Activity Packages and by educating him in the producer's instructional design. Thus the instrument could bring about a more intelligent implementation of materials in the classroom context.

It is assumed that you as a teacher know your students' learning characteristics and will be able to use your professional judgment in choosing a Learning Activity Package for your defined student population.

In reading this questionnaire, you may experience some difficulty with some of the terminology. A glossary of terms is included and should be read prior to completing the questionnaire. Terms listed in the glossary are marked with an asterisk.

Please answer each of the questions in this questionnaire. Respond as accurately as you can, expressing your knowledge/or professional opinions. If you do not understand a question, answer it as best as you can, but write next to the question that it is not clear.

You are not to consult with your colleagues or discuss it with your students while you are filling this questionnaire. Please complete it before your students begin using the Learning Activity Package.

Your responses will remain strictly confidential. They can be seen only by the investigator for the purpose of this research.

A GLOSSARY OF TERMS USED IN THIS INSTRUMENT

*Objectives stated in behavioral terms -- a word picture of the type of behavior or behavior product which one might expect when the objective is achieved. Objectives stated in behavioral terms will usually name the behavior, state the conditions under which it will appear, and the level of performance expected, e.g., the child will be able to spell (type of behavior), in formal and informal writing (condition under which it will appear), 98 percent of the words in his written work (level of performance).

*Implicit objectives -- an examination of the content will permit the reader to readily identify the objectives that the student should accomplish, even if the producer has not stated them. If a filmstrip gives the sequential steps in solving arithmetic problems using long division one would assume the implicit objective to teach the student the process of long division.

*Broader behavioral pattern -- instructional materials frequently are geared to goals that include complex behavior which is to be developed over time. Example: voting behavior as a function of citizenship involves a broader behavioral pattern which chains together a complex of behaviors ranging from knowing the candidates and the issues, to being registered, and knowing how to operate a voting machine. The instructional material may be designed to contribute to a broader behavioral pattern, rather than a simpler, more specific behavior. Even if the objective is geared to a single specific behavior there should be some relationship to a broader behavioral pattern.

*Attitudinal objectives -- objectives that are designed to develop

feelings and predispositions to act in accordance with internalized values and beliefs. These may be listed as attitudes, values, interests, and appreciations. They may be fairly direct as to develop in each student an interest in listening to a newscast at least once a day or more complex as to form an attitude of critically evaluating the news by investigating the source of reports.

*Cognitive developmental skills -- objectives which have specific development skills (thinking) as a basis will usually emphasize thinking processes as their focus, such as understanding, discriminating, utilizing, chaining and evaluating as opposed to emphasizing specific products.

*Objectives drawn from a learning approach -- objectives may be drawn utilizing approaches to learning, in some cases emphasizing wholeness of learnings prior to fragmenting into specifics for instruction. Example: the student will become familiar with the background of the 12th and 13th century European interest in colonies and trade, prior to studying the specific explorations. The extreme of the above approach would be a small step by step sequencing of the material on Europe in the 12th and 13th century in which concepts on European interest in trade and colonies were fed to the student on a programed basis, eventually leading through the various explorations. These objectives are based on different approaches to learning.

*Objectives based on demands and needs of child -- objectives using this emphasis usually have as their focus some developmental sequence (physical, emotional or social) as their central organizer. Example: the student will express affection as well as receive affection. The behavior of expressing affections is developmentally more advanced than simply receiving affection. Example: the student will cooperate with

another student on taking turns in using a game. If this objective is to be taught, it is usually sequenced with other objectives according to the way most children develop.

*Task analysis -- the materials have been developed into specific tasks for the learner which have behavioral requirements that suggest a sequence for presentation and which allow an observer to determine if the learner accomplishes the task.

*Errorless discrimination -- the tasks are sequenced in such a manner that the student should move from step to step without making errors. This technique is used in some types of programed instruction.

*Figure-ground -- the organization of materials frequently perceptual in nature, in a field so that one stands out in a distinct way (figure) and the rest remains in the background (ground). Figure-ground organization can be used with other characteristics such as sounds, where one sound is heard over and above a background of others.

*To an effective response system -- where recognition is given to different levels of attitudes, from the simplest of merely attending to an object, to the building up of complex attitudes which predispose one's behavior toward a wide range of stimuli, e.g. enjoying a variety of forms of music.

*Interrelationships of a subject -- where the subject matter contains a logical relationship of concepts and processes. Example: adding must be mastered prior to multiplying. The local community is studied prior to more distant entities of state or federal government.

*Positive reinforcement and programed sequence -- where the material has been developed into small steps that lead the learner toward a larger concept through a sequence that permits the learner to receive frequent

reinforcement through knowledge of right answers.

*Open ended development of generalization -- the instructional sequence is purposely quite open, e.g. letting the learner try out many possibilities and alternatives before arriving at a generalization.

*Advanced organizers (cognitive) -- a framework of key concepts, crucial to understanding and relating concepts of the larger body of material, are strategically placed in the sequence, forming an ideational ladder to which other material can readily be related. In some materials a short summary preceding the main body of instructional material delineates the key concepts or stresses their relationship to other concepts known by the learner, thus serving as advance organizers through the ideational anchors it gives to the learner for organizing, relating and remembering the new material.

*Mode of transaction -- a transaction is the interaction of a learner and stimuli in this context consisting of instructional materials. A mode is the channel that is used. Is the student asked to passively view, manipulate, verbally organize? Is the teacher an important part of the mode through exercising control over the learner's channels of transactions? Is the student free to seek out channels of transaction or are they chosen for him? These are questions which must be answered when setting up modes of transaction (methodologies) to be used with instructional materials.

*Teacher-centric method -- the teacher is largely responsible for choosing and directing the mode of transaction for the learner. Teacher-centric modes of transaction usually prescribe that the "Teacher will . . ." and are predicated on obtaining specific learner responses.

*Pupil-centric method -- the learner is responsible for choosing the modes of transaction with the instructional material and is frequently left to evaluate and revise his behavior toward materials without teacher supervision.

*Psychomotor skills -- muscular or motor skills which require manipulation of materials or objects. The ability to stack blocks is a psychomotor skill.

*Affective response -- responses which emphasize feelings, emotion or degrees of acceptance or rejection stemming from internal attitudinal sets. Such responses may be labelled attitudes, biases, interests, etc.

*Norm referent evaluation -- judging a learner's performance by what other known groups of learners do so on the same tasks. Achievement test scores, aptitide tests, and mental test scores report their results in norm referent terms. The statement, "This particular learner scored at 4th grade level," is using a norm referent evaluation of the learner's performance.

*Criterion referent evaluation -- the learner is judged on his ability to do a specified task or demonstrate the behavior appropriate to the task. The learner is judged on whether he can or cannot demonstrate the appropriate behavior that signifies task accomplishment and is not judged by comparison of his performance with another group of learners.

APPENDIX "A"

AN INSTRUMENT TO ASSESS LEARNING ACTIVITY PACKAGES

---

1 OBJECTIVES

A. Are there objectives stated for the use of the material?

1. General objectives? Yes___ No___

2. Learning objectives? Yes___ No___

3. Are the objectives stated in behavioral terms?* Yes___ No___

4. If stated in behavioral terms, do the objectives specify

a. The type of behavior? Yes___ No___

b. Conditions under which it will appear? Yes___ No___

c. Level of performance expected? Yes___ No___

5. List example of objective(s).

B. If there are no objective(s) stated for the use of the materials, are the objectives instead implicit* or readily obvious? Yes___ No___

1. If yes, please outline below what objectives, you believe govern the purpose of the material.

* See a GLOSSARY OF TERMS USED IN THIS INSTRUMENT

C. What appears to be the source of the objectives (both stated and implicit objectives)?

1. Are the objectives related to a larger frame of instruction? Yes___ No___

2. Are the objectives specific to a subject skill? Yes___ No___

3. Are the objectives related to a broader behavior pattern* that is to be developed over a period of time? Yes___ No___

4. What seems to be the emphasis of the objectives: (Check as many as appropriate).

   a. Attitudinal* ___

   b. Motor skills ___

   c. Cognitive development skills* ___

   d. Subject skills___

5. Are the objectives drawn from: (check as many as appropriate).

   a. A learning approach* ___

   b. Society needs (citizenship)___

   c. Demands of the subject___

   d. Demands and needs of child* ___

D. Quantitative rating of objectives:

(DIRECTIONS) Please CIRCLE the NUMBER on the rating scale below which represents your best judgment on the following criteria.

Lowest rating - 0 1 2 3 4 5 6 7 8 9 10 - highest rating

-- the higher the number the better the rating --)

Objectives vague, unclear, or missing.
Those included not useful. Fails to distinguish between general and learning objectives, mixes various types of objectives, confusing to the student and teacher.

Average - some of the criteria for objectives met, some missing, at times inconsistent, objectives only partially operational for the classroom teacher.

The objectives are stated clearly and in behavioral terms. Both general and learning objectives are stated in a consistent conceptual framework.
Excellent, one of the best, useful for a teacher.

0 1 2 3 4 5 6 7 8 9 10

11 Organization of the Materials (Scope and Sequence).

A. Has a task analysis* been made of the material and some relationship specified between the tasks? Yes___ No___

B. If a task analysis has been made, what basis was used to organize the materials?
(Check as many as appropriate).

1. Errorless discrimination*___
2. Simple to complex___
3. Figure ground*___
4. General to specific___
5. Logical order___
6. Chronology___

C. If no indication of a task analysis has been made, what assumptions do you believe the author (LAP writer) has made concerning the organization of the instructional sequence of the material?

D. Is there a basis for the scope of the material included in the instructional package? Yes___ No___

1. If there is a basis, is it:

a. related to a subject area? Yes___ No___

b. to a motor skill development? Yes___ No___

c. to a cognitive skill area? Yes___ No___

d. to an affective response system*? Yes___ No___

e. other? (please specify).

_____

2. Has the scope been subjected to analysis for:

   a. appropriateness to students? Yes____ No____

   b. relationship to other material? Yes____ No____

E. Is there a recommended sequence?

1. What is the basis of the recommended sequence? (Check as many as appropriate).

   a. Interrelationships of a subject* ____

   b. Positive reinforcement and programed sequence* ____

   c. Open ended development of a generalization* ____

   d. Advanced organizers (cognitive)* ____

   e. Other (please specify.)

   _____

F. Briefly outline the scope and sequence.

G. Quantitative rating of organization of the materials (Scope and Sequence).

(DIRECTIONS: Please CIRCLE the NUMBER on the rating scale below which represents your best judgment on the following criteria).

Sequence illogical or unstated, learner and teacher is left to puzzle it out. Does not appear to have subjected material to any analysis to build any instructional design. Scope is uncertain, seems to contradict sequence. Little help unintentionally to teacher or pupils in organizing materials.

Average in organization. Some help but teacher must supply much of organizational sequence. Scope somewhat limited, may be too narrow (or broad). Sequence is not detailed enough and may have been tested with a range of children.

Excellent organization of scope and sequence. Conceptually developed based on a consistent theory; task analysis or other appropriate investigation has been done. Tested for appropriateness of recommended sequence.

0 1 2 3 4 5 6 7 8 9 10

111 METHODOLOGY

A. Does the author(s) and/or material suggest any methodological approach? Yes____ No____

B. Is the methodological approach, if suggested, specific to the mode of transaction? Yes____ No____

1. Does the mode of transaction*: (Check as many as appropriate).

a. rely upon teacher-centric method* (largely teacher directing?)* Yes____ No____

b. rely upon pupil-centric method* (largely self-directing?) Yes____ No____

c. acquire active participation by the students? Yes____ No____

d. passive participation by the students? Yes____ No____

e. combination of active and passive participation by the students? Yes____ No____

f. direct student's attention to method of learning as well as the learning product? Yes____ No____

g. provide for variation among students -- uses several approaches to method? Yes____ No____

C. Does the methodology suggested require extensive preparation by the teacher? Yes____ No____

1. How much deviation is permitted in methodology?

Much____ Some____ Little____

2. Does the methodology require unusual skills obtained through specific training?

Yes____ No____

3. Is there any statement on how methodology was tested: any experimental evidence?

Yes____ No____

4. If you have tried the recommended methodology, how successful did it seem for your students?

   Most succeeded____

   Approximately ½ succeeded____

   Few succeeded____

   a. Please provide a brief description of the students who were successful and those who were not successful.

D. In a brief statement describe the recommended methodology.

E. Quantitative rating of methodology.

(DIRECTIONS: Please CIRCLE the NUMBER on the rating scale below which represents your best judgment on the following criteria).

Very little help is given on methodology, or methodology is too abstract and complex for most students and teachers. Methodology appears to be unrelated to content and an afterthought in the learning package. Too active or passive for most students. Teacher required to participate fully with too many students at every step. Doesn't have appropriate methodology for variety of learning abilities among students.

Given some help to the teacher, but would like more. Some students would be able to cope with suggested methodology, but others not. Doesn't appear to have been widely field tested. Teacher has to work out variety for students with special learning difficulties.

Uses a variety of modes in the transactions. Does not chain a teacher to a mode without reason, but provides assistance for different abilities. Describes the field test of the methodology. Teachers will find methodology easy to use and believe students will respond. Methodology is part of goals of instruction and not just vehicle for content.

0 1 2 3 4 5 6 7 8 9 10

IV EVALUATION

A. Are there recommended evaluation procedures for teachers and students in the instructional package? Yes____ No____

1. What do the evaluation procedures emphasize? (Check as many as appropriate).

   a. Cognitive skills____

   b. Subject skills____

   c. Psychomotor skills*____

   d. Affective responses*____

2. Are the evaluation procedures compatible with the objectives? Yes____ No____

3. Are evaluation procedures developed for several different levels? ((check as many as appropriate).

   a. Immediate feedback evaluation for the pupil____

   b. Evaluation for a variety of the areas in No. 1 above, and over a period of time____

   c. Immediate feedback evaluation for the teacher____

   d. Evaluation on a norm referent*____

   e. Evaluation on a criterion referent*____

B. Are the evaluation procedures contained in the package? Yes____ No____

C. Does the evaluation give attention to both product and process learnings? Yes____ No____

D. Is there information on how evaluation procedures were tested and developed? Yes____ No____

E. Briefly state what evaluation procedures are included, if possible, give examples Yes____ No____

F. Quantitative rating evaluation.

(DIRECTIONS: Please CIRCLE the NUMBER on the rating scale below which represents your best judgment on the following criteria).

Haphazard in approach. Product and process learnings either entirely neglected or confused. Lists items, but poorly constructed. No evidence of testing of evaluation approach. Students receive no assistance through feedback. Fails to recognize and examine different types of learning where appropriate.

Some examples given, range of evaluation limited. Samples given but limited and sketchy. Teacher finds useful that which is given, but needs more examples. Evaluation is limited to product or process. Unsure on whether evaluation has ever been tested, but seems logical though limited in types of learning examined.

Many suggestions and helps in evaluation for the teacher. Has criterion reference procedures where appropriate. Student obtains assistance in learning through feedback evaluation. Gives attention to several kinds of learning, consistent with objectives of learning package.

0 1 2 3 4 5 6 7 8 9 10

V COMMENT

A. Draw up an overall statement of the strengths and weaknesses of the material as an instructional package. Prepare your statement as if it were to be addressed to your fellow classroom teachers who are going to use it to make a decision on these instructional materials.

Strengths:

Weaknesses:

B. Quantitative rating overall assessment of materials.

(DIRECTION: Please CIRCLE the NUMBER on the rating scale below which represents your best judgment on the following criteria).

Poorly designed, conceptually weak, and inconsistent or haphazard design. Does not appear to have been field tested: inaccurate assumptions about children who will be using materials. Overpriced underdeveloped, a bad bargain.

Has strengths and weaknesses, but most teachers would find satisfactory. On the balance comes out about average, would need considerable supplementary effort by teacher. A compromise on price and availability.

Excellent, one of the best by comparison with other available materials.
Theoretically and conceptually strong and carefully field tested. Shows consistent instructional design. Would recommend highly, well worth the price.

0 1 2 3 4 5 6 7 8 9 10

Appendix B.

PUPIL RECORD FORM USING A LEARNING ACTIVITY PACKAGE

Student's name_____

Grade Level_____ Reading Achievement_____

Title of LAP being studied_____

Date started:_____ Date completed:_____

Time in completing LAP (if known)_____minutes.

Pre-assessment results:

(a) Learning objective achieved Yes___ No___

(b) Raw score_____

Learning activities completed: (Identify Activity by No.)

_____

_____

Post-assessment results:

(a) Learning objective achieved Yes___ No___

(b) Raw score_____

Teacher's LAP revision recommendations in the light of field testing results: e.g. student required more than one explanation, difficult vocabulary, lacked specific learning materials, etc.

_____

_____

_____

_____

_____

_____

Time taken in revising LAP in minutes:

1st time___ 2nd time___ 3rd time___ TOTAL___min.

Appendix C.

Name_____ School_____

Title of LAP_____

STUDENT EVALUATION FORM

for

LEARNING ACTIVITY PACKAGES

Please complete the form below and give it to your teacher. Your truthful opinion about how you feel about LAPs will be appreciated. Please do not ask a friend to help you.

Place an X in the appropriate blank.

1. What did you like best about this LAP? (Check as many as appropriate).

Rationale___	Self-test___
Pretest___	Posttest___
Learning objective___	Quest___
Learning activities___	Other (specify)_____

2. What did you dislike most about this LAP? (Check as many as appropriate).

Rationale___	Self-test___
Pretest___	Posttest___
Learning objective___	Quest___
Learning activities___	Other (specify)_____

3. How would you like to improve this LAP?

_____

_____

4. Rate the LAP you used by circling a number:

4. Rate the LAP you used by circling a number:

One (1) means "no good." Three (3) means "OK." Five (5) means "very good." Two (2) and four (4) fall between "no good" and "OK", or "OK" and "very good."

No Good		OK		Very good
1	2	3	4	5

5. Which do you like better: the LAP method of learning, or the required daily assignment method of learning?

LAP____ Daily Assignment____

6. Do you think you can learn as much using LAPS? Yes____ No____

7. Did you have time to work individually with your teacher or with small groups? Yes____ No____

8. Would you like to use LAPs next year in your studies?

Yes____ No____

Appendix D

BASIC INTERVIEW QUESTIONS OF LAP ACCEPTABILITY BY PUPILS

1. Why do you prefer working with Learning Activity Packages on your own rather than working in large groups with a teacher guiding you?
2. There are seven parts to a Learning Activity Package. Tell me which part or parts you liked 'best' or 'least' and why?
3. Each package had at least five learning activities. Which type of activity did you enjoy doing?

Appendix E.

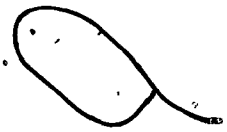
BASIC INTERVIEW QUESTIONS FOR LAP COMPATIBILITY WITHIN THE SCHOOL

1. What amount of time was availabe for student participation in the LAP method of individualized instruction?
2. How does the LAP method of learning fit in with the present objectives of the school program?
3. How does the LAP method affect the operation and/or goal attainment of the present school program?
4. How did experience with individualized instruction through LAPs influence your teaching?
5. How do you use resource center learning in your school now?
6. What facilities and media are now available for the LAP program?
7. How is the LAP program affected by the manner in which facilities and media are allocated?
8. What benefits do you see your pupils gaining in using LAPs in a resource center for their learning?
9. Are the gains for students anticipated by the LAP method equal to, less than, or greater than under the present educational objectives of your school?
10. What do you think is the teacher's role in the LAP method of individualized instruction?

Appendix F

SELECTING A LAP FOR YOUR PUPIL

What statements below best describe the reason you chose a particular Learning Activity Package for your pupil? (Check as many as appropriate).



___Demands of the subject

___Level of difficulty (e.g. it was the easiest)

___Relevant to the student's interests, abilities, and needs. (physical, emotional, social)

___To foster independent work.

___To arouse interest, attention, and awareness.

___To prepare an individual report and report to a group.

___Activities require little teacher help.

___It uses materials I like.

___It has the most interesting activities.

___Another teacher recommended it.

___Other students recommended it.

___Request from a pupil.

___As busy work.

___As a reward.

___As a punishment

___As remedial work.

___As supplementary work.

___It was the only one available

___Other (specify)

_____

_____

_____

Appendix G

AGENDA OF 45 MINUTE

ORIENTATION SESSION OF THE TEACHERS ON:

AN INSTRUMENT TO ASSESS LEARNING ACTIVITY PACKAGES

1. My positional stand in this study:
   - to leave something positive
   - to leave something constructive and of value with the teacher in this school.
2. Pilot study at Peretz School
   - pupils reactions to LAP method of learning
   - recorded on tape.
3. Assumptions re: teacher using this instrument
   - that the classroom teacher knows her pupils' learning characteristics and therefore will be able to make a face evaluation (based on her professional opinion and judgment) as to the suitability of a particular LAP for her pupils.
   - that the teacher may not know the principles of instructional design and development rules for instructional products.
   - that the teacher can choose a particular LAP for her pupil or a group of pupils.
   - that the teacher will have difficulty with the terminology used in this instrument.
4. Teacher involvement in this study: Teachers are ASKED to
   a. Evaluate the LAPs before being used by their pupils.
   b. Assign pupils to certain LAPs.
   c. Take an occasional opportunity to see their pupils in action using LAPs and giving some teacher-direction when

c. asked by their pupils. (1st hand experience).

5. The instrument - is designed for various kinds of instructional materials and does not represent feedback from one learning package or unitary piece of instructional materials. Hopefully your school may come up with an evaluation model of its own.

CONSTRUCTS OF THE INSTRUMENT:

(1) Statement of objectives, aims, ends, or purposes of learning in the materials.

(2) Organization of the materials (Scope and Sequence), the arrangement and inclusion of materials in a teaching-learning sequence.

(3) Methodology, the modes of transaction used for focusing, engaging, and directing the learner.

(4) Evaluation, guiding the Learning through feedback as well as yielding data on accomplishment of objectives.

6. Explanation of the instrument - terminology, what parts apply to LAPs.

Appendix H LAP RECORD SHEET FOR STATISTICAL ANALYSIS

LAP TITLE ______________________________

Teacher's Quantitative ratings:

Minimum Performance Level ______

K- No. of matching Pre- & Posttest items ____

K^1- No. of correct Pretest items

K^2- No. of correct Posttest items

Revision time in minutes ______

CONSTRUCTS				
1	2	3	4	5

			SCORES				
Student's Name	Grade	LAP Rating	PRE	K^1	POST	K^2	GAIN

LAP RECORD SHEET FOR STATISTICAL ANALYSIS

LAP TITLE A VISIT TO OLD MONTREAL

Teacher's Quantitative ratings:

Minimum Performance Level 10/13

K- No. of matching Pre- & Posttest items 4/8

K^1- No. of correct Pretest items

K^2- No. of correct Posttest items

Revision time in minutes 0

CONSTRUCTS				
1	2	3	4	5
8	3	5	7	6

Student's Name	Grade	LAP Rating	SCORES PRE	K^1	POST	K^2	GAIN
FIRST TRYOUT							
SUSAN SCHAFER	5	4	0/8	0	6/13	1	.140
LISA FRIEDMAN	6	3	0/8	0	2/13	2	.150
JEAN YOON	6	4	0/8	0	3/13	1	.140
CATHY PORTER	6	5	0/8	0	7/13	3	.75
JANET MAMPRIZE	6	5	0/8	0	8/13	3	.75
JANET BURGESS	6	5	0/8	0	8/13	3	.75

LAP RECORD SHEET FOR STATISTICAL ANALYSIS

LAP TITLE Come To Prince Edward Island

Teacher's Quantitative ratings:

Minimum Performance Level 10/14

K- No. of matching Pre- & Posttest items 8/10

K^1- No. of correct Pretest items

K^2- No. of correct Posttest items

Revision time in minutes 45

CONSTRUCTS				
1	2	3	4	5
6	6	6	6	6
8	9	10	9	9
10	10	10	10	10
8	9	9	9	9

			SCORES				
Student's Name	Grade	LAP Rating	PRE	K^1	POST	K^2	GAIN
PILOT							
JOANNE WOLFE	5	3	1/10	1	11/14	6	.68
LARRY ZELTON	6	3	7/10	5	11/14	7	.53
MARLA WEINSTEIN	6	5	2/10	2	9/14	5	.50
FIRST TRYOUT							
KARL SEDEROFF	5	3	2/10	2	7/14	5	.50
PAMELA LITMAN	5	3	0/10	0	5/14	5	.38
PAMELA WISE	5	5	0/10	0	9/14	5	.63
SECOND TRYOUT							
LYNN MARCHAND	5	NR*	0/10	0	11/14	6	.75
LEE TENENHOUSE	5	5	1/10	1	12/14	6	.68
BONNIE SOLOMON	5	NR	0/10	0	6/14	4	.50
RICHARD BERLIN	6	NR	1/10	1	12/14	7	.53
SUSAN HITZIG	6	4	4/10	3	12/14	8	1.0

*NR - No Response

LAP RECORD SHEET FOR STATISTICAL ANALYSIS

LAP TITLE *Did You Know? (Using A Microscope)*

Teacher's Quantitative ratings:

Minimum Performance Level *14/16*

K- No. of matching Pre- & Posttest items *0/16*

K^1- No. of correct Pretest items

K^2- No. of correct Posttest items

Revision time in minutes *0*

CONSTRUCTS				
1	2	3	4	5
9	4	7	5	6

Student's Name	Grade	LAP Rating	SCORES PRE	K^1	POST	K^2	GAIN
ALOT							
ALLAN WISKNER	5	5	5/6		7/8		
DONNA BUTTERS	5	5	3/6		8/8		
ADA MORRIS	6	5	3/6		8/8		
AVROM SHTERN	6	5	4/6		7/8		
HARRY GEFFIN	6	5	3/6		8/8		
FIRST TRYOUT							
MICHAEL BETTMAN	5	5	6/6		15/16		
STEPHANIE STALZMAN	5	5	5/6		15/16		
RANDY BECKER	5	5	6/6		16/16		
MARK LITTMAN	5	5	5/6		16/16		
ALLAN GELBER	5	5	3/6		15/16		
BENGY BUKO	5	5	5/6		16/16		
STEVEN DORFMAN	5	NR	6/6		15/16		
MARK ZALTER	5	4	6/6		16/16		
DOUGLAS NAIMER	5	NR	4/6		16/16		
SANDY SEGAL	6	4	2/6		12/16		
BRUCE ENTUS	6	NR	4/6		14/16		
DAVID BUTLER	6	NR	4/6		15/16		
IRWIN KASTNER	6	4	3/6		15/16		

LAP RECORD SHEET FOR STATISTICAL ANALYSIS

LAP TITLE DRUMS

Teacher's Quantitative ratings:

Minimum Performance Level 11/15

K- No. of matching Pre- & Posttest items 5/15

K^1- No. of correct Pretest items

K^2- No. of correct Posttest items

Revision time in minutes 75'

CONSTRUCTS				
1	2	3	4	5
7	7	8	8	7
9	8	7	8	8

Student's Name	Grade	LAP Rating	SCORES PRE	K^1	POST	K^2	GAIN
PILOT							
GARRY BELLMAN	5'	4	2/15	0	5/15	2	.40
GARY LETOVSKY	6	5'	8/15	2	14/15	5'	1.0
FIRST TRYOUT							
MICHAEL MOSKOVITCH	5'	5'	1/15	0	11/15	5'	1.0
LENNY FRANKEN	5'	5'	5/15	0	9/15	3	.60
SECOND TRYOUT							
RONNY DUNSKY	5'	5'	3/15	0	12/15	4	.80
STEPHEN LIBMAN	5'	5'	10/15	4	12/15	4	0.00
IAN KOTT	5'	5'	6/15	1	7/15	2	.25
DOUGLAS NAIMER	5'	3	2/15	0	12/15	4	.80
GORDON	5'	NR	1/15	0	5/15	4	.80
JAY SEDEROFF	6	4	2/15	0	5/15	2	.40

LAP RECORD SHEET FOR STATISTICAL ANALYSIS

LAP TITLE *Exporting of Canadian Wheat*

Teacher's Quantitative ratings:

Minimum Performance Level 7/10

K- No. of matching Pre- & Posttest items 4/11

K^1- No. of correct Pretest items

K^2- No. of correct Posttest items

Revision time in minutes 25

CONSTRUCTS				
1	2	3	4	5
6	4	7	7	6

Student's Name	Grade	LAP Rating	SCORES PRE	K^1	POST	K^2	GAIN
First Tryout							
Carol Fattal	5	3	7/11	3	5/10	2	-1.0
Cheryl Weigensberg	5	5	10/11	3	4/10	2	-1.0
Barbara Levitt	5	5	9/11	3	9/10	4	1.0
Hylee Levenstone	5	4	8/11	2	5/10	1	-.50
Second Tryout							
Nancy Gross	5	5	8/11	2	8/10	4	1.0
Vered Eshkol	5	NR	6/11	2	8/10	4	1.0
Eric Feffer	6	NR	11/11	4	10/10	4	0.0
Lori Shore	6	2	9/11	4	8/10	3	0.0
Bev Schroter	6	5	9/11	2	7/10	3	.50
Karen Galler	6	2	11/11	4	10/10	4	0.0
Jacob Stilman	6	3	10/11	3	7/10	3	0.0

LAP RECORD SHEET FOR STATISTICAL ANALYSIS

LAP TITLE METRIC LENGTHS

Teacher's Quantitative ratings:

Minimum Performance Level 5/6

K- No. of matching Pre- & Posttest items 5/6

K^1- No. of correct Pretest items

K^2- No. of correct Posttest items

Revision time in minutes 30

CONSTRUCTS				
1	2	3	4	5
6	7	8	8	7

Student's Name	Grade	LAP Rating	SCORES PRE	K^1	POST	K^2	GAIN
FIRST TRYOUT							
ALAN GODEL	5	5	2/6	1	5/6	4	.75
WARNEN GORNITSKY	5	5	4/6	4	4/6	3	-1.0
SECOND TRYOUT							
BENSIE PHILOSOPHE	6	5	6/6	5	5/6	4	0.0
JANE RESPITZ	6	4	6/6	5	4/6	3	0.0
TAMI DUBROSKY	6	5	6/6	5	5/6	4	0.0
DAVID BRINDEF	6	5	2/6	1	3/6	2	.25

LAP RECORD SHEET FOR STATISTICAL ANALYSIS

LAP TITLE (THE) METRIC SYSTEM OF WEIGHTS

Teacher's Quantitative ratings:

Minimum Performance Level 7/10

K- No. of matching Pre- & Posttest items 4/10

K^1- No. of correct Pretest items

K^2- No. of correct Posttest items

Revision time in minutes 45

CONSTRUCTS				
1	2	3	4	5
6	5	10	6	6

Student's Name	Grade	LAP Rating	SCORES PRE	K^1	POST	K^2	GAIN
FIRST TRYOUT							
DANNY LIGHTER	5	NR	2/8	1	8/10	4	1.0
LISA WOLFE	6	3	5/8	1	7/10	3	.167
BOBBY BLUMENTHAL	5	2	5/8	2	6/10	2	0.0
LEONARD MARCOVITCH	5	5	4/8	1	5/10	4	1.0
JESSE SHARF	5	5	5/8	3	9/10	4	1.0
SCOTT SEBASTIAN	5	3	4/8	3	9/10	4	1.0

LAP RECORD SHEET FOR STATISTICAL ANALYSIS

LAP TITLE *NUTRITION: HOW TO CHOOSE A BALANCED DIET*

Teacher's Quantitative ratings:

Minimum Performance Level 7/10

K- No. of matching Pre- & Posttest items 4/10

K^1- No. of correct Pretest items

K^2- No. of correct Posttest items

Revision time in minutes 10

CONSTRUCTS				
1	2	3	4	5
8	6	7	6	7
8	9	8	6	7

Student's Name	Grade	LAP Rating	SCORES PRE	K^1	POST	K^2	GAIN
PILOT							
ANNE SEGAL	5	5	6/10	2	7/10	4	1.0
MARLA WEINSTEIN	6	5	8/10	4	2/10	1	0.0
ANDREA FELDMAN	6	3	5/10	2	6/10	4	1.0
ADA MORRIS	6	5	6/10	1	5/10	4	1.0
CHERYL GREENBERG	6	5	8/10	4	10/10	4	0.0
FIRST TRYOUT							
JOELE FEFER	5	4	8/10	3	6/10	3	0.0
MARLENE BARAN	5	5	7/10	4	6/10	3	0.0
INA FICHMAN	5	5	8/10	3	8/10	4	0.0
ELLEN BESSNER	5	NR	8/10	4	7/10	3	0.0
BARBARA MARKS	5	4	1/10	0	8/10	3	.75
NAOMI LEVINE	5	NR	7/10	4	8/10	4	0.0
NAOMI ABBEY	6	3	4/10	2	8/10	4	1.0
CAROLYNE MANDELKER	6	5	5/10	1	10/10	4	1.0
NIRA ARBEL	6	5	6/10	2	8/10	2	0.0
FRANCHEN FRIEFELD	6	5	8/10	3	8/10	4	1.0

LAP RECORD SHEET FOR STATISTICAL ANALYSIS

LAP TITLE Nutrition: The Proteins You Eat

Teacher's Quantitative ratings:

Minimum Performance Level 7/10

K- No. of matching Pre- & Posttest items 4/10

K^1- No. of correct Pretest items

K^2- No. of correct Posttest items

Revision time in minutes 30

CONSTRUCTS				
1	2	3	4	5
7	10	10	7	6
6	5	5	5	3
8	9	9	8	9

Student's Name	Grade	LAP Rating	SCORES PRE	K^1	POST	K^2	GAIN
PILOT							
Donna Butters	5	3	7/10	3	1/10	1	-2.0
Rakefet Haham	5	5	6/10	2	8/10	4	1.0
Karen Cohen	6	5	4/10	3	8/10	4	1.0
Ada Morris	6	5	6/10	3	8/10	4	1.0
Wendy Wolfe	6	5	5/10	2	4/10	2	1.0
First Tryout							
Marla Bercovitch	5	3	6/10	2	8/10	4	1.0
Ruth Mercer	5	3	5/10	2	6/10	3	.50
Cathy Shatz	5	4	2/10	0	8/10	4	1.0
Shauna Heglich	5	5	4/10	1	9/10	3	.67
Second Tryout							
Rody Reisler	5	NR	4/10	2	5/10	1	-.50
Elana Teitelbaum	5	5	3/10	2	6/10	3	.50
Annette Cohen	5	NR	4/10	2	7/10	3	.50
Florence Rozen	5	NR	4/10	2	10/10	4	1.0
Carolyn Mandelker	6	4	5/10	2	9/10	4	1.0
Lisa Wolfe	6	NR	6/10	3	10/10	4	1.0
Tammi Goldstein	6	NR	5/10	2	9/10	4	1.0
Debbie Herling	6	3	5/10	3	7/10	3	0.0

LAP RECORD SHEET FOR STATISTICAL ANALYSIS

LAP TITLE *PLANTS: VEGETATIVE REPRODUCTION*

Teacher's Quantitative ratings:

Minimum Performance Level *10/14*

K- No. of matching Pre- & Posttest items *12/14*

K^1- No. of correct Pretest items

K^2- No. of correct Posttest items

Revision time in minutes *90*

CONSTRUCTS				
1	2	3	4	5
6	7	7	8	7

Student's Name	Grade	LAP Rating	SCORES PRE	K^1	POST	K^2	GAIN
FIRST TRYOUT							
EVA-LYNN GROSS	6	*NR*	*2/14*	*1*	*11/14*	*9*	*.73*
ELYSE TANNENBAUM	5	5	*3/14*	*2*	*10/14*	*10*	*.81*
LORI SHORE	6	5	*3/14*	*2*	*9/14*	*8*	*.60*
ELINA GUTTEN BERG	6	3	*1/14*	*1*	*12/14*	*11*	*.90*
ORLY LOVES	6	5	*4/14*	*3*	*14/14*	*12*	*1.0*
HOWARD BETTER	6	5	*4/14*	*4*	*14/14*	*12*	*1.0*

LAP RECORD SHEET FOR STATISTICAL ANALYSIS

LAP TITLE *Problems of Being an Immigrant*

Teacher's Quantitative ratings:

Minimum Performance Level 7/10

K- No. of matching Pre- & Posttest items 3/14

K^1- No. of correct Pretest items

K^2- No. of correct Posttest items

Revision time in minutes 40

CONSTRUCTS				
1	2	3	4	5
10	10	10	8	10
7	8	10	7	8

Student's Name	Grade	LAP Rating	SCORES PRE	K^1	POST	K^2	GAIN
Pilot							
Sujata Tyagi	5	5	3/14	1	7/10	2	.50
Michael Margolian	5	NR	5/14	1	6/10	2	.50
Yona Shtern	5	2	5/14	1	5/10	2	.50
Larry Zoltan	6	NR	5/14	2	7/10	2	0.0
Jeff Anhang	6	3	9/14	3	7/10	2	0.0
First Tryout							
Ina Mattkins	5	3	10/14	3	6/10	2	0.0
Robin Pollock	5	NR	6/14	2	7/10	2	0.0
Donna Perelman	5	NR	5/14	1	6/10	2	.50
Jesse Sharf	5	5	5/14	1	6/10	2	.50
Beth Fineberg	5	4	4/14	1	3/10	0	-.50
Leona Sterlin	5	NR	5/14	2	4/10	0	-2.0
Second Tryout							
Sharon West	6	4	6/14	2	7/10	2	0.0
Debbie Friedman	6	NR	2/14	1	5/10	2	.50
Tammi Goldstein	5	4	7/14	2	7/10	2	0.0
Jill Frank	6	4	11/14	3	6/10	2	0.0
Elliott Cornerstone	6	4	1/14	0	7/10	3	1.0
Sheldon Nisenson	6	3	9/14	2	6/10	2	0.0

LAP RECORD SHEET FOR STATISTICAL ANALYSIS

LAP TITLE (THE) ROLE OF RELIGION IN MONTREAL AND QUEBEC

Teacher's Quantitative ratings:

Minimum Performance Level 7/10

K- No. of matching Pre- & Posttest items 0/5

K^1- No. of correct Pretest items

K^2- No. of correct Posttest items

Revision time in minutes 0

CONSTRUCTS				
1	2	3	4	5
6	6	6	6	6
7	4	6	6	6

Student's Name	Grade	LAP Rating	SCORES PRE	K^1	POST	K^2	GAIN
PILOT							
SELENA AIJRD	5	NR	0/5		9/10		
YONA SHTREN	5	5	1/5		10/10		
EARL AMIZOV	6	3	0/5		7/10		
JEFF ANHANG	6	3	0/5		9/10		
GARY LETSONSKY	6	2	0/5		7/10		
FIRST TRYOUT							
EILEEN COHEN	5	3	0/5		9/10		
RONNY DINSKY	5	3	1/5		8/10		
SHERRY COHEN	5	3	0/5		7/10		
ARIVA HERCHAN	5	3	0/5		8/10		
JUDITA CUNIER	5	4	0/5		8/10		
DONNA FINKLESTEIN	5	5	0/5		10/10		
STEVEN BLOSTEIN	6	3	0/5		9/10		
BEVERLY SCHANTER	6	3	0/5		6/10		
BARRY LAZARUS	6	2	0/5		10/10		
ALBERT SHARF	6	3	0/5		9/10		
LEONA STERLIN	5	NR	1/5		7/10		
NAOMI LEVINE	5	5	0/5		10/10		
MARLEEN GREENBERG	5	4	0/5		7/10		

LAP RECORD SHEET FOR STATISTICAL ANALYSIS

LAP TITLE Seed Dispersal

Teacher's Quantitative ratings:

Minimum Performance Level 11/14

K- No. of matching Pre- & Posttest items 6/7

K^1- No. of correct Pretest items

K^2- No. of correct Posttest items

Revision time in minutes 65

CONSTRUCTS				
1	2	3	4	5
9	9	9	8	8
7	7	8	9	8
7	8	10	7	8

Student's Name	Grade	LAP Rating	SCORES PRE	K^1	POST	K^2	GAIN
First Tryout							
Sloane Levitt	5	NR	0/7	0	6/14	3	.150
Linda Friedman	5	3	2/7	2	6/14	4	.150
Ellen Lupu	5	5	4/7	3	14/14	6	.150
Joelle Feffer	5	5	5/7	4	10/14	6	1.0
Reesa Tanchin	5	2	1/7	1	6/14	3	.45
Melanie Malus	5	3	4/7	3	7/14	3	0.0
Shari Schwartz	6	2	3/7	3	12/14	6	1.0
Heidi Grossack	5	3	3/7	2	8/14	3	.125
Second Tryout							
Mark Kingstone	6	5	7/7	6	13/14	6	0.0
Miriam Ettinger	5	4	3/7	2	11/14	5	.75
Florence Rosen	5	NR	5/7	5	13/14	6	1.0
Susie Joseph	6	4	5/7	5	11/14	6	1.0
Janice Conroy	6	NR	4/7	3	12/14	6	1.0
Esther Shainblum	6	4	7/7	6	12/14	6	0.0

LAP RECORD SHEET FOR STATISTICAL ANALYSIS

LAP TITLE SIGHTS AND SOUNDS OF PLACE DES ARTS

Teacher's Quantitative ratings:

Minimum Performance Level 7/10

K- No. of matching Pre- & Posttest items 8/12

K^1- No. of correct Pretest items

K^2- No. of correct Posttest items

Revision time in minutes 0

CONSTRUCTS				
1	2	3	4	5
5	6	5	5	5
10	9	8	10	9

Student's Name	Grade	LAP Rating	SCORES PRE	K^1	POST	K^2	GAIN
FIRST TRYOUT							
TANI DUBROFSKY	6	5	1/12	0	6/10	4	.50
IRIS AMIZAGEV	6	5	0/12	0	10/10	8	1.0
LEONARD SMOLASH	5	4	1/12	0	7/10	6	.75
KAREN ETINGIN	5	4	7/12	6	8/10	6	0.0
PETER BERALL	5	4	2/12	1	5/10	4	.43
ESTHER DACTMAN	5	5	0/12	0	8/10	6	.75
HOWARD GOLDSTEIN	5	4	0/12	0	8/10	6	.75
KAREN HIRSHHERMIR	5	4	2/12	1	8/10	6	.71
DANNY BLATT	5	NR	1/12	0	7/10	6	.75
BARBARA MERLING	6	3	1/12	0	9/10	7	.88
SUSAN HITZIG	6	5	7/12	6	8/10	6	0.0
DANNY LIGHTER	6	NR	2/12	1	8/10	6	.71

LAP RECORD SHEET FOR STATISTICAL ANALYSIS

LAP TITLE *TELEVISION IN MONTREAL*

Teacher's Quantitative ratings:

Minimum Performance Level *11/15*

K- No. of matching Pre- & Posttest items *9/11*

K^1- No. of correct Pretest items

K^2- No. of correct Posttest items

Revision time in minutes *0*

CONSTRUCTS				
1	2	3	4	5
10	9	10	9	10
7	8	7	8	7
10	9	9	9	10

Student's Name	Grade	LAP Rating	SCORES PRE	K^1	POST	K^2	GAIN
PILOT							
STEPHEN ZIMMERMAN	5	5	8/11	7	10/15	7	0.0
GLEN NASHEN	5	NR	7/11	7	13/15	8	.50
ANDREA FELDMAN	6	3	11/11	9	4/15	8	-1.0
HARRY GEFFIN	6	5	7/11	5	12/15	8	.174
ERIC AZICRY	6	5	7/11	5	11/15	7	.149
MARLA WEINSTEIN	6	5	6/11	4	12/15	7	.160
KAREN COHEN	6	4	7/11	6	11/15	6	0.0
FIRST TRYOUT							
LEWIS QUINT	5	5	3/11	3	12/15	7	.167
MARLA BERGOVITCH	5	5	7/11	5	13/15	8	.173
PETER BERALL	5	5	8/11	7	10/15	5	-1.00
HEIDI WISE	5	3	6/11	5	11/15	7	.149
BRYAN WOLOFSKY	5	NR	6/11	5	10/15	6	.124
SUSAN FRIEDMAN	5	5	7/11	5	14/15	8	.173
ORIT JANCO	5	5	6/11	6	11/15	7	.133
JONATHAN BRONNSTEIN	5	NR	3/11	3	14/15	9	1.00
RONNIE TEITELBAUM	5	5	8/11	6	12/15	8	.167
MARK	5	NR	11/11	9	15/15	9	0.0
ELLIOT COPPERSTONE	6	5	9/11	7	15/15	9	1.00
SHELDON WISEMAN	6	4	6/11	6	12/15	7	.133
DEBRA GOLDSTEIN	6	4	8/11	6	13/15	9	1.00
TRACEY GEFFIN	6	NR	7/11	6	12/15	6	0.0
JONATHON LITTMAN	6	5	8/11	6	14/15	9	1.00

LAP RECORD SHEET FOR STATISTICAL ANALYSIS

LAP TITLE *TRANSPORTATION IN MONTREAL*

Teacher's Quantitative ratings:

Minimum Performance Level 7/10

K- No. of matching Pre- & Posttest items 4/8

K^1- No. of correct Pretest items

K^2- No. of correct Posttest items

Revision time in minutes _____

CONSTRUCTS				
1	2	3	4	5
8	8	8	8	8

Student's Name	Grade	LAP Rating	SCORES PRE	K^1	POST	K^2	GAIN
PILOT							
MONA LAXER	5	NR	4/8	2	6/10	3	.50
CAROLINE WEINBERGER	5	3	5/8	4	5/10	3	0.0
KAREN COHEN	6	2	3/8	1	7/10	4	1.0
GARY LETOVSKY	6	3	6/8	2	6/10	3	.50
CHERYL GREENSBERG	6	4	4/8	2	10/10	4	1.00
HOWARD KLEIN	6	3	3/8	2	6/10	2	0.0
FIRST TRYOUT							
JORDAN SHIVACK	5	NR	2/8	1	3/10	2	.30
HEDI LACK	5	5	2/8	2	3/10	2	0.0
BRUCE GORNITSKY	5	NR	4/8	2	2/10	1	.50
JUDITH WEINSTEIN	5	NR	0/8	0	3/10	2	.50
MYRON HOFFERT	5	4	6/8	4	4/10	1	0.0
KEVIN HAYES	5	5	1/8	0	1/10	0	0.0
GAIL RABINOVITCH	5	5	5/8	2	7/10	4	1.0
MOVA SHTIR	5	NR	3/8	1	4/10	1	0.0
ERIC FINKELBERG	6	5	4/8	2	7/10	4	1.0
ILENE RUSK	6	1	2/8	1	6/10	2	.30
ROBERT LEWSKY	6	5	1/8	0	7/10	3	.75
HOWIE LAWANG	6	NR	5/8	2	7/10	4	1.0

LAP RECORD SHEET FOR STATISTICAL ANALYSIS

LAP TITLE TRIANGLES

Teacher's Quantitative ratings:

Minimum Performance Level 7/10

K- No. of matching Pre- & Posttest items 4/8

K^1- No. of correct Pretest items

K^2- No. of correct Posttest items

Revision time in minutes 45

CONSTRUCTS				
1	2	3	4	5
10	10	10	10	10
8	8	7	—	—
9	6	8	10	8

Student's Name	Grade	LAP Rating	SCORES PRE	K	POST	K	GAIN
FIRST TRYOUT							
GARY POLACHECK	5	NR	7/10	1	7/10	1	0.0
WILLIS GROD	5	4	5/10	1	9/10	2	.30
BRUCE GORNITSKY	5	5	6/10	1	9/10	2	.30
MARK SEITZER	5	3	5/10	2	7/10	0	-1.0
BARRY RASHKOVAN	5	2	5/10	1	8/10	1	0.0
MICHAEL MEITZER	6	4	6/10	1	8/10	1	0.0
GORDON WASSERMAN	5	5	9/10	1	9/10	2	.30
RICHARD TARASOFSKY	5	4	7/10	1	8/10	2	.30
JANICE CONVOY	6	3	8/10	1	7/10	2	.30
ROBERT RICKEL	6	3	5/10	0	8/10	2	.50
STEVEN FRANK	6	NR	7/10	2	7/10	2	0.0
KAREN HIRSCHHEIMER	5	NR	8/10	1	7/10	2	.30
DEBRA GOLDSTEIN	6	1	6/10	0	9/10	2	.50

Appendix I.

Learning Activities Package: TV in Montreal

RATIONALE

Do you know how your favorite TV program is made? Did you ever wonder how a TV program gets into your television set at home? Many people work together to make a TV program.

When you watch TV you see only the actors. Let's take a look inside a television station and see what happens. We'll see the director, the cameraman, the set designer and find out about some other jobs in a TV station. We'll see what a TV studio looks like with its lights and cameras. We'll find out about master control where the different parts of a program are put together and then sent out to your TV set.

So come along and let's see how a TV program is made.

LAP: TV IN MONTREAL

LEARNING OBJECTIVES

Given a descriptive sentence you will be able to identify any five (5) different jobs performed in a TV station and the use of any five (5) different pieces of equipment or work areas used to make a TV program.

LAP: TV IN MONTREAL

PRE-TEST: Before you start work on this package see how many of these questions you can answer. WRITE your answers on the answer sheet given to you. You must answer all the questions correctly to be excused from taking this package.

INSTRUCTIONS: Fill in the blanks to complete the sentence.

1) A person who writes a story for TV is called a _____ _____(two words).

2) The TV picture you see on TV is taken by a special_____.

3) TV programs are made in a _____.

4) The man who is in charge of all the people who work on a TV show is called the _____.

5) The furniture and backgrounds that we see in a TV program is called a_____.

6) The man who operates a TV camera is called the_____.

7) The small TV screen which the cameraman looks through is called a _____.

8) When a TV show is recorded it is put on _____tape.

INSTRUCTIONS: Choose the correct answer from a), b), or c) to complete the sentence.

9) I adjust the TV picture before it is sent to your TV. I amke sure the picture is not too dark or too light. I am called the:
   a) production assistant
   b) master control operator
   c) producer

10) It is my job to decide how many lights will be used on a TV program. I also decide how bright the lights will be. I am called the:
   a) electrician
   b) TV monitor
   c) lighting director

11) The large steel structure that a TV station usually puts on top of a mountain or high building is called the TV:
   a) antenna
   b) signal
   c) transmitter

SHOW THE ANSWER SHEET TO YOUR TEACHER

LAP: TV IN MONTREAL

LEARNING ACTIVITIES

Instructions for the learner:

This learning package has eight (8) activities. You should do activities three (3) and six (6). You can also do any other activities you want to do. Any time you feel ready take the self test. If you pass the self test go to your teacher. If you don't pass the self test continue to perform or review the learning activities until you do pass. See your teacher if you are not successful after three(3) tries.

1. READ AND WRITE: New Vocabulary Words. Look at the list of new vocabulary words and see if you can learn some of them. Divide a sheet of paper into two parts. On one side put the new words and on the other side put what these words mean. You do not have to learn all the words but try as many as you aan.

2. READ: Read about television and TV stations in any of the following encyclopeadias.

   Britannica Junior Encyclopeadia.

   Encyclopeadia Canadiana, Volume 10, Television Programs, pages 38-46. (1968)

   Comptons Picture Enclyclopeadia and Fact Index, Television-Home Entertainment for Everyone- pages 70-79. (1966)

   Childcraft- The How and Why Library, Televison-volume 8 pages 178-179, volume 10 pages 267-273. (1967)

3. DISCOVER AND LEARN: What Do I Do? Find out about some of the exciting jobs in a TV station and look at some pictures.

4. PLAY A GAME: Play a game of 'Concentration' and try to match words and meanings. You can play this game alone or with one or more classmates.

5. READ AND ENJOY: How it Works-Television, a Ladybird Book. If you would like to learn all you can about television you'll enjoy this small book. Don't worry if you can't understand parts of this book-just read what you can understand.

6. DISCOVER AND LEARN: What is Television? How does it work? If you would like to know how a TV program gets from the TV station to your house, you will enjoy this activity.

7. PLAY A GAME: Play the game 'Who Am I' and try to guess the jobs performed by people who work in a TV station.

8. LOOK AT A MAP: Do you know what a TV coverage map is? Let's find out.

LAP: TV IN MONTREAL

BIBLIOGRAPHY

If you would like to learn more about the fascinating world of TV ask your teacher or librarian to help you find some books about television.

Here are two books which you'll enjoy.

1) Buchheimer, Naomi, Lets Go To A Television Station, G.P. Putnam's and Sons, New York, 1958.

2) Bendick, Jeanne & Robert, Television Works Like This, Whittlesey House, McGraw Hill, Toronto, 1959.

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SELF-TEST: The purpose of this self-test is to check your own progress and to see if you are ready to take the post test.

INSTRUCTIONS: DO NOT WRITE ON THIS SHEET. On a sheet of paper write the word(s) which complete the sentence.

Fill in the blank(s) to complete the sentence.

1) I am in charge of all the lights in a TV studio. I determine which lights will be turned on and how bright they will be. I am called the _____director.

2) The TV picture is changed to electricity by the_____.

3) There are three different kinds of shots or picture sizes used in TV. These are the long shot, medium shot and close-up. As_____it is my job to choose which shot or picture you will see.

4) Your TV set at home is also called a_____.

5) The instrument that the lighting director uses to measure how bright the lights are is called a _____ _____(2 words).

6) As_____ _____ _____(3 words) it is my job to record TV shows.

INSTRUCTIONS: Choose the correct answer to complete the sentence.

7) After the TV picture leaves the control room it is sent to the:
   a) transmitter
   b) set workshop
   c) light meter

8) The man that is responsible for seeing that all the furniture and sets are well built and look real is called the:
   a) carpenter
   b) production assistant
   c) set designer

9) I am in charge of choosing the actors and actresses who will be in a TV program. I also decide how much money will be spent on the program. I am the:
   a) director
   b) script-writer
   c) producer

LAP: TV IN MONTREAL

SELF-TEST

10) The director works in the:
    a) control room
    b) workshop
    c) transmitter room

11) A dolly is a:
    a) special kind of light
    b) a wagon on which cameras are moved around
    c) a set used for children's TV programs

12) I often help the video-tape operator when he records a TV show. I am called the:
    a) video-tape operator
    b) TV aide
    c) production assistant

The key to the self test is printed upside down on the bottom of this page.

KEY:

1) lighting director
2) camera
3) director
4) receiver
5) light meter
6) video tape operator

7) a
8) c
9) c
10) a
11) b
12) c

LAP: TV IN MONTREAL

POST-TEST: The purpose of the post test is to determine whether you can perform the learning objective for this learning package and go on to the next package.

INSTRUCTIONS: Write your answers on the answer sheet provided

Choose the correct answer to complete the sentence

1) This piece of equipment is usually found on top of high buildings or on mountains. It is called
   a) antenna
   b) transmitter
   c) headphones

2) It is my job to record all the TV shows that are not done 'live'. What is my job?
   a) video tape operator
   b) producer of TV show
   c) designer

3) The cameraman talks to the director by using his
   a) telephone
   b) TV monitor
   c) headphones

4) The man who is in charge of all the people who work on a TV program is called the
   a) director
   b) production assistant
   c) master control operator

5) If you were watching me work you might see me turning lights off and on. I would be choosing which lights to use for a TV program. I would also be measuring how bright the lights are. What is my job?
   a) light meter reader
   b) lighting director
   c) light tester

6) Before I send the TV picture to the transmitter I check to see if it is too bright or too dark. If it is too dark I make it brighter. If it is too light I make it darker. What is my job?
   a) brightness checker
   b) lighting director
   c) master control operator

7) I am the director. Where do I do most of my work?
   a) control room
   b) lighting room
   c) studio

LAP: TV IN MONTREAL

POST-TEST

8) The furniture and backgrounds used on a TV program to make it look real is called the :
   a) set
   b) stage
   c) studio

9) On the ceiling of this room you will see hundreds of lights. On the floor there will be several cameras. This room is usually two stories high. What is this room called?
   a) master control
   b) TV studio
   c) TV hangar

10) Although I usually have many jobs in a TV station I am often found helping the video tape operator record TV shows. What is my job?
   a) producer
   b) TV show recorder
   c) production assistant

INSTRUCTIONS: Fill in the blanks to complete the sentence.

11) I am in charge of all the sets built for a TV program. I have to make sure that all the sets are well built and look real. Who am I? _____ _____(2 words).

12) I am the person who writes a TV show. Who am I?
_____ _____(2 words).

13) As _____ it is my job to move the camera around the studio and take the picture that the director wants

14) The small TV in the camera that the cameraman watches to see what picture he is taking is called the _____.

15) After the TV picture signal leaves the master control it goes to the TV stations_____.

SHOW THE ANSWER SHEET TO YOUR TEACHER.

LAR: TV IN MONTREAL

QUEST: If any part of the LAP has interested you, you may want to do a project of your own.

1) Ask your teacher to arrange a trip to a TV station. Before you go make a list of questions you would like to ask your guide. Perhaps your class could arrange to get tickets to be in the audience for a live TV show. When you go to the TV station try to see the control room, the studios, and the set design workshop.

2) If you enjoyed finding out about television and the many jobs available in a TV station perhaps you would like to read the enclosed book, Careers in Broadcasting. In this book you will find explanations of all the different jobs in both television and radio. Try to find some of the jobs you might be interested in. Perhaps you can get more information about these jobs from your school library.

3) In Canada and the United States television is free. That is, we do not have to pay to watch TV. The companies that put on commercials pay the cost of making a TV program. These companies want us to watch their commercials and then buy their products. Do you like watching commercials? Do you have a favorite commercial? Do you ever buy and products that are advertised on TV? Try to write a commercial. Pick a product (such as a new toy or a car) that you would like to sell. Write a small story trying to convince other people to buy that product. Read it to your friends and ask them if they would want to buy that product. If you need help or ideas look through some magazines and see how commercials are written.

4) What kind of programs do you like to watch on TV? Do you have a favorite program? Let's imagine that you were asked to make a new TV show. What kind of show would you like to make? Would it be a

LAP: TV IN MONTREAL

QUEST

4) western, a cartoon or a movie? Perhaps you and a friend would like to design a TV show. How many people would you need to work on the show? If you are not sure take another look at some of the learning activities. Remember that all shows start with just an idea. Do you have an idea?

5) TV is one way of communicating. Radio is another way. How many other ways do people communicate? Make a list of the ways people communicate. If you would like to know more ways of communicating read the 'Communications" section in any encyclopeadia or ask your teacher or librarian for a book on communications. One good book that you may want to read is: Communication: From Cave-Writing to Television, by Julie F. Batchelor, published by Harcourt Brace and Company, New York.

6) Ask your teacher if she can get a film on communications for you. The film 'Allo, Hello, Alo' is an excellent short cartoon film illustrating the history of communications from tom-toms to satellites. It is available free of charge from the National Film Board of Canada, 550 Sherbrooke Street West, Montreal.

LAP: TV IN MONTREAL

INSTRUCTIONS TO THE TEACHER

Here are the answer keys to the pre-test and post-tests for this LAP.

1) PRE TEST KEY:

1) script writer
2) camera
3) studio
4) director
5) set
6) cameraman
7) monitor
8) video
9) b
10) c
11) a

2) POST TEST KEY:

1) a
2) a
3) c
4) a
5) b
6) c
7) a
8) a
9) b
10) c
11) set designer
12) script writer
13) cameraman
14) monitor
15) transmitter

LAP: TV IN MONTREAL

PRETEST ANSWER SHEET

1) _____ _____

2) _____

3) _____

4) _____

5) _____

6) _____

7) _____

8) _____

9) _____

10) _____

11) _____

LAP: TV IN MONTREAL

POST TEST ANSWER SHEET

1) _____

2) _____

3) _____

4) _____

5) _____

6) _____

7) _____

8) _____

9) _____

10) _____

11) _____ _____

12) _____ _____

13) _____

14) _____

15) _____