DOCUMENT RESUME

ED 106 651   CE 003 831

TITLE   Individualized Instruction in Occupational Education
                 (The Sanford Project).
INSTITUTION   Sanford - Lee County Schools, N.C.
SPONS AGENCY   North Carolina State Dept. of Public Instruction,
                 Raleigh. Occupational Research Unit.
PUB DATE   Jun 74
NOTE   124p.; Appendix G may reproduce poorly due to
                 legibility of original document

EDRS PRICE   MF-$0.76   HC-$5.70 PLUS POSTAGE
DESCRIPTORS   Automation; Carpenters; Distributive Education;
                 Drafting; *Individualized Instruction;
                 *Individualized Programs; Instructional Materials;
                 Instructional Programs; Masonry; Metal Working
                 Occupations; Program Administration; Program Design;
                 *Program Development; Program Evaluation; *Trade and
                 Industrial Education; Typewriting; *Vocational
                 Education

ABSTRACT
                 One-third of the report explains the nature of the
project, its development, administration, and the details of the
individualized instruction system. The project goal of developing an
individualized cluster curriculum in occupational education is
described. The five phases of planning, development, pilot testing,
revision, and dissemination which lasted from October 1971 to June
1974 are outlined. The development of the individualized
instructional system consisting of minicourses, automated
instruction, learning activity packages, task packages, and a
centralized learning resources center for each of the six
instructional programs (typing, distributive education, masonry,
carpentry, metals, and drafting) is described. Conclusions and
recommendations concerning both the conduct of the project and the
instructional system itself are presented. The remaining two-thirds
of the report is composed of appendixes which provide sample
minicourse descriptions, task packages for each of the six
instructional programs, a sample page from the competency survey
form, sample competency statements, a sample unit task package, a
unit test, an instructor's performance checklist, a student progress
chart, a vocational skill list, a student survey form, and a staff
development plan. Each task package includes rationale, objectives,
learning activities, and learning practice. (JR)

FOREWORD

This report is intended to serve as a descriptive summary of an occupational education research project conducted at Sanford Central High School during the years 1971 through 1974. The research project was descriptively titled "The Development and Implementation of an Individually Scheduled, Cluster Curriculum in Occupational Education" but, in common usage, quickly became known as "The Sanford Project".

The report itself is divided into two basic categories. One category speaks to administration of the project - funding, sub-contracts, personnel, overall design, etc., while the other category concerns itself with the instructional system and curriculum materials developed during the project. Two major audiences are intended to be served. Administrators, planners, and researchers should concentrate primarily on the administrative aspects while teachers and curriculum developers will want to review primarily the comments on the instructional system.

By necessity, this report does not contain all the curriculum materials developed during the project. For instance, a complete single set of the student task packages consumes more than 9,000 printed pages. However, examples are included in the appendix of this report and complete copies are available through the ERIC system, wit' a limited number of hard copies available through the Occupational Research Unit of the North Carolina State Department of Public Education.

The primary equipment in the Resource Center consists of twenty Coxco sound/slide machines with individual headsets.

The Resource Center for typing is located between the two typing classrooms and is used by each instructor as indicated in Figure 4. This Resource Center is used by students who fall behind or those who want to do extra work during their full class period. Some of the materials and equipment are also stored in the Center.

Evaluation

In a survey of the Sanford administration and faculty who are involved with the individualized instruction program during the Pilot Test Phase it was found that 60 students were enrolled in carpentry; 69 in masonry; 118 in drafting; and 81 in metals for a total enrollment of 328.

Of these students 85% are expected to reach job level competency by use of the individualized package system. Ten percent of these students experienced severe reading difficulty in reading the task package and 5 1/2% of the students had to be referred to the remedial reading program. The students attempted a package an average of 1.7 times before mastering it and moving on to the next package.

Five of the respondents felt that students were progressing faster and learning more under the individualized package system than under the traditional system, while one felt that progress and learning was about the same. They felt that 82% of the students were having their needs met by the individualized package system. By the middle of February, the most number of packages completed was 75; the least, two; and the average, 28. At the same time, 25% of the students had taken advantage of the feature of the individualized package system that allows the student to test through on prior knowledge. The most number of packages completed by testing through was 20; the average, ten.

There were 18 sound-slide machines available to the students. The respondents reported that this was an adequate number and that the machines were in use about 50% of the time. They felt that the sound slide package added materially to the student's understanding of the package.

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FOREWORD

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By necessity, this report does not contain all the curriculum materials developed during the project. For instance, a complete single set of the student task packages consumes more than 9,000 printed pages. However, examples are included in the appendix of this report and complete copies are available through the ERIC system, with a limited number of hard copies available through the Occupational Research Unit of the North Carolina State Department of Public Education.

ACKNOWLEDGEMENTS

SUMMARY

The overall goal of this developmental project in Occupational Education was to design and structure the high school curriculum so that students have flexibility in scheduling and sequencing the instructional modules necessary to prepare them for their career objective. Individualized instruction is operationally defined as any system of instruction that permits (1) entry at any point in the learning sequence commensurate with the student's level of achievement, regardless of time (2) individually-paced progression through a sequence of learning experiences, and (3) exit at any point commensurate with the student's career objective, regardless of time.

Four mechanisms for individualizing instruction were employed in the project; namely, mini-courses, automated instruction, learning activity packages, and task packages. Emphasis throughout the project was on the development of the task packages as the primary mechanism to individualize instruction. The instructional system also utilized a centralized Learning Resource Center.

In order to maintain flexibility and to permit tailoring an educational plan for an individual student, the courses have either a completely individualized instructional system or a composite number of mini-courses. The ideal system would, of course, include individualized instruction in all areas. However, mini-courses provide flexibility in that the student may move to a mini-course under another course cluster (aside from his major interest), which is taught by another instructor, to receive necessary auxiliary training within a nine-week time frame.

Six instructional programs are now utilizing individualized instructional systems. One program was purchased from Automated Instruction for Typing; another instructional system, in Distributive Education, was developed in a contract with a State University; and four systems were developed in a contract with the RCA Corporation in the areas of Masonry, Carpentry, Metals, and Drafting.

The commercially produced instructional system in the area of Typing includes an 8mm movie with sound track for teaching the keyboard and instructional cassette tapes for letter response and word response for the development of speed and accuracy. The typing instructor worked during the summer developing instructional packages to incorporate production typing into this system.

A contract with UNC-G involved North Carolina in a ten-state consortium for the development of Learning Activity Packages in the area of Distributive Education.

An Ad Hoc group of twelve DE teachers under the direction of the teacher training staff at UNC-G worked during the summer developing about 100 packages. Each of the other states produced an equal amount. No multi-media were developed with the Distributive Education materials.

A contract with the RCA Educational Systems Division helped develop individualized instructional programs in four areas. These include Masonry, Carpentry, Metals, and Drafting. In this agreement RCA supplied the curriculum specialists who wrote the materials, and the project provided the personnel for typing, printing, collating, and stapling the instructional packages. Instructors were used to develop multi-media in the form of sound-slide programs to go with the instructional packages that were written.

An individualized instructional sequence was developed in each of the four areas on the competencies necessary to enter the specific trade arrived at by the state curriculum guide, instructors, state staff, RCA Curriculum Specialists, and the local craft committee. After the competencies had been determined, behavioral objectives were written for each competency. Then an instructional package was developed which offered the student a guide and the necessary ingredients to achieve the objectives for each competency.

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CHAPTER I.   INTRODUCTION AND OVERVIEW

Introduction

During the period of October, 1971 through June, 1974, Sanford
Central High School, in cooperation with the Occupational Research
Unit of the State Department of Public Education, has engaged in an
extensive research and development project whose overall goal is to
develop and implement an individualized, cluster curriculum in occupa-
tional education.

The overall objectives of the research project were:

1. To identify and describe occupational clusters for general and
   specific instruction based on the projected employment opportuni-
   ties within the school's county and multi-county planning area.
2. To design and implement a curriculum that provides students flexi-
   bility in scheduling and sequencing the instructional modules
   necessary for their career plans.
3. To design, staff, and implement a Learning Resource Center as an
   integral part of each occupational cluster.
4. To develop and disseminate programmed materials, audio-visual
   learning aids, and other instructional resources that are needed
   either in the occupational clusters or in the Learning Resource
   Center.

Through a system of individualized learning programs, courses, and
mini-courses, occupational education is available to all students with-
out such traditional barriers as length of time required for completion
and grade-level prerequisites for enrollment. Occupational education is
presented in two dimensions: (1) exploratory, to introduce the student
to an occupational area in which he may choose to specialize, and (2)
specialized, to allow the student to develop fully the skills necessary
for entrance into his chosen field in the world of work. The courses in
occupational education are characterized by such features as flexible
scheduling, individualized learning, instructional units, independent
study, and the facilities of a Learning Resource Center, which provides

audio-visual and other instructional areas. These allow the student
to proceed at his own pace, and, on the basis of suitable testing
materials and procedures, to enter, exit, or by-pass a portion of the
course as his knowledge and performance levels indicate. The occupa-
tional courses, themselves, are oriented to the local employment
opportunities in the Sanford, Lee County, and multi-county areas.

Definitions of Curriculum

Definitions of curriculum, for the purposes of this report,
should be helpful in establishing a baseline of communication. Robert
M. Gagné (1969) reviewed recent developments, methods, approaches and
definitions in curriculum. While he found merit in the descriptions
offered by various contributors to the AERA monograph series on
curriculum evaluation, he preferred the more specific definitions in-
cluded in his 1965 book. He stated that:

> A curriculum is a sequence of content units arranged in
> such a way that the learning of each unit may be accom-
> plished as a single act, provided the capabilities de-
> scribed by specified prior units (in the sequence) have
> already been mastered by the learner.

Gagné further clarified his definition by stating that:

> A curriculum is specified when (1) the terminal objec-
> tives are stated; (2) the sequence of prerequisite
> capabilities is described; and (3) the initial capa-
> bilities assumed to be possessed by the student are
> identified.

Relevant, also, to the project design and reflected in recent
reports on curriculum development (Ullery 1969) is the emphasis
Gagné has placed on well engineered and well managed development.
Gagné (1969) states that:

Curriculum design can be, and probably should be,
based firmly upon the kind of empirical evidence
that can come from successive tryouts and systema-
tic testing.

The importance of this statement and the impact such an approach
has had on systems type curriculum development and evaluation must be
understood. It is the <u>keystone</u> not only to the developmental process
but the evaluative process.

Hilda Taba (1962) defines curriculum development in a fairly
broad way by including:

(1) diagnosing educational needs; (2) formulating objectives;
(3) selection of content; (4) organization of content; (5)
selection of learning experiences; (6) organization of learning
experiences; and (7) determining the ways and means of evalua-
ting effectiveness of what is taught.

Taba seems to be in general agreement with Gagné.

F. Coit Butler (1967) referred to Gagné frequently in a manual
prepared for Job Corps instructional systems development. Butler
defined training systems as:

. . .a series of interrelated, interacting, precisely
controlled learning experiences that are designed to
achieve specific training objectives; but organized
into a unified, dynamic whole which is responsive and
adaptive to the individual trainee while fulfilling
specific job-relevant training criteria.

Butler went on to describe the process of curriculum development as a
vigorous measurement of results in comparison to the specific per-
formance objectives.

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Site Description

Lee County is located in the center of North Carolina on the "fall line" which divides Piedmont and Coastal Plain. It is one of the smallest counties in the State in land area with 255 square miles. Lee county population in 1970 was 30,467.

Sanford is the only major town, located in the approximate center of the county. Sanford has many varied industries giving it unusual stability. The population of Sanford in 1970 was 11,716.

Sanford Central High School is a comprehensive high school with an enrollment of 1800 in grades 9-12. It enjoys a large campus style facility located on a 52 acre site outside the business district of the town. The administrative and teaching staff number 80. The school is departmentalized with nine departments.

These departments include Fine Arts (3), Language (16), ROTC (3), Mathematics (8), Science (8), Social Studies (9), Guidance (2), Physical & Health Education (3) and Occupational Education (26). (The number in paraenthize following the department name indicates personnel assigned.)

The curriculum is comprehensive in an effort to meet the needs of students. Curriculum planning decisions are based largely on where the students go after graduation. The follow-up report for school year 1972-73 is as follows:

College & Universities 29%

Jr. & Community College & Technical School 17%

Enter Labor Market 40%

Military Service 6%

Others 4%

The occupational courses offered at Sanford Central High School are listed in Figure 1.

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Grade 9	Grade 10	Grade 11	Grade 12
Introduction to Business	Typing I Shorthand I Bookkeeping I Business Math	Typing I Typing II Shorthand I Bookkeeping I Clerical Off. Practice Advertising & Salesmanship Distributive Education	Typing II Shorthand II Clerical Office Practice Clerical Office Occupations Distributive Education
Introduction to Home Economics	Home Ec. II	Foods & Employment Commercial Sewing	Foods & Employment Commercial Sewing Industrial Co-op Training Distributive Education
		Health Occupations I	Health Occupations I Health Occupations II
Introduction to Agriculture	Agriculture II	Agriculture Co-op Training	Agriculture Co-op Training
Introduction to Industrial Education	Introduction to Industrial Ed. Drafting I Machine Shop I Carpentry I Bricklaying I	Surveying I Drafting I Mechanical Drafting II Architectural Drafting Machine Shop I Machine Shop II Carpentry I Carpentry II Bricklaying I Bricklaying II	Surveying I Industrial Co-op Training Mechanical Drafting II Architectural Drafting Machine Shop II Carpentry II Bricklaying II
Occupational DARE Communication Lab Math Lab	Occupational DARE Communication Lab Math Lab	Occupational DARE Program Cooperative Occupation Training	Occupational DARE Program Cooperative Occupation Training

Figure 1. Course offerings in occupational education at Sanford Central High School

The occupational courses enjoy a very positive image among the student body. Out of a total school enrollment of 1800 there are 1000 students enrolled in occupational courses.

This high enrollment can be attributed to the fact that occupational courses being offered are meeting a felt need of the students and the community. The occupational faculty continually strive for excellence in their respective courses.

Funding Arrangement

The three-year project was supported through a combination of Federal, State, and local monies. The Federal share of project support amounted to $225,295 under Part C - Section 131(b) of the 1968 Vocational Education Amendments. These Federal monies were matched with $22,973 of State funds by the North Carolina State Board of Education. The Sanford-Lee County Board of Education provided additional support amounting to approximately $15,000 in the form of support personnel, facilities, and equipment. Total expenditures for the duration of the three-year project totaled approximately $263,268. Item expenditures for the project during the three-year period are summarized in Table 1.

Table 1. Summary of project expenditures by item.

Item	Expenditure
Personnel (including benefits)	$116,792
Materials and Supplies	23,516
Equipment	29,473
Contracted Curriculum Development	71,705
Travel	3,738
Consultants	763
Communications	1,402
Other (including facilities)	15,879
Total Expenditure	$263,268

CHAPTER II. ADMINISTRATIVE CONDUCT

Personnel

The project directly supported three full-time staff positions. Numerous other persons were involved in sub-contracts for curriculum development and in activities such as teacher in-service programs and teacher development of curriculum and supporting multi-media.

A full-time project director gave overall direction to the project. A full-time secretary was assigned to the project director and the third full-time staff person was the director of the Learning Resource Center who also served as coordinator of development of the supporting multi-media materials. Total personnel costs for the project, including employee benefits, was $116,792.

Project Design

The overall project design encompassed five distinct groups of related activities, or phases. These five phases were an orderly progression of planning, development, pilot testing, revision and dissemination. Figure 2 depicts this sequence of events.

The Planning Phase accurred between the startup date of the project and June 1972. During this Phase the project director formed an advisory group to assist in giving overall direction to the project, visited many innovative and exemplary programs in both North Carolina and the Nation, and did an extensive search of the literature in an effort to chart the general course for the project. The Planning Phase continued throughout the preliminary stages of the Development Phase.

The Development Phase began during February, 1972 and continued through September, 1972, with the major developmental work occuring during the summer months of June, July, and August. During this Phase two sub-contracts were let for the development of curriculum materials and extensive development of teacher-made materials was begun. The Learning Resource Center was designed and equipped during this Phase and a limited tryout of material was conducted during the last two months of the school year.
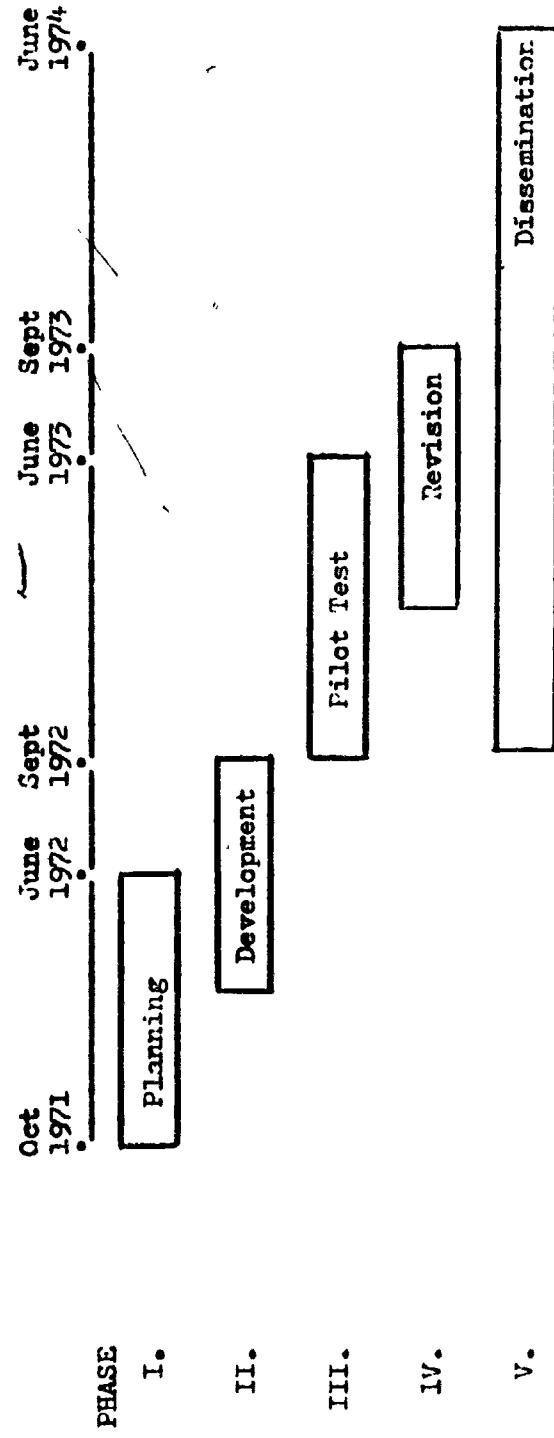
Figure 2. Overall design of the project

The Pilot Test Phase began in September of 1972 and continued throughout the 1972-73 school year. During this Phase the curriculum materials and the Learning Resource Center were utilized fully. Limited revision occurred during this Phase.

The bulk of the Revision Phase occurred during the summer months of 1973. All of the curriculum materials, including the supporting multimedia, were revised, and in some cases, rewritten during this Phase.

The Dissemination Phase occurred primarily between June, 1973 and the ending of the project in June, 1974. Dissemination activities are described more thoroughly in the following section.

Dissemination Activities

Dissemination of products of the research project as well as periodic reports of progress of the project has been a joint undertaking of project personnel and the Occupational Research Unit. The project has employed various media in its dissemination activities to a multitude of audiences.

A. Visitors

Educators from both within and outside North Carolina have been encouraged to visit the project site for first-hand observation and a description of the project. During the project period more than 300 instructors, administrators, teacher educators, and State Department personnel have visited the project site.

B. Correspondence

Numerous individuals and agencies have corresponded with the project director. In addition to individuals and agencies in North Carolina information about the project has been mailed to agencies in twelve states outside North Carolina.

C. Presentations

A slide-tape presentation of the project was prepared and has been used on numerous occasions. In addition,numerous presentations and workshops have been conducted by project and State Department personnel. Presentations have been given at the Southwide Research Coordinating Council, the Kentucky Vocational

Teacher Annual Conference, the West Virginia Vocational
Teacher Annual Conference, the Pennsylvania State University,
East Carolina University, the North Carolina Trade and Indus-
trial Teacher Annual Conference, and the annual meeting of the
North Carolina Association of Researchers in Education, as well
as to many other groups and organizations.

In addition, the project has conducted, sponsored, or partici-
pated in numerous workshops and institutes which served to
disseminate results of the project. Included in the list are:

(1) Workshop on Individualized Instruction - Rutgers University.

(2) Summer Institute - East Carolina University

(3) Four three-week workshops - Sanford Central High School

(4) Career Education Workshops - North Carolina State Department
     of Public Instruction.

D. Mass Media

The research project has also utilized the mass media for local
and Statewide dissemination. The local radio station, WWGP, has
sponsored three programs on the research project and the local
newspaper, The Sanford Herald, has published six articles on the
project. In addition the project was publicized on a thirty-
minute program on Statewide educational television.

E. Demonstration Sites

The underlying philosophy of the dissemination activities of the
project has been that not only would other educators be aware of
project activities but that they would actually implement the
positive aspect of the project. To this end, the research project
conducted, in cooperation with the North Carolina State Department
of Public Instruction, four three-week workshops involving 120
teachers and principals from across North Carolina, during the
summer of 1973. This group of 120 was comprised of teams of
teachers and administrators from 16 schools who had agreed to
serve as demonstration sites during the following school year.

During the fall of 1973 project personnel provided consulta-
tive assistance to the 16 schools implementing the concept of
individualized instruction. In addition, curriculum materials
developed in the research project were provided to the 16
demonstration sites. In the early spring of 1974 each of the
demonstration sites invited teams of teachers from three addi-
tional schools to spend one-week internship at the demonstration
site. In all, by the end of the 1973-74 school year, 64 (16
demonstration schools plus 48 interning schools) schools had
actively participated in the process and had implemented some
of the concepts of individualized instruction as developed in
the research project. The 64 schools will continue to serve as
demonstration sites during the 1974-75 school year.

Staff Development

Sanford Central High School was a traditional school. In order to
aquaint the faculty and staff with the new concept of individualized
instruction, massive in-service efforts were undertaken. A staff
development plan was devised and implemented during the summer and fall
of 1972. A complete description of the staff development plan is in-
cluded in Appendix P.

CHAPTER III. THE INDIVIDUALIZED INSTRUCTION SYSTEM

Instructional Program

In order to maintain flexibility and to permit customizing or tailoring a training plan for an individual student, all occupational courses have either a completely individualized instructional system or a composite number of mini-courses. The ideal system would, of course, include individualized instruction in all areas. However, mini-courses provide flexibility in that the student may move to a mini-course under another instructor, to receive necessary auxiliary training within a nine-week time frame. As an example, suppose a student in the Horticulture Cluster under the program area of Agriculture-Business and Natural Resources is studying to become a nursery worker. If his eventual goal is to operate his own nursery, he will need training in bookkeeping. Therefore, he may move to a mini-course in bookkeeping within the Clerical Cluster under the program area of Business and Office.

Each instructor serves as a counselor to the students and approves all transfers to mini-courses, taught by other instructors, which are considered essential to the students' occupational goals. Scheduled conferences are held with the students, and each student must express a serious interest before moving to another instructor for a mini-course.

Within this structural framework, the student is allowed either to generalize his occupational training or to specialize to the degree desired under the guidance of the instructors. (Sample mini-course descriptions are included in Appendix A.)

Individualized Systems

Six instructional programs are now made up of individualized instructional systems. One program was purchased from Automated Instructions for typing; one instructional system in Distributive Education was developed in a contract with the University of North Carolina at Greensboro; and four systems were developed in a contract with RCA* in the clusters of Masonry, Carpentry, Metals and Drafting.

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*RCA Education Systems, Division of Educational Development and Planning, One Cherry Hill Mall, Cherry Hill, New Jersey, 08101

An instructional system in the area of Typing was purchased from Automated Instruction. This system includes an 8mm movie with sound track for teaching the keyboard, and instructional cassette tapes for letter response and work response for the development of speed and accuracy. Minor modifications and development of instructional packages incorportated production typing into this system.

The project also funded a contract with UNC-G to involve North Carolina in a ten-state consortium for the development of instructional packages in the area of Distributive Education. A staff of about twelve people at UNC-G worked during the summer of 1972 developing about 100 packages, while each of the other states produced an equal amount.

The project also contracted with the RCA, Educational Systems Division, to help develop individualized instructional programs in four clusters. These include the areas of Masonry, Carpentry, Metals and Drafting. In this agreement RCA supplied the curriculum specialists who wrote the materials, and the project typed the materials and supplied the personnel for printing, collating, and stapling the instructional packages that were written. (Examples of task packages are included in Appendices B, C, D, E, F, and G.) The project developed multi-media in the form of sound-slide programs to go with the instructional packages that were written.

A completely individualized instructional program was developed in each of the four clusters based on the competencies necessary to enter the specific trade. These competencies were arrived at by consulting the State curriculum guide, instructors, State Staff, RCA Curriculum Specialists, and local craft committees. A sample page from the competency survey form is included in Appendix H. After the competencies had been determined and behavioralized an instructional package was developed to offer the student a guide and the necessary ingredients to achieve the objectives for each competency. (Sample competency statements are included in Appendix I.)

Each cluster area consists of a number of units. There is an instructional package for each unit which includes a Rationale, General Objective, Specific Objectives (which come from the individual task packages, or competencies packages), and the Learning Activity, which includes the list of task packages within that unit. (An example of a Unit task package is included in Appendix J.) Each task package contains a Rationale, Specific Behavioral Objective, and Learning Activity (which in most instances includes a sound-slide program developed so that a student can see and hear the instructions having to do with achieving the Objectives stated). The majority of the AV materials was presented in the 35 millimeter slide medium correlated with an audio tape cassette cued to slide advance by inaudible sounds. The Coxco sound-slide machine was used for all programs developed. The Learning Activity also includes a reading reference - specifically, reference to three or four different texts in the entire curriculum which in most instances are found on the state-adopted book list. To this point the student does all of the work in the Resource Learning Center, but at this time goes into the Learning Practice phase of the task package, which requires him to return to his shop or lab and follow the step-by-step directions in which he practices the items to assist him in achieving his objectives. Upon completion of the Learning Practice, he is referred to his instructor for an evaluation of his work and is assigned his next task package if his work has been satisfactorily completed in accordance with the standards as set up in the Objectives. All of the instructional materials are designed around behavorial objectives with terminal points at each level of competence. In effect, students are allowed to begin work precisely at the level where they need instruction and they cannot proceed to higher units until they demonstrate mastery of the unit undertaken. With the assignment of a new task package, the student returns to the Resource Learning Center and starts the cycle over again. Upon the completion of all task packages within a unit, the student is given a prepared unit test. (See Appendix K.) The test consists of theory questions including multiple choice, matching, and completion.

When appropriate, a performance test is administered in the shop or lab.
Upon completion of the performance test, the student is evaluated in
accordance with the instructor's checklist, (see Appendix L) which the
student has in hand at the outset.

(1) Self Paced Learning

Another facet of the project is that it is allowing students to
progress at their own speed. Fast learners are, in some cases, finish-
ing the course in half the time it takes for slower students. Since it
is an educational fact that all learners have varying speeds, the
Sanford Research Project adequately compensates for each one's parti-
cular pacing. With the traditional time frame thrown out, students no
longer have only a specific number of weeks to master a specific number
of skills in order to receive a grade at the end of quarterly grading
periods. The students are evaluated strictly upon obtaining or ac-
quiring identified skills and no one is ever penalized for taking addi-
tional time to successfully master course requirements. It must be noted
however, that some academic and emotional immaturity problems appeared
among some of our students which resulted in the Occupational Department
taking steps to insure that learning paces chosen are commensurate with
ability. Figure 3 schematically depicts student progression through the
learning sequence.

(2) Positive Reinforcement

In order to reinforce to a student the is allowed to progress
academically at his own pace, the system is so structured that a student
never fails a test of record. By design, the written and performance
tests are given not only as measurement devices but also as counseling
instruments. If a student does not successfully measure up to a re-
quired skills level on the first attempt, then that unsatisfactory score
is recorded temporarily, and the student is then guided to correct his
errors. In this manner, if a student's performance is not up to an
acceptable level, sufficient repetition for a weakness is provided
allowing each student the opportunity to eventually succeed.

Enter

Introduction &
Orientation

Pre-Assessment

Advisor
Conference
and Evaluation

Select
Learning
Activities

(Recycle
as Needed)

Post-Assessment

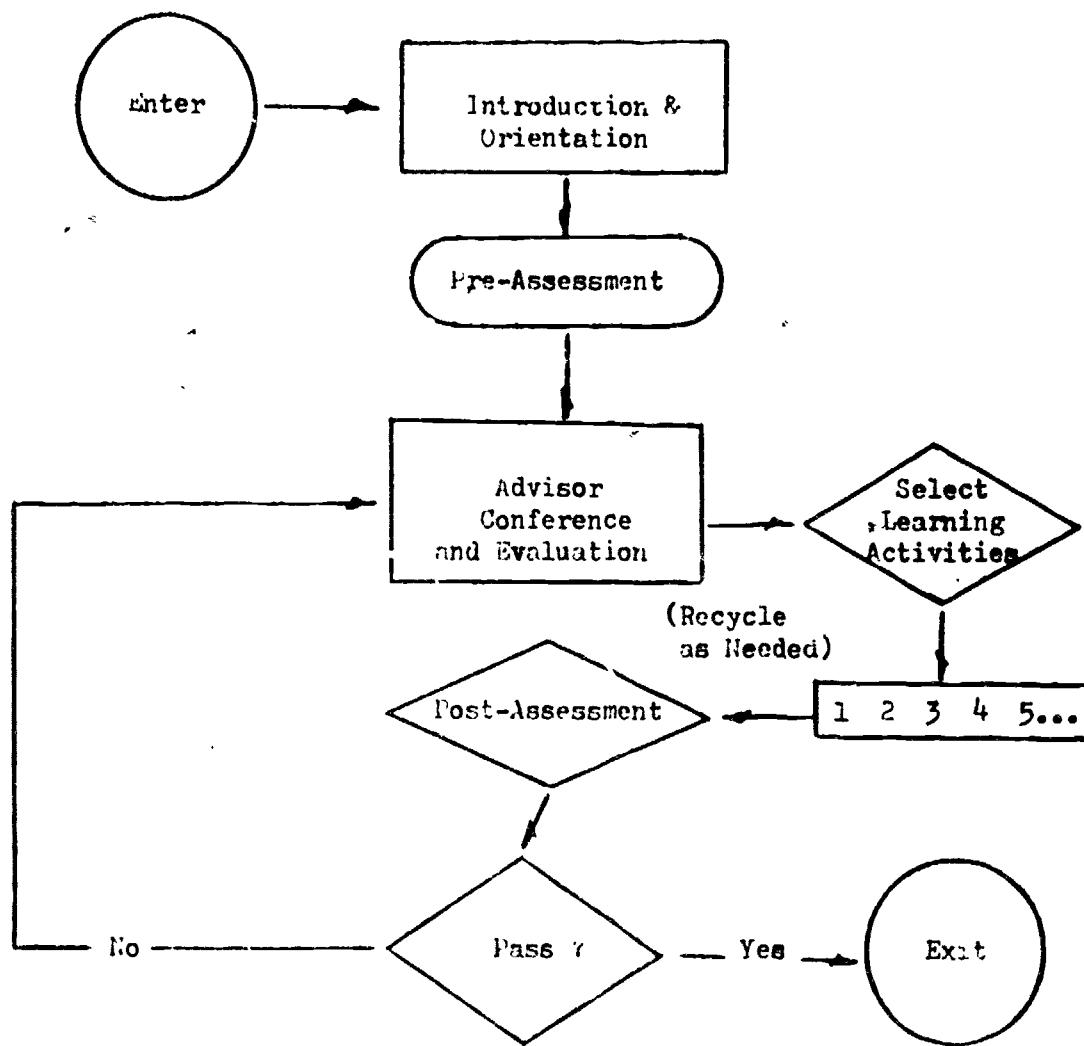1 2 3 4 5...

No

Pass ?

Yes

Exit

Figure 3. Student progression through the learning sequence.

(3) Individual Attention and Instruction

Each individual enrolled in these programs has the guarantee at the onset of receiving individual and personal help and attention at any time during this course. Each checkpoint or test is evaluated immediately upon completion in a one-to-one conference, or at least in small groups with the instructor.

In essence then, the Sanford project is designed to allow the students to become the master of their own education plan. If any problem should prevent them from attending class for a day, a week, or however long, the next lesson or the same lesson is always available for that student when he returns.

Each instructor must maintain a tracking chart for each student to record the individual progress. (The student progress chart used is included in Appendix M.)

The vocational skill list (Appendix N.) is the record of the competencies each student possesses upon completion of a program as verified by his instructor. This is the official record indicating what the student can do. Two copies are made for each student, one is filed in the student's permanent record and one is given to the student in the form of a folding pocket card to have available to show a prospective employer.

Physical Facilities

In this comprehensive, campus style, high school the occupational area is located on the east side of the school grounds. The drafting laboratory, metals shop, carpentry shop, and the masonry shop are located near the Learning Resource Center as indicated in Figure 4. The students travel to the Learning Resource Center for their initial individualized instruction and return to the shop or laboratory to practice the competency. The Learning Resource Center is the size of two classrooms. There are storage cabinets for equipment and extensive shelving for instructional material storage. The tables and individual study carrels in the Resource Center will seat forty students. One corner is partioned to serve as an office while another corner is partioned to serve as a conference room as illustrated in Figure 5.
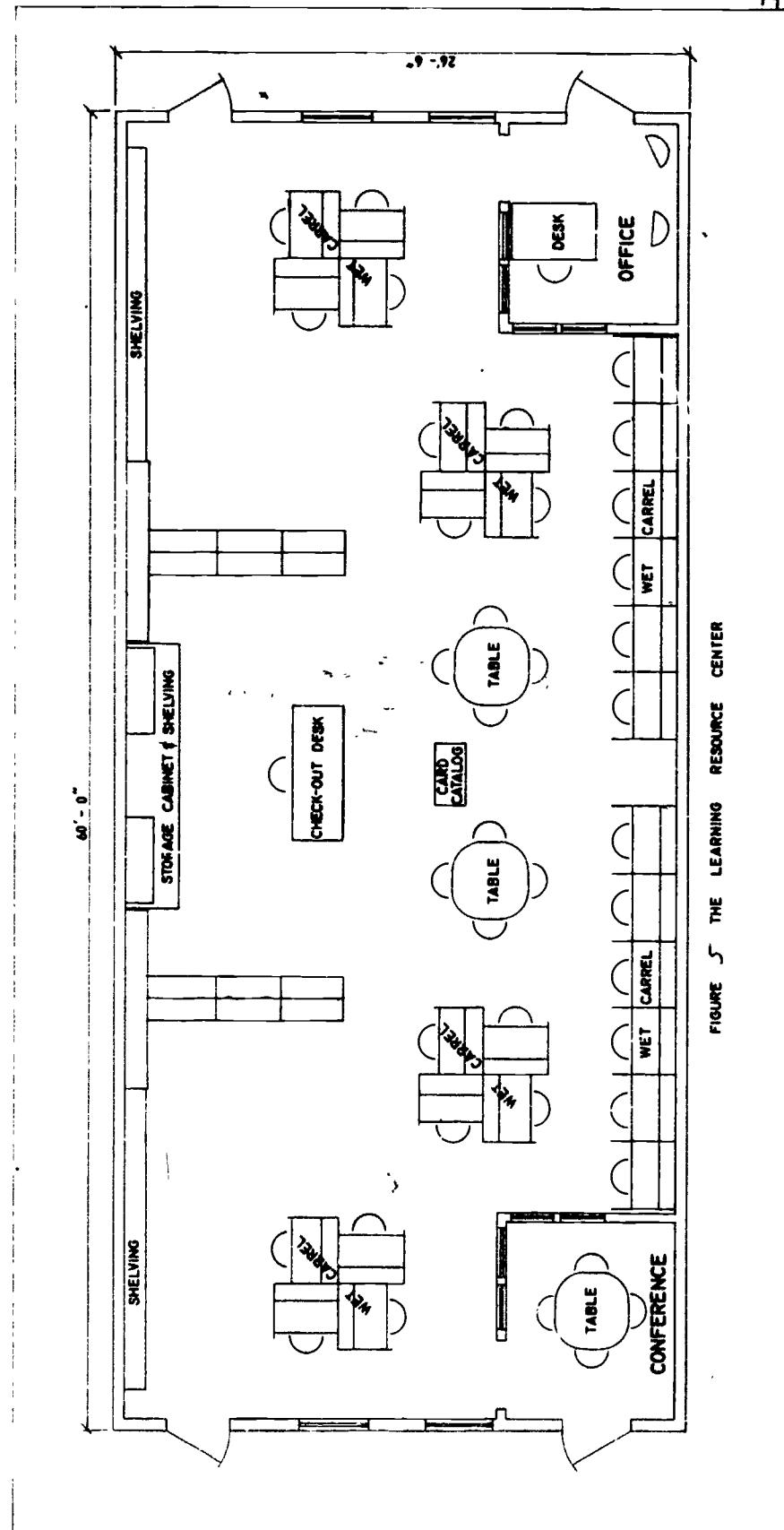
Figure 4., Curriculum Project Location
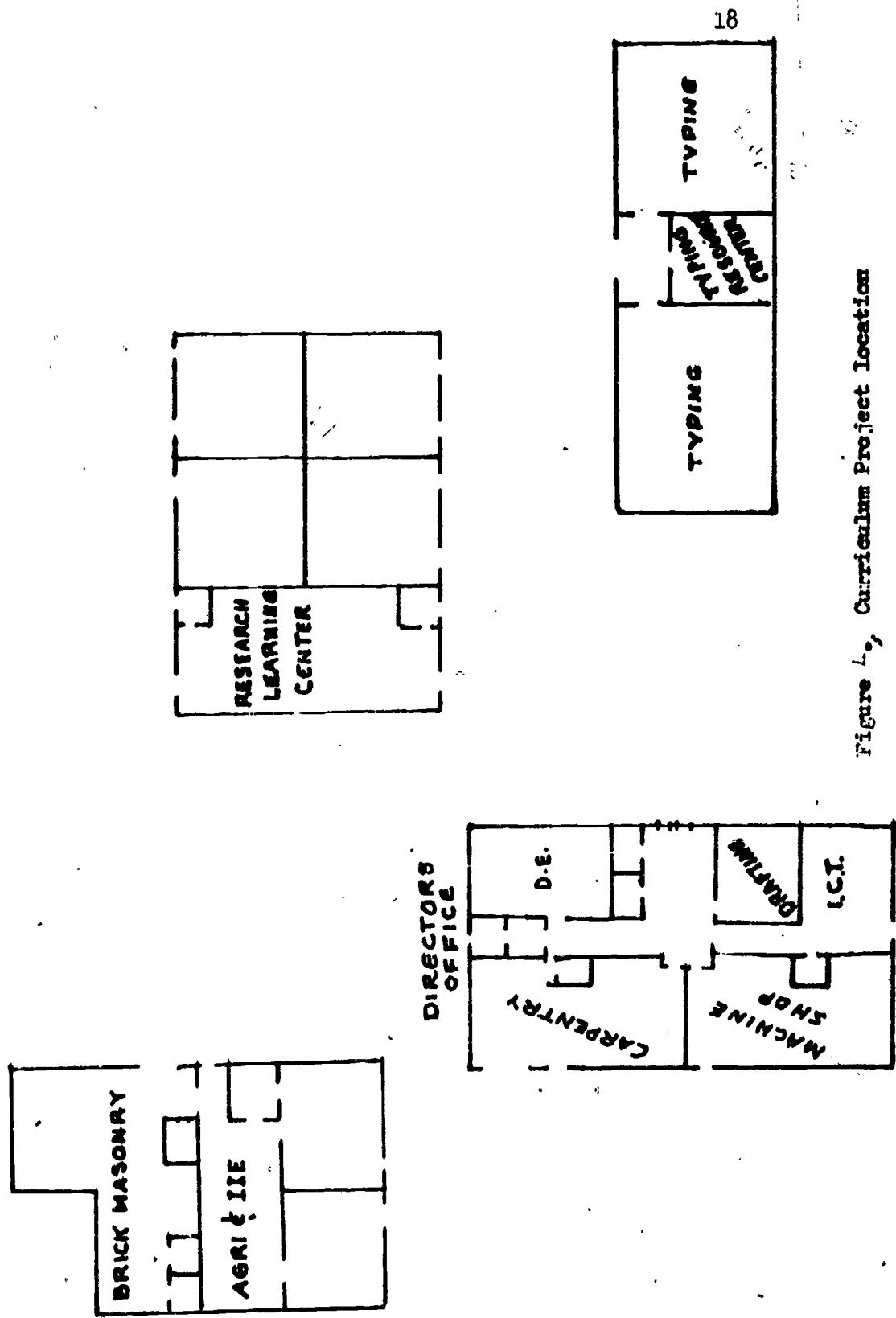
FIGURE 5 THE LEARNING RESOURCE CENTER

30

The primary equipment in the Resource Center consists of twenty Coxco sound/slide machines with individual headsets.

The Resource Center for typing is located between the two typing classrooms and is used by each instructor as indicated in Figure 4. This Resource Center is used by students who fall behind or those who want to do extra work during their full class period. Some of the materials and equipment are also stored in the Center.

Evaluation

In a survey of the Sanford administration and faculty who are involved with the individualized instruction program during the Pilot Test Phase it was found that 60 students were enrolled in carpentry; 69 in masonry; 118 in drafting; and 81 in metals for a total enrollment of 328.

Of these students 85% are expected to reach job level competency by use of the individualized package system. Ten percent of these students experienced severe reading difficulty in reading the task package and 5 1/2% of the students had to be referred to the remedial reading program. The students attempted a package an average of 1.7 times before mastering it and moving on to the next package.

Five of the respondents felt that students were progressing faster and learning more under the individualized package system than under the traditional system, while one felt that progress and learning was about the same. They felt that 82% of the students were having their needs met by the individualized package system. By the middle of February, the most number of packages completed was 75; the least, two; and the average, 28. At the same time, 25% of the students had taken advantage of the feature of the individualized package system that allows the student to test through on prior knowledge. The most number of packages completed by testing through was 20; the average, ten.

There were 18 sound-slide machines available to the students. The respondents reported that this was an adequate number and that the machines were in use about 50% of the time. They felt that the sound slide package added materially to the student's understanding of the package.

In a comparision of package students with those taught by the
traditional approach the respondents found that 71% of the students
were happier in the package program; 24%, about the same; and only
five percent, less happy. Discipline proved to be a problem in only
13% more cases with about 26% of the students remaining the same, and
61% causing less problems. Motivation through the package system
proved to be more in 67% of the students; 26% remained about the same;
and only seven percent showed less motivation through the package
system. Students who showed more energy and industry amounted to 41%;
those who remained about the same on these two items were 45%; and 14%
showed less energy and industry. Sixty-six percent of the students
were more cooperative; 26% were about the same; and eight percent dis-
played less cooperation. Rating the students on dependability the
respondents found that 45% were more dependable; 47% about the same;
and only eight percent, less dependable. Eighteen percent of the
students were more puntual; 74%, about the same; and eight percent,
less punctual.

The respondents reported that while large discipline problems
decreased in number, there was an increase in small problems. They
also found that a problem arose because the students wanted to omit
the textbook and reading part of the cycle. By omitting this portion
they were then unable to comprehend the practical part of the cycle.
One of the assets reported was that by not being required to spend as
much time with all the students, instructors were released to work
more with those who were having problems. The respondents were also
pleased with the rapid pace of learning in the average and above
average students.

Two student surveys were conducted by the project staff during
the Pilot Test Phase. One in October, 1972, and the other in March,
1973. In both instances, the same survey form was administered to the
students.

The survey form was composed of nine items in statement form utilizing a three point scale as the response mode. (See Appendix O.) The scale used was ALWAYS, SOMETIMES, and NEVER. Also included on the survey form were two open-ended questions. The eleven items on the survey form were:

1. I like having the responsibility for learning.
2. I like this new system of learning more than listening to an insturctor lecture.
3. I find it helpful to have the statement of the reasons for learning. (Rationale)
4. I find it helpful to have the statement of what I am expected to do. (Objective)
5. I am able to read and understand tne instructional package.
6. I learn more from the sound-slide programs than the reading references.
7. I like to be able to learn at my own speed.
8. Upon completion of a task package, I feel confident that I have achieved the Objective.
9. Considering all things about this new instructional system, I think it is a more effective method of learning.
10. What do you like most about this new approach?
11. What do you dislike most about this new approach?

Table 2 shows the responses for the nine items using the three point scale. The total number of responses for the October, 1972 survey was 2262, and total responses for the March, 1973, survey were 2506. This increase can be accounted for by the influx of students into the program and may also be partly accounted for by an increased desire of the students and staff to obtain a more complete survey of student feeling. It is not felt that this numerical difference has any significant effect on the results of the survey evaluation.

A breakdown of the ALWAYS responses is show in Table 3. In the second and fifth columns the total number of responses made for each item is shown.

Table 2. Summary of responses to the two student surveys.

	October, 1972				March, 1973		
Item	Always	Sometimes	Never		Always	Sometimes	Never
1	119	135	3		127	150	7
2	146	99	11		123	136	23
3	117	132	6		89	172	11
4	154	93	8		134	134	13
5	114	139	1		109	165	7
6	25	154	36		72	165	36
7	222	36	0		212	63	4
8	126	128	5		110	159	10
9	143	100	10		123	126	26
Total	1166	1016	80		1099	1270	137

Table 3. Comparison of the ALWAYS responses on the two student surveys.

	October, 1972				March, 1973			
Item	N	Always	Always %		N	Always	Always%	%Change
1	257	119	46.30		284	127	44.71	- 1.59
2	226	146	64.60		282	123	46.61	-17.99
3	117	117	45.88		272	89	32.72	-13.16
4	255	154	60.39		281	134	47.68	-12.71
5	254	114	44.88		281	109	38.79	- 6.09
6	215	25	11.66		273	72	26.36	14.70
7	258	222	86.04		279	212	75.98	-10.06
8	259	126	48.64		279	110	39.42	- 9.22
9	253	143	56.52		275	123	44.72	-11.80
Mean	251.33	129.55	51.54		278.44	122.11	43.85	- 7.69

The range for this total in the October survey is 215 to 259 with a difference of 44. The March survey shows a range of 272 to 284 with a difference of 12. The lower difference in the latter survey may be attributed to a closer scrutiny of the survey by the staff and the desire of the students for increased input. It might also be noted that the item in the October survey with the lowest number of responses, Item 6, also had a low number of responses in the March survey. This low rate of responses may mean that the students feel uncomfortable with this item and, therefore, do not respond to it. It should also be noted that this is the only item that shows a positive increase in the March survey over the earlier October survey. It should be explained at this point that the use of positive to show an increase in the March survey over the October survey and the use of negative for an opposite increase is an arbitrary device used to show trends in the data, and these uses have no other connotation. The positive-negative device will be used for the discussion of all the data presented in this paper except where noted otherwise.

The major trend indicated in Table 3 seems to be a shift from a higher rate of the ALWAYS choice in the October survey to a somewhat lesser rate in the March survey. Using the average percentages for both surveys, there has been a shift of -7.69% between the surveys. With caution, because of the type and treatment (percentages) of the data, the conclusion may be drawn that there is less enthusiasm for the students to select the ALWAYS choice after six months in the project. It may also be concluded, with the above caution in mind, that there may have been a "novelty effect" working when the October survey was made. Note the high negative shift in items 2, 3, 4, 7, and 9.

The comparison of the SOMETIMES responses, Table 4, may be thought of as the neutral point in the surveys. It could normally be expected that this category would have the greatest number of responses in it. This, however, was not the case in the October survey but did become true in the March survey.

Table 4. Comparison of the SOMETIMES responses on the two student surveys.

October, 1972   March, 1973

Item	N	Sometimes	Sometimes%	N	Sometimes	Sometimes%	%Change
1	257	135	52.52	284	150	52.81	0.29
2	256	99	38.67	282	136	48.22	9.55
3	255	132	51.76	272	172	63.23	11.47
4	255	93	36.47	281	134	47.68	11.21
5	254	139	54.72	281	165	58.71	3.99
6	215	154	71.62	273	165	60.43	-11.19
7	258	36	13.95	279	63	22.58	8.63
8	259	128	49.42	279	159	56.98	7.56
9	253	100	39.52	275	126	45.81	6.29
Mean	251.33	112.88	44.91	278.44	141.11	50.67	5.76

Table 5. Comparison of the NEVER responses on the two student surveys.

October, 1972   March, 1973

Item	N	Never	Never%	N	Never	Never%	%Change
1	257	3	.0116	284	7	.0246	.0130
2	256	11	.0429	282	23	.0815	.0386
3	255	6	.0235	272	11	.0404	.0169
4	255	8	.0313	281	13	.0462	.0329
5	254	1	.0039	281	7	.0249	.0210
6	215	36	.1674	273	36	.1318	-.0356
7	258	0	.0000	279	4	.0143	.0143
8	259	5	.0193	279	10	.0358	.0165
9	253	10	.0395	275	26	.0945	.0550
Mean	251.33	8.88	.0353	278.44	15.22	.0546	.0193

The overall trend as shown by Table 4 is one of a shift to the positive or an increase of the number of responses in the March survey over the October survey. The one exception to this trend is Item 6 which shows a negative shift in Table 4 that is reflected in Table 3 by the positive shift against the overall negative trend. A possible conclusion that can be drawn from the behavior of this item is that the students found the sound-slide programs to be more useful as their task became more involved.

The positive shift of the SOMETIMES response, as indicated in Table 4, seems to add weight to the conslusion that a "novelty effect" might be at work in this project. After six months of working with and becoming used to the new system, the students seem to be taking a more discriminating look at it.

The average positive shift as shown in Table 4, is 5.76%. It may be fairly concluded that this increase came primarily from the ALWAYS responses even though the percentages do not match completely. Because of this mismatching, caution should be used when looking for significance in the data.

From the viewpoint of the staff, the information contained in Table 5, the comparison of the NEVER responses, is perhaps the most critical for the success of the project. A large increase in this category would mean a trend toward dissatisfaction with the project. An examination of the data from Table 5 shows that there is a positive trend, that is, an increase of NEVER responses in the March survey over the October survey. However, the number of responses is so small when compared to the other two categories that it is unlikely that any real significance can be attached to this trend. The total increase, percentagewise, is a positive 0.0193%. It might be concluded from this figure that the NEVER category is fairly stable at this particular time.

Table 6. Item 10: What do you like best about this new approach?

	Response	October, 1972		March, 1973	
		N	Responding%	N	Responding%
a.	Learning at own speed	144	61.01	145	59.42
b.	Not listening to instructor talk	23	9.74	26	10.65
c.	Like the sound-slide	23 ·	9.74	31	12.70
d.	Easier to understand	16	6.77	16	6.55
e.	Like having responsibility for learning	13	5.50	13	5.32
f.	Not boring	10	4.23	2	.81
g.	Challenging	7	2.96	5	2.04
	Total	236		238	

Table 7. Item 11: What do you dislike most about this new approach?

	Response	October, 1972		March, 1973	
		N	Responding%	N	Responding%
a.	Dislikes reading	19	32.75	22	26.82
b.	Can't always understand; ask for help	18	31.03	15	18.29
c.	Repeats materials	10	17.24	3	3.65
d.	Sound-slide programs	6	10.34	19	23.17
e.	Responsibility for learning	3	5.17	4	4.87
f.	Instructor doesn't have enough time	2	3.44	19	23.17
	Total	58		82	

It is interesting to note that Item 6 has again gone against the trend. While it has remained the same numerically, the increase in responses in the March survey decreases the percentage value of the 36 responses from .1674% to .1318% or a shift in the negative direction of .0356%. One wonders, but cannot conclude, if it is the same 36 students who never learn from the sound-slide program.

Tables 6 and 7 are included to show the responses to the two open-ended questions. The percentages in the fifth or last column show the shift trends. In Table 6 the largest shift is for the "Not boring" response, but again caution must be observed in attaching significance to these figures. It is interesting to note the larger number of students who seem to like to learn at their own speed.

Table 7 shows a greater degree of shifting in the responses by the students. It is unfortunate that the total number of students responding to this item was not numerically larger so that more credence could be placed on the results, but because of the lack of a larger numerical total, no valid conclusions can be drawn from these figures. One may, however, speculate that there are some areas in the project that need to be watched closely and may be in need of some improvement. One may, of course, say this about any new project.

In viewing the project as a whole, it can be concluded that the students seem to be in favor of this new way of learning occupational subjects. In three informal interviews with the staff of the occupational unit of Sanford Central High School, it was found that the staff also felt strongly that this was a better method of teaching and learning. The staff also seemed to agree that it was harder for them to teach this way, but the results they were achieving made it worthwhile.

CHAPTER IV. CONCLUSIONS AND RECOMMENDATIONS

This chapter will summarize the findings of the research project and
present recommendations based on experience gained in the project. For
convenience sake, the major conclusions and recommendations are presented
in two categories - those pertaining to administration of the research
project, and those pertaining to the instructional system itself. A
separate section which speaks to product transportability is also included.

Product Transportability

Two major products were derived from the project - a workable model
for the curriculum development process and a tested instructional system
complete with individualized curriculum materials in six cluster areas.
Throughout the project the idea of developing transportable products was
in the forefront.

The instructional system, including curriculum materials, is highly
transportable. Dissemination and utilization efforts have already been
described in the section, "Dissemination Activities." Complete sets of the
curriculum materials in Masonry, Carpentry, Drafting, Machine Shop, Typing,
and Distributive Education are available in either hard copy or through
the ERIC system.

The other product, and probably the most valuable in the long-run,
the curriculum development model, is also transportable with minor modi-
fications. Total cost of the research project, including the planning
and development phases, was high. However, the curriculum development
model can be replicated at much lower costs. Table 8 will serve to
illustrate. Costs shown in the table reflect only those expenditures
incurred during the Planning, Development, and Pilot Test Phases of the
project. This two-year period encompassed the curriculum development
activities and does not include dissemination and field-testing activities.
Table 8 should be helpful to those considering replicating the curriculum
development model described in this report.

Table 3. Actual expenditures and estimated replication costs for curriculum development in the six cluster areas of Masonry, Carpentry, Drafting, Machine Shop, Typing, and Distributive Education.

Item	Actual Cost (Two-Year Period)	Replication Needs*
Personnel		
Project Director	$22,9?3	One Project Director
Resource Center Manager	19,560	One Center Manager (If Center is used)
Secretarial Assistance	6,2??	One Secretary-Offset Operator
Aides	4,?72	One Aide (If Center is used)
Part-time Workers	12,43?	6 Typists, 4 Assemblers, 1 Narrator, 1 Photographer, 5 Instructors <u>for two months</u>
Employee Benefits		As Appropriate
Materials		
Paper	3,?74	2000 reams of paper
Supplies	1?,514	Printing supplies, film and processing, office supplies, etc.
Equipment		
Resource Center Furniture	?,51?	As needed to equip Resource Center
Multi-Media Equipment	7,300	As needed to equip Resource Center
Cassette Players	2,577	As needed to equip Resource Center
Other	10,521	As appropriate
Contracted Curriculum Development		
RCA Corporation	57,500	As appropriate
UNC-G	14,204	As appropriate
Travel	3,168	Travel for Project Director
Communications	1,002	As appropriate for telephone and postage
Consultants	763	Is appropriate

*This portion of the research project consumed two years time. It is estimated that replication of the project would require four months planning time, three months development time, and nine months pilot-testing and revision time.

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Conclusions and Recommendations Concerning Conduct of the Project

1. A rather-high level of funding is necessary for the systematic development of instructional systems. On a small and limited basis, the traditional method of curriculum development (teachers writing for personal classroom use) is not practical because of the lack of assessment, uneven quality, and questionable benefits from the high development costs. However, such high levels of funding can be justified only if the materials and systems are widely disseminated and used.

2. The administrative arrangement of providing concentrated curriculum development funds to a selected school for on-site development and try-out has proven a viable alternative for North Carolina and should be continued in the future.

3. The team writing approach (i.e., a professional writer, a tradesman, and a teacher) has proven to be an economical and highly productive arrangement for producing curriculum materials and should be continued in the future.

Conclusions and Recommendations Concerning The Instructional System

1. Students in an individualized instructional system feel that they share a much greater responsibility for learning. Students respond positively when given this responsibility.

2. The learner finds it very helpful to know the reason (rationale) and the expected performance (objective) before the learning activity begins.

3. The multi-media programs are extremely beneficial to all learners, but especially for the learners who have difficulty reading.

4. The idea that a student can learn if given enough time is applied in this system. A student does not progress in this system until the more simple competencies have been mastered.

5. Each unit has a prepared test including either theory test questions or performance test questions and sometimes both. The learner appreciates having in hand the instructor's checklist of the criteria for evaluating the performance test.

6. A letter grade has never been very meaningful to a prospective employer for an occupational course. Through the use of the vocational skill list, the student may show the employer which competencies he possesses as verified by his instructor. This builds in accountability for the instructor and the student.

7. The instructor in this system must change from a dispenser of information to a manager of learning. In some instances this role change is difficult, therefore, indepth inservice training is required.

8. In an individualized instructional system the student evaluation must be individualized. This is not easy because t evaluation becomes more subjective than the instructor has been accustomed to in the past. The number of competencies completed, the ability of the student, the effort of the student, and the quality of the student performance should be considered in evaluating the students progress.

9. In this instructional system a student may enter or exit the program on any given day. This flexability offers the school administrator an asset that he never enjoyed before.

10. The cost of implementing an individualized system is greater than the traditional method of instruction. The cost may not be as great as it appears on the surface because there is a shift in cost from a large number of textbooks to more printed task packages and multi-media.

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APPENDIX TABLE OF CONTENTS

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APPENDIX A

Sample Mini-Course Descriptions

COURSE TITLE: Introduction to Agriculture
MINI-COURSE: Agricultural Careers & Leadership
QUARTER OFFERED: First
DESCRIPTION: This mini-course will introduce to the students the
                    importance of agriculture and the number of various
                    agricultural occupations related to the world of work.
                    F.F.A. activities such as livestock judging, parlia-
                    mentary procedure, land judging and tools will be
                    included.

COURSE TITLE: Introduction to Agriculture
MINI-COURSE: Animal Science
QUARTER OFFERED: Second
DESCRIPTION: The students will develop an understanding of the
                    basic fundamentals of animal science and its import-
                    ance in local and national economics.

COURSE TITLE: Introduction to Agriculture
MINI-COURSE: Soils and Plant Science
QUARTER OFFERED: Third
DESCRIPTION: This mini-course develops an understanding of the
                    importance of soil to our nation and to the susten-
                    ance of human lives. A Land Judging Contest is
                    included as a means of learning about soils. The
                    course also covers the importance of plant science
                    to domestic animals, wildlife, environmental
                    beautification, and society.

COURSE TITEL: Introduction to Agriculture
MINI-COURSE: Agricultural Mechanics
QUARTER OFFERED: Fourth
DESCRIPTION: The students will develop basic skills in identifying,
                    operating, and using agricultural tools and equipment
                    efficiently.

APPENDIX B

Masonry Task Package

BM-VII-1

UNIT VII: CONSTRUCTION OF BRICK WALL USING APPROPRIATE PATTERN BOND

TASK PACKAGE 1: LAYING UP A 4" STRETCHER WALL

PREREQUISITES: UNIT I, TASK PACKAGES 1 - 2; UNIT IV, TASK PACKAGE 1; UNIT VI, TASK PACKAGE II

RATIONALE:

The 4" stretcher bonded wall is one of the most extensively used bonds for the construction of brick veneer and partition walls. It is known as stretcher bond since all of the courses are laid using the stretcher position of a brick. Familiarity with the 4" stretcher bonded wall pays dividends to the mason.

In this task package you will learn to properly position the mason line on established leads and to lay brick to the line. This 4" stretcher wall is only the beginning of many different types of walls you will be building in the near future. In this task package you will also gain skill in building a stretcher bonded wall. Continue by reading the Objective and performing the Learning Activities and the Learning Practice.

BM-VII-1

OBJECTIVE:

Upon completion of this task package you will be able to lay up a

4" stretcher wall between established leads maintaining the following:

a. 3/8" to 1/2" mortar space between each brick lengthwise.

b. + 1/8" for overall height for a given number of courses and

wall height.

c. All brick laid to a line.

Your performance will be evaluated in accordance with the

instructor's checklist.

LEARNING ACTIVITY:

1. View sound-slide package BM-VII-1.

2. Refer to Unit III, Task Package 1; Unit VI, Task Packages 1 & 2.

3. View figure 1, page 5.

4. Read and study Masonry Simplified, Volume I, pages 264 and 265.

5. This completes the Learning Activity. Now begin the Learning

Practice.

LEARNING PRACTICE:

Tools and Equipment

1. Trowel   4. Mason's line

2. Mortar board   5. Corner blocks or pins

3. Brick hammer   6. 6 ft. spacing rule

BM-VII-1

LEARNING PRACTICE (cont'd):

1. Check with the instructor for the type of brick to be used, and the height of the wall; then determine the brick spacing and mark them on the leads.

2. Stretch a mason line on established corner leads.

3. Spread mortar on deck.

4. Lay 6 brick on the bed of the mortar to a line. Be careful not to crowd the line; this will cause a bulge in the wall. Also try to maintain a 1/16" space between the top edge of the brick and the mason line. Maintain a 3/8" to 1/2" mortar space between brick.

5. Now that you are finished with the first course you are ready to start the second course. (Be sure to check that no brick are below the line).

6. Secure half brick from instructor.

7. Move mason line up to the second course, making sure the line is adjusted to the correct position on the lead.

8. Spread mortar on top of the first course of brick.

9. On one end of the wall set a half brick in position so it is flush with the bottom brick, at the same time keeping the top edge of the half brick to the line.

10. Fill in the remaining section of the wall with brick maintaining the 3/8" to 1/2" mortar j int or head joint.

51.

BM-VII-1

<u>LEARNING PRACTICE (cont'd)</u>:

11. Repeat all operations previously used for the first two

    courses in completing the remaining courses to the given

    > height ± 1/8".

12. When finished for the day, clean up work area and tools.

    Well, since you finished the wall, was it as easy as you first

    thought? It probably wasn't, but don't be discouraged; you

    will get much better as you keep trying. Remember, the

    longest journey begins with the single step.

BM-VI1-

A 4" ALL STRETCHER WALL
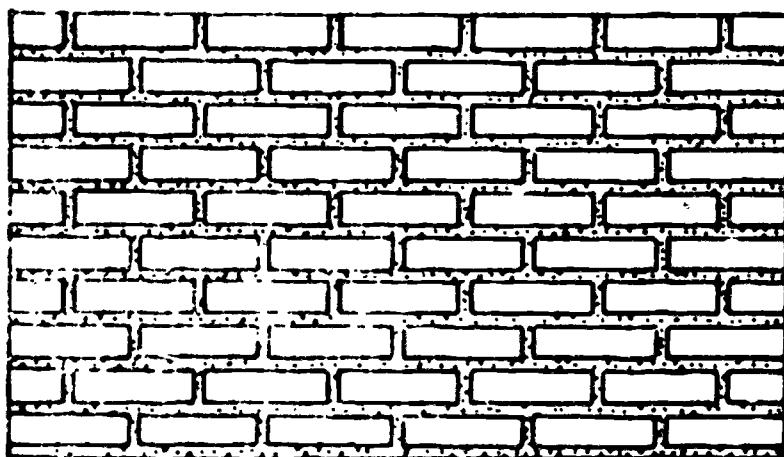
Front Elevation
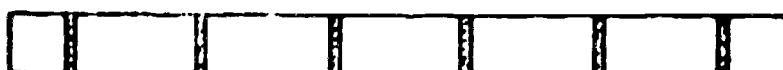
2nd, 4th, 6th, 8th and 10th course plan

1st, 3rd, 5th, 7th and 9th course plan

Figure 1

APPENDIX C

Carpentry Task Package

C-XI-1

UNIT XI: ROOF FRAMING FOR A HOUSE

TASK PACKAGE 1: COMMON RAFTERS

PREREQUISITES: UNITS I-VII; UNITS IX-X

RATIONALE:

Many so-called common things are really good things. Take the
common rafter, for instance. It supports the roofing material which
protects the unfinished structure and keeps raindrops from falling
on your head while you work inside.

Now that the wall framing for your house has been completed
in Unit X, the next step, as many carpenters believe, is to apply
a covering over the walls in order to protect the structural members
from the weather. This procedure also allows other work to progress
inside the house. The first stage in providing this cover is to
lay out and cut common rafters which become the foundation upon which
the rest of the roofing material will be placed. Logically, then,
in this task package you will learn how to lay out, cut, and install
common rafters for your house, using the plans and specifications
provided. Continue, now, by reading the Objective and doing the
Learning Activity and the Learning Practice.

C-XI-1

OBJECTIVE:

Upon completion of this task package you will be able to lay out,
cut and install common rafters for a residential structure
according to plans and specifications maintaining the following
standards:

a. length of common rafters is computed correctly with respect
   to span of building, pitch of roof, and overhang, within
   ($\pm$ 1/16").

b. bird's mouth is correctly cut on common rafters.

c. ridge cut of common rafters is correctly cut to within
   ($\pm$ 1/16") of the required angle with respect to appropriate
   angle ($\pm$ 2°).

d. tail cut of common rafters correctly cut with respect to
   appropriate angle ($\pm$ 2°).

e. common rafters are properly positioned ($\pm$ 1/16") and nailed
   to plate and ridge (type of fastener and spacing).

f. overhang is of proper length ($\pm$ 1/16").

Your performance will be evaluated in accordance with the
instructor's checklist.

C-XI-1

LEARNING ACTIVITY:

1. View sound-slide package C-XI-1, an extra special feature.

2. Read and study carefully pages 157-165 in Modern Carpentry,
   ending your reading with the section entitled Gable End Frame
   on page 165.

3. This completes the Learning Activity; begin the Learning Practice.

LEARNING PRACTICE:

Tools and Equipment

1.	100 foot layout tape	5.	Radial arm saw
2.	Folding wood rule	6.	Framing square
3.	Crosscut saw	7.	Pencil
4.	Portable e'ectric circular saw	8.	Combination square

1. Contact your instructor and discuss the laying out, the cutting,
   and the installation of common rafters. When you and your
   instructor feel you are ready to proceed, go to step 2 in the
   Learning Practice.

2. Refer to the plans for the house and determine the number of
   common rafters needed, the spacing between them, their length,
   their width, and their thickness. Note - To determine length
   of the rafters you will need to know the slope of the roof and
   the amount of overhang required.

3. Referring to the procedure outlined in Modern Carpentry, pages
   161 to 163, and using the framing square, lay out a common rafter

C-XI-1

LEARNING PRACTICE (cont'd):

on a straight and true piece of stock of the correct length,
using the proper width and thickness of lumber. You should lay
out for the ridge cut, bird's-mouth (seat cut and plumb-cut),
the tail cut, and provide for the proper overhang.

4. If difficulty is encountered in the layout, contact the
    instructor for help. When satisfied that the rafter has been
    properly laid out, let the instructor check your final layout.

5. Cut the rafter along the lines you have laid out and label this
    rafter as a pattern.

6. All other common rafters may now be laid out using the pattern
    rafter as a model.

7. So that the rafters may be properly positioned when erected
    into place, lay out the double plate according to the plans and
    specifications.

8. After you have evaluated yourself on the work, contact the
    instructor.

9. After satisfactory completion of this job you will be directed
    to the next task package.

10. Place all of the common rafters aside until you begin work on
    the next task package.

No attempt at humor will be made here-just a hearty congratulations
for a job well done!

There's nothing common about the way you study carpentry!

APPENDIX D

Metals Task Package

M-I-13

UNIT I: MEASURING DEVICES

TASK PACKAGE #13: DIAL INDICATOR

PREREQUISITES: UNIT I, TASK PACKAGE 12

RATIONALE:

You have learned to test the dial indicator in your last

package. Now you will learn to test a piece of stock with the

dial indicator.

The dial indicator can be, and is, used on all the machines

in a machine shop. As you progress through this course you will

be asked to use the dial indicator to check and align workpieces

on or off the machines. How well and how easily you can do this

depends a great deal on how well you learn the basic lessons

in your task packages.

Do a good job now and you will enjoy it later!

OBJECTIVE:

Upon completion of this task package you will be able to use a dial
indicator, vee blocks, and surface plate to test the concentricity
(roundness) of stock. A standard of accuracy of $\pm$ .001 of an inch
will be required.

M-I-13

LEARNING ACTIVITY:

1. View slide-sound program M-I-13.

2. The vee blocks, also called V-blocks, are holding devices for roundstock. To find out something about them and how they are used, turn to page 59 in <u>Metalwork Technology and Practice</u> and read section 92. Figure 69 on the same page shows how the clamps are used with them. Now turn to page 210, figure 427, and see the v-blocks used in another way; page 573, figure 1287 also shows the v-blocks in use.

3. You will be using the dial indicator again in this task package, so turn to page 446 in <u>Metalwork Technology and Practice</u> and see some of the various uses of this measuring device. Read section 1152 on this and the next page and examine the pictures and illustrations. You are probably wondering why you are doing so much jumping around and looking. The reason for this is that the work you do in a task package is usually a basic function of the tools and equipment. There are many other ways to use these tools and, while it may be sometime before you do use them, you should be aware of some of these uses.

4. Read the section on v-blocks in <u>Machine Tool Technology</u>, page 58, and notice figure 3 - 30.

M-I-13

LEARNING ACTIVITY (cont'd):

5. Machine Shop Operations and Setups, page 43, figure 41

   shows a picture of the operation you will be doing in this

   task package. Study it and notice that you can use this

   operation to check tapers. This practice will be useful for

   a later task package.

NOTE: V-blocks should be purchased in pairs and the pairs should

   be kept together. Don't mix V-blocks.

6. Go into your Learning Practice.

LEARNING PRACTICE:

   Tools and Equipment

   1. Dial indicator set   3. Surface plate

   2. V-blocks and machinist's   4. Pencil and paper
      clamps.

1. Obtain from your instructor a piece of smooth roundstock about

   6" to 8" in length.

2. Make the setup as shown in figure 41, page 43, Machine Shop

   Operations and Setups.

3. Test the concentricity of the roundstock at each end and at

   each 1/2 inch of the length. Record your readings on a piece of

   paper.

4. You may want to test other pieces of stock. If so, ask your

   instructor for some pieces to test.

'1-I-13

LEARNING PRACTICE (cont'd):

5. Show your work to your instructor and, if you have any questions, now is a good time to ask him about them.

6. When you have made the test, clean all the tools and replace them. Handle these tools very carefully as nicks or burrs can limit their usefulness.

   You have completed the unit on measuring devices. While this has been a long unit it also is a very basic, but important, part of your introduction to the machine shop crafts. Remember in all your future work that you are becoming a craftsman, and to be a craftsman you must first be accurate!

APPENDIX E

Drafting Task Package

DM-II-1

UNIT II: SCREW THREADS AND FASTENERS

TASK PACKAGE 1: DEFINITIONS OF SCREW THREAD TERMINOLOGY

PREREQUISITES: NONE

RATIONALE:

The use of screw threads appears so frequently in the
daily task of the draftsman that the common forms and methods
of representation must be understood. The jobs that screws and
other fasteners do are so vast that a draftsman needs to be able
to identify the various types and the particular job that each
does. The draftsman should be concerned with the basic
terminology of screws and screw threads. The draftsman's
language is graphical, and he must know the relationship between
his representation of screws and threads and the correct
terminology his symbols are to express. You need to have an
accurate understanding of the terms that apply to screws and
screw threads. "Get in the twist of things and tighten up all
the screws in this package."

DM-II-1

OBJECTIVE:

Upon completion of this task package you will be able to list

and define in writing, six common terms related to threads.

Your performance will be evaluated in accordance with the

instructor's checklist.

LEARNING ACTIVITY:

1. Read pages 202-206 in <u>Basic Technical Drawing</u>.

2. Read pages 154-158 in <u>Mechanical Drawing</u>.

3. Review sound-slide presentation DM-II-1, today's terrific show.

4. Study figure 465 on page 202 in <u>Basic Technical Drawing</u>.

    Can you see the different items that are related to a help?

5. Study figure 466 on page 203 in <u>Basic Technical Drawing</u>.

    Notice the difference between external and internal threads.

6. Study figure 471 on page 205 in <u>Basic Technical Drawing</u>.

    Notice the variations in the pitch of each example.

7. Study figure 472 on page 205 in <u>Basic Technical Drawing</u>.

    Do you see the difference between right and left-hand thread?

8. Study figure 473 on page 206 in <u>Basic Technical Drawing</u>. Do

    you see the difference between multiple threads?

9. Study figure 12-6 on page 157 in <u>Mechanical Drawing</u>.

DM-II-1

LEARNING ACTIVITY (cont'd):

10. Looks as though you're not goofing around. You've finished this
Learning Activity. Check with your instructor before starting
the Learning Practice.

LEARNING PRACTICE:

1. Study pages 202-206, section 202-208 in Basic Technical Drawing.

    a. From the pages listed above find six terms related to screw
    threads.

    b. List the terms found in part a on a sheet of paper. Leave
    two lines blank between each word.

    c. Define the words found in a. Use the space beside the word.

2. Study section 205, on page 204, in Basic Technical Drawing.

    a. List five thread forms found in the above section. Leave
    two spaces between each listing.

    b. Write the function of each thread form listed in a.

    c. Sketch each thread form listed in a.

3. Study section 208, on page 206 in Basic Technical Drawing.

    a. Write an explanation as to the relationship between lead
    and pitch.

4. Be sure your name, today's date and this package number are on
your paper.

5. Now tell me, how many of your friends could do this? I know they
couldn't do it like you do it. Take your work to the instructor
for an evaluation. Beethoven was a perfectionist — why shouldn't
you be one?

APPENDIX F

Typing Task Package

UNIT IV: PERSONAL AND BUSINESS LETTERS

RATIONALE: Letters plus term papers are perhaps the two most important

type problems you will encounter in Typing I. In typing

letters you should always strive for good form, neatness, and

accuracy because you are "selling" your qualifications or

your organization to someone else and you definitely want to

make a good impression.

A carbon copy is made of most letters in business offices,

because one copy always remains on file for reference. Offices

also have printed stationery (letterhead stationery plus a

matching envelope). In addition to looking attractive, letter-

heads save a secretary's time since she does not have to type a

return address on either the letter or the envelope.

There are two basic letter styles--block style and modified

block style. See which style you prefer!

OBJECTIVE: Upon completion of this unit package, you will be able to type

personal/business and business notes and letters in block and

modified block styles to a degree of 98 percent accuracy.

LEARNING ACTIVITY:

>There are no individual task packages for this particular
>
>unit. See cassette tape 4-1A on personal/business
>
>letters before beginning Section 2. See cassette tape
>
>4-1B on strictly business letters before beginning
>
>Section 3. Also consult the illustrations and study
>
>sheets in this package. You will be referring to
>
>pages 86-96 in your Brown Text.

LEARNING PRACTICE:

>Pick up correct amount of paper before beginning each
>section. This practice will be divided into three
>sections. Correct errors in all problems.

>Section 1--Memos and Personal Notes (5 half sheets)

>### Memos in Block Style

>53C, Problem 1, p. 86 (Read the actual content of this
>   memo before typing it.   Type
>   problem only once.)

>What does block style mean?

>Problem 2, p. 87 (Half sheet; 60-space line; SS)--top

>### Personal Notes

>Problem 1, p. 87--bottom

>Problem 2, p. 89

>56C, p. 89 (Step 1 only. Follow directions and THINK!

>HOLD THESE 5 PROBLEMS UNTIL YOU COMPLETE ENTIRE PACKAGE!

Section 2--Personal/Business Letters (3 full sheets)

Have you listened to tape 4-1A?

Problem 1, p. 91

Problem 2, p. 91 (Change the return address to your own
home return address. See return address
illustrations in this package. Send
letter to Dr. Newkirk. What would be
the correct salutation for this letter?)

Problem 3, p. 91 (Notice that the correct salutation for
a letter addressed to a company is
just Gentlemen NEVER Dear Gentlemen)

What does modified block style mean?

What is mixed punctuation?

What is open punctuation?

HOLD THESE 3 PROBLEMS UNTIL YOU COMPLETE ENTIRE PACKAGE!

Section 3--Business Letters (3 letterheads, 1 onionskin,
6 small envelopes)

Have you listened to tape 4-1B?

59D, Problem 1, p. 93

59D, Problem 1, p. 93 (Retype the same letter again but
this time use block style. The
spacing between various parts is
the same, but where does every
line begin in block style?)

Problem 2, p. 95 (Study how to type carbon copies in 59C,
p. 93 and in this package.)*

Which side of the carbon paper (glossy or
dull) is toward you once you have
inserted your carbon pack in the machine
and are ready to begin typing?

A carbon pack is composed of what parts?

*When you type a problem with a carbon
copy, make sure you finish the problem
completely after you start if possible.
It is often difficult to realign the
original and carbon copy (which you
cannot ever see) at a later date.

Section 3 (cont.)

Address small envelopes for all letters in Section 2
and Section 3 (6 envelopes total).

Study 61B, p. 96 including the bottom or
refer to "Typing Small Envelopes" in this
package.

Place each letter on the right side of
your desk and address envelope directly
from typed letters. The envelope address
should agree with address(es) in the letter
in content, style, and spacing.

For the envelopes in Section 2 you must
type both the return address and the letter
address.

For the envelopes in Section 3 you do not
need to type a return address since you typed
these letters on letterhead stationery and
would, therefore, have matching envelopes
with a printed return address. (Assume on
business envelopes that you have a printed
return address always.)

TURN IN ALL PROBLEMS IN SECTIONS 1, 2, and 3!
(11 problems total plus carbon copy and 6 envelopes)

TEST:

Written or typed.

TI-IV

LETTERS

There are two basic letter styles: block--every line begins at left margin

modified block--(1) return address (if
one) and date begin
at center point

(2) closing lines begin
at center point

There are two kinds of punctuation: open--no punctuation after salutation
and no punctuation after compli-
mentary close

mixed--a colon (:) after salutation and
a comma (,) after complimentary
close

Parts of a business letter in the order that they appear in a letter:

return address (if no letterhead)
date
letter address
salutation
body
complimentary close
signature (in longhand with a pen never 'pencil)
typed name
typed official title or position (if one)
typist initials (also called reference initials)--the first
letter of the first and last names of the
typist which appear on a letter in small
letters with no periods or spaces. Through-
out the textbook always use your own typist
initials regardless of what the initials are
in the problem.
enclosure notation--When the body of a letter states something
is enclosed (or being sent in the same
envelope with the letter), then an enclosure
notation should be made two spaces below the
typist initials. For example, two enclosures
might be shown as follows:
(1) Enclosures
(2) Enclosures 2
(3) Enc. 2
(4) Enclosures: Check for $528.50
List of Salesmen

Carbon Copies

 carbon pack: plain sheet or letterhead (sheet with name of company or
           organization, address, phone
           number, top executives, etc.
           already printed at the top)

     carbon paper (dull side toward you after pack is inserted
       in the typewriter)

     onionskin (a thin paper used for carbon copies. A carbon
       copy is made of most letters in an office and
       filed. If filed, the carbon copy or onionskin
       sheet would normally not contain a signature.)

Carbon Copies: To make one carbon copy, place a sheet of carbon paper
(glossy side down) on a thin sheet of paper (onionskin). On top of the
carbon paper, place the original sheet. After stacking the carbon pack and
while holding the pack firmly, insert it in the typewriter and turn the
right cylinder knob slowly until the carbon pack is positioned around the
cylinder. Then operate the paper release lever to even the carbon pack at
the top and to prevent streaks from appearing on the carbon copy due to the
carbon paper itself wrinkling. Once you are ready to begin typing, check to
make sure the dull side of the carbon paper is now toward you!

For each additional carbon copy, just add another sheet of onionskin (bottom)
and another sheet of carbon paper (top).

Typing and making one carbon copy is known as preparing copy in duplicate
(two copies - one original and one carbon copy). Typing and making two
carbon copies is known as preparing copy in triplicate (three copies--one
original and two carbon copies,) etc.

Different address lines for use in either a return address or a letter address:

  1708 Marie Street,   Route 4, Forest Hills
  Sanford, N. C. 27330   Sanford, N. C. 27330

  P. O. Box 377   Route 4, Box 286
  Sanford, N. C. 273   Sanford, N. C. 27330

If an address applies to a small community where there are no streets, etc.,
place the name of the town on one line and the name of the state on the next
line as follows:

    Miss Jane Jackson
    Gumnock
    North Carolina 28602

You always need at least three lines for the letter address.

A Personal/Business Letter (Modified Block Style
Mixed Punctuation
5 space line)

Set tab ↓

*The line on which you begin
the return address depends upon
the length of the body.
(Begin at center point on
line 15.)*

return address

1744 Rosemont Drive
Sanford, N. C. 27330
Current Date

*2 blank spaces between
state and Z.I.P. Code*

*Always come down 4 lines
to the letter address*

letter address

Director of Admissions
Meredith College
Raleigh, N. C. 27400

DS

salutation

Dear Sir:

2 blank spaces

DS

body

As a senior at Sanford Central High School, I am
interested in applying for admission to Meredith
College for the 1973-74 term. Please send me an
application form plus any information concerning
scholarships and loans that are available. If I
am to attend college in September, I shall need
some financial assistance. I would even consider
a work-study program.

If a personal interview is required, please notify
me and specify any additional information I might
need.

complimentary close

signature

typed name

Sincerely yours,

Your Typed Name

*Girls, include Miss or Mrs.
(with or without parentheses)
before your typed name. In
the signature line do NOT
use Miss or Mrs.*

*Boys, do not use Mr. in
either typed name or signature.*

mixed punctuation--colon after salutation and comma after complimentary close

open punctuation--NO punctuation after salutation or after complimentary close

75

TYPI

To address a small envelope: Type the writer's or sender's __return address__ __(if one)__ in the upper left corner. (You do not have to type a __return address__ on an envelope when it is already printed to correspond with matching letter-head stationery.) If you must type the return address on an envelope, begin on the second line from the top edge and the __third space from the left edge.__ Use block style and single space.

Type the first line of the letter or envelope address about 2" from the top (about vertical center) on line 12 or 13. Begin about 2½" __from the left__ edge. Use block style and single space, no matter how many or how few lines are required.

A ZIP Code number is used in both the return address and the letter address. A person's title is found in both the return address and the letter address of an envelope.

Small Envelope

Line 2 .... (Actual size = 6 1/2" x 3 5/8")

Miss Karen Jones
1744 Rosemont Drive
Sanford, N. C. 27330

About
2"

Director of Admissions
...... College
Raleigh, N. C. 27602
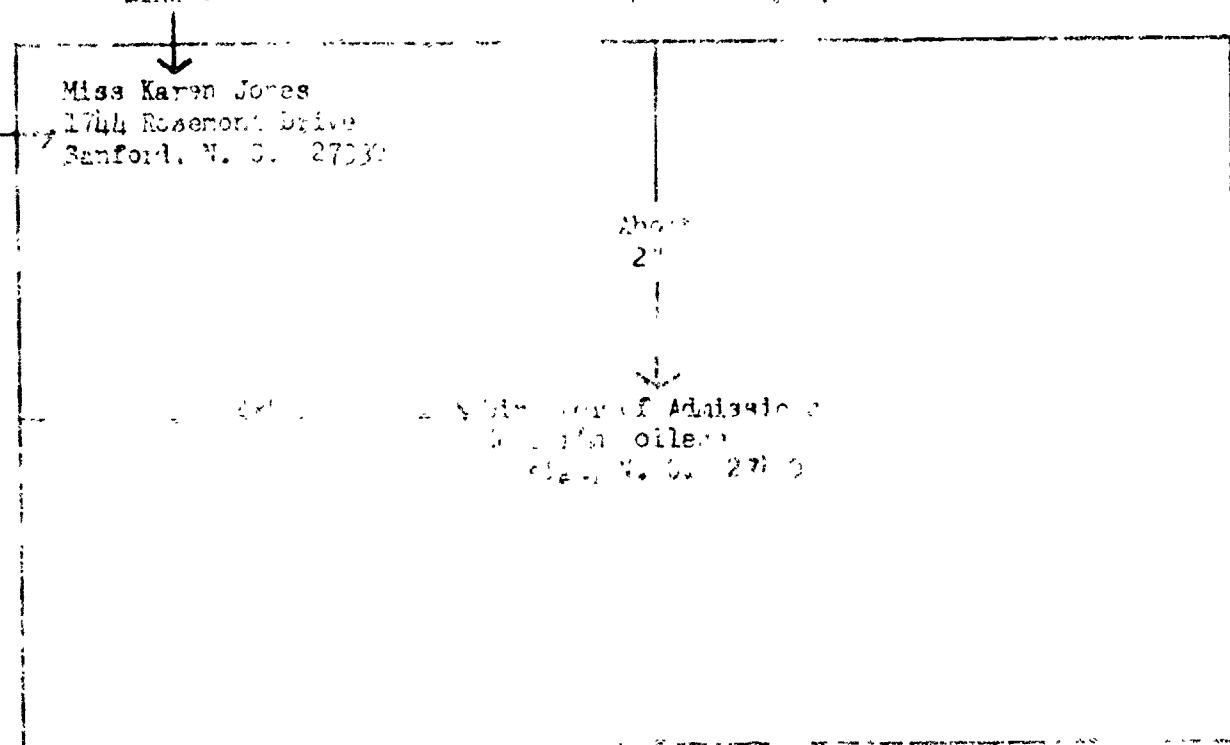
You may spell in full a state name (California), abbreviate it according to the old standard abbreviation (Calif.), or abbreviate it according to the 2-letter ZIP Code abbreviation designated by the U.S. Postal Department (CA). The Postal Department prefers that ZIP Codes be used with all state names regardless of whether the name is spelled in full or the old standard abbreviation is used. ZIP Codes must, however, be used with all new 2-letter abbreviations as CA 75211.

PENDIX G

Distributive Education Task Package

STUDENT'S PACK

Competency ... Communication _____ Competency No. __142___

L.A.P. Title _Stimulating customer interest with trademarks, slogans, and similes_

LEARNING ACTIVITIES

Competency No. ... and Objective(s):

When a handout of six ... you will be able to evaluate ways to stimulate customer interest with ... ows, slogans, and similes with 90% accuracy.

DIRECTIONS: To become most competent in communicating effectively, it is suggested that you complete Activity ... under the Individual ...

Large Group

You will discuss ... advertising ... from a local business giving ... by businesses to gain customer interest through the use ... nd similes

You will brainstorm ... customer interest with trademarks, slogans, similes

Small Group

After being divided into small groups, design a trademark and write a slogan ... explain to the class why you feel that ... trademark ... make customer interest.

After ... in a newspaper the ... and three sl ... write a report tell ... what ... are in these trademarks and slogans that will attract ...

Individual

Read one ... the
a. Advertising ... p. ... 3.0-351.
b. **Advertising** and ... pp. 13... 47, 555-533.
... tising, Source #20 NC pp. 339-331; 341-343.
d. **Advertising** Today ... d. Ed., Source #81 NC. pp. 364-371.

You will ... material about ..., give a ...

1. Locate Parama ... trademark ... gives information about trademarks

Page No. _____

____ ____

Competen__ ____ ____ ____ ____ ____ tency No _____

U.A.P. Title: Stimulating, co__ ____ Interest with to demirbs, slogans, and similes

____ ____ SILES

Competen__ ____ ____ ____ and ____ ____(s)

__Individual for__ ___

> __) Once you have read the handout, locate and complete the self-evaluation
> exercises in Section 2 of the handout. When you have completed this
> ____ ____ ____ to Section 3 of ____ handout.
>
> ____ ____ ____ ____ ____ ____ ____ ____
> ____

__) ou will ____ ____ ____ ____ and ster ____ ____ ____ ____
a given table of stud____ ____ ____ features ____ ____ slogan ____ __
write ____ ____

> 1) Locate ____ ____ ____ ____ ____ ____ further ____ information from
> slogans ____ ____
>
> ?) Once you have ____ th ____ ____ locate nd ____ ____ ____ self-evaluation
> exercises on Sec__ion 3____ ____ if you have completed th ____ ____ correctly,

____ ____ ____ ____

____ ____

____ ____ ____

____ ____

____ ____ ____

HANDOUT #·   ᵗ·⸳ ·

A trademark is a distinctive identifying ⸳⸳⸳ of a product. Many
companies desire to register their trademarks ⸳⸳⸳ ⸳⸳. Patent Office
in Washington to prevent their use by competing businesses. Although the
trademark will enable the purchaser to recognize the product and the company
that makes it,   ⸳tar   ·   ⸳⸳·   ⸳⸳ to indicate
sales.

    Advertisers ·   ⸳⸳⸳   ⸳   ·   ·   ⸳⸳ element of the
advertising campaign ⸳   ⸳ may   ⸳⸳ ⸳⸳ ⸳⸳ial that ⸳⸳ ⸳⸳mark that is easy
to remember and ⸳⸳⸳ ⸳⸳ ⸳⸳ ⸳ ⸳⸳   ⸳⸳ ⸳⸳   ⸳ advertisement.
If the prospective customer has already seen the trademark on television,
in magazines, in newspapers, and on billboards, the trademark on the product
⸳⸳ ⸳ ⸳ ⸳⸳⸳ ⸳   ⸳   ⸳⸳   ⸳   ·   ⸳⸳   ·   ⸳⸳ ⸳⸳⸳⸳ If
  ur   t ⸳⸳   ⸳   ⸳iate⸳ ⸳
offer ⸳ ⸳ e ⸳⸳ ⸳   ⸳⸳

    A ⸳r ⸳ ⸳   ⸳⸳   ⸳ ⸳⸳   ⸳⸳
⸳   ⸳   ⸳⸳ ⸳r ⸳ le
words are t⸳ ⸳ ⸳ ⸳ ⸳   ⸳   the cust ⸳⸳
⸳ ⸳ ⸳ ⸳ ⸳   ⸳⸳ ⸳lue in
order of a trade ⸳⸳ ⸳   ⸳⸳⸳   ⸳   ⸳⸳ ⸳⸳⸳⸳⸳⸳ it must be kept
    ⸳   ⸳ ⸳ ⸳

I. ᴄ trade...

II On the ... thirty-one trademarks.
Based ... ... give the name of the
proced... ... is a picture, place

... = Word or Words

If a trademark contains more than one of the ... standards, use the lowest
number of the two standards.

			...OR COMPANY NAME
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

III. The ... trademark

HAND... ... SECTION 2 (continued)

1.

2.

3.

4.

71 5. TWA

6. Kodak

7.

8. Tetley THE QUALITY TEA

9.

10.

11.

12.

13. SHELL

14.

15.

16.

17.

18.

19.

20.

21.

22.

23.

24. CHAMPION

25.

26.
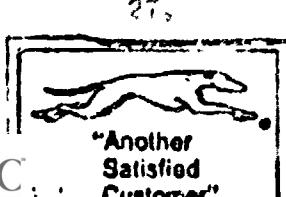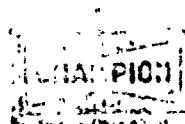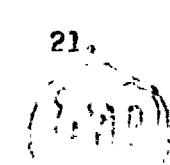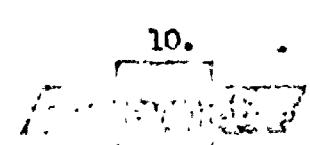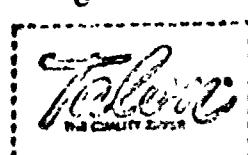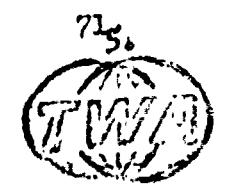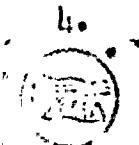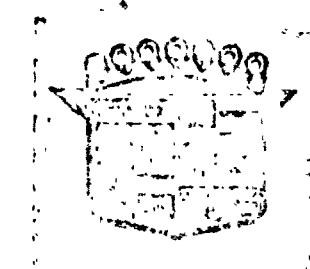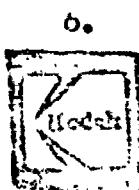
27. "Another Satisfied Customer"

28.

29.

30.

31.

82

Page ___7___
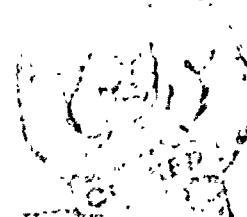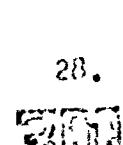
HANDOUT I - SECTION 2

I. A trademark is a distinctive, identifying symbol of a product.

II. | Trademark Number | Evaluation | Product or Company Name |
|---|---|---|
| 1. | 1 | Blue Bonnet Margarine |
| 2. | 2 (5) | Ford Motor Company |
| 3. | 2 | Chrysler Motors |
| 4. | 2 (5) | Wella Shampoo |
| 5. | 2 (5) | Trans World Airlines |
| 6. | 2 (5) | Kodak (Cameras and Film) |
| 7. | 1 | White Stag (Clothing) |
| 8. | | Talon Zipper |
| 9. | 1, 2 | Canada Dry Ginger Ale |
| 10. | | Crisco |
| 11. | (5) | Avis (Rent A Car) |
| 12. | 1 | Morton Salt |
| 13. | (5) | Mobil Oil Company |
| 14 | 1 (5) | Fisher |
| 15. | (5) | Shoes |
| 16. | 1 | Simmons Mattress |
| 17. | 1 (2) | Floral Telegraph Delivery |
| 18. | 2 (5) | General Electric |
| 19. | 2 (3,5) | Phillips 66 |
| 20. | 2 (3,5) | Harley Davidson Motorcycles |
| 21. | 2 (4) | A & P |
| | | Howard Johnson's |
| 23. | | Bell Telephone |
| 24. | | Foods |
| | | Champion Spark |
| | | American Motors |
| 27 | | Greyhound Bus |
| 25 | | Company |
| | | Products |
| | | Crackers |
| | | International Business Machines |
| | | telephone sales. |

III. The use of trademarks

HANDOUT #1 - SECTION 3

I. Locate a trademark that meets each of the following standards and paste
    it on the right.

    Picture   -

    Design   -

    Number   -

    Letter

    Words   -

II. Design a trademark that meets each of the following standards and give
    the name of the product or company that it represents.

    Picture

    Design

    Number

    Letter

    Word

HANDOUT #1 - SECTION 4

A slogan is a phrase or a short sentence tha   ... be repeated word for word. An identification of the product,   description of the product, or a promise of a benefit to the purchaser is   ually included in the slogan. In some cases two or more of these characteristics are combined. To be effective a slogan needs to contain at least two or three of the following features.

    1. It needs to be brief and to the point.
    2. It needs to make a suggestion.
    3. It needs to be easily remembered.
    4. It needs to be related to the produc .
    5. It needs to be catchy.
    6. It needs to be descriptive and colo. ....

Since slogans are more successful in verbal m ia, they need to be easy to say and easy to remember.

Slogans are used in conj   tion with other sales promotion tools to increase sales in advertising campaigns. Advertisers use the slogans to keep the name and image of the product bef   the public   In order for a slogan to   remember   and repeated it needs to be before the public with some degree of regula ...

Many writers use figures of speech in slogans to add color, variety, humor and   A figure of speech   a   r phrase in which words are used to give   the word is not used in its true meaning. A   either like or as, is the most often used f   of speech. "   on's taste good like a cigarette should"   a   simile used as a slogan.

... you ... ... repeated word for word.

... ... It the slogan merits a
... ... appropriate column ... ve the name of the product or
company ...

	JUDGE-MENT	BRIEF	CATCHY	EASILY REMEM-BERED	IDEA RE-LATED TO PRODUCT	DESCRIP-TIVE	PRODUCT OR COMPANY
			Y			X	Alka-Seltzer
				X			Ala-Put
			X				First Life
		X		X			Ford
		X		X		X	Chevrolet
		X		X		X	Volkswagen
		X				X	Pepsi
			X	Y	X		Honda
	Y		Y	Y			Camel
							Pola Milk
							Trident
				X			...
				Y			...
		X			X		...
					X		...
							...
				X		X	...
							...
				X			...
				X			...
					X		Imperial

SECTION 6

... this ... three of the qualities listed below:
... ... is a related product, suggest ...
descript...
...rify the ... ...

In the ... ... slo... ... met at least three of the above standards for
... ... in your original slogan.

... ... slogans in that group that

Name of Firm	Address

Name of Person Completing Form	Position

Job Title	Number of People Employed (by job title)

DIRECTIONS: ... ... check how often people who are employed in this trade are ... ... following ... in the designated column to locate each competency.

... ... feel free to change the wording of any competency statement ... ... which should be included in the instructional program.

	Frequency of Use				
Competencies	Daily	Once a week	Once a month	Once every 3 months	Never
Using hand tools in construction.					
1. Read and ... ... a zig zag rule, tape and combination ... to measure stock.					
2. Copy ... ... folding rule.					
3. Read ... ... check for squareness of					
4. Checking a ... wall for plumbness and checking ... ... (low level).					
... ...					

APPENDIX I

Sample Competency Statements

MECHANICAL DRAFTING

COMPETENCY STATEMENTS:

UNIT I. PICTORIAL DRAWING

1. Draws an isometric illustration of a cube using the principles of isometric projection.
2. Draws an isometric view of an object that has inclined planes.
3. Knows how to select the proper isometric axis for illustrating an object.
4. Draws an isometric view of an object that has a circular plane.
5. Draws an isometric view of an object that has curved surfaces.
6. Draws and constructs offset measurements in an isometric illustration.
7. Draws an oblique illustration of a cube using the principles of oblique projection.
8. Draws an oblique view of an object that has angles and inclined surfaces.
9. Draws an oblique view of an object that has circular planes.
10. Distinguishes between cabinet and cavalier drawings.

UNIT IV. CONSTRUCTS A 6 TO 8 STRETCHER BRICK WALL

1. Sets up work area.
2. Determines wall location.
3. Spreads mortar and butters brick.
4. Lays brick by forehand and backhand methods using eye alignment.

UNIT V. STUDY THE BONDING OF COMPOSITE MASONRY WALLS

1. Knows the principles involving structural bonding, using the overlap method of masonry units.
2. Knows how to tie two or more wythes of masonry together with common metal ties.
3. Understands how the principle of adhesion of grout contributes to structural bonding in a cavity wall.

UNIT VI. RECOGNIZES AND IDENTIFIES THE FIVE FREQUENTLY USED PATTERN BOND DESIGNS

1. Identifies the soldier, rowlock, header, and stretcher positions of masonry units in a wall.
2. Recognizes the following bonded wall designs:

    a. Running bond
    b. Common
    c. Flemish
    d. English

T-VII

OBJECTIVE (cont'd):

Specific:

Upon completion of th... ... ..., you will be
able to:

1. Lay up ... ... on established leads, main-
   ... ... the following:

   a. ... ... brick lengthwise.

   b. ... ... umber of course
      ... will ...

   c. ... brick lai ... ...

   ... perform ... ... accordance with the
   ... ...

2. ... ... only, maintaining
   ... ...

   ... ... lengt...

   b. ... ... umber of cours...

   ... ...

   ... ... with ...

   ... ...

   ... ... leads,
   ...

   ... ... lengthwi...

N-VII

OBJECTIVES (cont'd):

　　　a. _____ for a ____ number of courses _____.

　　　b. _____.

　　　c. _____ mortar.

Your _____ will be evaluated in accordance with the instructor's _____.

4. _____ stretcher bond _____.

　　　a. _____ brick lengthwise.

　　　b. _____ for a ____ number of courses _____.

　　　c. _____.

　　　d. _____.

You perform _____ in accordance with the instructor's _____.

5. _____.

　　　a. _____.

　　　b. _____ lengthwise.

　　　c. _____ for a ____ number of courses _____.

　　　d. _____.

　　　e. _____ plumb.

... ... with the

... ... been established

... ... between ... ... ick teratruise.

... ... to a ... number of courses

... ...

c. ... ...

d. ... ... will ... required, leveled

... ...

e. ... ...

... ... the

... ... mathematics.

... ... of ...

... ... with the

...

DA-IV

POST TEST (cont'd)

UNIT IV: FOUNDATION AND FOOTING DETAILS

Student_____ Section_____ Date_____

DIRECTIONS for PERFORMANCE TEST:

Before beginning your test, study the standards in the instructor's

checklist.

1. Draw a foundation plan.

    a. Obtain a sheet of 8 1/2 x 11 paper from your instructor. He

       will provide you with the proper layout to use.

    b. Study figure 40-13 on page 280 in <u>Architectural Drafting and</u>

       <u>Design</u>.

    c. Draw a slab foundation of the plan in figure 40-13.

    d. Follow the directions given in problem one on page 280,

       disregarding the floor plan in figures 1 - 2.

    e. Dimension the plan, providing notes where necessary.

    f. When you have completed the job, have your instructor evaluate

       your work according to the standards.

UNI-VII

LEARNING ACTIVITY (cont'd):

TASK PACKAGE 1:   LAYING UP A 5" STRETCHER WALL

TASK PACKAGE 2:   LAYING UP A 4" RETURN CORNER LEAD

TASK PACKAGE 3:   LAYING UP AN 8" STRETCHER BRICK WALL

TASK PACKAGE 4:   8" RETURN ANGLE CORNER LEAD

TASK PACKAGE 5:   4 x 12" PILASTER IN AN 8" STRETCHER WALL

TASK PACKAGE 6:   AN 8" INTERSECTING STRETCHER WALL

TASK PACKAGE 7:   8" WALL IN COMMON BOND

TASK PACKAGE 8:   10" CAVITY WALL IN STRETCHER BOND

Proceed with your work as outlined above and when you are
ready for the unit evaluation, contact your instructor..

APPENDIX K

Unit Test

DA-IV

POST TEST

UNIT IV: FOUNDATION AND FOOTING DETAILS

Student_____ Section _____Date_____

DIRECTIONS for MATCHING TEST:

Match the statements in the right-hand column with the word they des-
cribe in the left-hand column. Place the letter from the matched
phrase in the space provided in front of the word in the left-hand
column.

_____ 1. Foundation

_____ 2. Footing

_____ 3. Concrete

_____ 4. Foundation wall

_____ 5. Pier and columns

_____ 6. Anchor bolts

_____ 7. Sills

_____ 8. Girder

_____ 9. Joist

_____ 10. Cripples

a. Provides the base for attaching the
    exterior walls to the foundation.

b. Supports the load of the building
    above the ground line and transmits
    the weight of the house to the footing.

c. Provides a level and uniformly dis-
    tributed support for the structure.

f. Used for footers because it can be
    poured to maintain a firm contact
    with the supporting soil.

e. Major horizontal support members upon
    which the floor system is laid.

f. Part of the floor system that is
    placed on the girders.

.. Used to raise the floor level without
    the use of a higher foundation wall.

h. Distributes the weight of the house
    over a large area.

i. Vertical members usually made of con-
    crete, brick, steel, or wood, which
    are used to support the floor systems.

j. Are embedded in the top of the foundation
    and hold the sill to the foundation.

k. Used to prevent attack by termites.

003ca

DA-IV

POST TEST (Cont'd)

UNIT IV: FOUNDATION AND FOOTING DETAILS,

DIRECTIONS for COMPLETION TEST:

Complete the following statements or questions by writing in the appropriate answer in the space (s) provided.

1. List five members of a foundation.

   (1) _____
   (2) _____
   (3) _____
   (4) _____
   (5) _____

2. What are the three types of foundations?

   (1) _____
   (2) _____
   (3) _____

3. What is a term used for the base size? _____
   _____

4. What is used to indicate the exact position of the excavation line, footer line, and the foundation wall line. _____
   _____

5. Why does a structure require a foundation? _____
   _____
   _____

DA-IV

POST TEST (cont'd)

UNIT IV: FOUNDATION AND FOOTING DETAILS

Student_____ Section_____ Date_____

DIRECTIONS for PERFORMANCE TEST:

Before beginning your test, study the standards in the instructor's

checklist.

1. Draw a foundation plan.

   a.   Obtain a sheet of 8 1/2 x 11 paper from your instructor. He

        will provide you with the proper layout to use.

   b.   Study figure 40-13 on page 280 in Architectural Drafting and

        Design.

   c.   Draw a slab foundation of the plan in figure 40-13.

   d.   Follow the directions given in problem one on page 280,

        disregarding the floor plan in figures 1 - 2.

   e.   Dimension the plan, providing notes where necessary.

   f.   When you have completed the job, have your instructor evaluate

        your work according to the standards.

DA-IV

INSTRUCTOR'S CHECKLIST

		Acceptable	Unacceptable
1.	Neatness of drawing.	_____	_____
2.	Line quality.	_____	_____
3.	Lettering spaced properly.	_____	_____
4.	Lettering legible.	_____	_____
5.	Accuracy of drawing.	_____	_____
6.	Completeness of dimensions.	_____	_____
7.	Placement of dimensions.	_____	_____
8.	Correct foundation data.	_____	_____
9.	Foundation placed correctly for support of the structure.	_____	_____

APPENDIX L

Instructor's Performance Checklist

VOCATIONAL SKILLS RECORD

CLUSTER - DRAFTING - MECHANICAL

NAME _____ DATE _____

CERTIFIED BY _____ TITLE _____

[L M S] Draws isometric views of objects.

[L M S] Draws offset measurements and sections objects drawn isometrically.

[L M S] Draws oblique illustrations of objects.

[L M S] Draws oblique illustrations using cabinet method.

[L M S] Identifies common uses of threads.

[L M S] Draws unified threads using semi-conventional method.

[L M S] Draws acme threads using semi conventional method.

[L M S] Draws square threads using semi conventional method.

[L M S] Draws threads using simplified and schematic methods.

[L M S] Draws square and hexagonal bolts and nuts.

[L M S] Identifies machine, cap and set screws.

[L M S] Draws cams which use uniform motion.

[L M S] Draws cams which use harmonic motion.

[L M S] Draws cams which use uniformly accelerated motion.

[L M S] Calculates and draws tooth profile of spur gears.

[L M S] Calculates and draws spur gears using simplified method.

[L M S] Calculates and draws spur gears using conventional method.

[L M S] Draws bevel gears using simplified method.

[L M S] Draws worm gears using simplified method.

[L M S] Constructs prisms using parallel line development.

[L M S] Constructs pyramids and cones using radial line development.

[L M S] Constructs transition pieces by triangulation.

[L M S] Constructs line, bar, and pie charts.

[L M S] Draws simple detailed working drawings.

[L M S] Draws simple assembly working drawings.

[L M S] Identifies basic shop processes.

[L M S] Identifies basic operations performed on drill press, lathe, and milling machine.

[L M S] Draws machine shop layouts to scale.

General Attitude - [L M S] Industrious and energetic
[L M S] Cooperative with instructors and associates
[L M S] Dependable
[L M S] Punctual

Code - **L** - Limited skill requires supervision.
M - Moderate skill requires minimum supervision.
S - Skilled works independently

APPENDIX H

'tu' + Progress Chart

STUDENT _____   CLASS _____

PERIOD _____

STUDENT PROGRESS CHART

PKG.	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT	UNIT
1.															
2.															
3.															
4.															
5.															
6.															
7.															
8.															
9.															
10.															
11.															
12.															
13.															
14.															
15.															

APPENDIX II

Vocational Skill List

[1 M S] Understands basic construction of kitchen base cabinet and installs laminated plastic top

[L M S] Cut at. stall ...

CLUSTER -- CARPENTRY

[L M S] Bores holes wit ... expansion bits.

[L M S] ... underlayment and staples insulation batts.

[L M S] Cuts and installs crown molding

[L M S] Cuts and installs metal threshold.

[L M S] Cuts and installs door jambs.

L - Limited skill requires supervision.
M - Moderate skill requires minimum supervision.
S - Skilled works independently.

DATE

CERTIFIED BY

TITLE

99

APPENDIX C

Student Survey Form

Circle One Response

1. I like having the responsibility for learning.

   ALWAYS   SOMETIMES   NEVER

2. I like this new system of learning more than listening to an instructor lecture.

   ALWAYS   SOMETIMES   NEVER

3. I find it helpful to have the statement of the reasons for learning (Rationale).

   ALWAYS   SOMETIMES   NEVER

4. I find it helpful to have the statement of what I am expected to do (Objective).

   ALWAYS   SOMETIMES   NEVER

5. I am able to read and understand the instructional package.

   ALWAYS   SOMETIMES   NEVER

6. I learn more from the sound-slide material than the reading references.

   ALWAYS   SOMETIMES   NEVER

7. I like to be able to learn at my own speed.

   ALWAYS   SOMETIMES   NEVER

8. Upon completion of a task package, I feel confident that I have achieved the Objective.

   ALWAYS   SOMETIMES   NEVER

9. Considering all things about this instructional system, I think it is a more effective method of instruction.

   ALWAYS   SOMETIMES   NEVER

10. What do you like most about this approach?

    _____

    _____

11. What do you dislike most about this approach?

    _____

    _____

In-Service Training in Individualized Instruction

This staff development plan has been prepared for use in conjunction with the curriculum materials developed in the summer 1972 Sanford Research Project, Sanford Central High School, Sanford, North Carolina. The curriculum materials were designed to cover the first year of instruction in the occupational career clusters of drafting, masonry, metals, and carpentry. The instructional program at Sanford Central High School is based on two hours of instruction per day, five days per week.

The Sanford curriculum has been designed in an individualized instruction format, enabling each student to pursue specific learning objectives at his own rate of speed. Since this approach is totally different from the group instruction to which many teachers are accustomed, the staff development plan focuses on this aspect of the program. In the in-service workshops outlined below, the instructor should be able to develop those skills necessary for management of the individualized curriculum.

The plan is to be used as an in-service training program for the instructional staff. Component parts of the specialized staff development plan are as follows:

I.   ORGANIZATION -- the overall structure and requirements for conducting a staff development program.

II. IMPLEMENTATION -- the structure and manner by which the in-service staff development plan is to be conducted.

III. CONTENT -- the methodology, objectives materials, and other information needed to familiarize staff who will be administering an individualized instructional system.

IV. EVALUATION -- methods of assessing the effectiveness of the in-service training program.

I. ORGANIZATION OF IN-SERVICE PROGRAM

A. PROGRAM ACCEPTANCE

1. Attitudinal Dimension

One of the essential ingredients for activating the process of change from one type of instructional mode to another is the creation of a climate for such change through development of proper attitudes regarding the acceptance of the program. The overall success of any new program depends in large part upon those who are delegated the responsibility to see that the program is carried out. In order to make certain that this or any other innovative program is given a fair chance for success, it must be nurtured in an atmosphere of positive thinking and enthusiasm. Before beginning the task of implementing

*Submitted by Educational Development, RCA Service Company, Cherry Hill, New Jersey

an individualized program, the administrator and staff personnel who will become involved with the program must be given a sufficient amount of information to understand its objectives and methods and to develop a positive attitude toward it. The philosophy of individualizing instruction must be accepted by everyone involved before a specific plan or proposal is developed.

2. Methods of Gaining Support

A successful marketing job by the project administrator should result in a staff which is responsive and which has positive attitudes toward making the project a success. The chances for success will be greatly enhanced as a result of having a dedicated and cooperative staff team.

Some methods which an administrator might use in selling the concept of individualized instruction to his staff as well as to his administrators and board members are as follows:

a. Dissemination of written materials which clearly support the position or arguments that he is trying to establish.

b. Visitations to other school systems which have similar types of programs.

c. Employment of experts in the field (consultants) to make presentations for the administrative and instructional staff.

d. Assistance from state education department personnel.

It is suggested that if the program does not have the strong solid support of the people who will become involved, as well as support from the superintendent and board, it should be deferred until such support becomes available.

3. Developing Program Proposal

When it has been agreed that the philosophy of individualization is desirable, the next step is to develop a plan or proposal which describes how the program is to function. The development of this plan should involve key staff people who will eventually be involved in implementation. In order to anticipate reaction from administrators and board members, the proposed program should be written so that the content includes the following:

(1) Goals and objectives of the program
(2) Administration of the program
(3) Staff requirements
(4) Procedure for implementation
(5) Program cost--facilities, equipment, curriculum, hardware, and software
(6) Methods of evaluating the program

The plan should be a modest one which will not overwhelm the board, teachers, or community.

Assistance in the preparation of the proposal can be obtained from an experienced consultant who can supply local school system personnel with additional information and alert them to the advantages and disadvantages of various types of programs.

Having achieved the necessary support and approvals to proceed with the implementation of an individualized system of instruction, the next step is to put together the organizational structure to deal with the in-service staff development program.

1. Project Administrator

The project administrator of the in-service staff development program should be clearly designated; his responsibilities should be established, and he should be given ample time to plan and conduct the program. It is suggested that the project administrator plan to visit school systems which have had successful individualized instructional programs in operation and spend a sufficient amount of time with the project administrator, staff, and students. The time he spends in these schools will be highly valuable in that he will get an opportunity to observe an actual operation and see first-hand how an operating program functions as well as being able to ask questions pertinent to development and implementation of his own program.

2. Specialists

The assistance of qualified people is essential in conducting an effective in-service program. In a large school system where a similar program is already in operation, assistance may be obtained from within the school system. However, in a system that does not have people who have this kind of experience, it is necessary to hire outside consultants who have the expertise to assist in the in-service staff training program. Individuals who are brought in to conduct an in-service program are generally better accepted by local staff because of the demonstrated expertise and because of background and experiences in a variety of schools offering this kind of program. These individuals bring with them experiences beyond those of the local staff and can contribute greatly to the implementation of the program.

The qualifications for such a person or persons are as follows:

a. <u>Individualized Instructional Systems Specialist</u> -- a person who has a thorough understanding of how an individualized system operates, sound knowledge of curriculum development, ability to develop individualized learning packages, understanding of administrative and staff requirements, ability to design and write a comprehensive proposal with detailed cost analysis, and an interest in the particular local program.

b. <u>Curriculum Content Specialist</u> -- a person who has knowledge of curriculum development, understanding of behavioral objectives, previous experience in working with an individualized instructional system, and a knowledge of occupational education.

It is suggested that the in-service staff development workshop have at least one person with the above-mentioned qualifications to assist the project administrator in conducting the workshop. If there are more than ten participants in the in-service workshops, it is suggested that the workshop have an individualized instructional systems leader and the necessary number of curriculum content specialists to enable teachers to work in small groups with a ratio of one specialist for every six teachers. The size of the small discussion work group has proven to be an effective means of getting everyone to participate actively while also allowing for individual attention and evaluation by the group leader.

A careful assessment of the local staff should be made in order to determine whether certain individuals have the expertise required for the program. In a large school system, assistance may be obtained from people in other schools with the system who have the required expertise.

II. IMPLEMENTATION OF THE IN-SERVICE PROGRAM

A. TIME ALLOTMENT

Perhaps the single most essential element in implementing the program effectively is additional planning and training time for teachers and administrators. Staff training and planning time should be initiated well before an attempt is made to implement even pilot programs. Ideally, the in-service program should be conducted prior to the start of the new school year. It is much easier to begin a new program at the start of the year rather than trying to begin after school has started.

It is suggested that the staff be given an ample amount of time not only to attend the staff development workshop but also to make necessary changes such as ordering textbooks and multi-media materials, developing slides, altering physical facilities, obtaining equipment and supplies, and preparing other materials. It is suggested that at least one month be given to the staff member for this entire task. The extent of multi-media or other new materials to be incorporated in the individualized instructional system will determine the need for additional preparation time needed for the staff.

Having designated a particular starting date with the allotted time for the in-service workshop, the project administrator should prepare a written hand-out which clearly establishes the purpose, content, and schedule of events which are to take place during the workshop. The program goals should be clearly spelled out so that the participants know exactly what the expected outcomes are. It is suggested that at least a week be devoted to the in-service workshop. In scheduling the topics of the workshop, program activity should be arranged to enable the staff to work both in small groups and individually.

B. PLANNING THE IN-SERVICE PROGRAM

Prior to conducting the in-service workshop, a comprehensive plan should be written to cutline what is to be accomplished during the workshop. The working plan should clearly set forth the objectives of the program and other pertinent information. It should also contain a flow chart of how the program will be organized and conducted. This material should be assembled and disseminated to the participants of the workshop so that they may have an opportunity to study it before starting the actual in-service staff development program.

Additional instructional materials are required in most schools to implement individualized learning. Therefore, additional resources must be obtained or existing resources must be reallocated to purchase these materials, as well as for consultant services and necessary facility alterations. To assist the project administrator in conducting the in-service workshop, it is suggested that consultant services be purchased in such areas as writing behavioral objectives, developing and writing learning packages, developing multi-media materials, and implementing the instructional program. The consultants selected should have the capability and expertise to stimulate the participants of the workshop and alert them to new procedures.

Depending upon the number of teachers that are to be involved in the in-service workshop, it is suggested that the project administrator plan his particular implementation program to utilize a variety of instructional approaches, including large group instruction, small group instruction, and individual teacher assistance sessions. Since there are certain problems which probably will occur regarding implementation that are peculiar to a given area, the project administrator should allocate time to meet on an individual basis with staff members in seeking solutions to these problems.

Since this particular in-service plan deals with converting the staff from group instruction to individualized instruction, the format of the in-service workshop should utilize an individualized approach. The over expenditure of time in lecturing (group instruction) to staff should be avoided. After the introductory session, the group should be broken into smaller groups using the curriculum content specialists as group leaders so that the staff members may begin familiarizing themselves with subject matter and approaches they will have to master in order to implement the individualized instructional system successfully. The project administrator should consult individually with teachers to make certain that they understand the concepts and are making satisfactory progress.

Part of the implementation plan should focus on the actual staff involvement with the unit and task learning packages. The staff should be given a set of learning packages in their given areas of the curriculum and have the opportunity to study and proceed through the packages as a student would. Having members of the staff play the part of a student will enable them to experience first-hand how a student might react to this individualized approach. Individual staff members will perform activities as prescribed in both unit and task packages. Upon completion, the participant will evaluate his own progress. The success of the individualized instructional system will be determined by teachers who are charged with the responsibility for implementing the program. Therefore the staff must understand the system and be able to provide proper direction to students.

D. OPERATIONAL CHECKLIST

As project administrator, it may be necessary to perform a number of activities and make various arrangements prior to actual starting of the in-service workshop. To assist in this task, the following checklist of questions has been prepared.

1. Has the program proposal been approved?
2. Have arrangements been made to obtain the service of consultants?
3. Has a definite starting date and length for the workshop been established?
4. Has the location and needed physical facilities been established?
5. Has a detailed flow-chart been prepared indicating when activities are to occur?
6. Have the participants of the in-service workshop been given sufficient notice to make necessary preparations?
7. Has a document been prepared detailing the following:
   a. goals and objectives of the workshop
   b. expected outcomes of the workshop
   c. daily schedule of activities
   d. content of the workshop
   e. evaluation of the workshop

8. Has necessary equipment, materials, multi-media, and software been procured or rented?
9. Have arrangements been made for staff visitations to other school systems?
10. Has additional money been allocated to cover the cost of the in-service workshop?
11. Have arrangements been made to hire clerical help for the workshop?
12. Have arrangements been made to hire personnel to develop multi-media?
13. Have all items related to the cost of conducting the in-service work-shop been identified and budgeted to provide a total cost? Has the following been accounted for?
    a. project administrator and staff salaries
    b. travel expense
    c. consultant services fee
    d. equipment and materials rental fee
    e. equipment, multi-media, and materials cost
    f. duplication of instructional material cost
    g. clerical and support personnel salaries
    h. telephone, postage, and miscellaneous expense
14. Has additional time been allocated for individual staff members to implement program in their own area?
15. Lastly, have the necessary stimuli been present to generate enthusiasm and a desire to make it a successful project?

III. CONTENT OF THE IN-SERVICE PROGRAM

A. PHILOSOPHY AND GOALS OF INDIVIDUALIZED INSTRUCTIONAL PROGRAM

Since an in-service plan is designed for the purpose of bringing about change, it is essential to formulate a statement of philosophy to set forth the goals of the program. The statement and the goals identified will serve as the foundation for the program. A typical statement might be as follows:

For generations educators have been trying to adjust the student' to the curriculum rather than the curriculum to the student. The result has been an inability to deal with individual differences among students because of reliance on traditional group instruction methods. "Individualized instruction" is an attempt to develop a delivery system of instruction by which we will take into considera-tion a student's individual differences in ability, interests, and learning goals.

The major goals of the individualized instructional system are to provide the best learning situation possible for all students and to help each student plan his own educational development. These goals might be stated as follows:
    a. to recognize each student's educational needs by providing him with the opportunity to learn and master material at his own rate.
    b. to improve the general learning environment of the school.
    c. to enable students to learn, think, and make decisions in today's technological society.

B. COMPARISON BETWEEN INDIVIDUALIZED AND TRADITIONAL SYSTEMS

By comparing an individualized instructional system with a traditional instructional system, it is possible to contrast the different roles that each requires of both teacher and student.

The workshop should make clear to the staff the distinct differences in the new role requirements of both teacher and student in an individualized instructional system. Recognizing that these are new roles to be mastered, ample time and consideration should be given to allow for the proper development of the roles in the most effective and efficient manner.

1. Role of the Teacher--Traditional vs. Individualized

The role of the teacher in a traditional system is to provide instruction to a group of students, using primarily the lecture method of presentation. Although teachers often meet individually to assist the student with his learning, the learning activity proceeds at the rate of the group. In contrast, the individualized system changes the role of the teacher from a dispenser of knowledge and controller of learning to a manager of instruction. The new responsibilities require the instructor to analyze carefully the individual needs of each student, to prepare an instructional sequence geared to the ability of the student, and to diagnose learning problems. The individualized system of instruction frees the teachers from the time spent lecturing a class and enables him to work on an individual basis with each student. In addition, the teacher monitors the individual performance of each student and evaluates his progress with reference to his own individual ability.

2. Role of the Student--Traditional vs. Individualized

The role of the student in the traditional system is to proceed with learning at the rate of the group. In so doing he works on the same assignments as the other students and is required to complete learning units within a specified amount of time. The performance of each student is evaluated not by his ability to learn the material so much as by comparing his learning rate to that of the group.

In the indivdualized instructional system the role of the student is significantly changed. The student no longer proceeds at the group rate but rather proceeds at his own individual rate of learning. Recognizing differences in individual ability, individualized instruction provides the needed flexibility to enable each student to spend the necessary time needed to complete a learning activity. The student in the indidualized approach assumes responsibility for learning by selecting and using the various resources that are available and by being able to assess his performance by self-evaluation.

C CAREER COMPETENCIES

As with the development of any curriculum materials there must be a starting point from which content is derived to formulate the basis of an instructional program. Since the materials to be used from the Sanford Research Project were related to occupational education, the appropriate starting point for the development of the content was to first ascertain what the particular career competencies were for the various trades that were representative of the occupational programs. The method by which these career competencies were derived was to gather input from four sources: (1) the Sanford instructional staff, (2) the state curriculum guides, (3) the craft advisory committee, and (4) curriculum content specialists from the Education Systems group of RCA Corporation, who were responsible for development of the curriculum in Sanford. The resulting career competencies represent a synthesis of this input.

Career competencies are those theoretical and practical skills a craftsman needs to know and do in an actual job sitution. Since these programs were developed for the Sanford City School System, the career competencies were tailored to fit local employment indigenous to the Sanford area. A list of career competencies has been developed for the areas of carpentry, masonry, drafting, and metals.

D. BEHAVIORAL OBJECTIVES

Having identified the career competencies, the next step was to translate the career competencies into measurable behavioral objectives related to the competency goals. The behavioral objective indicates to the student what he is to do, under what conditions he is to perform, and what the criteria for acceptable performance will be. The behavioral objective is the nucleus of the individualized instructional system in that it determines the type and sequence of learning that will be required by the student to master that ojbective successfully.

While many teachers have some acquaintance with behavioral objectives, these objectives constitute so significant a part of an individualized system that careful attention should be given to the concept and mechanics of setting objectives. A review should be made of types of behavioral objectives written in the cognitive, psycho-motor and affective domains. Depending upon the expertise of the project administrator, it may be desirable to utilize consultants to handle this portion of the in-service training.

There is a great deal of written material available that deals with the writing of behavioral objectives. If the instructional staff is going to be expected to implement this program and to participate in necessary up-dating and revision, they must have a thorough understanding of what a behavioral objective is, be able to recognize the component parts, and have the ability to write objectives in behaviorally stated terms. The decision as to how far the staff will be able to pursue the development of behavioral objectives will be determined by the amount of time available for the in-service program. It is suggested that at least two days be devoted to the study of behavioral objectives.

List of behavioral objectives were developed in the Sanford Research Project in the occupational areas of metals, drafting, masonry, and carpentry.

E. LEARNING PACKAGES

The Sanford-Research Project used the following format for development of learning packages:

The learning package system contains two parts: (1) the task package, which deals with the individual behavioral objective, and (2) the unit package, which contains a number of task packages related to given unit of instruction.

The task package contains four basic parts: the Rationale, Objective, Learning Activity, and Learning Practice. The Rationale is a statement which describes what the learning package is about and why it is important for the student to learn this task. The Objective of the task package is stated behaviorally and specifies the observable performance required of the student so that the goal may be adequately evaluated by the student or teacher. The Learning Activity section makes reference to specific source information

needed to reach the objective. Reference is made to specific pages in text- 111
books, manuals, or other reading aids available to the student, as well as
to multi-media materials. The Learning Practice of the task package provides
the student with an exercise or set of exercises that allows for the practice
and application (or "hands-on" experience) required for the behavioral objec-
tive. This section also provides the student with a set of directions, tools,
materials, illustrations, and other aids needed to practice the required
behavior of the objective.

The unit package also contains four parts: the Rationale, Objective,
Learning Activity, and Post Test. As in the use of the task package, the
Rationale serves as an overview or introduction to the unit and describes
what the unit is about. The Objective of the unit package contains a general
objective followed by the specific behavioral objectives of the related task
packages. The Learning Activity in the unit package provides the student
with information on how he is to proceed in the learning sequence and lists
the names of all the task packages of the unit. Finally, the Post Test
provides the means for measuring the behavioral objectives for all of the
task packages comprising the unit. Written tests, performance tests, and
combinations of both are used. Where a performance test is used, a form
titled "instructor checklist" has been developed to enable both student and
instructor to know what the evaluative criteria are.

F. DIAGNOSTIC AND INSTRUCTIONAL PROCEDURES

In addition to understanding the concept of individualized instruction,
it is essential for the instructor to develop additional skills in being
able to diagnose the needs of the learner and prescribe appropriate learn-
ing activities. A means of assessing the individual needs of a student
might use a diagnostic procedure comprised of the following elements:

1. Individual performance on standardized tests dealing with basic
   skills
2. Individual performance on specialized tests in specific areas
3. Consultation with individual's Guidance Counselor
4. Individual performance on teacher prepared pre-tests for
   instructional units or course
5. Consultation with other teachers
6. Individual student interest.

The results of the diagnostic assessment should produce an individual
profile and other data. Instructor then utilizes this input in directing
and prescribing the appropriate learning activity.

Although the learning packages are designed to enable the student to
evaluate his own performance, the final evaluation must be determined by
the instructor.

After the student masters the objective of the task package, he then
has the instructor certify his performance. Upon completion, the student
is then assigned to another task package or unit package.

The outward appearance of the class using the individualized learning
system may appear to be somewhat similar to group instruction. However,
a closer look will find students working individually at their own rate of
speed, using a variety of written and resource materials, on different
learning units. Depending upon the diagnostic profile of students and the
number of prerequisites per learning unit, it is possible to have students
in the same class working at learning units representing the entire course
content.

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It should be noted that there is a transitional period from traditional
instruction to individualized instruction during which teachers as well as
students need time to adjust and become comfortable with their own roles.
The most significant adjustment will occur during the first two-to-four
weeks. During this time, the project administrator should meet daily with
staff to assist them in implementing this system.

IV. EVALUATION OF IN-SERVICE TRAINING

The evaluation component of this plan is intended to furnish direction
in being able to assess the effectiveness of the in-service workshop. Since
evaluation is an ongoing process, it should not be viewed as a separate
activity but rather as a part of the continuous activity of the program.
During the course of the in-service workshop, it is assumed that the key
points mentioned in this section will be only suggestive of some of the
criteria which need consideration.

After reading this section, the project administrator should prepare an
evaluation plan to measure the specific curricular areas covered in the in-
service workshop. Certainly one of the key points the evaluation plan
should focus upon is the assessment of how well the staff understands the
goals and objectives of the program which is to be implemented. This section
of the workshop curriculum can perhaps best be evaluated by preparing
written materials which are self-instructional and which enable participants
to respond and evaluate their own progress. In addition to making self-
evaluation possible, presentation of the material in this form will provide
first-hand experience with the individualized instructional approach. This
format will also enable workshop leaders to evaluate the progress of parti-
cipants in the program.

An assessment of the attitudinal dimension of an in-service workshop will
enable your project administrator to gauge whether or not additional training
and materials are needed. When certain staff people are not comfortable with
the new concept, individual attention should be given to determine the cause
of the individual problem. The process of changing attitudes and ideas
cannot be accomplished overnight. Changing from the traditional instructional
system to the individualized instructional system is a gradual process that
requires patience. If staff personnel can be successfully convinced of the
value of the program, they in turn will be able to function as initiators and
change agents in selling the idea to other staff and students.

The effectiveness of the in-service program can be assessed by asking
participants to write behavioral objectives in the cognitive, psychomotor,
and affective domains and to develop a sample task and unit package in their
respective disciplines. The project administrator can then evaluate the work
to assess the individual progress of each staff member.

A requirement of the in-service workshop should be that each individual
participant of the workshop prepare a written implementation plan indicating
in detail how he will proceed with the task of implementing an individualized
instructional program in his respective area.

This plan should contain the following:

a. Student Orientation-- an indication to the student of how the system
   functions, describing the new roles of the student, teacher, and
   learning materials.

b. Learning System-- a description of how the student will proceed with his learning activities.

c. Diagnosis and Prescription--identification of how the instructor will be able to diagnose individually the educational needs of the student and to prescribe learning activities.

d. Equipment and Materials--lists of instructional equipment, tools, textbooks, references, and multi-media materials needed for the program, including cost.

Upon completion of the implementation plan by each individual instructor, it is suggested that the respective plans be duplicated for each member of the workshop. The project administrator should then arrange for each individual staff participant to make a presentation to the workshop. After the presentation, the project administrator and other staff participants should critique the plan, pointing out areas where additional clarification and revision are needed. The result of these sessions will be extremely beneficial to the individual staff participant, since he will not only have had the opportunity to develop his own plan and have it critiqued, but he will also have copies of other plans which contain other useable ideas. The overall activity will enable the teacher to assess his readiness in being able to implement the individualized instructional system.

The main goal of education is to provide the best education possible for students. This goal can be achieved by personalizing instruction and meeting the individual interests, needs, aptitudes, and abilities of students.