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ABSTRACT

A description of open and individualized elementary school instruction is provided. The goals of such instruction are to: 1) teach basic skills in language arts, math, science, and social studies; 2) develop higher cognitive abilities, such as problem solving; and 3) develop the child's social competence and self-concept. Open, individualized education assumes that learning should be an active, interesting process in a free environment which is self-managed by the learner, with the teacher acting as a facilitator. The system begins by positing educational objectives and uses student learning plans in which pupils choose learning activities. Learning materials are adapted for individual use in a flexible room whose foci are learning centers for language arts, math and science, and arts and crafts. Media are regarded as essential to the program. The teacher's role changes as he spends less time in group instruction and more in adapting instructional materials for individual activities, and as he learns new ways of relating to students. Children are required to become more responsible, active, cooperative, self-disciplined, and self-evaluative. Lastly, the program is mastery-oriented, for students work at projects at varying paces until mastery is achieved. (PB)

Designing Open and Individualized Instruction at the Elementary Level: A Guide For the Individual Teacher

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Large scale systems for the implementation of individualized instruction at the elementary level such as PLAN, IPI, and IGE require substantial financial support, administrative commitment at the building level or higher, and much inservice trainin, of teachers. In addition the existing models are technology oriented and heavily commited to the use of tests for educational diagnosis and planning.

Many individual teachers or small groups of teachers would like to individualize instruction in their classrooms but lack administrative support, financial resources, and knowledge of how to proceed. Yet an ad hoc approach might lead to classroom chaos and ineffective instruction. Specific models are needed to serve these teachers and particularly to serve those who are minimally committed to educational technology and tests as bases for diagnosis and instructional planning. There is urgent need for a model for individualized instruction which can be implemented without major expenditures, which utilizes available instructional materials, and which requires a minimum of test development and complex diagnostic procedures.

The concepts of open education (Barth 1972; Nyquist and Howes, 1972) and individualized instruction (Weisgerber, Vol. 1 & 2,

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1971; Dell, 1972) are well articulated in educational theory and are popular influences on educational innovation in American schools. It is unfortunate, however, that the two concepts are dealt with separately or that school implementation projects seek to adhere to one or the other. The two concepts are really inextricably linked and should be considered together in designing individualized systems of instruction. Opening the classroom involves choice, freedom, materials, informality and humaneness (Barth, 1972). Components of individualized instruction include 1) self-instructional materials, 2) a variety of learning activities, 3) planned evaluation procedures, 4) teacher involvement in materials organization, room arrangement, record keeping, and interaction with students, and 5) student responsibility for managing time and participating in choices of instructional objectives to achieve (Dell, 1972). In open classrooms there is more stress on learning centers and choice of activities to pursue while individualized instruction stresses organization, objectives, and evaluation. These differences, if taken alone, are neither sufficient nor adequate principles for opening classrooms or individualizing instruction.

The main points of agreement are emphasis on student freedom, student self-management, independent learning, learning from students peers as well as from teachers, an abundance of materials available, active rather than passive learners, teachers working with individuals more than with large groups, informal atmosphere, and respect for both teachers' and students'

individuality and responsibilities. All together they constitute a significant set of common purposes and practices. Knowing that a particular classroom is considered open or individualized, a visitor would often be hard pressed to identify it as one or the other.

Summary Of A Model To Be Described In This Paper

The authors carried out a project with 80 elementary teachers in a medium size school system and with smaller groups of teachers in several other school systems helping these teachers to open and individualize instruction in their classrooms. Research and theoretical literature on indiviudalized instruction was reviewed, and this review served as a basic guide in developing plans and in-service work for these teachers. A partial listing of our review sources appears in Appendix A. A more extensive reference list is available from the first author upon request.

Strong emphasis was placed on the use and conversion of available instructional materials and equipment in order to facilitate individualized use by pupils. Teachers were also taught how to develop simple self-instructional units for children. Heavy reliance was placed on daily instructional activities as the basis for learning and diagnostic evaluation. Formal testing was minimized although short tests were used to assess achievement of some specified objectives.

Learning agreements were the chief method for individual pupil planning. These agreements provided the students with much

freedom to select their own learning activities and rate or pace of learning. However, teachers could also require some instructional activities, especially in basic skills, according to pupil needs. Classrooms were organized to focus on instructional centers which housed materials and equipment to which pupils could go to select instructional materials or equipment and study.

Small group and total class activities were still encouraged for as much as half of a pupil's school day. However, there was special emphasis on integration of individualization with group learning activities. It was assumed that much of the small group and total class activity would be aimed at higher level cognitive and affective objectives while the individualized instruction would stress basic skills and lower cognitive levels. There was also much stress on teaching children to live and learn in a self directing but socially acceptable manner in the classroom.

Evidence of the effectiveness of the approach is based on evaluations of video tapes of rooms in which the model is in operation and on interviews and questionnaires administered to teachers and children. Results indicate that the model is functionally effective; that children, parents, and teachers liked the approach; that discipline problems declined; and that the children were learning well.

This paper will present the goals of the project, the theoretical assumptions which served as guides, a more detailed description of the system, and some further subjective evaluations.

Goals for the Children

The model which we developed has four broad goals. The first is to teach basic skills. Throughout the elementary grades there should be an emphasis on the language skills of reading, writing, speaking and listening. As the child progresses through the grades, skills in mathematics, science and social studies become increasingly important.

The second goal is the development of higher cognitive abilities such as problem solving, creative thinking, conceptualization, logical thinking, inquiry, and decision making skills. Specific knowledge or information rarely has instructional value in and of itself. However, knowledge level objectives are necessary for they provide the child with information or procedure cues for use in learning higher level cognitive abilities.

The third goal is social competence. This means that the child should be given explicit instructional aid in learning how to live with, work with and relate to other children as individuals, in small task oriented groups, and in the larger classroom and total school social environment.

The fourth goal is personal fulfillment and good self concept. Personal fulfillment will be reflected in the self concept. This goal implies that the child discovers himself, his capabilities, and his personal characteristics through the classroom interactions. It also implies that he experiences sufficient success and learns frustration and failure tolerance so that he develops a sound base of self esteem.

General Assumptions Which Served As Guides In Designing The Open and Individualized Instruction Systems

On the basis of the review of literature and from our emerging experience in working with elementary teachers who were trying to open and individualize instruction, we formulated a set of basic assumptions which in turn guided all of our efforts. The first group of these assumptions related generally to learning and motivation.

A sound system of individualization must provide for instruction at many different levels and rates to accomodate these differences.

Active involvement increases the child's attention and arousal level and enhances all types of learning.

Commitment to goals or objectives increases motivation, persistence on tasks, and learning.

Classroom activities must be stimulating and interesting in order to be effective in motivating children and producing learning.

Children gain self confidence in learning through experiencing success in learning tasks.

Concrete and manipulative experience is essential in many kinds of learning and should precede abstract formal operations.

Fundamental skills in language arts and mathematics and later in science and social studies are basic goals.

Work in small groups can facilitate learning by individual children, and it may also facilitate the development of social skills.

Diagnostic, formative and summative evaluations should focus chiefly on children's growth in basic skills and development of higher cognitive abilities as reflected in realistic project activities.

A second set of assumptions which guided our efforts related to classroom operations and instructional material.

Much of the learning of basic skills and even higher level cognitive abilities can be accomplished with self instructional materials and equipment.

The classroom experience should be enjoyable most of the time.

There should be much freedom of movement in the classroom.

The physical arrangement of the classroom must facilitate open, informal activity.

The classroom should afford a rich variety of materials to encourage inquiry and discovery.

Alternative instructional materials and plans should be available to accommodate the learning styles of different children.

Learning centers should serve as the foci for language arts, mathematics, science, social studies, and art activities.

Simulations, games, realistic problems, discovery experiences and inquiry are all useful techniques in teaching higher level cognitive skills and abilities.

Traditional instructional materials can often be adapted easily for individualized instruction.

A third set of assumptions were all related to the teacher's role in an open, individualized classroom.

Teachers must regard their roles as facilitators of learning, not purveyors.

Teachers should stress affective and social goals as much as cognitive goals.

Teachers must be able to relate to and work with children as individuals, in small groups, and as a total class.

The teacher's record keeping system should be simple and functional.

In parent-teacher-child conferences there should be explicit attention to the child's ability to function in an open, individualized classroom, and any problems he is experiencing.

Finally, a set of assumptions related to the pupil's role in an open, individualized classroom were formulated.

Children should be afforded experience in selecting or developing goals and activities which fit their own needs and interests.

Children need explicit instruction and experience in planning for and carrying out individual and small group instruction.

Children can teach or tutor one another effectively, and both the tutor and tutee profit from the experience.

Children should be taught to evaluate their own work and progress.

The System

Objectives. The system which we developed utilizes educational objectives as the basis for developing, guiding and evaluating instruction. If objectives are not available, we would encourage the school to develop its own set of objectives, chiefly by selecting from previously published objectives. However, even if no objectives are available teachers can proceed to individualize instruction if good instructional materials are available. Many teachers can do an excellent job without precise educational objectives.

If objectives are available we would like to have objectives and instructional activities or materials tied together as often as possible. In some cases the teacher will use objectives in one area of instruction and not in another. This should create no problem. If objectives are available they should be presented to the student as a prelude to or part of each new instructional unit. The statement of objectives to the student in Teaching Learning Units (TLUs), Learning Activity Packages (LAPs), etc. is ideal.

Student Learning Plan. The heart of our system is the Student Learning Plan. It consists of two major parts. First, there is a listing by the teacher of the instructional activities which are operational or which the child can engage in. This may be a list on a chart or on the blackboard. Ideally the list is long and includes many free or alternate choices, while still allowing the teacher to specify some activities as required for all pupils. This may be the case for basic skills areas. However, this does not mean that all pupils work on the same activity at the same time. It simply means that some portion of the day or week must be spent on that basic skill area.

The teacher should make the instructional materials available in the learning centers in files or drawers or on tables, or the materials may be things the child has in his own possession such as texts, workbooks, TLUs or LAPs. In some instances teachers may also choose to distribute materials to meet individual needs at the beginning of the day or by attaching them to a Student Learning Plan form.

The second major part of the Student Learning Plan is the form which a child completes each day or week listing the activities he plans to work on. Each day or week begins with a brief period of individual planning for the day or week ahead. The child examines the teacher's chart and decides whether he will work alone and/or in small groups. First and second graders typically work on a one-day plan while third through

sixth graders can move toward a weekly or even biweekly plan. The order of activities each day is left to the child but may be determined in part by the availability of materials and by the need to schedule some work in groups. During the planning stage the teacher circulates and confers with individual pupils about their plan. The child writes the things he plans to do. Appendix B gives two examples of Student Learning Plans, one for prereaders in first grade and one for older children. The latter is a weekly plan.

The children then begin their activities for the day or part of the day. Many of the teachers with whom we worked limited individualized work to the mornings and used afternoons for whole class activities. The child keeps his Learning Plan, often taped to his desk top, to use as a guide throughout the day or week. When activities are completed they are turned in to the teacher and the Plan is turned in at the end of the day or week. Most Learning Plans include a place on the form for the child to indicate his level of progress or completion of an activity.

In addition to choices offered by the teacher, children are encouraged to suggest or find alternative activities. These alternatives often require guidance from the teacher in finding some suitable instructional materials and plans of attack for the activity suggested by the child.

Instructional Materials. We have found that nearly all of the existing traditional instructional materials in the school can be adapted for individualized instruction through use of Learning Guides. These are one-page forms which state objectives, introduce the unit in a paragraph, and offer a variety of instructional activities. Also included are references to available materials such as texts and workbooks as well as supplemental activities for the child if he is interested. Appendix C gives two illustrations of Learning Guides. If books are in short supply they can be cut apart so that individual children can be using different parts of the book simultaneously.

Ambitious teachers working individually and in groups can also develop lengthier and more comprehensive individualized units such as LAPs, audio-tutorial units, or Learning Units as we chose to call them. These Learning Units can be duplicated and shared by many teachers. Appendix D gives an illustration of such a unit on insects. This unit was developed by Marvin Goad and Agnes Thomas of the Jackson (Michigan) Public Schools.

Hopefully, the school's budget would permit each classroom to be equipped immediately with at least several sets of material expressly developed for individualized instruction. Excellent individualized materials have been developed for all areas of the curriculum. Appendix E is a list of currently available individualized materials. Instructional games, simulations, and craft activities are also available in abundance and can be used to great advantage in an individualized classroom.

The teacher who is just beginning to individualize might be hard pressed to keep up an adequate supply of instructional materials. In many instances our teachers had pupils join in the process of developing materials. The children developed game kits, set up files, helped mount parts of books which had been divided up, set up displays in learning centers, and made signs to show other children where things were.

Our teachers also shared knowledge about available free instructional material through a monthly newsletter which we circulated. This can be extremely beneficial on either a systemwide or school wide basis, and can include references to published or teacher-made materials, methods, and activities. We also held an instructional materials fair at which publishers and teachers displayed thousands of illustrations of material for individualizing instruction.

The Physical Set Up. The open individualized classroom can be developed in any traditional classroom with moveable seats or tables and chairs. We believe that children should continue to have a home desk or seat at a table. The desks should be clustered in groups of three or four in a central area of the room with the children seated facing one another in the clusters. Appendix F shows a possible plan for the room arrangement. Seating arrangements and groupings should be flexible and changed as often as necessary.

Learning Centers are essential in the open and individualized classroom. At a minimum there should be centers for (1) arts and craft projects. (2) science and math, and (3) language arts and social studies. Ideally, there should be a separate reading and book center and separate areas for science, math, and social studies.

Each center serves several purposes. First, it is a depository for individualized instructional material which the child may get and take back to his seat for individual or small group study. Second, it contains a table and chairs for small group projects or study. Third, it may have carrells, listening posts, or otherwise serve as a place to which pupils go for individualized study. Fourth, it is an interest center for discovery and inquiry activities. There may be intriguing displays, animals, fish, objects to manipulate, etc.

The Learning Centers should have some physical identity or separation. Low dividers, book cases, partitions and carrells may all be used to create the separate units. Carpet is desirable on the floors as well as cushions in the reading areas. The teacher's creativity can find abundant expression in the development of Learning Centers. The children's talents should also be tapped in developing them. We have found that children love Learning Centers and appreciate the chance to go to the centers whenever they wish.

Media and Equipment. Media and equipment are useful in the individualized classroom. Cassette players with headsets

are ideal for audio-tutorial instruction in carrells. Slide and filmstrip viewers are equally useful, and the Language Master is ideal for the early grades. A 16 mm film projector can be used in a large carrell or nook. Overhead and opaque projectors can be used in a dozen ways by individuals and small groups of children.

As a bare minimum the teacher should have a cassette player and a multiple outlet listening post, a filmstrip viewer, and an overhead projector. There are many other types of equipment which can be used effectively in the open individualized classroom.

The Teacher's Role. The teacher's role is changed substantially in our open individualized classroom. First, the teacher will spend much more time in selecting, adapting, or developing instructional materials and activities. Second, less time will be spent in planning for and carrying out traditional group instructional activities. Third, much more time will be spent helping and working with individuals and small groups of pupils. Fourth, the teacher will focus evaluation on individual children's projects, growth in basic skills, practical activities, personal and social growth, and higher level cognitive activities.

In reality all this means that teachers have to learn anew how to relate to children as human beings. The relationship must be more open. Evaluation must be cooperative. There must be much more expression of affectivity.

The Child's Role. The child's role is also changed substantially. First, the student will be responsible for making choices about which learning activities he will engage in at various times. Second, he will spend far less time sitting quietly in large groups listening to a teacher lecture. Third, he will spend more time working with other students in cooperative learning activities. He will also be working more by himself on activities which few or no other students are doing. Fourth, he must learn to evaluate his own work in conjunction with the teacher.

A final point of departure from usual classroom practice involves the movement to a more self-disciplined approach to classroom management. The child is now free to move about while making selections of materials and changing activities. The teacher is no longer responsible for granting permission to move about, to talk to others, to use the washroom, or to work on a different learning activity. Thus, the child must assume more responsibility for his own actions and behavior. Less reliance on the teacher as an external disciplinary force leads to self-discipline and respect for the rights of others.

Inherent in the rationale and design of the open individualized classroom is increased communications among its members. This increased communication is different in scope and function from that previously experienced by teachers and students. Clear, accurate communication rests upon understanding of each other's role and relies on the recognition of equality as human beings.

Recordkeeping. Recordkeeping focuses chiefly on objectives achieved by the child if objectives are incorporated in the system or on instructional activities completed successfully if there are no explicitly stated objectives. The simple McBee record card developed by the American Book Company for its Read and Targeted Mathematics series is ideal. Thirty or forty objectives are printed on five by eight cards and are keyed to numbers and holes around the margin of the card. When a child completes an objective the edge of the card is punched so that the hole is opened. When a teacher wishes to determine which children have not completed an objective a McBee rod is inserted through the pack at that hole. Cards of children who completed the objective fall out, those who have not hang on the rod.

The teacher may also choose to file the completed Learning Plans and instructional materials as a part of her record keeping. As noted earlier, the Learning Plan includes a space for notations of objectives or projects completed.

Mastery Orientation. All of the instruction in our open individualized classroom is mastery oriented. That is, the children work at an objective or project until it is learned or successfully completed. Evaluations are formative and designed to help the child achieve success. In learning basic skills there is special emphasis on achieving mastery before proceeding to higher level learning.

The Teacher's Problems. Perhaps the major difficulty faced by our teachers was in getting enough good instructional materials to provide productive learning experiences for all the children. Ideally the teacher should have aides to help get materials ready, to duplicate them, and to help children learn how to access them. Teachers should also be provided with a core of good published materials which may serve as a basis for individual activities and learning guides.

Some teachers had truly troublesome children who had great difficulty in learning how to live and work in an open individualized classroom. Discipline problems, fighting, wandering about or inertia were some of the difficulties. A concentration of troublesome children in several classrooms made it necessary to gather several children into a small group and teach them for a time in traditional manner.

Some of the teachers had trouble accepting a noisier classroom, the free movement of children, and the closer personal relationship with children. The separation between teacher and child in traditional classrooms affords emotional security for some teachers. Teachers have been told that "familiarity breeds contempt" and thus, many have hangups in adapting to this new, closer, more personal relationship with children.

Physical limitations also presented problems for some teachers. Some classrooms were small, had little wall or storage space, and were poorly equipped. These difficulties were often only solved by great individual initiative and ingenuity on the part of the teachers. However, most classrooms were easily adapted for open and individualized instruction.

Perhaps the greatest difficulty faced by some teachers was a non supportive principal. Ideally the principal must lend support, help, and work closely with the teachers in developing individualized instruction. Some principals seemed to know little about open and individualized instruction and cared little about the teachers' efforts. Under these conditions some teachers became discouraged and apathetic about our projects.

The Student's Problems. Some students had great difficulty in adjusting to a less rigid classroom set-up. Some could not make good use of time and delayed working on anything until near the end of the day or week. Some needed to be told what to do, when to do it, and could not evaluate their own work realistically. Some looked upon learning activities merely as a way to gain points to earn good grades and paid little attention to finding significant learning activities. Some were not able to respect the rights of others without constant aid from the teacher.

The Successes. On the positive side we were pleased to find many teachers implementing an excellent open and individualized classroom. We interviewed children and teachers and found both to be highly enthusiastic. Most of the children learned well and enjoyed the experience. Teachers reported finding new satisfaction in teaching. Discipline problems seemed to decline. The model seems to be highly workable in a wide variety of elementary classrooms, with children of different ethnic backgrounds, and at different socioeconomic levels.

The First Big Steps. The first big step a teacher ought to take in preparing to individualize instruction is to do some reading. Helen Davis Dell's book Individualizing Instruction (1972) is a must. Several other books on our highly recommended list in Appendix A would also be extremely helpful.

Of the variety of books on open education, two stand out as particularly helpful. Roland Barth's (1972) Open Education and the American School provides a very coherent description of the assumptions about learning and knowledge which open education holds. He also details very well the role of the teacher and the principal in open schools, as well as presenting a case study of implementing open education in two schools. Charles Silberman's (1973) The Open Classroom Reader is a collection of sixty-five selections from American, English, and Canadian sources. It presents comprehensive information about the current practices, rationale, teacher and student roles, curriculum, materials, and theory of open education.

Surveying resources in her own room and from publishers is another task to begin early. Simultaneously the quest for objectives to guide instructional development should begin. While these steps are in progress the teacher should formulate a development plan and a commitment as to when individualized instruction will begin. The guidelines presented in this paper should then serve as continuing sources of direction for the teacher.

APPENDIX A

Highly Recommended Books For A Basic Introduction To Open, Individualized Instruction

Barth, R. S. Open Education and the American School. New York: Agathon Press, Inc. 1972.

Bishop, L. K. Individualizing Educational Systems: The Elementary and Secondary School. New York: Harper & Row, 1971.

Dell, H. D. Individualizing Instruction: Materials and Classroom Procedures. Chicago: Science Research Associates, 1972.

Edling, J. U. Individualized Instruction: A manual for Administrators, Corvallis, Oregon: Continuing Education Publications, 1971.

Glasser, J. F. The Elementary School Learning Center For Independent Study. New York: Parker Publishing, 1971.

Hertzberg, A. & Stone, E. F. Schools Are For Children: An American Approach To The Open Classroom. New York: Schocken Books, 1971.

Nyquist, E. B. & Hawes, G. R. (Eds.) Open Education. New York: Bantam Books, 1972.

Rathbone, C. H. (Ed.) Open Education. New York: Scholastic Books, 1971.

Silberman, C. E. The Open Classroom Reader. New York: Random House, Inc. 1973.

Weisgerber, R. A. Developmental Efforts In Individualized Learning, Itasca, Ill.: F. E. Peacock, 1971.

Weisgerber, R. A. Perspectives In Individualized Learning, Itasca, Ill.: F. E. Peacock, 1971.

Highly Recommended Articles

Bartel, E. V. Initiating a Self-Directed Learning Program in the Classroom. Education, 1971, (Feb), 91, 247-249.

Burns, R. Methods for Individualizing Instruction. Educational Technology, 1971 (Jun), Vol. 11(6), 55-56.

Bybee, R. A Take-It-Easy Approach To Opening Your Classroom, Teacher, 1973 (Mar), 90(7), 30-33.

Dunn, R. S. & Dunn, K. Practical Questions Teachers Ask About Individualizing Instruction: And Some Of The Answers. Audiovisual Instruction, 1972 (Jan), 17(1), 47-50.

Flurry, R. C. Open Education: How To Get There If You Want To Go, Childhood Education, 1973 (May), 49(8), 416-420.

Grossman, R. Individualizing Occurs When Thinking Becomes Visible. Educational Technology, 1972 (Mar), 12(3), 36-39.

Jelden, D. L. Learning Activity Packet For Individualized Instruction. Man/Society/Technology, 1972 (Feb), 31, 138-140.

Lambek, M. & Lorentzen, M. Learning Resource Centers in Every Classroom. Instructor, 1971 (Oct), 81, 88.

Miller, J. W. & Miller, H. G. Individualizing Instruction Through Diagnosis and Evaluation. Childhood Education, 1970 (May), 46, 417-421.

Packard, R. G. Do We Have To Do What We Want Today? Structure In An Open Classroom, Teachers College Record, 1973 (May), 74(4), 553-558.

Pilcher, P. S. Open Education: In Britain and the U.S.A. Educational Leadership, 1972 (Nov), 30(2); 137-140.

Randazzo, J. D. & Arnold, J. M. Does Open Education Really Work In An Urban Setting? Phi Delta Kappan, 1972 (007), 54(2) 107-110.

Roth, T. C. Expanding the Concept of Individualized Education. The Educational Forum, 1971 (Nov), 36, 61-66.

Sobel, H. W. & Tejirian, E. The Case For Open Education, Teachers College Record, 1973 (May), 74(4), 559-565.

Walberg, H. J. Models for Optimizing and Individualizing School Learning. Interchange, 1971, 2(3), 15-27.

Williams, F. E. Differential Strategies Allowing For Openness in Education. Educational Technology, 1972 (Jan) 12(1), 56-58.

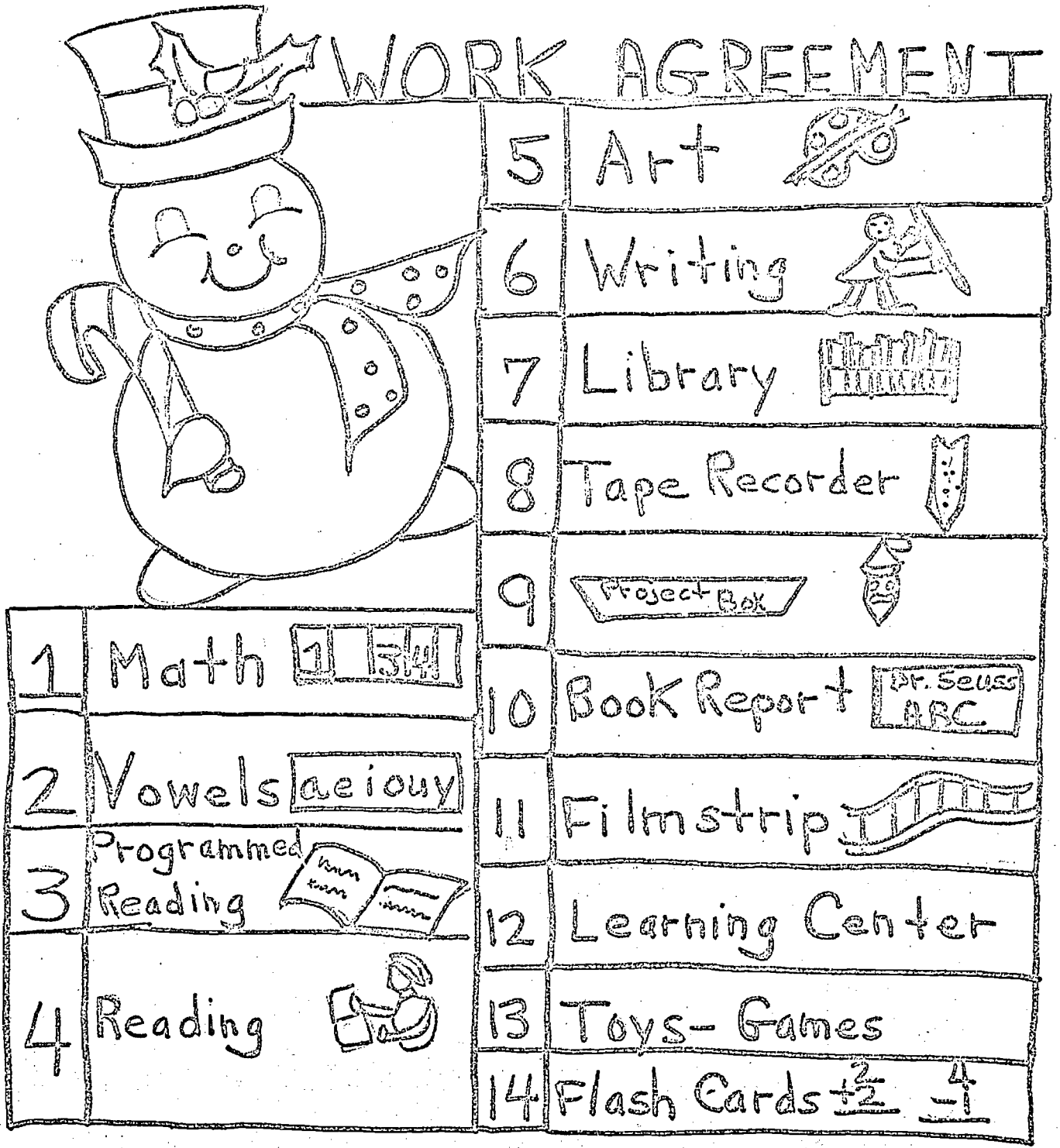
Zeitz, F. Individualized Prescribed Instruction. School and Community, 1970 (Nov), 57, 78.

APPENDIX B-1

Learning Agreements Developed

by

Hazel Feldhusen, Cumberland School
West Lafayette, Indiana



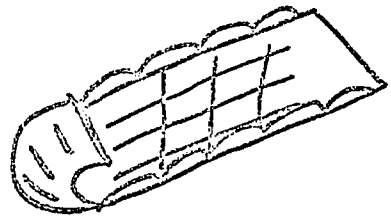
APPENDIX B-2

Student Learning Plan

	PLANNED ACTIVITIES	PROGRESS OR WORK COMPLETED
MONDAY		
TUESDAY		
WEDNESDAY		
THURSDAY		
FRIDAY		

NAME OF PUPIL _____ WEEKDATES _____

TEACHER COMMENTS _____



APPENDIX C

Learning Guides Developed by

Hazel Feldhusen, Cumberland School
West Lafayette, Indiana

Winter Activities

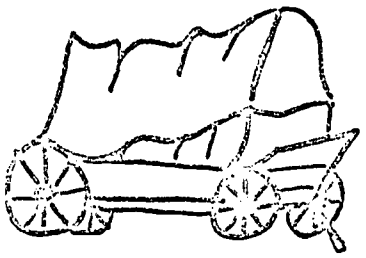
In this unit you will learn about things we do in the winter season. It is winter now so we can think of things you do after school and on weekends.

When we get done with this unit you will be able to name, describe, draw or write about things people do in the winter.

Pick one of these activities to do today. You can do more tomorrow.

1. Read one or more of these books.
   - A. The Snow Party
   - B. Katy and The Big Snow
   - C. Ski Pup
   - D. I Like Winter
   - E. The Snowy Day
   - F. White Snow Bright Snow
2. Listen to one of these stories at the Listening Post.
   - A. Ski Pup
   - B. White Snow Bright Snow
   - C. I Like Winter
3. View one of these filmstrips.
   - A. A Snowy Day
   - B. In The Winter
4. Draw a picture showing kids doing winter fun things.
5. Write a story about something you do in the winter.

Pioneers



In this unit you will learn about pioneers. Most pioneers lived on farms because they had to produce most of their own goods. Pioneer families worked very hard. You will learn many things about pioneers. You will find out what pioneer families did in their free time, how they traveled, where pioneer children went to school, and some of the dangers during pioneer times.

Pick one of these activities to do today. You can do more tomorrow.

1. Read one or more of these books.
   - A. The True Book About Pioneers
   - B. To Be a Pioneer
   - C. Indian Summer
   - D. Great-Grandfather in the Honey Tree
2. Listen to one of these stories at the Listening Post
   - A. The True Book About Pioneers
   - B. Great-Grandfather in the Honey Tree
3. Draw a picture of a pioneer family.

   Draw a picture of Daniel Boone
4. Make a diorama of a pioneer home.
5. Write a story about a pioneer girl or boy.
6. View one of these filmstrips.
   - A. Pioneer Home Life
   - B. A Pioneer Village
   - C. Pioneer Life in Indiana

APPENDIX D

Learning Activity Package on Insects

by
Marvin Goad and Agnes Thomas, Jackson (Michigan) Public Schools

I. Objective: To become familiar with insects.

To be able to identify parts of insects.
To be able to draw pictures of insects.

II. Equipment needed

A. Tape recorder
B. Head phone(s)
C. Tape
D. Box of insects
E. Judy sequence puzzle depicting life cycle of a Monarch butterfly
F. Paper(s) for children to use while tape is being played
G. Pencil(s)
H. Butterfly net and jars
I. Library books about insects
J. Drawing paper and crayons or felt pens

III. Script

INSECTS ALL AROUND US

You are going to be listening to a tape about insects. Sometimes you will need to turn off the tape while you mark or draw something on your paper. Listen carefully to all of the directions and do not turn off the tape till you hear this sound*, when you have finished as much as you can turn on the tape again and listen to the next part.

START PAGE I

Insects are small animals. We see insects everywhere. They eat many foods that we eat. Some insects eat our clothing, and even parts of our houses. Insects cause millions of dollars worth of damage every year. So you see insects are important to everyone. Some insects do many good things for us. Honey bees make honey to put on our bread. Insects carry pollen from one apple blossom to another so the blossoms can grow into apples for us to eat. Insects are valuable as food for other animals such as some of our birds and fish. Many birds help us by eating insects which would otherwise cause damage to gardens and far crops.

* Look at the insects in the box. How many things can you find out about insects? How many feet do they have? Can you see 6 on each insect? How many body parts? How many eyes and how many antennae? And what about wings. Stop the tape while you examine these insects carefully. Start the tape again after you have had as much time as you wish to look at them*.

Now take your paper and look at the insect in picture one. Say this softly with me as you look at and think about the picture, an insect is an animal that has three body sections. An insect has six legs -----An insect has 2 large eyes and sometimes smaller eyes -----An insect has 2 antennae. Some insects have wings.

Now point to and look at picture 2. This shows the three sections of an insect's body. The section with the numeral one is the head. Section two is the thorax or throat, section three is the abdomen or body. Now say the names of these parts with me and point to each part as you say its name. Part one is the head. Part two is the thorax or throat. Part three is the abdomen or body.

Now point to and look at picture 1 again - the picture which shows all the parts of an insect. Look carefully at the insects legs - an insect has 6 legs. An insect's six legs are always attached to the middle section or thorax. Turn off the tape and draw six legs for the large insect in picture 5 at the bottom of the page. Make three legs on one side of the thorax and three legs on the other side. Remember, the thorax where the legs are attached is the middle section of the insects body. *

Now look at picture 3. This shows the insect's head and face. The insect has two antennae or feelers on the top of its head. It has two large eyes and in some kinds of insects two or three little eyes between the larger ones. Sometimes these small eyes are so very tiny that you cannot see them, but the insects can see with them. The insect's large eyes are compound eyes which are made up of many many tiny eyes very close together, so close that to us each compound eye looks like just one big eye. Now turn off the tape and in picture 5 at the bottom of the page, draw the large eyes, then two or three smaller eyes between the large ones. Don't forget to make the antennae so the insect can feel and smell things around him. *

Now put your finger by picture 4. This shows the insect's wings. Some insects have two or four wings attached near the top of the thorax. He might have one wing on each side of the thorax, or he might have two wings on each side as the honey bee does. Look, carefully, at the insect's wings in picture four. You see there are two large wings and two smaller wings. Turn off the tape while you draw four wings on the large insect in picture 5. *

Look again at picture one at the top of your page. Put your finger by the picture. The abdomen is divided into segments so that the insect's body can move more easily in many directions. The lines on the insect's abdomen in picture one show the segments. If the insect's body didn't have these segments it would stay straight and stiff like a stick or bone and couldn't turn very easily. Now turn off the tape while you draw the lines to show the body segments of the insect in picture 5. Draw just the lines. Do not make the tiny circles which are below the lines. *

Look at picture 1 again. Insects do not have lungs for breathing as you have. They breathe through tiny holes that are on the lower sides of the abdomen. They are just below theline segments you just drew on the abdomen. These holes are called spiracles. Turn off the tape while you draw the tiny spiracles or breathing holes on the abdomen of the insect in picture 5. *

Now you will remember what an insect looks like. It has three body sections: a head, the thorax, or throat, and the abdomen, or body. It has six legs, two large eyes and two antennae. Some insects have two or four wings. I'm sure you have finished your big insect picture very nicely. Look at it carefully to see if you have made all of the parts: 3 body sections, 6 legs, the eyes and antennae, some wings. Now turn off the tape and fold your paper back so you can see page 2. *

In the first box at the top of page two you see some pictures of insects and other animals. Look carefully at each one and think: Is this an insect? Does it have the three body parts an insect always has? Does it have six legs, antennae and perhaps some wings? Look and think! Some of these creatures are insects and some are not. Turn off the tape while you make a circle for a cage around each insect. Do not make a cage around a picture which does not show an insect. *

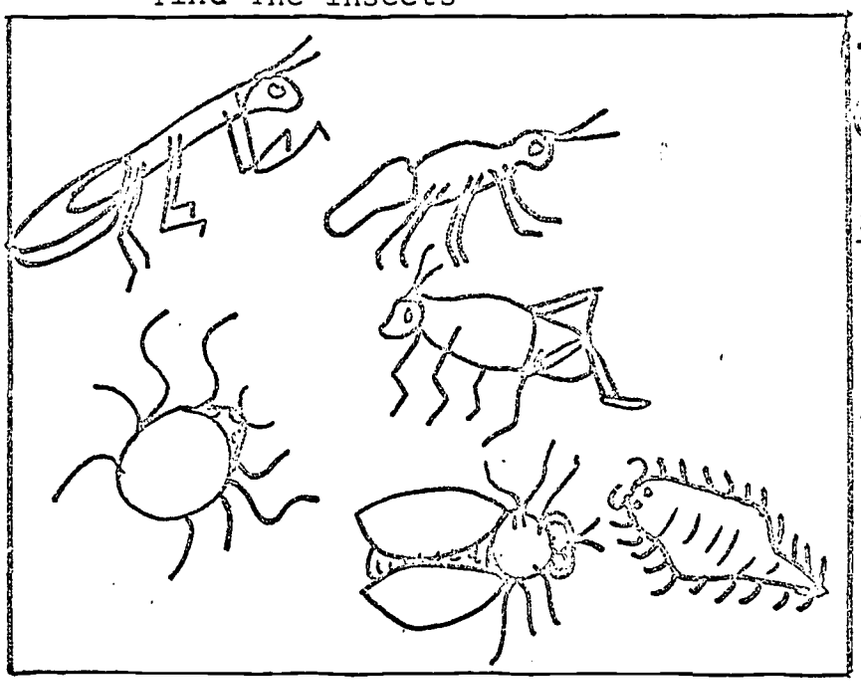
At the bottom of the page are some sentences about insects. Read them with me and put a ring around the numeral which tells the right answer. Put your finger by sentence 1. It says an insect has 4 6 8 legs. (Repeat sentence.) Put a ring around the correct numeral. Put your finger by sentence 2. This says Insect have 2 3 4 large eyes. Put a ring around the numeral that tells how many large eyes insects have. Insects have 2 3 4 large eyes. Put your finger by sentence 3. Insects have 1 2 3 body parts. Put a ring around the numeral that tells how many body parts an insect has. Insects have 1 2 3 body parts. Put your finger by sentence 4. Some insects have 2 5 7 wings. Put a ring around the numeral that tells how many wings some of our insects have. Some insects have 2 5 7 wings. Put your finger by numeral 5. Insects have 1 2 3 antennae. Put a ring around the numeral that tells how many antennae insects have. Insects have 1 2 3 antennae.

Now turn page two over so you can draw a very large insect on the back of the page. Are you ready to draw your insect? Make it large.* First make the three body parts, Remember, the head, the thorax and the abdomen. Next add the legs, the wings, eyes and antennae. Show the body segments and spiracles. Knowing all these things about insects helps you to become a really truly young scientist.*

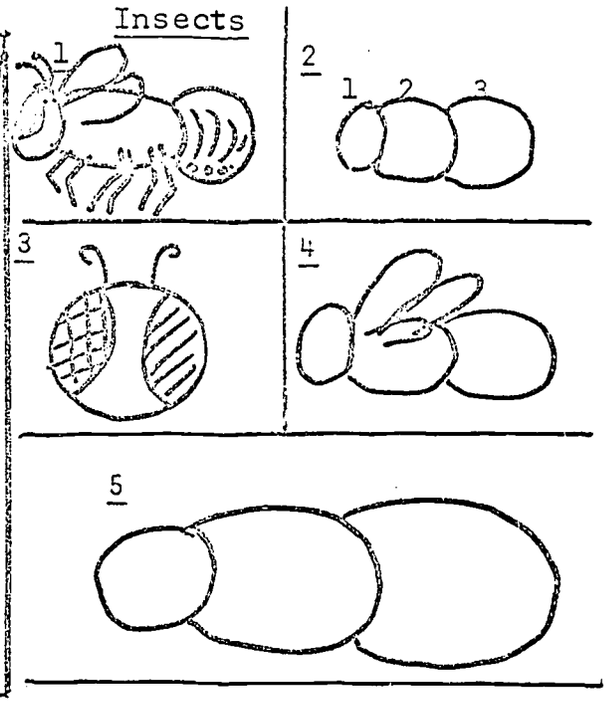
Perhaps you would like to find out even more about insects. You could do some of these things if you wish.

1. Get the puzzle about the life of the monarch butterfly. Put it together so it will tell the story of the monarch's life.
2. Take the butterfly net and catch some insects. Put them in a jar and see what you can find out about them.
3. Get books from the library and find out more about insects.
4. Make pictures to show how insects help us or harm us.
5. Or maybe you would like to use your own ideas for doing something to tell about insects.*

Find The Insects



Insects



1. An insect has 4 6 8 legs.
2. Insects have 2 3 4 large eyes.
3. Insects have 1 2 3 body parts.
4. Some insects have 2 5 7 wings.
5. Insects have 1 2 3 antennae.

APPENDIX E

Partial Listing of Curriculum Programs Suitable for Individualized Instruction

Addison Wesley
Sand Hill Road
Menlo Park, California

The Amherst Project
Individualized Mathematics

* * *

Allyn & Bacon, Inc.
Longwood Division
Rockleigh, New Jersey 07647

Elementary science Discovery Lessons
Math Activities for Child Involvement
Reading Activities for Child Involvement

* * *

American Book Company
300 Pike Street
Cincinnati, Ohio 45202

Mathematics Target System
The Read System

* * *

Center for Individualized Instructional Systems
Durham, North Carolina

Individualized Mathematics

* * *

Curriculum Development Associates, Inc.
1211 Connecticut Avenue
Washington, D.C. 20036

Man, A Course of Study

* * *

Educational and Industrial Testing Service
Box 7234
San Diego, California 92107

Individualized Mathematics

* * *

Educational Progress Corp.
400 South Lewis Avenue
Tulsa, Oklahoma 74145

Language Arts Laboratory
Math Continuous Progress Laboratory
Social Studies Continuous Progress Laboratory
Science Laboratory

* * *

Encyclopedia Britanica
425 North Michigan Avenue
Chicago, Illinois 60611

Reading Program

* * *

Follett Educational Corp.
1010 West Washington Blvd.
Chicago, Illinois 60607

Individualized English

* * *

Ginn & Company
Boston, Massachusetts 02117

Reading 360

* * *

Holt, Rinehart & Winston, Inc.
Box 3323
Grand Central Station
New York, New York 10017

Individualized Study Units in Arithmetic

* * *

Houghton Mifflin, Inc.
110 Tremont Street
Boston, Massachusetts 02107

Reading Skills Laboratory

* * *

Institute for Development of Educational Activities, Inc.
Box 446
Melbourne, Florida 32901

I/D/E/A

* * *

Instructional Objectives Exchange
Box 24095
Los Angeles, California 90024

* * *

Learning Systems, Inc.
3100 Meridian Street
Room E-05
Indianapolis, Indiana 46206

* * *

Macmillan Company
Riverside, New Jersey 08075

High School Georgraphy Project

* * *

McGraw-Hill Company
Webster Division
Manchester Road
Manchester, Missouri 63011

Sullivan Program
Elementary Science Study

* * *

National Computer Systems
4401 West 76th Street
Minneapolis, Minnesota 55435

Wisconsin Design for Reading
Skill Development

* * *

Nova Dissemination Department
3600 S. W. College Avenue
Ft. Lauderdale, Florida

Learning Activity Packages

* * *

Open Court Publishing Company
LaSalle, Illinois 61301

Reading Program

* * *

Wisconsin Research & Development
Center
1025 West Johnson Street
Madison, Wisconsin 53700

IGE Materials

* * *

Research for Better Schools
1700 Market Street
Philadelphia, Pennsylvania 19103

IPI

* * *

Scholastic Magazines & Book
Service
900 Sylvan Avenue
Englewood Cliff, New Jersey

Reading Program
Self-Teaching Arithmetic

* * *

Science Research Associates
259 East Erie Street
Chicago, Illinois 60611

Reading Program
Mathematics Involvement Program

* * *

Scott-Foresman
1900 East Lake Street
Glenview, Illinois 60025

Reading Program

* * *

Silver Burdett
Park Avenue and Columbia Rd.
Morristown, New Jersey 07960

Intermediate Science
Curriculum

* * *

Teachers Unipac Exchange
1653 Forest Hills Drive
Salt Lake City, Utah 84106

Unipacs

* * *

Westinghouse Learning Corporation
2680 Hanover Street
Palo Alto, California 94304

PLAN

* * *

Xerox Corporation
600 Madison Avenue
New York, New York 10022

Science, A-Process-Approach

* * *

APPENDIX F
FLOOR PLAN