DOCUMENT RESUME

ABSTRACT
        This volume is the last of four sets of materials
produced for training science supervisors in educational technology.
It describes the contents and use of kits designed to help
supervisors analyze their jobs in five basic supervisory areas:
budget; equipment, supplies, and materials; optimum learning systems;
provision of services to science teachers; and reports. The necessity
to relate these functions to improved student learning is emphasized.
A bibliography is appended. Examples of management systems developed
by science supervisors, samples of charts, and a copy of the
criterion assessments used as follow-up activities are included as
appendices to the report. (AL)

EDUCATIONAL
TECHNOLOGY
PROJECT

MANAGEMENT UNIT
STEP IV

VOLUME FIVE

NATIONAL SCIENCE TEACHERS ASSOCIATION   U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
WASHINGTON, D.C. 20036   Office of Education

FINAL REPORT

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VOLUME FIVE

MANAGEMENT KIT (SET IV)

Educational Technology Project
National Science Teachers Association
Washington, D.C. 20036

February 1970

U.S. DEPARTMENT OF
HEALTH, EDUCATION, & WELFARE
OFFICE OF EDUCATION
BUREAU OF RESEARCH

Set IV consists of a Management Kit.
The original version was conceived
and developed by

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C O N T E N T S

INTRODUCTION

The purpose of this kit is to help you analyze your job as it now exists. As a result of many work sessions, science supervisors developed this manipulative format to articulate and visualize management responsibilities.

Five basic science supervisory areas are included:

Budget

Equipment, Supplies, & Materials

Optimum Learning System

Provision of Services to Science Teachers

Reports

These five areas do not include all activities of a science supervisor, but they do represent the most important _management_ functions (goals) of supervisors as determined by supervisors themselves.

Emphatically, each of these functions _must_ result in improved student learning. Otherwise, as often happens with the pressures of daily activity, these functions become ends in themselves. In utilizing this kit these functions may be visually represented as the spokes in a wheel all leading to optimum student learning.
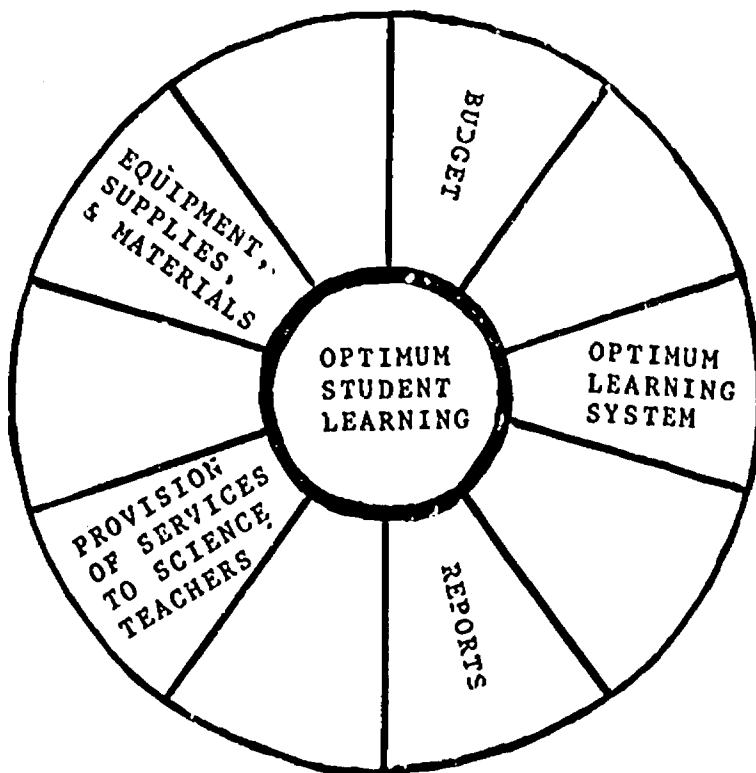
In using this kit, you will prepare flow chart of
activities and events (checkpoints) in the five supervisory
areas. The materials in this kit are to assist in a visual
analysis of your management responsibilities. Included are
instructions to make that analysis as effective as possible.

Don't start to play until you can devote at least two
uninterrupted hours to the task. You will need a large table
and an audio tape recorder with enough tape for 60 minutes of
recording.

When you are ready to start, turn the page and follow
the instructions carefully.

INSTRUCTIONS FOR UNIT I

This first unit will provide directions and materials
for a flow chart of your activities in any one of the five
management goals. In addition the resulting chart will
provide a linear time sequence of activities which will form
the basis for Unit II activities. If this activity is
carried out with others in the same room, it would be better
to prepare your own chart before comparing activities with
others. The purpose is to prepare a chart of your own
activities that will form a basis for future analysis and
revision. Before changing, it is necessary to have a
starting point: a basis for change.

Note: If you are in a group, spread out; unit I requires
room.

Initial Activity

1. Open the Management Kit. Enclosed you will find all of the items noted in the "List of Supplies." (Appendix A)

2. From the five triangles (terminal goals) select the one you want to start with and put it at the far right end of the table. Put the other triangles back in the Management Kit.

3. Pick up the printed squares (checkpoints) and select any of these which you consider relevant to the process of reaching the selected terminal objective.

4. Put the balance of the checkpoints (squares) back into the Management kit.

5. Keep the blank squares out and put them in an easy-to-reach place.

6. Return all additional materials to the Management Kit.

Operation

Spread out all selected checkpoints (squares) on top
of the table. Now, arrange them in sequential order leading
to your goal (triangle). (e.g., which comes first, mailing
the letter or typing it?) You may find it easier to start
with the goal at the far right and work backwards. If you
find any gaps (missing checkpoints) use the blank squares to
make your own. Since this unit involves your own activities
do not hesitate to add any checkpoints you feel are necessary. /5

The arrangement of checkpoints does not have to be
linear (except in time) Create any pattern best suited for
your situation. For example, the pattern might look some-
thing like this:
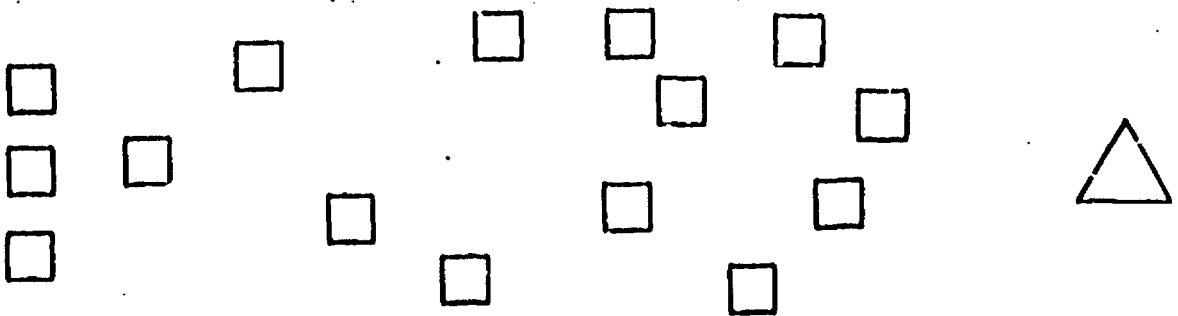
Here are some guidelines to help you.

1. Each checkpoint has a beginning and an ending.

2. The activities involved in reaching each checkpoint
   will be considered later. .

When all the checkpoints have been arranged in a pattern leading
toward the goal, turn the page.

Take the toothpicks out of the Management Kit. These
are the activity connectors. Use them to show the activities
leading from checkpoint to checkpoint toward the goal.

Here is one example of a finished product.
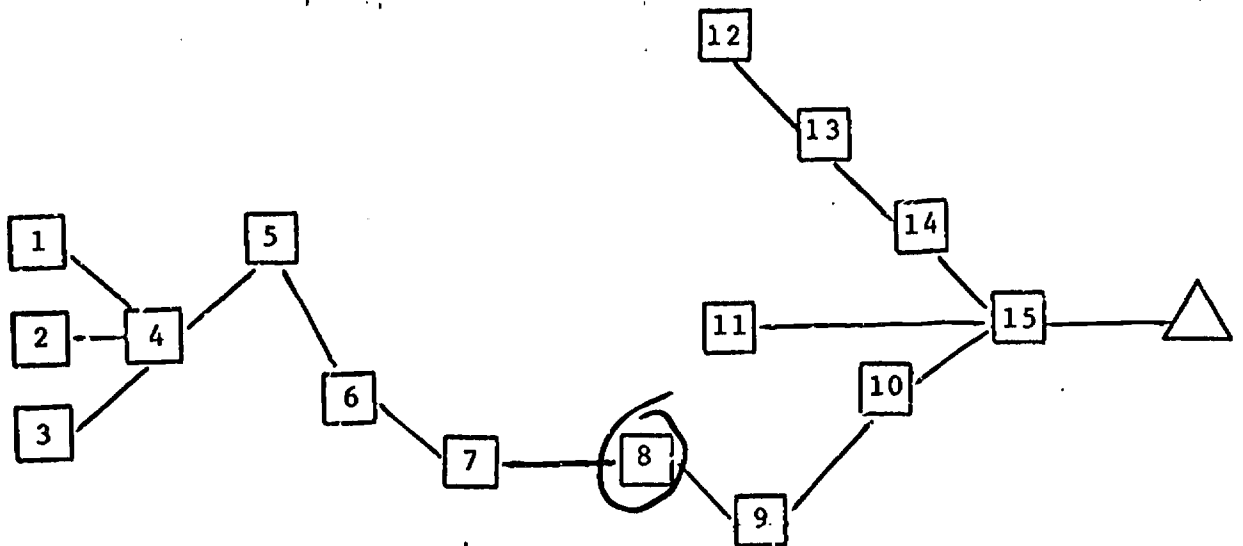
When your pattern is complete, select the colored pen
that matches the colored paper on which the goal is printed.
Now give each checkpoint card a position number (see above),
moving across the table from left to right. Insert the position
number beside the appropriate goal number which is already
printed on the checkpoint card.
For example, on the checkpoint
card "Inventory" (at the right),
the position number "8" was
written beside the appropriate
goal number (number "1" which
stands for the goal "Reports").

```
        B

    INVENTORY


  1.8    2.     3.

     4.    5.
```

Checkpoint card indicating
method of inserting position
number.

Take the following items from the Management Kit:

1. The sheet of paper (8½" X 14") of the same color as the triangle on which the goal is printed.

2. The black pen.

3. The square template.

4. The yellow lined pad.

Using these supplies, copy onto the colored paper the pattern you have developed. Follow these descriptive guidelines:

Description of Checkpoints Networks.

A. Composed of Events (checkpoints) and Activities.

1. The squares represent the Checkpoints.

2. The lines represent the Activities.
   a) Solid line ———— an activity.
   b) Dotted line —————— a dummy activity; no time required from event to event. For example, any event which really forms a part of something else: replacement parts (events) are necessary to an inventory (event) but once you have listed them they are a part of the inventory. No specific activity is required for this.

B. Ground Rules.

    1. An event can occur only <u>once</u> in a network.

        a) Event has a beginning.

        b) Event has an end.

        c) Activity runs from the beginning to the end.

    2. There can be no return to an event in the
network once it has ended.

Use the template to draw the lines represented by the tooth-
picks. Be sure to identify each of the squares on your
drawing with both its position number and capital letter (at
top). Use the yellow lined pad to list the numbered check-
points in your pattern.

When the drawing is complete, get a tape recorder and explain
the chart you have developed. Some find it helpful to have
another person listen to the explanation; others prefer to do
it in solitude. * Take your choice and, when finished, take
a break.

_____

* If you do not have a tape recorder write out the briefing
as if it were a memo explaining your chart to another science
person.

INSTRUCTIONS FOR UNIT II

After you have copied your flow chart and completed
the verbal description, you are ready to assign times to
your activities. Solid lines on your chart represent elapsed
time.

Each activity requires some amount of time for com-
pletion.

The estimated time required is written on the line;
e.g., one week equals 1.0 (a five-day week), one day equals
0.2.

One word of caution at this point, your chart need not
have a standard time scale:
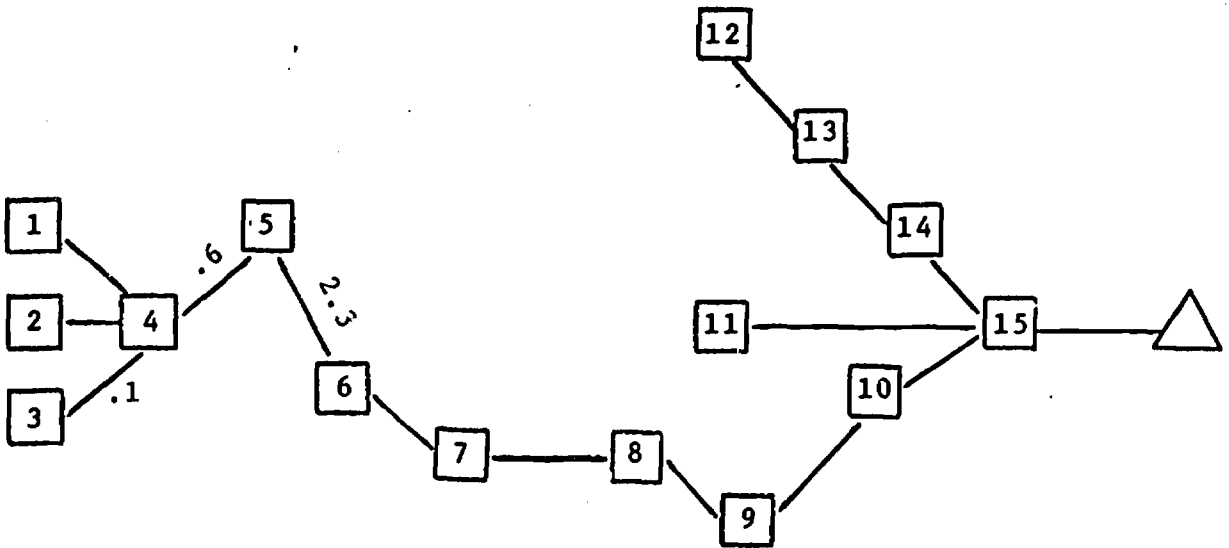
At this point feel free to change any lines from dotted
to solid or vice versa.

Your flow chart now shows the events, activities, and time estimates for cue terminal management goal. You have two options at this point: repeat Unit I and II for the other four terminal management goals, or continue to Unit III.

The choice is yours.

/1

INSTRUCTIONS FOR UNIT III

At this point, you have completed at least one of
the flow charts leading to a terminal management goal.
All of the work up to now is yours and should reflect your
real world activities.

In this unit you will have an opportunity to inter-
act with other points of view. The unit may be taken either
alone or with other science supervisors.

/1

> Remember - your chart represents your real world
>
> activities - it is not intended to be a textbook
>
> model. As a result, no two charts will have more
>
> than a general resemblance. This does not make
>
> one chart right and another wrong.
>
> Be prepared to seek new areas of activity and new
>
> approaches to similar areas. But also, identify
>
> your own strengths.
>
> The result of this interaction activity will be
>
> a strengthening of your own flow chart.

If you are working alone on Unit III, skip the steps
under group activity and proceed to individual activity.

Group Activity

1. Keep the group small; three people maximum.

2. Pick the one terminal management goal for which
    everyone in the group has developed a flow chart
    (Unit I).

3. Spread out the charts and give one another the
    tape recorded or written briefing prepared to
    describe the chart (Unit I).

4. Question, defend, and discuss each chart in turn,
    making notes about some of the major differences
    in the charts. Take as much time as you wish.

5. Make any changes you wish in your original flow
    chart. Do these with a different colored pen.

6. You may not continue as a group or separate. In
    either case, continue with the following steps
    under individual activity.

Individual Activity

1. Pick one terminal management goal for which you have done a flow chart.

2. From the kit select the brown envelope labeled with the terminal management goal you selected. This envelope contains a conglomerate flow chart incorporating charts from other supervisors. /1:

3. Spread your chart near the chart from the envelope.

4. This chart does not have a prepared audio tape or written briefing similar to yours. Prepare a briefing for it using a tape recorder or write it on the yellow pad.

5. Identify the major differences in arrangement of activities and checkpoints between your chart and the other chart (through comparing charts and briefings).

6. Make any changes you wish in your own original flow chart. You might wish to draw a new flow chart incorporating these changes.

   Remember changes must be realistic. The resulting chart is yours, not a theoretical model.

If you have flow charts for the remaining terminal

management goals, repeat Unit III using these charts. If

not, go back to Units I and II and complete your remaining

charts.

When you have completed Units I, II, and III for all

five goals, go on to Unit IV.

INSTRUCTIONS FOR UNIT IV

Unit IV may be taken in a small group or individually.
The purpose of this unit is to identify critical checkpoint
areas. Once these areas have been identified they can be
expanded in depth and weak points strengthened. Again, as in
all other units, all of the activities must meet your needs.
A critical checkpoint is one which is critical to your flow
chart. A weak area is where you have identified the need for
reinforcement.

1. In Unit I you placed the location of the checkpoint
   in a flow chart next to the number of the terminal
   management goal. Go through the checkpoints and
   sort them into piles according to the number of
   flow charts in which the checkpoint appears. (You
   should have six piles, 0 - 5.)

   ┌─────────────────────────┐
   │   B   │
   │   │
   │   INVENTORY   │
   │   │
   │   1. 8 2. 6 3. 34   │
   │   4. 4 5. 17   │
   └─────────────────────────┘
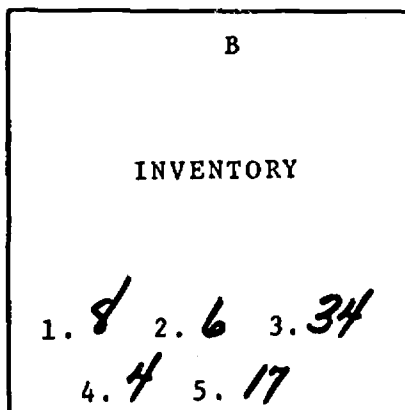
2. For the moment, take only the last two piles (e.g.,
   4 and 5). These checkpoints are of continuing
   importance since they appear in almost every flow
   chart.

3. Using the attached sheets as models, break down
   the checkpoints in detail.
   (Example, what goes into the monthly staff
   meeting? What is involved in organizing a journal
   club?)

4. Only you can identify areas of weakness in your
   activity. The attached sheets and the bibliography
   following are intended as general aids and infor-
   mation. They were developed through using the kit
   with a number of science supervisors at all levels.
   Areas that appeared consistently have been
   emphasized.

   /16

   From this point on you are on your own. If you
   have any comments or suggestions, let us know.
   We would appreciate copies of your revised flow
   charts and briefings, along with any other material
   you care to add.

SAMPLE CHECKPOINT BREAKDOWNS

CHECKPOINT CA

1. Presentations to Community Groups.

    1.1 Involve Attendees.

        1.1.1 Pre and Post Test.

        1.1.2 Demonstration - ice example.

        1.1.1 Shocking statements - heat example.

    1.2 Utilization of Media (equipment) desired in school

        by you in presentation   /17

        1.2.1 Getting loan of equipment from supply house.

    1.3 Student Demonstration.

CHECKPOINT AU

1. Professional Development.

    1.1 Membership in Teacher Organizations, Unions, etc..

    1.2 Encourage staff participation in N.E.A., particularly

        N.S.T.A..

    1.3 Release time and/or monetary contributions for graduate
study.

    1.4 In-service workshops, institutes, conventions, meetings,

        exhibits.

    1.5 Professional library and resource materials.

SAMPLE CHECKPOINT BREAKDOWNS

CHECKPOINT AC

1. Staff Meetings.

    1.1 To develop plans for science competition.

    1.2 To develop plans for Parents Day.

    1.3 To plan remedial action for weakest areas of student learning.

    1.4 To consider complaints received from parents or PTA.

    1.5 To consider requests from administration. /18

    1.6 To review public relations feedback.

    1.7 To discuss and evaluate validated learning systems and mediated materials.

CHECKPOINT BQ

1. Journal Clubs.

    1.1 To prepare recruitment material.

    1.2 To list the scientific journals to be used.

    1.3 To establish schedule of monthly meetings.

    1.4 To select articles to be reviewed at the first meeting and to assign these to "reviewers".

    1.5 To record or collect written reviews and compile them for memographed "Digest".

    1.6 To distribute "Digest" to all science teachers, to NSTA, and to administration.

SAMPLE CHECKPOINT BREAKDOWNS

CHECKPOINT AQ

1. Conferences and Counseling Sessions With Science Teachers.

    1.1 To discuss individual's strengths and weaknesses.

    1.2 To consider physical and mental health of the individual.

    1.3 To listen carefully to, make note of, and follow-up on
         suggestions and complaints of each.

    1.4 To assist the teacher in finding best approaches to
         problem solving.   /1!

APPENDIX A

LIST OF SUPPLIES

Five (5) colored triangles.

(Each triangle is printed with one terminal manage-

ment goal and a number identifying that objective.)

Ninety-One (91) white squares.

(Each square is printed with a checkpoint, numbers

1, 2, 3, 4, 5, goals, and a capital letter.)

Twenty (20) blank white squares.

Five (5) colored felt tip pens.

(Pink, yellow, green, blue, orange.)

One (1) bundle wooden toothpicks.

One (1) square template.

Ten (10) sheets 8½" X 14" paper.

(Blank, two sheets in each color: pink, yellow, green,

blue, orange.)

Three (3) blank sheets 20" X 30" newsprint.

One (1) black felt tip pen.

One (1) lined yellow pad.

/20

APPENDIX B

LIST OF "CHECKPOINT" SQUARES

A   CLERICAL SUPPORT

B   INVENTORY

C   DISTRIBUTION TO TEACHERS

D   PROCUREMENT OF BIDS

E   IDENTIFICATION OF UNMET NEEDS

F   REPAIRS AND REPLACEMENTS

G   DETERMINATION OF NEEDS

H   RESEARCH REVIEW

I   BUDGET

J   INVOLVEMENT OF FACULTY

K   COMPARISON OF NEEDS TO BUDGET

L   ASSIGNMENT OF PRIORITIES

M   RECEIVING INSTRUCTIONS

N   REQUESTS FOR ASSISTANCE

O   ADMINISTRATIVE BRIEFING

P   MAINTENANCE

Q   ORDERING

R   DISCUSSION OF BUDGET

S   MEMORANDA & LETTERS

T   COMPETITIVE TEAM IN STATE CASH AWARDS USED FOR EQUIPMENT

U   PERUSING CATALOGS

V   VISITS TO SCIENCE CLASSROOMS

W   TALKING TO SALESMEN

X   VISITING OTHER DISTRICTS (OR STATES)

Y   "SHARING" LIMITED EQUIPMENT

Z   CHECKING DELIVERIES

/ 21

AA	VISITING EXHIBITS
AB	EVALUATION OF STUDENT LEARNING (QUANTITATIVE & QUALITATIVE)
AC	STAFF MEETINGS
AD	TESTING & VALIDATION
AE	STATISTICAL SUMMARIES
AF	TELEPHONE CONFERENCES
AG	SUGGESTIONS FROM ADMINISTRATORS
AH	BASIC LEARNING PROGRAM DEVELOPMENT
AI	REQUESTS FROM ADMINISTRATORS
AJ	HUMAN REPAIR & MAINTENANCE
AK	DAILY DIARY
AL	PROGRESS REPORT
AM	EXPLANATION OF WRITTEN REPORTS
AN	ORIENTATION OF NEW FACULTY
AO	PREPARATIO' .OR VOCATIONAL TRAINING
AP	IN-SERVICE TRAINING
AQ	CONFERENCES OR COUNSELING SESSIONS
AR	ACTION RESEARCH
AS	PLANNING FUTURE PROGRAMS
AT	JOB ASSIGNMENTS
AU	PROFESSIONAL DEVELOPMENT
AV	STAFF EVALUATION
AW	ANECDOTAL RECORDS
AX	COMMITTEE ASSIGNMENTS
AY	JOB VACANCIES
AZ	ORAL INTERVIEWS

/22

BA	INTERIM REPORTS
BB	ANNUAL REPORT
BC	CONVENTIONS, INSTITUTES & WORKSHOPS
BD	TEACHER DESIRES
BE	TEACHER ABILITIES
BF	GRADUATE STUDIES
BG	PUBLIC RELATIONS FEEDBACK
BH	P.T.A. OR PARENT COMPLAINTS
BI	UNSATISFACTORY OR QUESTIONABLE EVALUATION OF STUDENT LEARNING
BJ	TEACHING RESPONSIBILITIES
BK	APPLICATION EVALUATION
BL	GETTING KIDS INTO COLLEGE
BM	TRADE MASTERY
BN	SUGGESTIONS OF FACULTY MEMBERS
BO	JOURNAL CLUBS
BP	IMPLEMENTATION OF LEARNING SYSTEM
BQ	STUDENT GUIDANCE
BR	INVOLVEMENT OF PARENTS
BS	SUGGESTIONS OF STUDENTS
BT	SUGGESTIONS OF PARENTS
BU	DETERMINATION OF WHAT WE WANT STUDENTS TO LEARN
BV	INVOLVEMENT OF STUDENTS
BW	NO APPLICATION OF APPROVED & VALIDATED SYSTEM OR MEDIATED MATERIALS
BX	BEST PRACTICES NEWS LETTER
BY	CONTINUING EDUCATION
BZ	SUGGESTIONS OF COMMUNITY

/23

CA   PRESENTATIONS TO COMMUNITY GROUPS

CB   EQUIPMENT, MATERIAL, & SUPPLIES

CC   PERSONNEL REPORTS

CD   STAFF SELECTION

CE   TEACHER AIDES

CF   STAFF COMMUNICATIONS

CG   APPLICATION OF VALIDATED LEARNING SYSTEMS & MEDIATED
      MATERIALS

/24

CH   REMEDIAL PLANS

CI   EQUIPMENT SPACE

CJ   PROFESSIONAL ASSOCIATIONS & JOURNALS

CK   EQUIPMENT UTILIZATION

CL   PROPOSAL PREPARATION

CM   VALIDATION OF NEW LEARNING MATERIAL

APPENDIX C

B I B L I O G R A P H Y

Use of Systems Approach for Management Activity

Clyde Carter, "What Management Techniques Can the School
Learn from Industry?" (Paper presented at the North
Central Association Annual Meeting, March 26, 1969.),
North Central Association Quarterly, 43:4 (Spring 1969),
pp. 353-60.

Desmond L. Cook. Program Evaluation and Review Technique:
Applications in Education, Cooperative Research Mono-
graph No. 17. Washington D.C.: U.S. Department of
Health, Education, and Welfare, Office of Education,
1966. (Government Printing Office #FS5.212:12024)

Leonard C. Guy, "Simulated Management," Library Journal,
94:1 (January 1969), pp. 37-41.

Harry J. Hartley, "Santayanan-Weberian Reason in Admin-
istration,"Journal of Educational Administration, 7:1
(May 1969), pp. 45-56.

Harry J. Hartley, "Limitations of Systems Analysis," Phi
Delta Kappan, 50:9 (May 1969), pp. 515-19.

C. Kenneth Tanner, "Techniques and Application of
Educational Systems Analysis," Audiovisual Instruction,
14:3 (March 1969), pp. 89-90.

Provision of Services to Science Teachers (especially related
to goal two)

William Ammentorp and others, "Prerequisites for Systems
Analysis--Analytic and Management Demands for a New
Approach to Educational Administration, "Educational
Technology 9:8 (August 1969), pp.44-7.

G. Ernest Anderson, Jr., "Simulation Model Helps Plan
Teacher Training Program," Nations Schools 83:4
(April 1969), pp. 90-2.

Joanne I. Bell. Staff Development and Practice Super-
vision: Criteria and Guidelines for Determining Their
Appropriate Functions. Washington, D.C.: U.S. Depart-
ment of Health, Education and Welfare, 1968. (Government
Printing Office #U-309-429)

Provision of Services to Science Teachers Continued

Martin M. Bruce. <u>Human Relations in Small Business</u>,
Small Business Management Series No. 3, third edition.
Washington, D.C.: Small Business Administration, 1969,
38 pages. (Government Printing Office #0-356-552)

N. Richard Diller, "The Management of Professional
Educators; Management Development Needs in the Education
Field," <u>Training Development Journal</u>, 23:5 (May 1969),
pp. 48-9.

Cleone L. Geddes and Beverly Y. Kooi, "An Instructional
Management System for Classroom Teachers," <u>Elementary
School Journal</u>, 69:7 (April 1969), pp. 337-45.

/26

E. W. Menzel, "Science Teaching and Sensitivity Training?,"
<u>Science Teacher</u>, 36:8 (November 1969), pp. 17-20.

Robert S. Randall, "An Operational Application of the CIPP
Model for Evaluation," <u>Educational Technology</u>, 9:7
(July 1969), pp. 40-4.

Martin I. Taft, "A Systematic Method for Evaluating Teachers,"
<u>Journal of Engineering Education</u>, 59:7 (March 1969)
pp. 852-7.

Budget and Reports (especially related to goals one and three)

G. Robert Cope, "Simulation Models Should Replace Formulas
for State Budget Requests," <u>College and University
Business</u>, 46:3 (March 1969), pp. 30-4.

Harry J. Hartley, "PPBS and Cost Effectiveness Analysis,"
<u>Educational Administration Quarterly</u>, 5:1 (Winter 1969),
pp. 65-80.

Richard Millard, "Program Development and Budgeting: PPBS
(Summary of report on study entitled <u>Planning for
Educational Development in a Planning, Programming and
Budgeting System</u>, by Selma Mushkin, Education Commission
of the States Steering Committee meeting, December 1968),"
<u>Compact</u> 3:1 (February 1969), p. 12.

Charles C. Poindexter, "Planning-Programming-Budgeting
Systems for Education," <u>High School Journal</u>, 52:4
(January 1969), pp. 206-17.

Equipment, Supplies, and Materials (especially related to goal five)

The Audio-Visual Equipment Directory: A Guide to Current Models of Audio-Visual Equipment. Fairfax, Virginia: National Audio-Visual Association, Inc. ($7.00)

An annual directory, produced by the trade association of audiovisual hardware manufacturers, includes pictures and specifications of the equipment.

Audiovisual Marketplace: A Multimedia Guide, second edition. New York City: R. R. Bowker Company, 1970. ($12.25)

The most comprehensive directory of hardware and soft-   /2;
ware manufacturers/producers/distributors. Includes listings of media organizations, periodicals, film libraries, educational radio and television stations.

Educators Guide to Free Science Materials. Randolph, Wisconsin: Educators Progress Service, 1968. ($8.25)

Lists free films, filmstrips, tapes, transcriptions, and other printed material.

Carl Hendershot. Programmed Learning: A Bibliography of Programs and Presentation Devices, fourth edition. Bay City, Michigan: Carl Hendershot, 4114 Ridgewood Drive. ($27.50, including supplements through June 1970)

Index to 16mm Educational Films, second edition. New York City: R. R. Bowker Company, 1969. ($38.50)

Contains 35,000 entries for commercially available 16mm films. More than 10,000 entries in the natural and physical sciences.

Index to 8mm Educational Film Loops, first edition. New York City: R. R. Bowker Company, 1969. ($16.00)

Approximately 10,000 entries for commercially available 8mm film loops.

Index to 35mm Educational Filmstrips, second edition. New York City: R. R. Bowker Company, 1969. ($34.00)

Some 25,000 entries.

Equipment, Supplies, and Materials Continued

Index to Educational Transparencies, first edition. New
  York City: R. R. Bowker Company, 1969. ($20.00)

  Some 15,000 entries.

Harris H. Shettel and Pamela C. Reilly, "Evaluation of
  Existing Criteria for Judging the Quality of Science
  Exhibits," AV Communication Review, 14:4 (Winter 1966),
  pp. 479-488.

/28

A P P E N D I X   D

MODEL SYSTEMS DEVELOPED BY SCIENCE SUPERVISORS

FOR USE IN UNIT III

MODEL 1: REPORTS

Model Sequential Order	Model Checkpoint	Capitol Letter of Management Game
1.	Begin Report	
2.	Clerical Support	A
3.	Daily Diary	AK
4.	Anecdotal Records	AW
5.	Begin: Staff Contributions	BN
6.	Staff Meetings	AC
7.	Journal Club Meetings	BO
8.	Conferences	AQ
9.	Correspondence	S
10.	Staff & Student Evaluation	AB AV
11.	Personnel Reports	CC
12.	Budget	I
13.	Equipment, Supplies & Materials	CB
14.	Quality & Quantity of Student Learning	AB
15.	Suggestions of Community	BZ
16.	End: Staff Contribution	
17.	Statistical Summaries	AE
18.	Requests from Administration	AI
19.	Progress Report	AL
20.	Annual Report	BB
21.	End: Reports	

REPORTS

REPORTS

SPECIAL REPORTS

ROUTINE REPORTS

REPORTS TO COMMUNITY GROUPS

STUDENT & STAFF INVOLVEMENT

SCIENCE NEWSLETTERS

LIVE ASSESSMENT OF GROUPS

STATISTICAL SUMMARIES

PROGRESS REPORTS (INTERIM REPORTS)

ANNUAL REPORT

PERSONNEL

EQUIPMENT, SUPPLIES & MATERIALS

BUDGET

QUANTITY & QUALITY OF STUDENT LEARNING
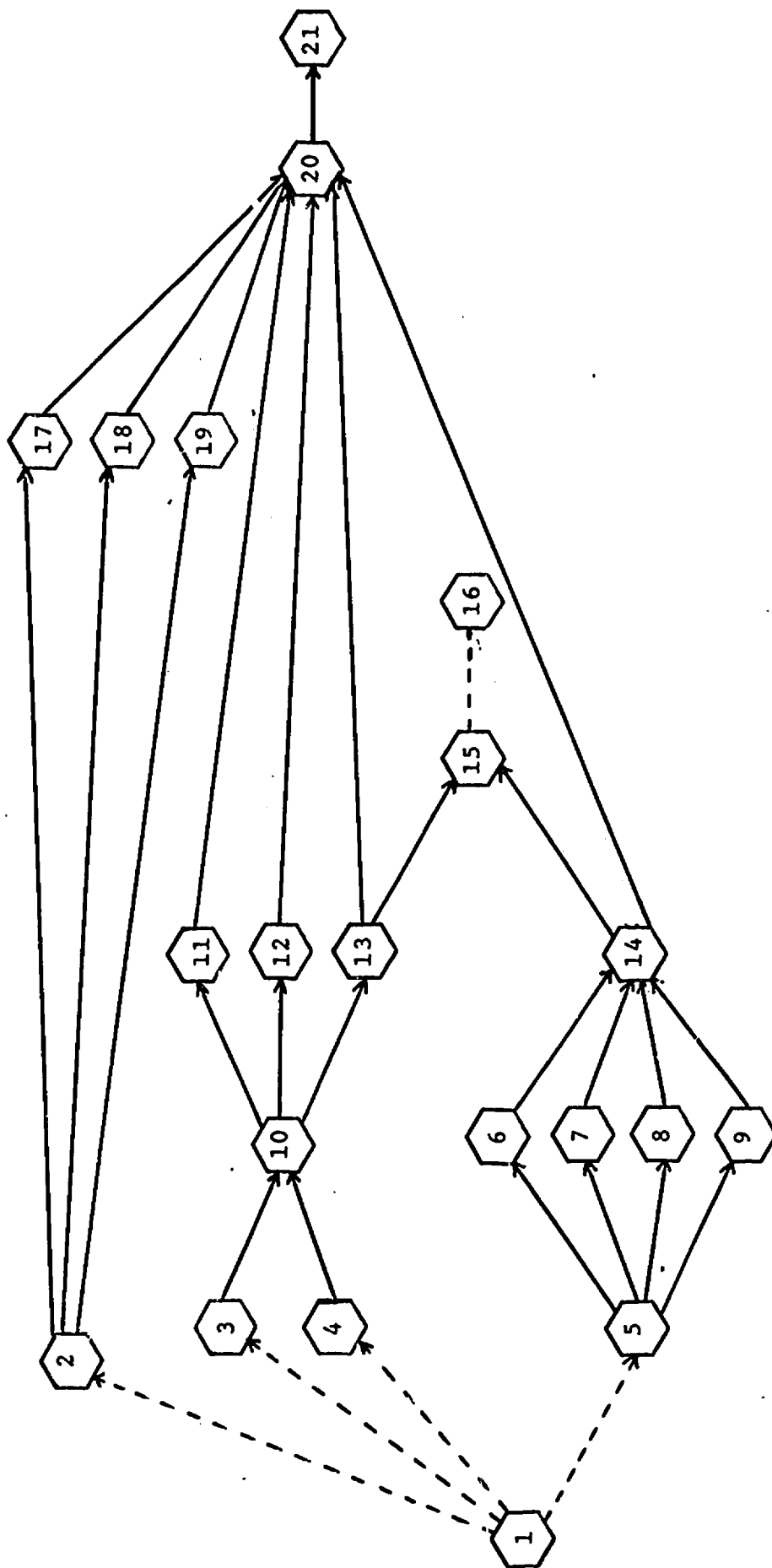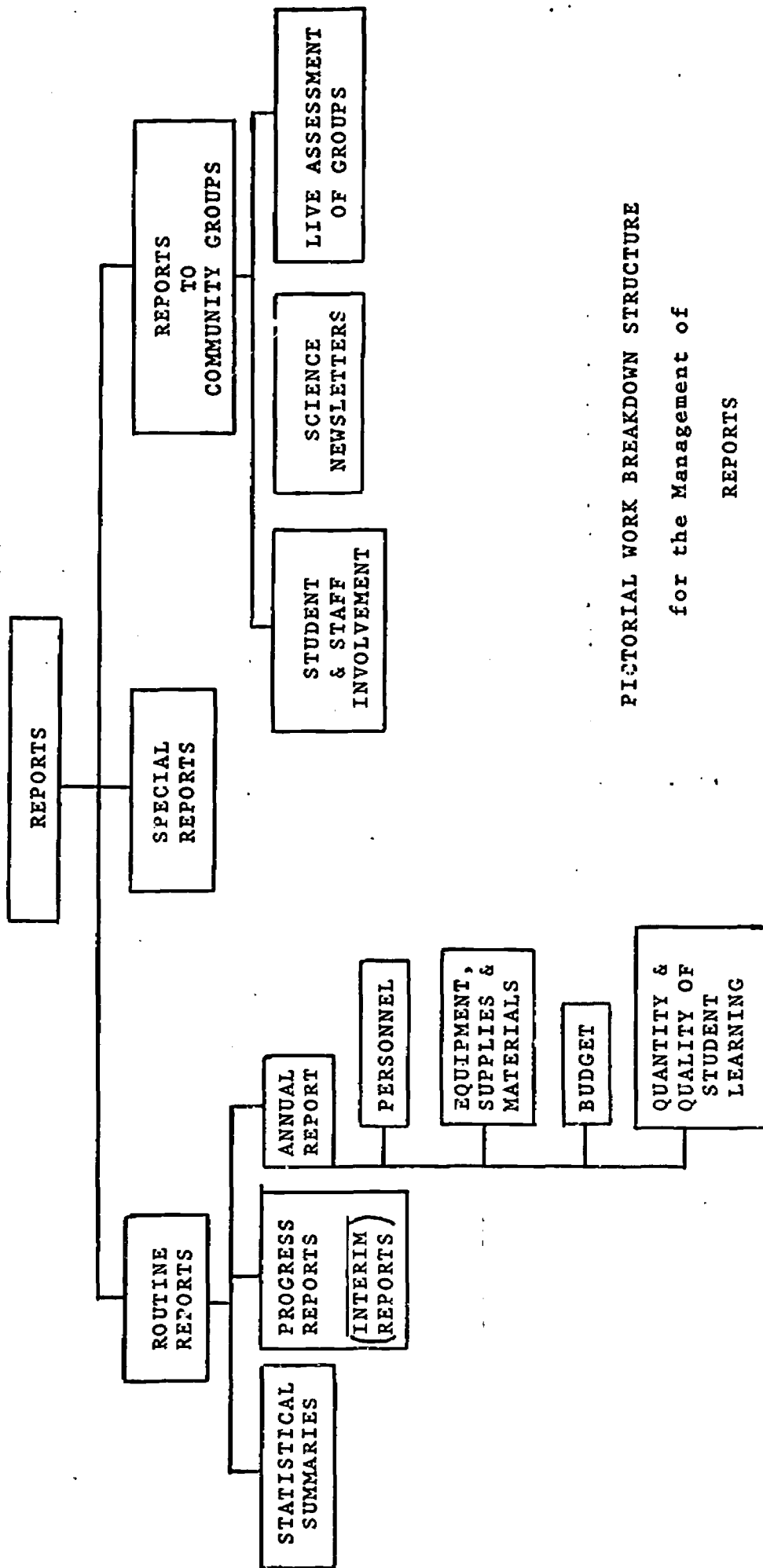
PICTORIAL WORK BREAKDOWN STRUCTURE

for the Management of

REPORTS

MODEL 2: PROVISION OF SERVICES TO SCIENCE TEACHERS

Model Sequential Order	Model Checkpoint	Capital Letter of Management Game
1.	Begin: Services to Science Teachers	
2.	Daily Diary	AK
3.	Anecdotal Records	AW
4.	Begin: Regular Communication with Staff	CF
5.	Begin: Monthly Staff Meeting	AC
6.	Plan for Science Competition	T
7.	Parents Day Plans	BR & BT
8.	Remedial Action Plans	CH
9.	Complaints from Parents &/or PTA	BH
10.	Requests from Administration	AI
11.	Public Relations Feedback	BG
12.	Application of Validated Learning Systems & Mediated Material	CG
13.	End: Monthly Staff Meetings	AC
14.	Begin: Journal Clubs	BO
15-20.	Research Review	H
21.	End: Regular Communication with Staff	
22.	Begin: Individual Conferences & Counseling Sessions	AQ
23.	Discussion of Individual's Strengths & Weaknesses	
24.	Consideration of Physical & Mental Health of Individual	AJ

MODEL 2:   PROVISION OF SERVICES TO SCIENCE TEACHERS CONT'D

Model Sequential Order	Model Checkpoints	Capital Letter of Management Game
25.	Complaints & Suggestions of Teachers	BN
26.	Problem-Solving	
27.	Memoranda & Letters	S
28.	Telephone Conferences	AF
29.	End: Individual Conferences & Counseling	AQ
30.	End: Services to Science Teachers	
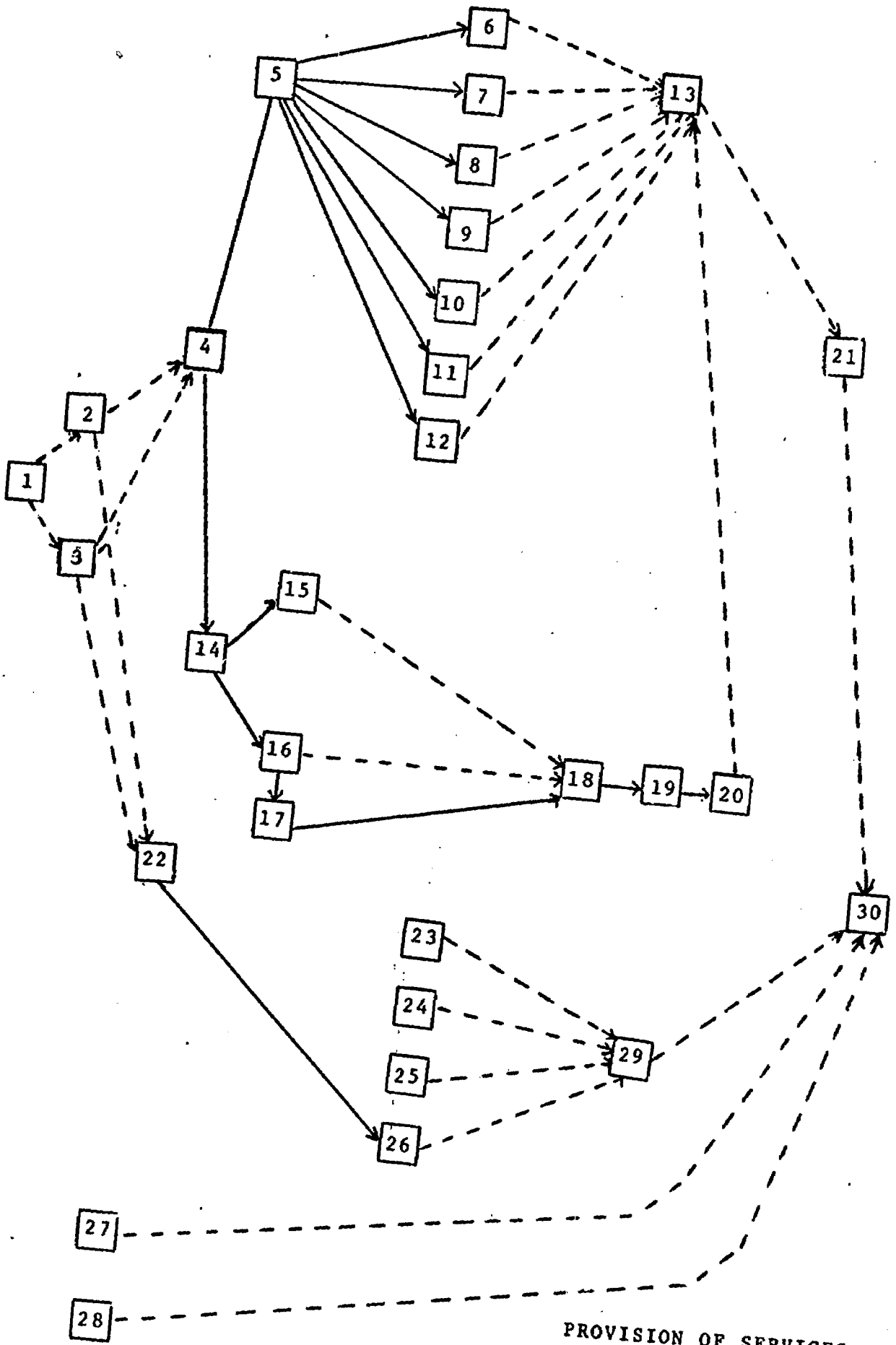
PROVISION OF SERVICES

TO SCIENCE TEACHERS
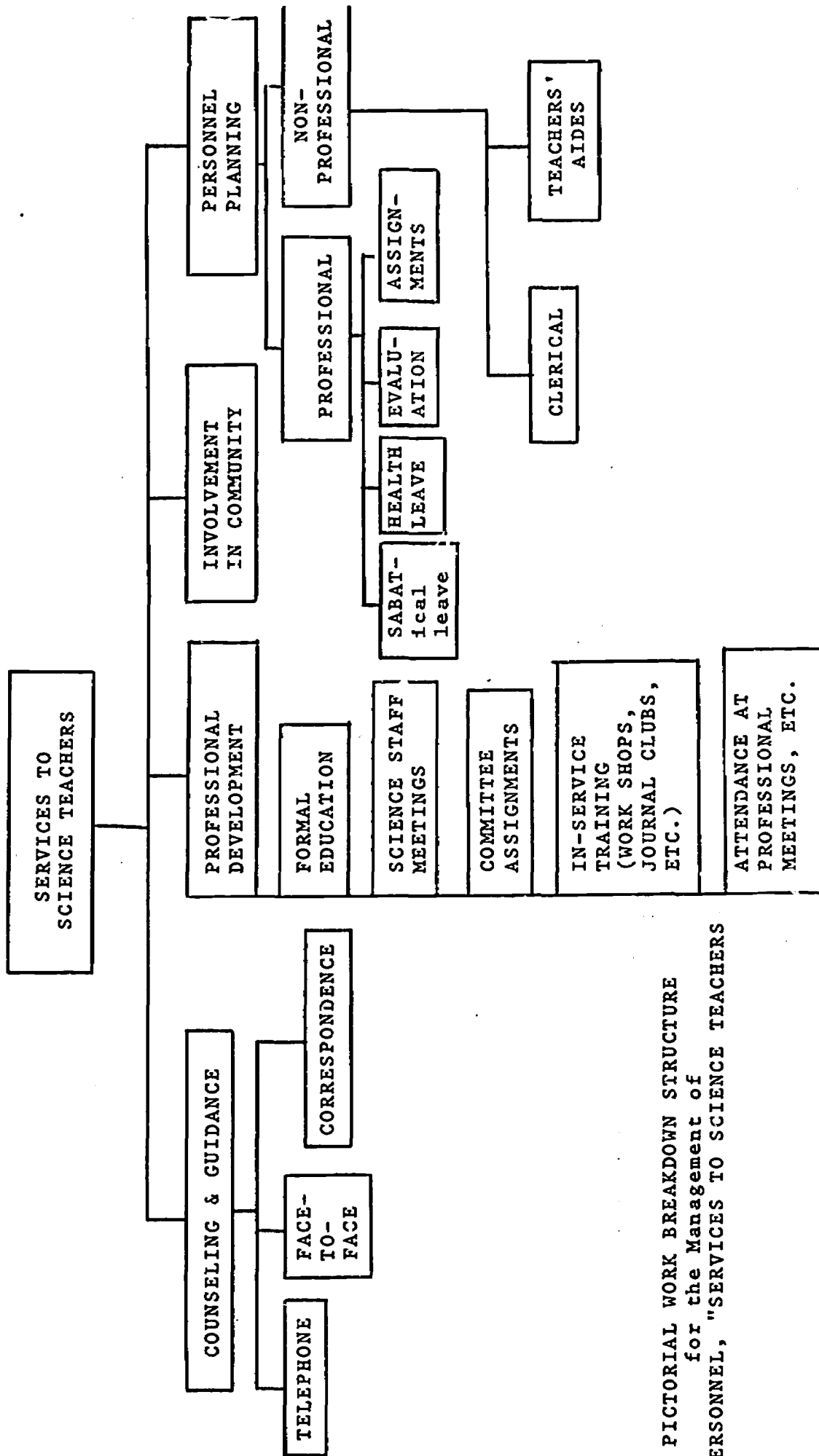
PICTORIAL WORK BREAKDOWN STRUCTURE
for the Management of
PERSONNEL, "SERVICES TO SCIENCE TEACHERS"

SERVICES TO SCIENCE TEACHERS

COUNSELING & GUIDANCE
- TELEPHONE
- FACE-TO-FACE
- CORRESPONDENCE

PROFESSIONAL DEVELOPMENT
- FORMAL EDUCATION
- SCIENCE STAFF MEETINGS
- COMMITTEE ASSIGNMENTS
- IN-SERVICE TRAINING (WORK SHOPS, JOURNAL CLUBS, ETC.)
- ATTENDANCE AT PROFESSIONAL MEETINGS, ETC.

INVOLVEMENT IN COMMUNITY

PERSONNEL PLANNING
- NON-PROFESSIONAL
  - TEACHERS' AIDES
  - CLERICAL
- PROFESSIONAL
  - SABAT-ical leave
  - HEALTH LEAVE
  - EVALU-ATION
  - ASSIGN-MENTS

MODEL 3: BUDGET

Model Sequential Order	Model Checkpoints	Capital Letter of Management Game
1.	Begin: Budget	I
2.	Begin: Staff	
3.	Begin: Regular Staff Available	
4.	Staff on Health Leave	
5.	Staff on Sabbatical Leave	
6.	Total Staff on Leave	
7.	Staff Retirement	
8.	Staff Transfer to Other School	
9.	End: Regular Staff Available	
10.	Applications	BK
11.	Teacher Aides	CD
12.	Clerical Support	A
13.	Potential Staff Evaluation	AV
14.	Possible Job Assignments	
15.	Job Vacancies	AY
16.	Staff Selection	CE
17.	Job Assignments	AT
18.	End: Staff	
19.	End: EMS	
20.	End: Services to Science Teachers	

MODEL 3:   BUDGET CONT'D

Model Sequential Order	Model Checkpoint	Capital Letter of Management Game
21.	Begin: Professional Development	AU
22.	Guidance (Conference or Counseling Sessions)	AQ
23.	Developmental Assignments	
24.	Begin: Continuing Education	BY
25.	Committee Assignments	AX
26.	Action Research	AR
27.	End: Continuing Education	
28.	In-Service Training	AP
29.	End: Professional Development	
30.	End: Reports	
31.	End: Budgetary Allocations	
32.	Optimum Learning System (Management Goal 4)	

BUDGET

BUDGET

REPORTS

OPTIMUM LEARNING SYSTEM

EQUIPMENT, SUPPLIES & MATERIALS

NEW

REPAIRS & PARTS

PETTY CASH?

PERSONNEL

PROFESSIONAL

NON-PROFESSIONAL

CONTINUING EDUCATION

SABATICAL LEAVE
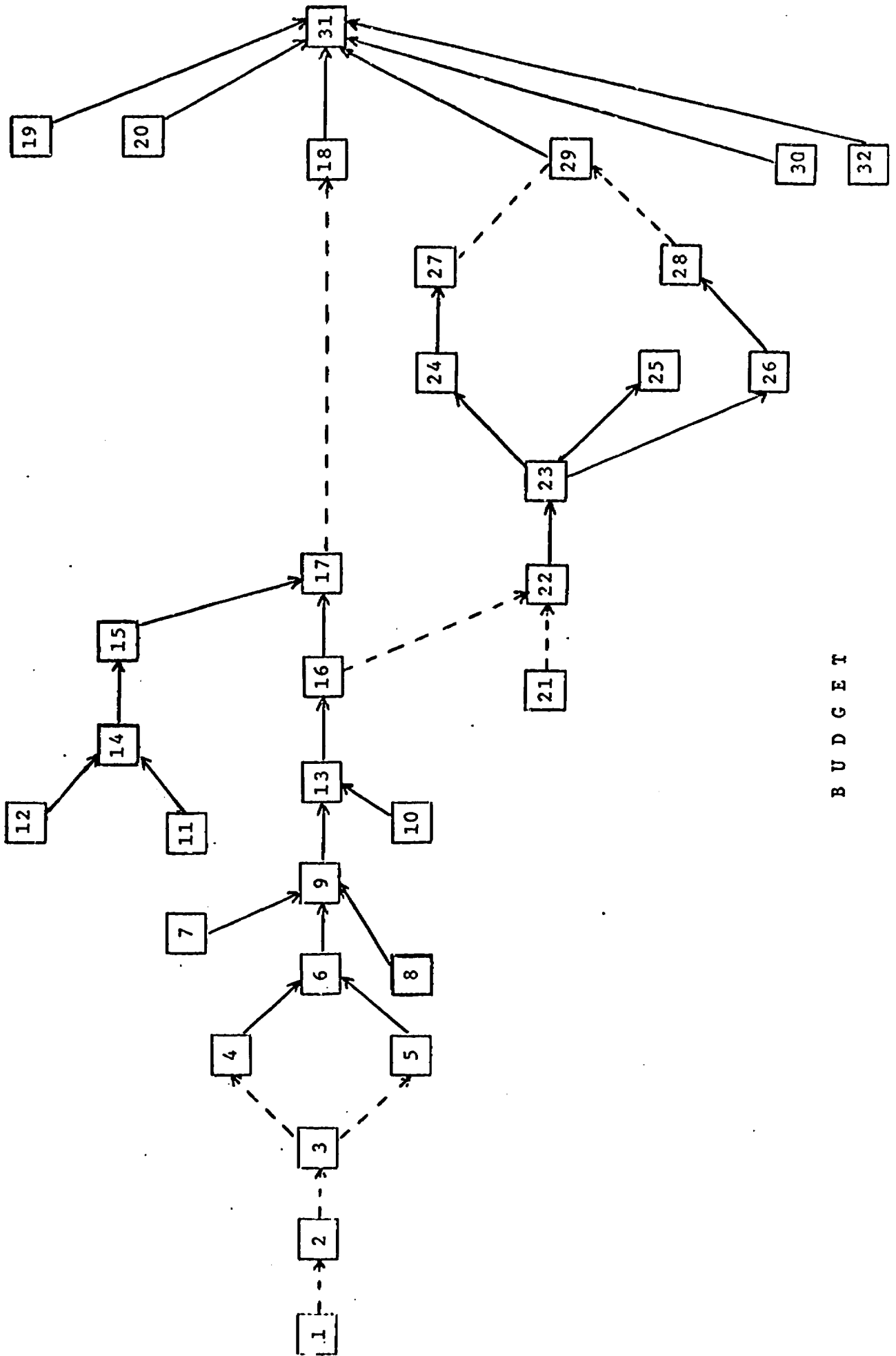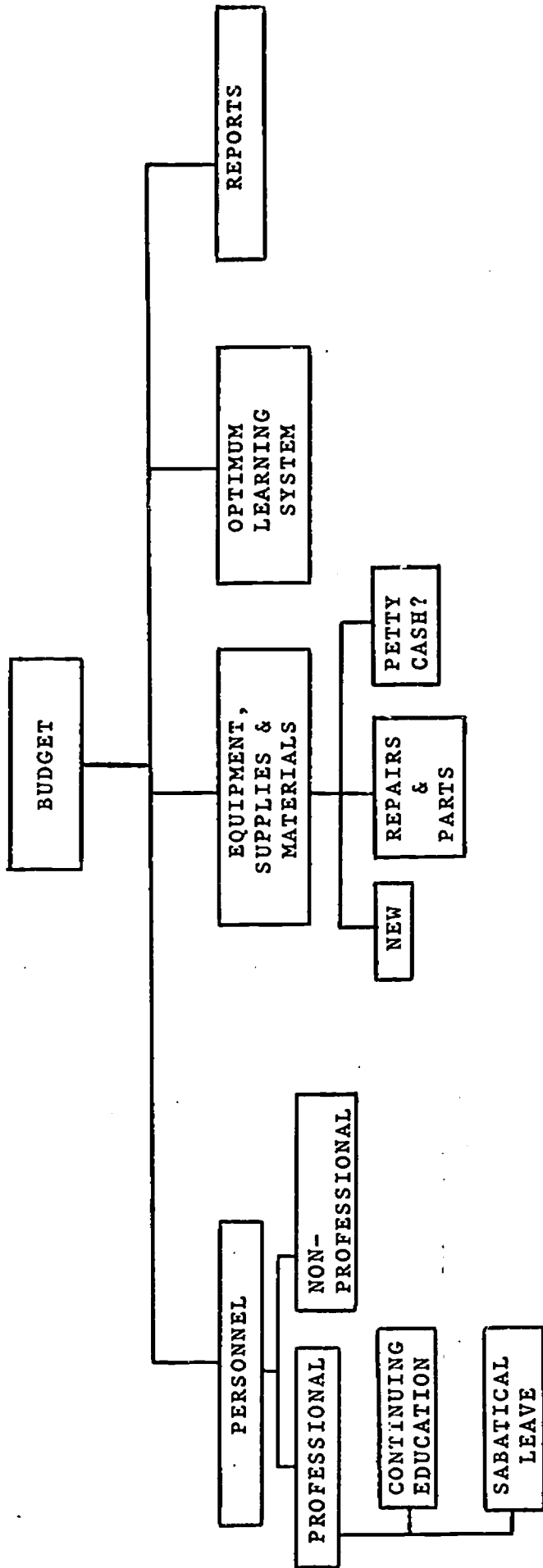
PICTORIAL WORK BREAKDOWN STRUCTURE
for the Management of
BUDGET

MODEL 4: OPTIMUM LEARNING SYSTEM

Model Sequential Order	Model Checkpoint	Capital Letter of Management Game
1.	Begin: Development of Optimum Learning System	
2.	Begin: Evaluation of Present System	AB
3.	Per Cent of College Prep Students into College	BL
4.	Per Cent of Students into Technical Training	AO
5.	Per Cent of Students into Work Force	BM
6.	End: Evaluation of Present System	
7.	Begin: Evaluation of Staff	AV
8.	Begin: Course Evaluation	
9.	Begin: Class Evaluation	
10.	Begin: Analysis of Major Parts	
11.	Begin: Course A	
12.	Begin: Course B	
13.	Begin: Course C	
14.	Begin: Course D	
15.	Begin: Course E	
16.	Begin: Course F	
17.	List of Major Parts	
18.	Traditional Staff Evaluation	AV
19.	Traditional Evaluation of Each Part	
20.	Staff Involvement	J

MODEL 4: OPTIMUM LEARNING SYSTEM CONT'D

Model Sequential Order	Model Checkpoint	Capital Letter of Management Game
21	Audio Visual Remedial Action	CH
22.	Criterion Assessment for Each Part	
23.	Application of Criterion Assessment to On-Going Courses	
24.	Comparison of Traditional Evaluation with Criterion Assessment Results	
25.	Equipment, Materials & Supplies	CB
26.	Begin: Preparation of Learning Modules	
27.	Validation of Learning Modules	
28.	Mediation	
29.	Validation of Mediated Materials	
30.	Continuous Evaluation	
31.	Introduction of New Learning Modules	CG
32.	Evaluation & Comparison with Previous Evaluation	CM
33.	Learning System Development	AH
34.	Application of New Learning System	BP
35.	Modification or Improvement of New Learning System	
36.	Optimum Feasible Learning System	

OPTIMUM LEARNING SYSTEM

CONTINUUM OF EVALUATION & UPDATING

CHECK POINTS AND CRITERION ASSESSMENT

STEP-BY-STEP APPROACH TO CURRICULUM DEVELOPMENT SYSTEM BY STAFF

CRITERION TESTS

LEARNING MODULES

MEDIATION

VALIDATION OF MODULES

OPTIMUM LEARNING SYSTEM DEVELOPMENT

REMEDIAL ACTION

OTHER

AV

CRITERION TEST DEVELOPMENT

IDENTIFICATION OF NEEDS

EVALUATION OF STUDENT LEARNING

CLASS

COURSE

MAJOR SUB-DIVISIONS

CRITERION TESTS

TRADITIONAL

PICTORIAL WORK BREAKDOWN STRUCTURE
for the Management of
OPTIMUM LEARNING SYSTEM DEVELOPMENT

MODEL 5: EQUIPMENT, SUPPLIES & MATERIALS

Model Sequential Order	Model Checkpoint	Capital Letter of Management Game
1.	Q. & Q. Student Learning	AB
2.	Determination of Needs	G
3.	Begin: Knowledge of ESM	
4.	Visiting Exhibits	AA
5.	Talking to Salesmen	W
6.	Visiting Other Districts (or States)	X
7.	Suggestions of Faculty Members	BN
8.	Perusing Catalogues	U
9.	Professional Organizations & Journals	CI
10.	End: Knowledge of ESM	
11.	Begin: Budgetary Allocations	
12.	Available Storage Space	CJ
13.	Available Utilization Space	CK
14.	Available Utilities	
15.	End: Budgetary Allocations	
16.	Standards	
17.	Proposals	CL
18.	Orders	Q
19.	Deliveries	Z
20.	Maintenance Schedule	P
21.	Replacement Parts	F
22.	Inventories	B
23.	Distribution & Reporting Procedures	C
24.	Staff Orientation	M

EQUIPMENT, MATERIALS & SUPPLIES

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
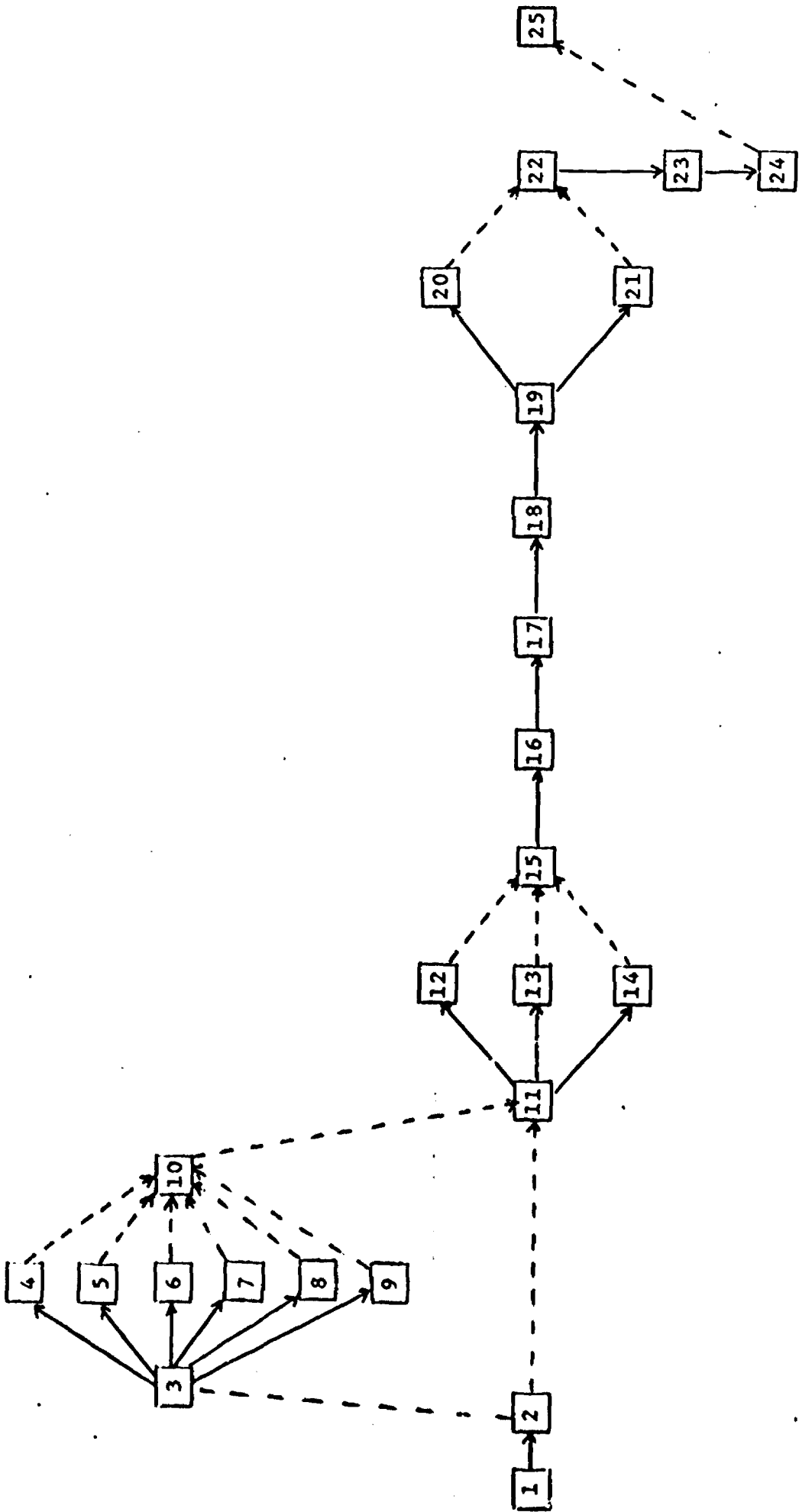
PICTORIAL WORK BREAKDCWN STRUCTURE
for the Management of
EQUIPMENT, SUPPLIES, & MATERIALS

```
                        ┌─────────────────┐
                        │  Equipment,     │
                        │  Supplies and   │
                        │  Materials      │
                        └─────────────────┘
```

NEEDS OF STUDENTS	MARKETED EQUIPMENT, SUPPLIES & MATERIALS	BUDGET ALLOCATIONS	MAINTENANCE & UTILIZATION

| SEE OPTIMUM LEARNING SYSTEM | EXHIBITS | AVAILABLE STORAGE SPACE | AVAILABLE UTILIZATION SPACE | INVENTORY OF ITEMS DELIVERED |

CATALOGS

SALESMEN

VISITS TO OTHER SCHOOLS

PROFESSIONAL MEETINGS & JOURNALS

FACILITIES AVAILABLE IN EACH AREA

PREVENTIVE MAINTENANCE SCHEDULE

PURCHASING

PREPARATION OF STANDARDS

REQUESTS FOR PROPOSALS OR BIDS

PREPARATION OF ORDERS

SPARE PARTS

SPECIAL SUPPLIES

STAFF ORIENTATION

DISTRIBUTION

REPORTING PROCEDURES

EVALUATION OF EFFECTIVENESS

MANAGEMENT OF SCIENCE SUPERVISORS

MANAGEMENT SURVEY

VISUAL PRESENTATION

MANAGEMENT PLANNING

BUDGET — APPLICANT EVALUATION — JOB ASSIGNMENTS — PROFESSIONAL DEVELOPMENT — CONTINUING EDUCATION; BUDGET; STAFF EVALUATION; GUIDANCE; COMMITTEE ASSIGNMENTS

SERVICES TO STAFF — CONFERENCES & COUNSELING SESSIONS — RESPONDING TO REQUESTS FOR ASST. — BEST PRACTICES NEWSLETTER

OPTIMUM STUDENT LEARNING — PROGRAM EVALUATION MODULAR — FACULTY INVOLVEMENT — NEED 1 D — PLANNING CHANGE — PROGRAM MODIFICATION — EVALUATION — TRYOUT

REPORTS — STAFF MEETINGS — NECESSARY RECORDS

EQUIPMENT MATERIAL & SUPPLIES — DISTRIBUTION TO TEACHERS — MAINTENANCE & REPAIRS — INVENTORY — JOURNAL CLUBS — RESEARCH REVIEW — ORDERING — ASKING FOR BIDS - PREPARING SPECS & — SHOPPING

APPENDIX E

PROJECT MATERIALS

△ TERMINAL GOALS

☐ CHECKPOINTS

TEMPLATE

2

Provision

of

Services

to
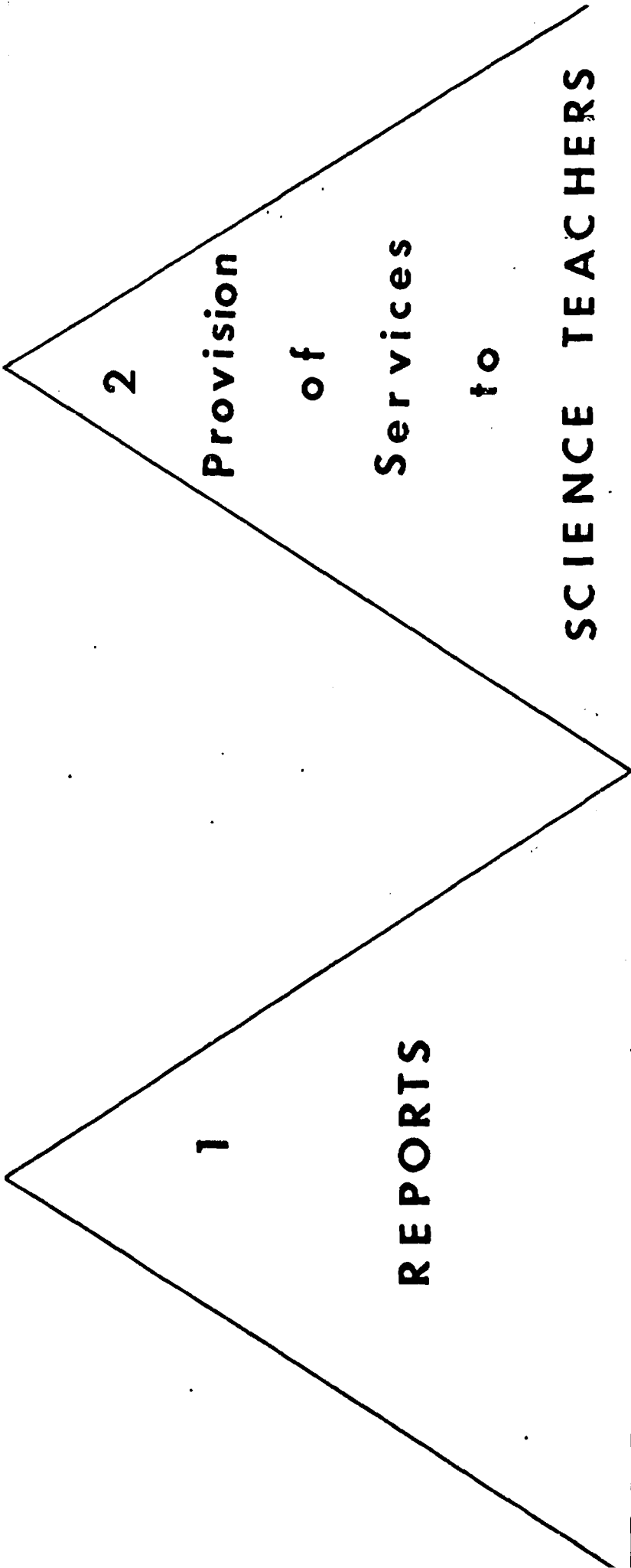
SCIENCE TEACHERS

1

REPORTS

3

BUDGET

5

Equipment

Supplies

Materials

4

OPTIMUM

LEARNING SYSTEM

A
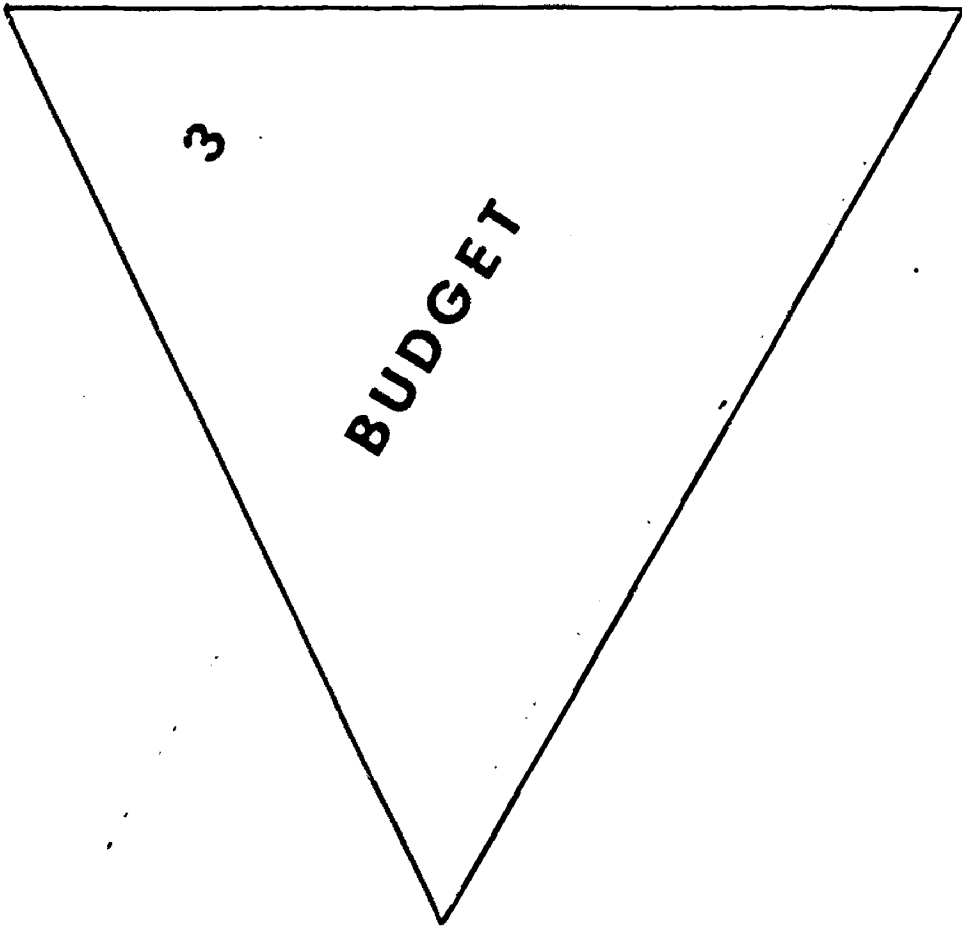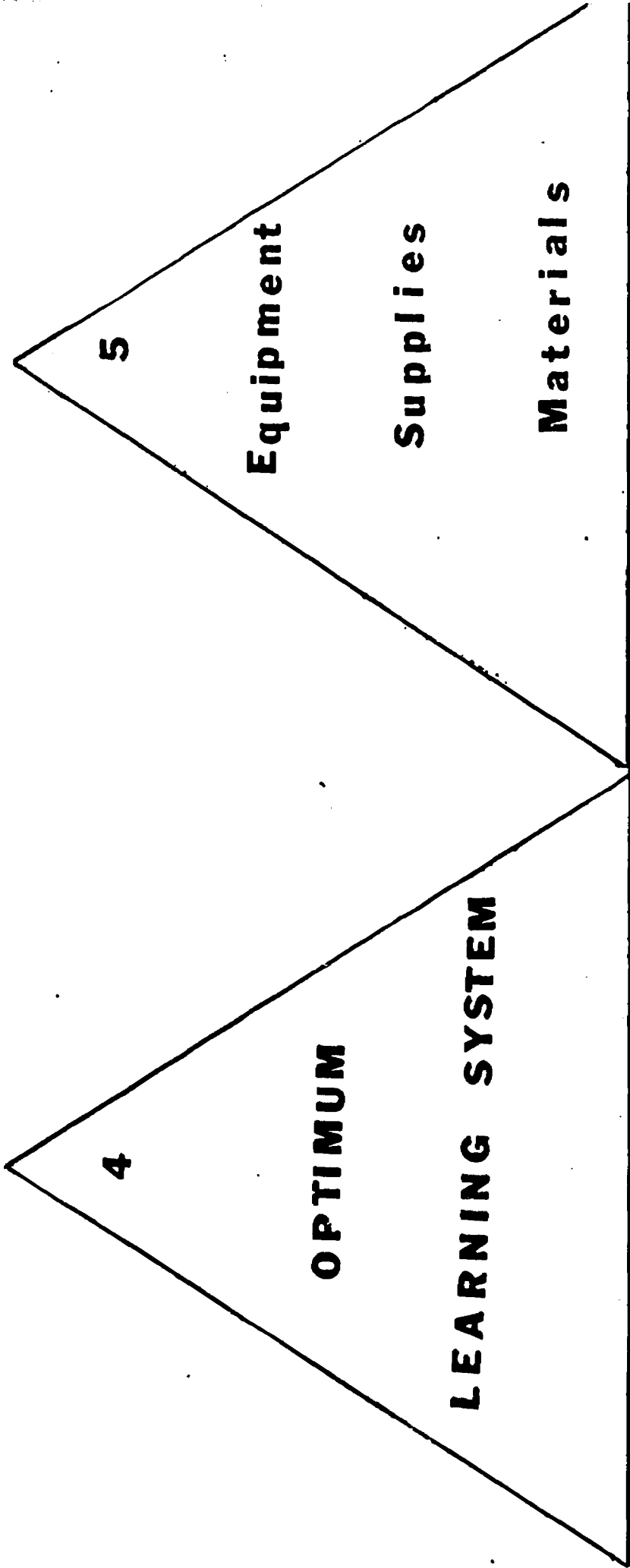
CLERICAL SUPPORT

1.
2.
3.
4.
5.

B

INVENTORY

1.
2.
3.
4.
5.

C

DISTRIBUTION TO TEACHERS

1.
2.
3.
4.
5.

D

PROCUREMENT OF BIDS

1.
2.
3.
4.
5.

E

IDENTIFICATION OF UNMET NEEDS

1.
2.
3.
4.
5.

F

REPAIRS & REPLACEMENTS

1.
2.
3.
4.
5.

G

DETERMINATION OF NEEDS

1.
2.
3.
4.
5.

H

RESEARCH REVIEW

1.
2.
3.
4.
5.

I

BUDGET

1.
2.
3.
4.
5.

J

INVOLVEMENT OF FACULTY

1.
2.
3.
4.
5.

K

COMPARISON OF NEEDS TO BUDGET

1.
2.
3.
4.
5.

L

ASSIGNMENT OF PRIORITIES

1.
2.
3.
4.
5.

M

RECEIVING INSTRUCTIONS

1.
2.
3.
4.
5.

N

REQUESTS FOR ASSISTANCE

1.
2.
3.
4.
5.

O

ADMINISTRATIVE BRIEFING

1.
2.
3.
4.
5.

P

MAINTENANCE

1.
2.
3.
4.
5.

T

COMPETITIVE TEAM
IN STATE CASH
AWARDS USED
FOR EQUIPMENT

1. 2. 3.
4. 5.

X

VISITING
OTHER DISTRICTS
(OR STATES)

1. 2. 3.
4. 5.

S

MEMORANDA
& LETTERS

1. 2. 3.
4. 5.

W

TALKING TO
SALESMEN

1. 2. 3.
4. 5.

R

DISCUSSION
OF BUDGET

1. 2. 3.
4. 5.

V

VISITS TO
SCIENCE CLASSROOMS

1. 2. 3.
4. 5.

Q

ORDERING

1. 2. 3.
4. 5.

U

PERUSING CATALOGS

1. 2. 3.
4. 5.

Y

"SHARING"
LIMITED
EQUIPMENT

1.　2.　3.

4.　5.

Z

CHECKING
DELIVERIES

1.　2.　3.

4.　5.

AA

VISITING
EXHIBITS

1.　2.　3.

4.　5.

AB

EVALUATION OF
STUDENT LEARNING
(QUANTITATIVE
& QUALITATIVE)

1.　2.　3.

4.　5.

AC

MEETINGS

1.　2.　3.

4.　5.

AD

TESTING &
VALIDATION

1.　2.　3.

4.　5.

AE

STATISTICAL
SUMMARIES

1.　2.　3.

4.　5.

AF

TELEPHONE
CONFERENCES

1.　2.　3.

4.　5.

AJ

HUMAN REPAIR
& MAINTENANCE

1. 2. 3.
4. 5.

AN

ORIENTATION
OF
NEW FACULTY

1. 2. 3.
4. 5.

AI

REQUESTS FROM
ADMINISTRATORS

1. 2. 3.
4. 5.

AM

EXPLANATION
OF WRITTEN
REPORTS, ETC.

1. 2. 3.
4. 5.

AH

BASIC LEARNING
PROGRAM DEVELOPMENT

1. 2. 3.
4. 5.

AL

PROGRESS REPORT

1. 2. 3.
4. 5.

AG

SUGGESTIONS
FROM
ADMINISTRATORS

1. 2. 3.
4. 5.

AK

DAILY DIARY

1. 2. 3.
4. 5.

AR

ACTION RESEARCH

1. 2. 3.
4. 5.

AQ

CONFERENCES OR
COUNSELING SESSIONS

1. 2. 3.
4. 5.

AP

IN-SERVICE
TRAINING

1. 2. 3.
4. 5.

AO

PREPARATION FOR
VOCATIONAL TRAINING

1. 2. 3.
4. 5.

AV

STAFF EVALUATION

1. 2. 3.
4. 5.

AU

PROFESSIONAL
DEVELOPMENT

1. 2. 3.
4. 5.

AT

JOB ASSIGNMENTS

1. 2. 3.
4. 5.

AS

PLANNING
FUTURE
PROGRAMS

1. 2. 3.
4. 5.

AZ

ORAL INTERVIEWS

1. 2. 3.
4. 5.

BD

TEACHER DESIRES

1. 2. 3.
4. 5.

AY

JOB VACANCIES

1. 2. 3.
4. 5.

BC

CONVENTIONS,
INSTITUTES
& WORKSHOPS

1. 2. 3.
4. 5.

AX

COMMITTEE
ASSIGNMENTS

1. 2. 3.
4. 5.

BB

ANNUAL REPORTS

1. 2.
4. 5.

AW

ANECDOTAL RECORDS

1. 2. 3.
4. 5.

BA

INTERIM REPORTS

1. 2. 3.
4. 5.

BE

TEACHER ABILITIES

1. 2. 3.

4. 5.

BF

GRADUATE STUDIES

1. 2. 3.

4. 5.

BG

PUBLIC RELATIONS FEEDBACK

1. 2. 3.

4. 5.

BH

P.T.A. OR PARENT COMPLAINTS

1. 2. 3.

4. 5.

BI

UNSATISFACTORY OR QUESTIONABLE EVALUATION OF STUDENT LEARNING

1. 2. 3.

4. 5.

BJ

TEACHING RESPONSIBILITIES

1. 2. 3.

4. 5.

BK

APPLICATION EVALUATION

1. 2. 3.

4. 5.

BL

GETTING KIDS INTO COLLEGE

1. 2. 3.

4. 5.

BP

IM---MENTATION
OF
LEARNING SYSTEMS

1. 2. 3.
4. 5.

BO

JOURNAL CLUBS

1. 2. 3.
4. 5.

BN

SUGGESTIONS OF
FACULTY MEMBERS

1. 2. 3.
4. 5.

BM

TRADE MASTERY

1. 2. 3.
4. 5.

BT

SUGGESTIONS
OF PARENTS

1. 2. 3.
4. 5.

BS

SUGGESTIONS
OF STUDENTS

1. 2. 3.
4. 5.

BR

INVOLVEMENT
OF PARENTS

1. 2. 3.
4. 5.

BQ

STUDENT GUIDANCE

1. 2. 3.
4. 5.

BX

BEST PRACTICES

NEWS LETTER

1. 2. 3.

4. 5.

CB

EQUIPMENT,
MATERIAL,
&
SUPPLIES

1. 2. 3.

4. 5.

BW

NO APPLICATION

OF APPROVED &

VALIDATED SYSTEM

OR MEDIATED MATERIALS

1. 2. 3.

4. 5.

CA

PRESENTATIONS TO

COMMUNITY GROUPS

1. 2. 3.

4. 5.

BV

INVOLVEMENT

OF STUDENTS

1. 2. 3.

4. 5.

BZ

SUGGESTIONS

OF

COMMUNITY

1. 2. 3.

4. 5.

BU

DETERMINATION OF

WHAT WE WANT

STUDENTS TO LEARN

1. 2. 3.

4. 5.

BY

CONTINUING

EDUCATION

1. 2. 3.

4. 5.

CF

STAFF COMMUNICATIONS

1. 2. 3.
4. 5.

CJ

PROFESSIONAL ASSOCIATIONS & JOURNALS

1. 2. 3.
4. 5.

CE

TEACHER AIDES

1. 2. 3.
4. 5.

CI

EQUIPMENT SPACE

1. 2. 3.
4. 5.

CD

STAFF SELECTION

1. 2. 3.
4. 5.

CH

REMEDIAL PLANS

1. 2. 3.
4. 5.

CC

PERSONNEL REPORTS

1. 2. 3.
4. 5.

CG

APPLICATION OF VALIDATED LEARNING SYSTEMS & MEDIATED MATERIALS

1. 2. 3.
4. 5.

20

BLANK

SQUARES

CM

VALIDATION OF

NEW LEARNING

MATERIAL

1.   2.   3.

4.   5.

CL

PROPOSAL

PREPARATION

1.   2.   3.

4.   5.

CK

EQUIPMENT

UTILIZATION

1.   2.   3.

4.   5.
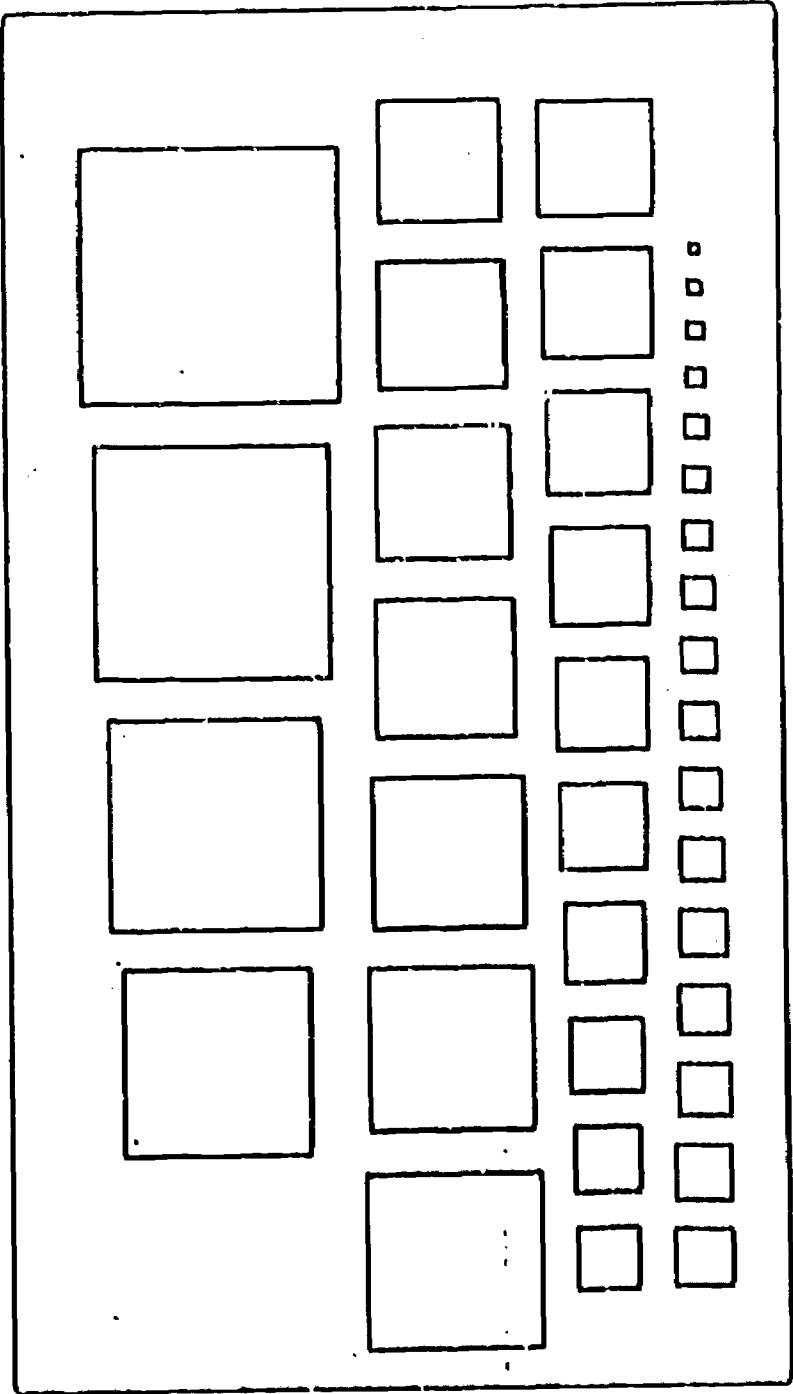
SQUARE TEMPLATE

EDUCATIONAL
TECHNOLOGY
PROJECT
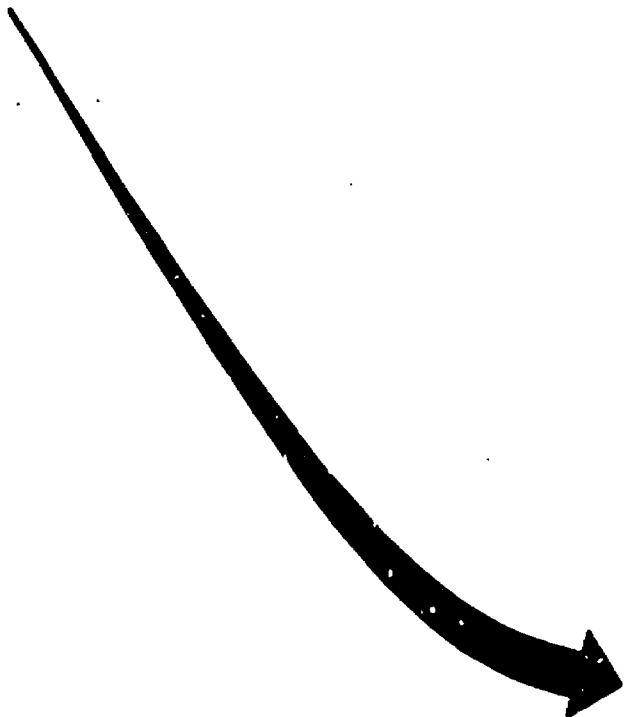
criterion assessments

These assessments have been
developed as a self evaluative
activity for supervisors. The
questions are based on the
model systems used in Unit III.
They are presently designed as
a follow-up activity after the
kit has been completed. As
such, they serve to provide a
more open-ended conclusion.
However, 'all supervisors who
have gone through the kit during
group validations have received
them.

ERIC

CRITERION ASSESSMENT   -   REPORTS

2.   What clerical support do you have?

   2.1   None.

      2.1.1   Write longhand.

      2.1.2   Do my own typing.

   2.2   Typist available _____ hours per week.

   2.3   Stenographer available _____ hours per week.

   2.4   Other: (dictating machine, etc.. _____

      _____.

3.   Do you keep a daily diary or some other type of daily record?

   _____.   If you do, send us a copy of the entries for one week

   of school.   If you don't, start keeping one and send us a

   copy of the entries made during the first week.

4.   Do you maintain a file of anecdotal records?   _____.   Send us

   copies of one or two of them.   If you don't, prepare one or

   two to send us.

6.   Do you have regularly scheduled meeting with your science

   teachers as a group?

   6.1   How many attend?

   6.2   How frequent are the meetings?

7.   Journal Clubs and Committees.

   7.1   If "Yes":

      7.1.1   Do science major students attend in addition to

          the science teachers?

CRITERION ASSESSMENT   -   REPORTS

7.   Continued.

   7.1.3   What scientific journals are reviewed?

   7.1.4   Are the reviews or excerpts published for
           distribution?
           7.1.4.1   If "Yes", how many copies? _____.
           7.1.4.2   If "No", do you plan to start?

   7.2   Do you have any committees on which you or members of
         your staff participate?
         7.2.1   If "Yes", please list them:

   7.3   Attach pertinent materials relating to these meetings,
         such as:
         7.3.1   Agenda.
         7.3.2   Minutes.
         7.3.3   Reports.
         7.3.4   Other.

8.   Do you routinely communicate with your science teachers by
     telephone?
     8.1   About how much time each day?
     8.2   About how much time each week?

CRITERION ASSESSMENT   -   REPORTS

9. Give us an estimate of the amount of correspondence involved
    in you job.

    9.1 About _____ letters per week.

11. List type of materials included in your personnel files on
    science teachers.

12. Prepare a realistic budget for this unit on reports including
    the following items as a minimum:

    12.1 Clerical hours.

    12.2 Professional hours (you and your staff)

    12.3 Equipment, supplies, & materials:

          12.3.1 Typewriter(s).

          12.3.2 File cabinets.

          12.3.3 Postage.

          12.3.4 Telephone.

          12.3.5 Miscellaneous (Itemize)

15. Reports to Community through various methods.

    15.1 Send us copies of presentations you have made to
          community groups or prepare a presentation to be made
          to a community group.

          15.1.1 Describe the method(s) used to involve attendees.

          15.1.2 List equipment (including media) used.

CRITERION ASSESSMENT   -   REPORTS

15. Continued.

    15.1.3 List and describe student involvement.

    15.2 Did you ever use equipment desired for use in school
    in your presentations?

        15.2.1 Did you borrow it from a dealer or a supply
        house?

        15.2.2 Did you borrow it from another school?

        15.2.3 If obtained otherwise, describe.

    15.3 Do you have a community newsletter?
    Presentations to Parents.

    15.4 Do you have any planned presentations to parents such
    as:

        15.4.1 Back to school nights?

        15.4.2 Election Day visitations?

        15.4.3 Others? (List and describe briefly)

        15.4.4 Do you have a newsletter to parents?
        If you do, attach a copy of the most recent
        one.

        15.4.5 How is student learning reported to the parents?

15. Continued.

>   15.4.5.1 Report Cards.
>
>   15.4.5.2 Conferences.
>
>   15.4.5.3 Others. (List and describe)

17. How many statistical reports do you submit each school
    year? _____ (Describe and submit a copy of each)

18. Requests from Administration.

    18.1 Do you have special presentation(s) for School Board
         and Administration? _____. Describe briefly.

    18.2 Do your students participate in formal competition
         such as a state science league?

         18.2.1 If they do, list and give standing and points
                received.

         18.2.2 Are there competitive events available in
                which your students do not participate? _____.
                If so, please describe.

5

CRITERION ASSESSMENT - REPORTS

18. Continued.

        18.2.3 Are there opportunities for students to
                participate in scientific programs sponsored
                by industry, etc.? _____. If so, please
                describe.

      18.3 Working with your staff, identify some unique needs
          of science which might be used in presentations.
          Prepare a list of these.

19. What reports are you required to keep by the state, district,
county, or school? List these and indicate the approximate
amount of time required for the presentation of each.

6

CRITERION ASSESSMENT   -   SERVICES TO SCIENCE TEACHERS

22. Guidance

    22.1 Do you have a file on each of the science teachers under your supervision?

        22.1.1 Check any of the following materials you maintain in these files:

            22.1.1.1 Basic personnel data   _____

            22.1.1.2 Anecdotal records   _____

            22.1.1.3 Traditional evaluation   _____

                     Describe _____

                     _____

            22.1.1.4 Teaching assignments   _____

            22.1.1.5 Community activities   _____

            22.1.1.6 Education   _____

        22.1.2 List other materials you include in these files.

    22.2 Do you have regular counseling sessions or conferences with each of your science teachers?

        22.2.1 If you do, how are these scheduled? (Describe in 25 words or less)

CRITERION ASSESSMENT - SERVICES TO SCIENCE TEACHERS

22.2.2 If you do not, would it be a good idea to
try this?

23. Developmental Assignments

23.1 Do you take into consideration developmental
opportunities for individual teachers when making
assignments or do you select the one you believe can
do the best job?

23.2 If you have a list of developmental assignments, send
us a copy.

23.3 If you don't have such a list, prepare one.

24. Continuing Education

24.1 Is there some form of education assistance available
to you and your science teachers for formal education?
Describe.

24.2 Have you used committee assignments as a form of in-
service training?   Describe.

24.3 Are your science teachers involved in any action
research at the present time?

2

CRITERION ASSESSMENT   -   SERVICES TO SCIENCE TEACHERS

24.4   Do you have a science journal club in operation?

24.4.1   If you do, answer the following questions:

24.4.1.1   Do any students participate?

24.4.1.2   What journals are covered?

_____

_____

_____

24.4.1.3   How often does the club meet?

24.4.1.4   How many copies of the reviews are
distributed?

24.4.2   Do you plan to start one?

29.   Have you ever discussed the need for guidance and other
developmental activities with your science teachers?

CRITERION ASSESSMENT   -   BUDGET

2. Budget

    2.1 List names of those on regular staff this year in
        alphabetical order.
        2.1.1 Using a green pencil or pen, put an "H" in
               front of those known to be on health leave, and
               an "S" in front of those on sabbatical leave.
        2.1.2 Using a red pencil or pen, put an "R" in front
               of those being retired, and a "T" in front of
               those being transferred out of your area of
               supervision.

9. List the names of those available this year from last year's
    staff, in alphabetical order, add the salary of each in a
    column to the right.

10. Review and assess applicants for positions for the coming
    year.

13. To the list prepared in 9, add your evaluation of each, using
    A, B, and C subjectively.

14. List each science class to be taught this year, beginning
    with the most advanced classes.
    14.1 Tentatively assign members of the regular staff to
        these classes.

CRITERION ASSESSMENT   -   BUDGET

14. Continued

        14.1.1 Consider the use of teacher aides and/or

               clerical support to make it possible to in-

               crease class hours for the more able teacher(s).

        14.1.2 Discuss this possibility with the teacher(s)

               involved.

    14.2 Prepare a list of the number of teacher aides and/or

        clerks desired.

        14.2.1 Write a justification for each position, using

               information obtained in 14.1.

        14.2.2 Have the teacher(s) involved comment on and

               approve the justification(s).

15. Job Vacancies

    15.1 Using information obtained in 14, prepare a list of

        job vacancies indicating salary for each in column to

        the right.

        Teachers.

        Teacher Aides.

        Clerks.

    15.2 Prepare a list of job vacancies for teachers only, if

        no teacher aides or clerks are employed.

    15.3 Compare the budget for 15.1 with the budget for 15.2.

    15.4 Write a memorandum to your administrator with your

        recommendations for staffing next year, using the

        information from 14.2 and 15.3 as part of your justi-

        fication.

CRITERION ASSESSMENT   -   BUDGET

   16.1 When job vacancies have been firmly established

        (approved by your administration) prepare a list of

        staff members selected for next year: teachers,

        teacher aides, clerks.

        16.1.1 Check availability of those selected.

        16.1.2 Complete employment procedures.

17. Make job assignments.

18. Record total budget for personnel salaries.

19. Record total budget for equipment, supplies & materials.

29. Record total budget for professional development.

30. Record total budget for reports.

31. Record total budget for optimum learning system development.

32. Total items 18, 19, 29, 30, and 31 for total budget.

CRITERION ASSESSMENT   -   OPTIMUM LEARNING SYSTEM

3.1 How many college preparatory students did you have last
     year?

3.2 How many of the above students were majoring in science?

3.3 Using the following chart, indicate how many of your
     students took science on the examinations and how many
     passed or failed?

EXAMINATION	TOTAL	PASSED	FAILED
College Entrance			
Regents			
Other (Not Local)			

3.4 How many of your students desirous of being admitted to
     college were accepted?

      a. Successful?   _____

      b. Unsuccessful   _____

4.1 How many of your senior students aspired to enter technical
     training institutions?

4.2 How many of your senior students were accepted into
     technical training institutions?

5.1 How many of your graduates joined the work force after
     graduation? (Do not include temporary or summer employment)

      a. Total   _____

      b. As Technicians   _____

      c. Other Type Work   _____

5.2 How many of your graduates were not able to find employ-
     ment?

6.1 How many of your graduates successfully met their objectives?

        a.   College Preparatory?   _____

        b.   Technical Training   _____

        c.   Employment   _____

             Overall Average   _____

8.1 List the names of your science teachers who taught any of
     the students who were unsuccessful in reaching their post-
     graduation goals under the following categories:

        a.   College Preparatory

        b.   Technical Training

        c.   Employment

8.2 Prepare a list of all science classes taught under your
     supervision last year, including the number of students in
     each class and the name of the teacher.

8.3 Using the information compiled in 8.1, list your science
     teachers in order of seniority, the classes taught by each
     one, the number of students in each class, and add the
     average grade for each class. (The following format should
     be used)

TEACHER	CLASS	NO. OF STUDENTS	AVERAGE GRADE

CRITERION ASSESSMENT   -   OPTIMUM LEARNING SYSTEM

19.1 Write a memorandum to be sent to each science teacher
      under your supervision requesting a student learning
      analysis for each major subdivision of each course. The
      subdivisions may be taken from course outlines, chapters
      or sections of a text, or - if necessary, material covered
      in each reporting period,

                          OR

      Write an announcement stating that you will request this
      same information at the next science teacher's staff
      meeting.

19.2 Using the list prepared in 8.3 as a reference, add the
      major subdivisions of each class and the average grade for
      each subdivision. (Note how the grade was obtained in
      each class.)

20.1 Write a paragraph describing the degree of involvement of
      the science teachers in this evaluation process.

21.1 Prepare a list of the weakest subdivisions for each course
      and, working with the teacher(s) involved, plan immediate
      remedial action for these areas. Outline the plan. (Note:
      This doesn't mean the development of learning modules)

22.1 Working with the appropriate teacher(s), and using the
      courses' outline, prepare criterion test items that thoroughly
      describe the learning desired for students in each instance.

23.1 Apply criterion tests to the on-going classes being taught
      by traditional methods and record the results in the same
      format as the one you used in 19.2.

CRITERION ASSESSMENT   -   OPTIMUM LEARNING SYSTEM

24.1   Prepare a tabular comparison of criterion test type cf
       evaluation with the traditional type of evaluation on major
       course subdivisions.

26.1   Cooperatively with the teacher(s) begin to prepare learning
       modules for areas of weakness identified by the results
       of the criterion tests. Prepare a copy of each learning
       module developed.

27.1   Try out the learning module(s) on a small group of students,
       preferably those in need of remedial work, using the
       criterion test(s) for validation. List the results, item
       by item, on one of the criterion test forms.

27.2   If there are items in the learning module that are not
       providing the learning experiences required, modify them
       until the desired results are attained. Submit a copy of
       the original module along with the modified one, giving
       the criterion test results for eacn.

31.1   Outline your plans for incorporating the validated learning
       modules into the curriculum, and indicate the sequential
       order of development of other learning modules leading to
       a complete learning system in science.

33.1   Prepare a flowchart indicating the major events (circles)
       and the required activities (arrows) in order to complete
       a validated learning system for science.

CRITERION ASSESSMENT   ·-   OPTIMUM LEARNING SYSTEM

33.2   Over the arrows, estimate the time required for each

activity, then compute the estimated date of completion

of the system.   (Use 0.2 for 1 day - 1.0 for 1 week, etc.)

CRITERION ASSESSMENT   -   EQUIPMENT, SUPPLIES, & MATERIALS

3.1 Start a 3" X 5" index file of equipment, supplies,
& materials that it would be nice to have.

3.1.1 Prepare a memorandum to your science teachers
asking them to provide feeder information into
this file.

3.1.2 Prepare a sample 3" X 5" card, to be attached
to your memorandum, showing the format in which
you desire to have the information presented.

3.1.3 Be sure that information from the following
activities gets into the file:

4. Attending exhibits.

5. Visits from salesmen.

6. Visits to other schools.

7. Activities of staff members.

8. Perusal of catalogs.

9. Professional organizations and journals.

12. Identify all storage space currently available for storage
of equipment, supplies and materials.

12.1 Describe area.

12.2 Square footage.

13. Identify all space currently available for utilization of
equipment, materials, and supplies.

13.1 Indicate how this space is being used.

13.2 Indicate how it might be used to better advantage.

CRITERION ASSESSMENT   -   EQUIPMENT, SUPPLIES, & MATERIALS

14. Add to 13 the utilities available in each area.

15. Compare the needs (identified in optimum learning system

    development) with the index file (3.1), and list the most

    desirable items.

    15.1 Using constraints described in 12, 13, and 14, cut

         the list down to those items that are feasible.

    15.2 Prepare a recommendation for the purchase of new

         equipment, supplies and materials with justification

         for each new major item.

         15.2.1 Indicate degree of staff involvement.

         15.2.2 Indicate method of staff involvement.

16. Prepare standards for new equipment, supplies, & materials.

    (Submit one to us)

17. Prepare requests to State Department of Education for pro-

    posals and/or requests for bids. (Submit one to us)

18. Prepare orders. (Submit copy to us)

19. Write a paragraph or two describing your system for recording

    such items as:

    19.1 Dates of deliveries.

    19.2 Checking of items delivered.

20. List all major pieces of equipment and your preventive

    maintenance schedule for each, including your inventory of

    spare parts.

CRITERION ASSESSMENT   —   EQUIPMENT, SUPPLIES, & MATERIALS

21. Send us a copy of your inventories.

23. Describe your distribution and reporting procedures.

   23.1 Do students operate the equipment?

   23.2 Is any of the equipment mobile?

24. How do you orient members of your staff to new equipment
     and its uses?

25. Prepare a total budget for equipment, supplies, & materials
     referring to items 15, 20, 21, and 23.