UNEVOC Studies in Technical and Vocational Education ◆ 3

A Guide for Evaluation of Technical and Vocational Education Curricula

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A Guide for Evaluation of Technical and Vocational Education Curricula

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PREFACE

This publication is the third in the series "UNEVOC Studies in Technical and Vocational Education" which aims at promoting international exchange of ideas, experience and studies relating to technical and vocational education. UNEVOC is the acronym of UNESCO's International Project on Technical and Vocational Education, which was launched in 1992. This Project focuses on the exchange of information networking and other methods of international co-operation between technical and vocational education specialists throughout the world.

The activities of the UNEVOC Project include publication of a series of technical documents which will reflect experiences gained in field projects and by national institutions. This series is intended primarily for educational administrators and planners, teacher-educators, curriculum developers and all those interested in the current status and future development of technical and vocational education at the international level.

The present document" A Guide for Evaluating Technical and Vocational Education Curricula" has been prepared under contract by the ILO International Training Centre in Turin and the author is Mr. Larry KENNEKE, Department for Vocational and Technical Education, State University of Oregan (USA). The purpose of this guide is to assist educators in the evaluation of vocational education curricula and will be useful to both experienced evaluators and novices.

PREFACE

This guide for evaluating technical and vocational education curricula has been developed by the ILO Turin Centre and has been prepared under contract with the Division of Education Sciences and Technical and Vocational Education of Unesco, Paris. The manuscript was written by Larry Kenneke, Department Chairman, Vocational and Technical Education, Oregon State University, Corvallis, USA, visiting faculty member, ILO Turin Centre, under direction of Pierre Martin, Promotion of Programmes Service, Turin Centre.

The purpose of this guide is to help people evaluate technical and vocational education curricula. It has a wide potential for use. Because the guide contains procedures, checklists and forms, it can be used by persons conducting extensive evaluations of comprehensive curricula; or, it can assist evaluators as they collect, analyse and report information for a multitude of purposes: surveying attitudes, observing programmes or measuring achievement. This guide also explains concepts and vocabulary common to evaluation. It, therefore, can be used for both training and upgrading activities. This guide will be useful to experienced evaluators as well as those who are novices.

This guide consists of six sections. The first describes the purpose, objectives, organisation and concepts upon which the guide is based. Procedures for developing an evaluation plan are presented in section two. Information requirements for different kind of evaluations are explained in section three. Section four describes how to go about administering and supervising an evaluation. Four case studies illustrating evaluation of specific curricula appear in section five. The last section includes checklists, forms and vocabulary.

May 1987

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SECTION I

INTRODUCTION TO EVALUATION

INTRODUCTION TO EVALUATION

Purpose

The purpose of this guide is to help you evaluate technical and vocational education (TVE) curricula. Procedures, checklists and forms are included to guide your evaluation activities.

Objectives

After reading this guide, you will know:

- concepts and vocabulary common to evaluation
- components of an evaluation plan
- information needed to conduct an evaluation
- administrative and supervisory procedures for managing an evaluation
- procedures for evaluating TVE curricula
- methods of checking and recording evaluation activities

Organisation and content

The guide includes six sections. The first describes purpose, objectives, organisation and concepts upon which the guide is based. Procedures for developing an evaluation plan are presented in Section II. Information requirements for different kinds of evaluations are explained in Section III. Section IV describes how to administer and supervise evaluations. Four case studies illustrating evaluation of TVE curricula appear in Section V. The last section includes checklists, forms, vocabulary and supporting material.

Reasons for evaluating

Evaluation provides decision-makers with information about TVE curricula. Administrators, specialists, teachers, students, employers and parents need information to make decisions. Credible data are needed by:

- administrators when determining whether or not to continue, modify or terminate programmes;
- specialists as they determine which educational practices work best;
- teachers as they measure student achievement;
- students as they choose TVE programmes;
- employers as they judge the appropriateness of curricula, and
- parents as they help their children choose technical and vocational programmes.

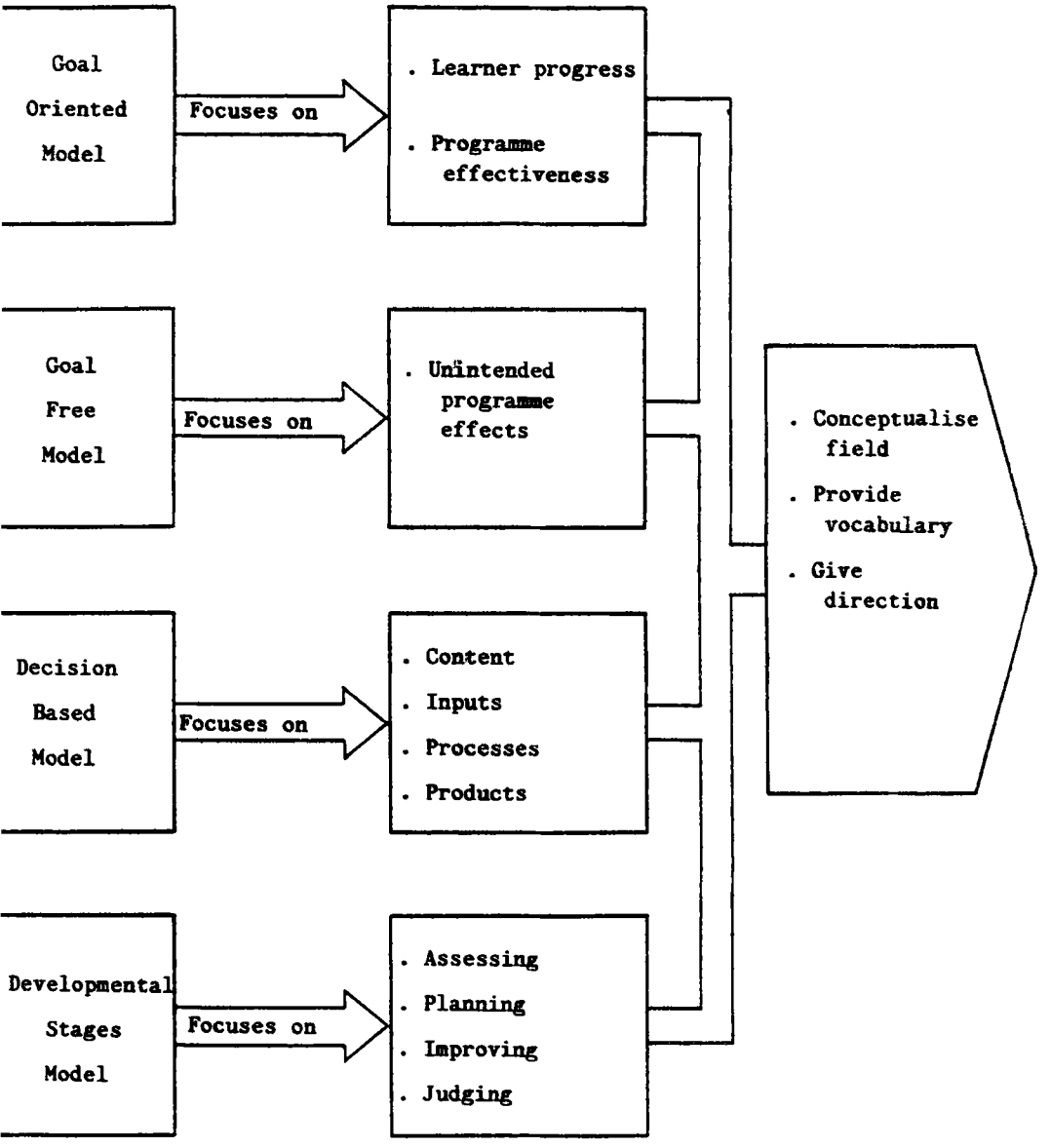
Only when people have access to credible evaluative data, can they make good decisions about TVE curricula and programmes.

Evaluation models

The contents of this guide were drawn from evaluation models shown in Exhibit 1.1. These models conceptualise the field, provide a working vocabulary and define evaluation tasks. A summary of similarities and differences among the models follows. Two models address a dicotomy of goals -- one goal oriented (Bloom, 1981), and the other goal free (Scriven, 1967). The former assesses progress in view of the programme goals and the latter, programme effects based on criteria unrelated to stated goals. A third model (Stufflebeam, 1971) suggests that evaluation focus on four elements basic to decision-making. They are context, input, process and products. Context deals with deciding whether or not to offer a curriculum. Input addresses what resources and methods to use. Process evaluation focuses on effects the curriculum has had on students while in school. Product evaluation examines the curriculum's effect on former students. Morris and Fitz-Gibbons (1978) view evaluation as a process of providing information to people as they design curricula. People use this information to make decisions (Stufflebeam, 1971). The kinds of decisions to be made depend on the stage of programme development. The four stages are assessing needs, planning, improving and judging. Needs assessments help set goal priorities. Programmes are planned using the priorities identified through needs assessments. Formative evaluations provide information for programme improvement while summative evaluations help people judge the worth of a programme.

Exhibit 1.1

EVALUATION MODELS



Evaluation methods proposed in this guide reflect the models cited in Exhibit 1.1. They are based on the premise that decision-making is critical to the design, development and operation of curriculum (Stufflebeam, 1971). Good decisions are based on comprehensive evaluations of curriculum. Comprehensive evaluations help you collect information and make decisions relating to:

- Curriculum planning -- whether or not to offer a TVE curriculum or programme;
- Curriculum development -- what goals, objectives and content should be included in a curriculum or programme:
- Curriculum materials development -- whether or not instructional materials are of good quality;
- Curriculum effects on students -- whether or not content and skills are learned by students; and
- Curriculum effects on former students -- whether or not the curriculum affects the employability of former students (Finch, 1979).

By using the process and procedures in this guide, you will be able to collect information on one, some or all of a curriculum's components.

Exhibit 1.2 shows some of the components you could measure.

Exhibit 1.2

CURRICULUM COMPONENTS THAT CAN BE MEASURED

- Need for the curriculum
- Goals, objectives and content
- Teaching-learning processes
- Instructional materials
- Supplies and equipment
- Classrooms, workshops, and support facilities
- Students
- Teaching personnel
- Budget

The kinds of decisions that must be made will determine which components you evaluate.

Key definitions

Working definitions of evaluation terminology are required to clarify important issues. Taken from the evaluation models summarised in Exhibit 1.1, the following definitions apply to this guide.

DEFINITION OF EVALUATION

Evaluation is a decision enabling process.

Evaluations gather information for making decisions about curriculum, programmes, or instructional materials. Curriculum is defined to mean the following.

DEFINITION OF CURRICULUM

Curriculum is a training design or plan that defines: -

- **aims, goals and objectives of an educational activity;**
- **ways, means and activities used to achieve aims, and**
- **methods and instruments needed to evaluate actions.**
  (D'Hainaut, 1981)

Because it has so many components, evaluating an entire curriculum is complex, time consuming and costly.

For these reasons, evaluations often focus on components of a curriculum. Two components frequently evaluated are programmes and materials. A programme is defined as follows.

DEFINITION OF PROGRAMME

A programme is one component of a curriculum that addresses an instructional area or course -- agricultural mechanics, business procedures, child care, nursing or welding.

A programme evaluation provides information on characteristics of a specific instructional area or course. For example, an evaluation of a commercial sewing programme may provide information on students, teachers, objectives, methods or achievements (Worthen, 1973).

Curriculum materials are also the focus of many evaluations. They are defined to mean the following.

DEFINITION OF CURRICULUM MATERIALS

Curriculum materials include all printed matter, audiovisuals and manipulative aids used for instructional purposes.

They include instructional items like guides, books, circulars, worksheets, modules, multimedia packages and computer software.

To provide people with appropriate information about curricula, programmes or materials, five questions must be answered: -

- Who wants the evaluation?
- What do they want to know?
- What design will provide credible information?
- What should be measured?
- How should information be reported?

Who wants the evaluation?

All evaluations are initiated at the direction or request of someone. A first step requires identification of those who initiated that request. While a directive may come from a single source, it is highly probable that a group of people prompted that request. For example, a TVE director may initiate a request for evaluation on behalf of an employer's

group, parent organisation or citizen's advisory committee. A project manager too, may initiate action to satisfy the information needs of funding agencies.

These people are called the audience or target group. Administrators, managers, sponsors, employers, students, teachers and parents are but a few examples of people who request evaluations. Because each person's motives for requesting an evaluation are different, it is essential to determine who made the request. This knowledge will help you design and conduct an evaluation that provides the audience with information they want.

What do people want to know?

People want all kinds of curricular information. They may want to know:

- what a programme looks like,
- whether objectives are being met,
- how a teaching process is working,
- whether programme graduates get jobs, or
- if students are mastering job skills.

To provide this information, you must know audience motivations -- reasons for requesting the evaluation.

People may simply want to learn about a programme. This requires information of a very general nature -- description of aims, activities and outcomes.

More often, requests are motivated by a need to make informed decisions. Administrators may need to decide whether or not to continue, modify or terminate a programme. Students may need to choose a programme of study. Employers may need to decide the fate of a cooperative work experience programme. These motivations require information quite different from the first example. Very specific information about student achievement, teaching methods and programme costs must be supplied.

To determine the information needs of your audience, ask them these questions:

What decisions do you want to make about the TVE curriculum?
What information will be needed to make these decisions?

Finding answers to these questions will make your job easier as you plan and carry out the evaluation.

Choosing an evaluation design

Evaluations must have credibility. They must be believable to the evaluation audience. If evaluations are perceived as accurate, it is likely that findings will be discussed and used by the audience. What people accept as credible information is influenced by the evaluation design (Fitz Gibbon, 1978).

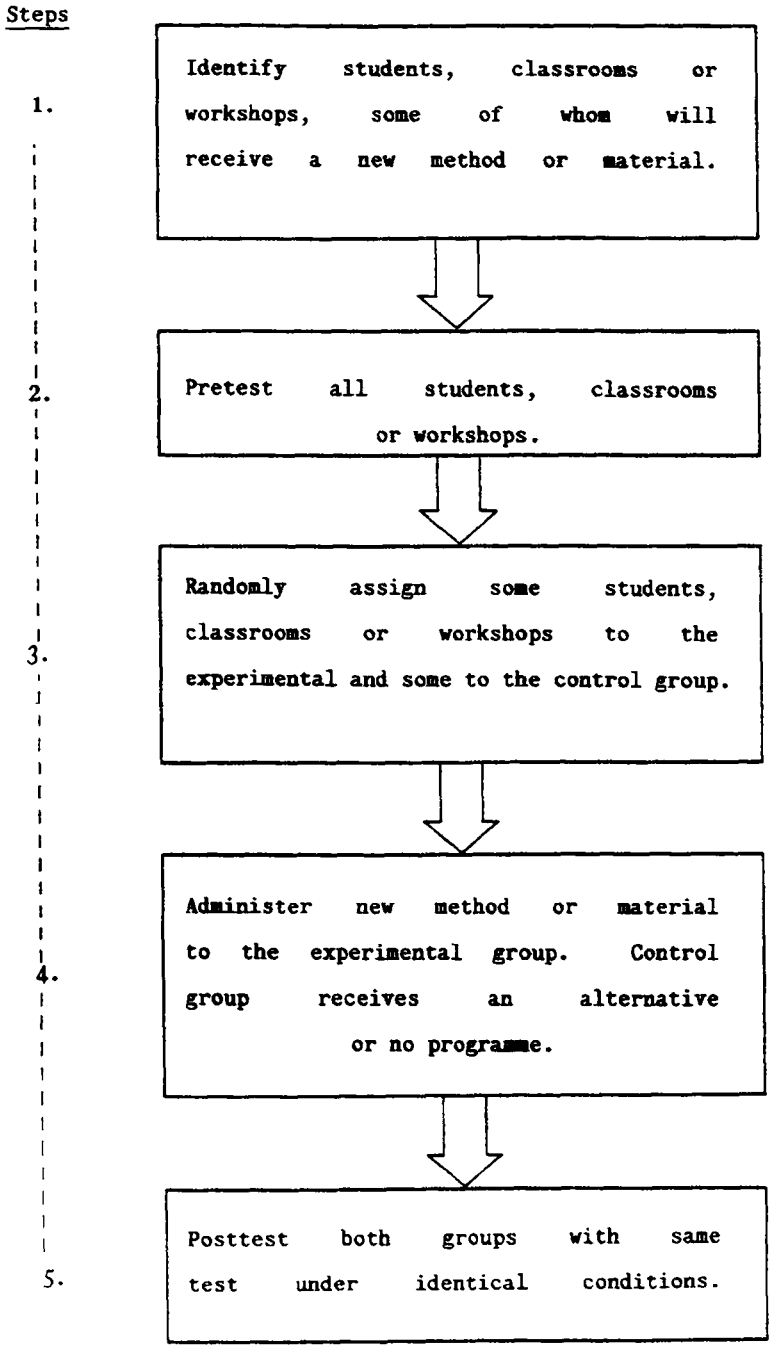
A good design produces believable information because it provides comparative data. This allows results from the programme under evaluation to be judged against another programme or standard. It enables you to say, "compared to traditional instruction, modular instruction produced more capable students" or "compared to national safety and health regulations, the mechanics workshop meets and in four cases exceeds minimum standards".

These conclusions are more defensible than ones that merely report results without benefit of a comparison group or standard. Comparative data is obtained by using control groups or by making informal comparisons of results.

Control group design. Exhibit 1.3 shows a true control group, pretest-posttest design. Students are randomly assigned to form two groups. One group receives a new method, material or programme. This is called the experimental (E) group. The other group. called control (C) does not receive treatment or gets an alternate one. Pretests are administered to see if both groups started out equal. If at the end of the treatment, the mean posttest score for the E-group is significantly higher than the mean posttest score for the C-group, the difference is attributed to the effect of the new method, material or programme.

Exhibit 1.3

THE CONTROL GROUP, PRETEST-POSTTEST DESIGN



Morris and Fitz Gibbon (1978) report three variations on this design. The true control group approach may be altered so both groups are measured only at the completion of the treatment. This variation is appropriate when a pretest might bias programme effects (when measuring attitudes) or when a suitable pretest is not available.

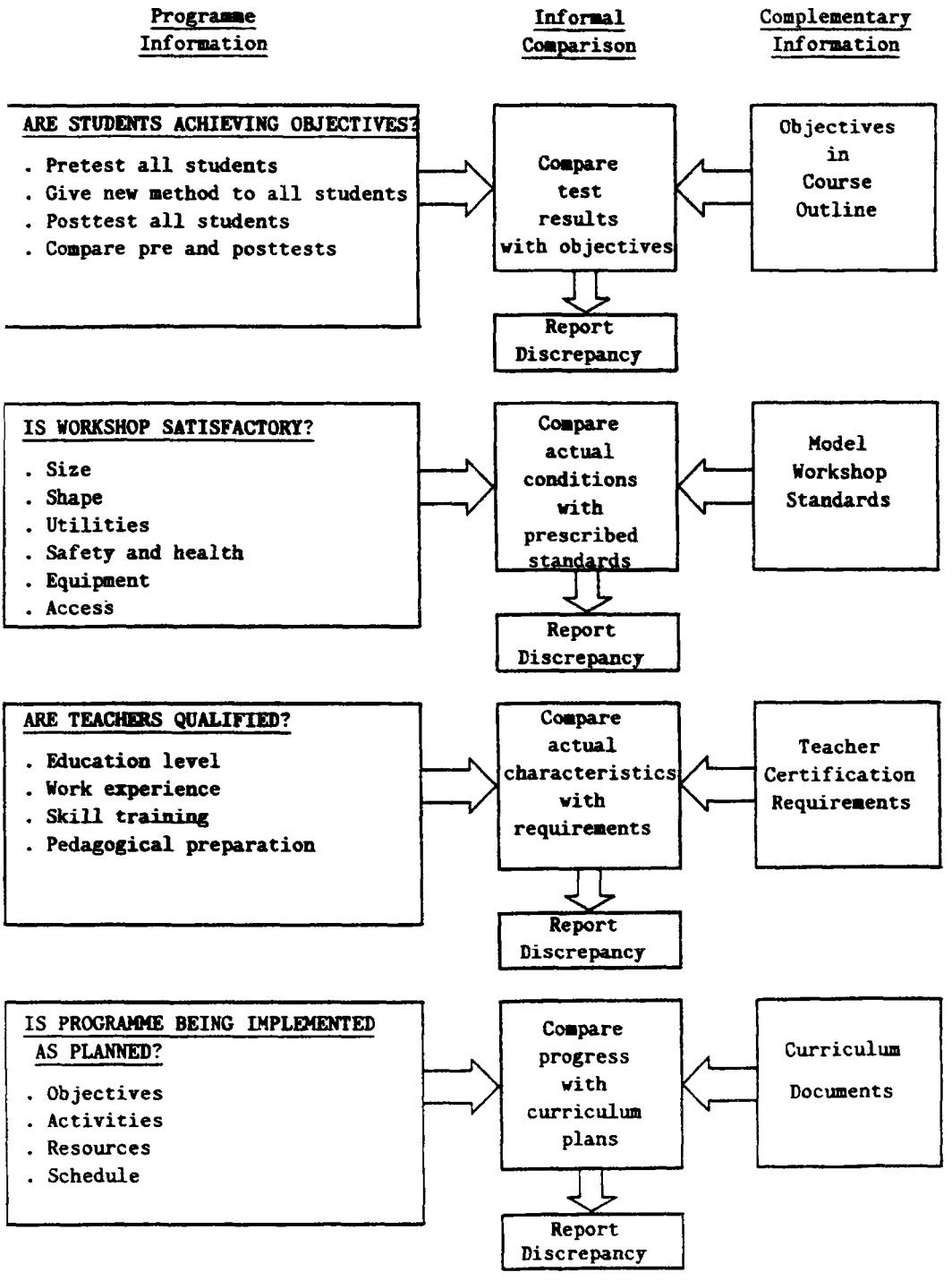
A non-equivalent control group, pretest-posttest is still another variation on the original design. Non-random groups are formed. This design is useful when students cannot be randomly assigned to programmes because they are bound by schedules, locations, prerequisites, or workshops. A third variation measures an experimental group and non-equivalent group at regular intervals. Both groups are measured before, during, and after a new programme, method, or material is initiated.

Control group designs require assignment of students, classrooms or workshops to programmes; comparison of groups and rigorous control of variables. These controls enable you to say that evaluation results are due to the treatment and not other variables. True control group designs are highly credible means of determining whether or not a programme, method or material is effective. These designs indicate effectiveness. They do not tell you what deficiencies exist or how to correct them (Braskamp, 1984).

Informal comparison design. A second approach collects no formal comparison data. Instead, complementary information is gathered from different sources -- student records, curriculum documents, health and safety standards, equipment and facilities specifications. This information is used cumulatively to draw conclusions about TVE curricula or programmes. Exhibit 1.4 shows four informal evaluation designs. For example, you may suspect that there is insufficient equipment in a welding workshop to meet programme objectives. To test your suspicions, you inventory existing welding equipment and compare the results with published workshop equipment standards. The comparison may show a discrepancy between what equipment exists and what equipment should be available for a model programme, (Provus, 1971). This discrepancy can be used to make recommendations for correcting equipment deficiencies. Corroborating evidence from different sources will strengthen informal interpretation of data. If you can get an expert to confirm the deficiency in workshop equipment, your conclusions will be all the more believable to an evaluation audience.

Exhibit 1.4

INFORMAL DESIGNS USING COMPLEMENTARY INFORMATION



Using complementary information to make informal comparisons of results helps determine curricular or programme deficiencies and how to correct them. This design is helpful when comparisons are not required for judging results -- as in monitoring implementation of a new programme.

An informal design is not satisfactory when assessing the quality of outcomes produced. This design does not provide answers to: "How good are the results?" and "Is the programme causing these results?".

Whatever evaluation design you choose, remember that credibility is enhanced when comparative data is reported. Consider using a combination of designs. When appropriate, combine a control group design with an informal comparison of results.

Deciding what to measure

What you decide to measure depends on the kinds of decisions to be made by the evaluation audience. These decisions dictate the kinds of information you must collect. Knowing the information needs will enable you to ask appropriate questions and measure the right things. Exhibit 1.5 shows five basic curricular concerns along with suggested items to measure (Lewy, 1977). For example. "IF" the curricular concern is whether or not to offer a welding programme, "THEN" you might measure one or more of the following:

- employer needs
- student needs
- supply and demand
- goals and objectives
- training costs

Exhibit 1.5

MEASUREMENT DECISION MATRIX

	IF THE CONCERN IS...	THEN MEASURE...
1.	Should a curriculum be offered?	. Employer needs . Student needs . Supply and demand for these workers . Goals and objectives . Costs of training
2.	What content should be offered?	. Knowledge requirements of the area . Skill requirements of the job . Required attitudes . Related requirements
3.	Are curriculum materials of good quality?	. Usefulness of materials . Acceptability of materials . Costs of materials
4.	What are curricular effects on students in-school?	. Student achievement . Student performance . Student satisfaction . Quality of facilities . Adequacy of budget . Teaching quality
5.	What are curricular effects on former students?	. Employability of graduates . Employer views of graduates . Graduates' satisfaction with TVE curriculum . Graduates' satisfaction with their jobs

Exhibit 1.5 can also help you decide what to measure when you are concerned with content, materials, and curricular effects on students. When you want to know what content should be offered, consider measuring knowledge, skill, and attitudinal requirements (Item 2). Try measuring usefulness, acceptability and costs of materials when you are concerned with the quality of curriculum materials (Item 3). Measuring student achievement, performance and satisfaction are three ways of determining curricular effects on in-school students (Item 4). Curricular effects on former students (Item 5) might be determined by measuring employers' views of graduates, graduates' satisfaction with the TVE curriculum or graduates' satisfaction with their jobs.

Reporting the evaluation

The real measure of an evaluation's success is the extent to which people read, understand and use findings given to them. A good evaluation report will increase the likelihood of achieving these outcomes. Report information that your audience wants to see. Present data in simple, easy-to-understand language. Use visuals, wherever possible, to communicate findings. Simple pie charts, bar graphs and tables are good ways to get your message across (Morris, 1978).

Arrange information in a logical sequence starting with a background statement. Describe the people who requested the evaluation, what decisions will be based on the evaluation, what information was requested and the evaluation objectives (Exhibit 1.6).

Exhibit 1.6

EXAMPLE OF BACKGROUND STATEMENT

To determine whether or not to propose changes in curriculum, the vocational training board chairman requested information on programme objectives. He wanted to know if each programme objective addressed industrial training needs. The objective of this evaluation was to determine, for each vocational programme, which objectivesaddressed training needs.

Next provide a brief description of the data collection and analysis procedures. Describe the instruments and methods used to collect data. Follow with an explanation of techniques used to analyse the data (Exhibit 1.7).

Exhibit 1.7

EXAMPLE OF DATA COLLECTION AND ANALYSIS

A discrepancy analysis was used. Objectives of each vocational programme were compared with counterpart industry training needs. Results of the comparisons were analysed for similarities and differences. Discrepancies between programme objectives and industry needs were recorded and reported.

Present findings with the aid of visuals. one well-designed chart, graph or table will communicate more effectively than many words. Briefly explain the contents of each visual (Exhibit 1.8).

Exhibit 1.8

EXAMPLE REPORT OF FINDINGS

Number of Discrepancies Between Industrial Training Needs and Objectives by Programme Areas

Vocational Programme	Nº of objectives meeting needs	Nº of training needs	Discrepancy
Agriculture mechanics	13	15	2
Business practices	10	20	10
Construction	15	20	5
Food preparation	12	19	7
Health care	15	21	6
Totals	65	95	30

Thirty instances were found where vocational curriculum objectives did not address industry training needs. The greatest number of discrepancies were found in the business practices programme (10). The next highest number (7) was found in the food preparation programme. Health care, construction and agriculture mechanics each accounted for 6, 5 and 2 discrepancies respectively.

Conclusions follow findings. Concluding statements summarise findings and focus on important issues and points (Exhibit 1.9).

Exhibit 1.9

EXAMPLE OF CONCLUSIONS

Vocational curriculum objectives are not meeting all of industry's training needs. The greatest discrepancy between industry needs and objectives appears in the business practices programme. Discrepancies are also evident in the school's four other programmes.

Recommendations logically follow conclusions (Exhibit 1.10). They are suggestions for further study or action.

Exhibit 1.10

EXAMPLE - RECOMMENDATIONS

1. Initiate continuing studies of the changing nature of industry training needs.
2. Revise curriculum objectives starting with business practices.

A complete example of a final report appears to Section VI. Use it and these examples to guide your report writing efforts. A final report is your method of communicating evaluation results to the audience. Prepare it well and your audience is likely to read it, understand content and apply recommendations.

Plan your report before starting the evaluation. Knowing reporting requrements will guide your efforts throughout the evaluation process.

Summary

Evaluations provide people with information. People use this information to make decisions about TVE curricula. The evaluation strategy proposed in this guide was drawn from four theoretical models. These models promote understandings of the evaluation process and of the actions that must occur. Five actions underlying evaluations are: -

- determine who requested the evaluation,
- find out what they want to know,
- choose an evaluation design,
- identify what must be measured, and
- determine how to report information.

Completion of these tasks leads to development of an evaluation plan.

SECTION II

PLANNING AN EVALUATION

PLANNING AN EVALUATION

Good evaluations do not just happen. They are carefully planned and executed. Quality evaluations are related to the amount and type of planning that has gone into them (Finch, 1982).

Planning requires much time and coordinated effort. This requires definition of purpose and preparation of an evaluation plan.

DEFINITION OF EVALUATION PLAN

An evaluation plan is a framework for collecting, analysing and reporting data.

This framework increases the likelihood that an evaluation will be successful. A good plan will result in an evaluation that provides decision makers with desired, credible and timely information.

Advisory committees, citizen groups, teachers, and administrators can provide valuable planning assistance. Use them as you prepare the evaluation plan. Solicit their advice as you define the scope of evaluation; its measures, designs, procedures, and budget. Check with them as you complete each part of the plan. Those who have experienced similar evaluations or situations may suggest ways to improve your plan. Still others may serve as sounding boards against which you test your ideas about evaluation measures, designs and procedures. By involving others, you create interest and ownership in the evaluation. When people feel the evaluation is their creation, they will work to see it succeed.

Planning process

The evaluation planning process is illustrated in Exhibit 2.1. It involves completing five planning worksheets and one summary document. The worksheets are used to collect information on five aspects of the evaluation.

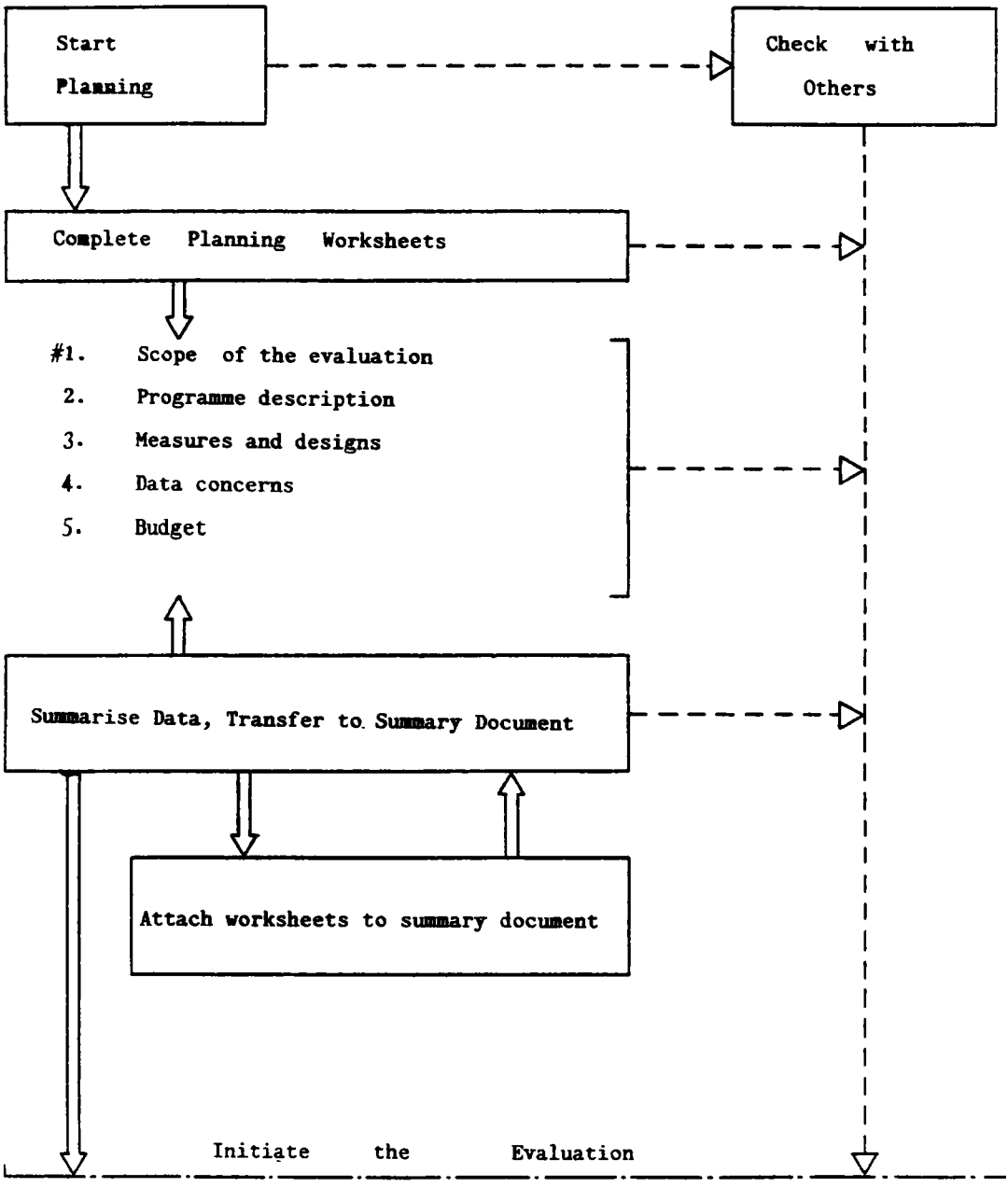
Worksheet number	Worksheet title
1	Scope of the evaluation
2	Programme description
3	Measures and designs
4	Data concerns
5	Budget

Each worksheet contains a series of steps that ask questions about the programme or evaluation process -- step 1.1, who wants to know about the programme?; step 1.5, what is/are the objective(s) of the evaluation?

Information collected at each step of each worksheet is summarised and transferred to a one page summary document. This document and five supporting worksheets comprise the evaluation plan. The entire process is validated by making continuous progress checks with advisory bodies, citizens groups, teachers and administrators.

Exhibit 2.1

EVALUATION PLANNING PROCESS



Example evaluation plan

An example plan illustrating the use of planning worksheets appears in Exhibit 2.2. Because evaluating an entire curriculum is so complex, the example plan addresses only one curriculum component. However, the process and procedures illustrated are applicable to the planning of comprehensive curriculum evaluations.

The example describes a plan for evaluating the effects of modular instruction on student achievement in an electronics assemblers programme. A small "experiment" was selected to provide desired information.

Information for the plan was collected using the five planning worksheets described in Exhibit 2.1. The data collected at each step was used to prepare the evaluation plan (as in Exhibit 2.2). An explanation of how to prepare a plan and worksheets follows. Worksheet preparation will be explained first.

Scope of the evaluation

Planning sheet 1 helps you describe five aspects of the evaluation. Begin by writing the name of the programme to be evaluated under step 1.1. Then identify the people who want to know about the programme (step 1.2). After you have identified the audience, find out what decisions they will make using evaluation information. You may want to ask them:

- What decisions do you want to make regarding the TVE curriculum?
- What information do you think you will need to make these decisions?

Enter decisions under step 1.3. Analyse the kinds of information your audience said they needed to make decisions. Make modifications in needs to ensure proper data collection. Describe the information needs in step 1.4.

Exhibit 2.2

SAMPLE EVALUATION PLAN

Person(s) responsible for the evaluation: Wiley, Suzuki, Kheir.

1. Evaluation scope

The electronic assemblers programme adopted mastery learning. This required purchase of modules. Because modules are costly, officials need to know their effectiveness. The evaluation objective is to determine how effective modules are in helping students develop job competencies. Findings will help officials determine whether or not to continue, modify or terminate the mastery learning process.

2. Programme description

This ten week programme prepares students for work as electronic assemblers. It develops competencies necessary to read schematics, solder connections, strip and wrap wires, harness cables, and install mechanical components. Two experienced tradesmen teach the course using learning modules. These modules require slide projectors, instruction manuals and 25 assembly stations.

3. Measures and designs

A pretest-posttest true control group design will be used to assess the impact of learning modules on student achievement. Students will be given a manufacturer's pretest on soldering. Two equivalent student groups will be formed by random assignment. Students in the experimental (E) group will spend two weeks using modules to learn soldering techniques. The control group (C) will learn to solder using traditional methods. At the end of two weeks, students will be tested to see if the module using (E) group has learned more than the control (C) group.

4. Data concerns

A pretest will be given on 1 April. Two weeks of instruction will be given using both modular (E-group) and traditional instruction (C-group). Both groups will be posttested on April 15. A t-test will be used to show significance of difference between mean scores of the E and C groups. A written report documenting findings, conclusions and recommendations will be completed no later than 11 May.

5. Budget

Funds required to carry out the evaluation as proposed equal US $ 1,720. Personnel will require US $ 1,550, with travel, test items, and communications requiring US $ 25, $ 85, and $ 60 respectively.

PLANNING SHEET 1

SCOPE OF THE EVALUATION

STEPS

1.1 **What programme is to be evaluated?**

Electronic assemblers

1.2 **Who wants to know about the programme?**

TVE advisory committee and administrators

1.3 **What decisions will be based on the evaluation?**

Whether or not to continue, modify or terminate the modular learning approach.

1.4 **What information must be given to the audience?**

Data on how effective modules are in helping students meet objectives.

1.5 **What is/are the objective(s) of the evaluation?**

To determine how effective learning modules are in helping students meet objectives.

Answering the questions in steps 1.1 through 1.4 enables you to state the evaluation objective(s). The nature of the situation will determine how many objectives must be stated. Use as few objectives as is possible. One well-stated objective is better than many poorly defined ones. Objectives give direction to evaluation efforts. They are important in creating an environment conducive to evaluation. Evaluation objectives help in:

- creating support for the evaluation,
- selecting measures and designs,
- assuring proper data collection and analysis,
- informing participants of expectations, and
- guiding evaluators and support personnel during the evaluation process.

An evaluation objective is a statement of what will be done to secure information required for making decisions about a curriculum or one of its many components. Some example evaluation objectives follows:

- to determine how effective learning modules are in helping students achieve objectives,
- to determine, for each vocational programme, which objectives address industrial training needs,
- to determine the need for a farm mechanic programme,
- to describe existing workshop conditions in relation to documented standards,
- to determine programme effects on the employability of former students.

Entering the evaluation objective(s) under step 1.5 completes planning sheet 1.

Programme description

Planning sheet 2 describes the curriculum, programme, method or materials being evaluated. When two programmes are compared, characteristics of both must be described. This enables you to measure exactly how one programme measures-up against an alternative. Complete a separate planning sheet for each programme.

PLANNING SHEET 2

PROGRAMME DESCRIPTION

Steps

2.1 What are the programme outcomes?

Students successfully completing the programme will be employable as electronic assemblers. They will meet industry standards for: -

- reading schematics;
- using hand and power tools;
- soldering electrical connections;
- harnessing cables; and
- stripping wires.

2.2 What are the programme activities?

Two teachers, one with 20 and the other with 8 years industrial experience teach the class. They use lectures, demonstrations and workshop exercises to impart knowledge and skills. Students observe techniques and then apply them to individual practice exercises.

2.3 What are the required resources?

A 200 m^2 workshop is fully equipped with 24 work stations, lecture area and storage room. Chalkboards, flipcharts, overhead projector and job sheets supplement instruction. An operating budget of US $ 280 is available for each student.

Programme characteristics may be grouped into three categories: desired outcomes, activities, and resources. Desired outcomes may include aims, goals and objectives. List these under step 2.1 Programme activities are all actions people engage in to acquire new knowledge, skills or attitudes (step 2.2). Observing demonstrations, role playing, completing exercises, and constructing projects are examples of programme activities. Resources include people, materials, equipment, space, time, and money. List major required resources under step 2.3. Planning sheet 2 will help you identify factors that may produce programme effects. For example, poorly maintained equipment or poor time management could be hindering student achievement of programme objectives. These and other factors could be measured during an evaluation.

Measures and designs

A process for selecting proper measurements and designs appears in planning sheet 3. This sheet enables you to focus on programme outcomes, activities and resources that are important to measure. The evaluation audience should be consulted when deciding what to measure. Plan to measure only those things that answer the questions of your audience -- "relative effect of modular instruction on student achievement" (step 3.1).

After identifying what will be measured, specify instruments that will collect required data (step 3.2). Knowing measurement instruments will help you plan data analyses. You can use formal procedures like the "t-test" shown in the sample worksheet or simply use sums, differences, or ranges. You may also choose to describe programme characteristics, discrepancies, deficiencies or levels of implementation. Describe your data analysis plans under step 3.3

Step 3.4 requires that you specify an evalaution design. The design will indicate who will be measured, how and when. A design may be formal, informal or both.

When only one programme can be measured, you can interpret results by comparing pretest and posttest results or through informal comparisons based on student profiles, curriculum documents, inventory lists, personnel records, established standards or budget sheets. Examples of informal comparisons appear in Exhibit 2.3.

PLANNING SHEET 3

MEASURES AND DESIGNS

Steps

3.1 **What will be measured?**

Relative effects of modular instruction on student achievement will be measured.

3.2 **What instruments will be used?**

Manufacturer's assembly test.

3.3 **How will data be analysed?**

Outcome data will be analysed using a t-test of differences between the mean score of an "experimental" group and a "control" group on a pretest and posttest.

3.4 **What designs will be used?**

A true control group, pretest, posttest will be used.

3.5 **What sampling strategy will be used?**

Random assignment.

Exhibit 2.3

EXAMPLE OF INFORMAL COMPARISONS

Programme Evaluation Data	Compared to	External standards
. Student test scores	to	Published test norms or previous test results
. Attendance figures	to	Past attendance records
. Workshop equipment	to	Prescribed equipment standards
. Class size	to	Class sizes in other comparable workshops
. Student performance	to	Published performance criterion measures

Programme evaluation results are compared with external standards or criteria. For example, the observed health and safety conditions in a welding programme are recorded and compared with established workshop safety standards. This allows results from the programme evaluation (observed conditions) to be judged against an external criterion (established standards). This permits you to say, "compared to established health and safety standards, the welding programme meets and/or exceeds all criteria". This conclusion is more defensible than one that reports results without benefit of comparison to an external standard.

Data are analysed with the greatest degree of confidence when the programme under evaluation has been compared with an alternative or control (C) group. Exhibit 2.4 shows four kinds of designs using controlled comparisons. Consider using these when planning to evaluate programme effectiveness.

Exhibit 2.4

EXAMPLES OF CONTROLLED COMPARISONS
. True control group, using pretest and posttest . True control group, using posttest only . Non-equivalent control group, using pretest and posttest . Time series with non-equivalent control group

Control or experimental group designs provide highly defensible conclusions on programme effectiveness. Credibility is increased because strict controls are exerted over programme variables -- students, time, methods, teachers, resources, tests. For example, when a true control group design is desired, you must be able to randomly assign students to programmes. Other control group designs require that non-randomised comparison groups be available. Whenever true control and non-equivalent control group designs are desired, the evaluation must be planned before a new programme, method or material is initiated. Describe your evaluation design under step 3.4.

You may also find it necessary to specify a sampling strategy (step 3.5). In some situations it may not be possible to measure everyone -- there are too many people, they are in remote locations, or there is insufficient time or money. Therefore, a random sample is drawn from the population. A sample should be made as large as is possible within the constraints of time and money. The entire population is best represented by a large sample. The smaller the sample, the less likely its outcomes will reflect measurements taken from the entire population. Whatever its size, the sample must accurately represent the population (Cochran, 1973 - Sudman, 1976).

Sample sizes necessary for credible representation of selected groups appear in Exhibit 2.5. Use this exhibit as a guide when specifying sample size. For example, if the number (N) of people in the population is 100, then the sample (S) size taken from Exhibit 2.5 is 80.

Exhibit 2.5

DETERMINING SAMPLE SIZE FROM A GIVEN POPULATION*

N	s	N	s	N	s
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	228	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	106	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	133	1000	278	75000	382
210	136	1100	285	100000	384

Note: "N" is population size. "s" is sample size.

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*Krejcie, R.V. and Morgan, D.W. Determining sample size for research activities. Educational and Psychological Measurement, 1970, 30, 607-610.

Data concerns

Collecting, analysing and reporting data are dealt with in planning sheet 4. Data collection deadlines are specified in step 4.1. Start by specifying the deadline for the evaluation report. Then estimate how much time will be needed to prepare the final document. The more extensive and complicated an evaluation, the more time will be required for report preparation. Two to three weeks are considered adequate to write a normal report.

Subtract the number of weeks required for report preparation from the reporting deadline. This is the deadline for analysing data. The complexity of the analysis process will determine how much time is needed to complete this task. The scoring deadline is dependent upon how quickly test instruments can be scored. The time needed may vary from a few days to many weeks.

Set pretest deadlines close to the end of the evaluation period. This will give a new programme or method maximum time to cause a programme effect. In most cases, pretests should be given at the start of the programme.

Planning data presentation requires choosing a method that will be understood by the evaluation audience (step 4.2). Plan to visualise data with charts and graphs. This will enable you to identify trends in results. Simple visuals are more effective than complex statistical presentations. The evaluation design and measurements will determine whether or not you can use statistical procedures.

Reports of evaluations must be carefully planned (step 4.3). Specify the manner in which results will be reported -- written, verbal or both. Then outline the major report topics -- background, data collection and analysis procedures, findings. An example of a completed evaluation report appears in Section VI.

PLANNING SHEET 4

DATA CONCERNS

Steps

4.1 What are the deadlines?

1 April - pretest
15 April - posttest
17 April - scoring
20 April - analysing
11 May - final report

4.2 How will data be presented?

. Graph data to show difference between mean scores of E and C groups.

4.3 How will data be reported?

. Written document describing:

- Programme background
- Data collection and analysis procedures
- Findings
- Conclusions
- Recommendations

Budget. Finally, an evaluation plan must define costs associated with collecting, analysing and reporting information. A budget must be developed ensuring sufficient funds to carry out the evaluation as proposed. Planning sheet 5 provides a budget outline. Use it as a guide. Notice that two cost columns are provided for each budget category; ESTIMATED and ACTUAL. First, enter estimated costs for each of the five budget categories -- personnel (5.1), travel (5.2), test items (5.3), communication (5.4), and other (5.5). As you incur costs, enter them in the ACTUAL column. This provides a good record of actual versus estimated costs.

The evaluation tasks proposed will determine costs. The more complicated and time consuming a task, the more it will cost. For example, evaluation requiring comprehensive data collection and computer analyses will be costly. Evaluations using simple designs and data collection will cost less. Personnel costs are estimated by calculating time on task. The procedure follows:

- Identify who will perform each task.
- Estimate time required to complete each task.
- Calculate staff cost per unit time.

EXAMPLE

Evaluation task	Time on task		Staff cost per hour		Total personnel cost
1	60 hrs	x	20 US $	=	1200 US $
2	30 hrs	x	10 US $	=	300 US $
3	10 hrs	x	5 US $	=	50 US $

Repeat for each evaluation task.

PLANNING SHEET 5

BUDGET

Steps		Costs Estimated	Actual
5.1	**What are the personnel costs?**		
	Evaluator	1200	
	Consultant	300	
	Clerical		
	Typist	50	
	Other		
5.2	**Travel/Lodging/Food**		
	Transportation		
	Housing		
	Meals	25	
5.3	**Test Items/Analysis**		
	Test purchase	35	
	Test scoring	50	
	Data processing		
5.4	**Communication**		
	Telephone	40	
	Postage	20	
	Telex		
5.5	**Other costs**		
5.6	**Total costs**	$ 1720	

Cost estimates for travel/food/lodging, test items, and communications can be developed on the basis of:

- current rates being paid or charged,
- experience with similar, past evaluations and/or
- information provided by others who have budgeted similar evaluations.

Show your completed budget worksheet to others. In this way, you can check your cost estimates against those made by others. You may discover errors and gain insights into fiscal planning.

People who have experienced similar evaluations may suggest ways to lower costs while still maintaining credibility. Experienced evaluators have found ways to keep costs manageable by:

- using clerical help wherever possible,
- purchasing rather than developing test instruments,
- employing consultants for only the most complicated tasks,
- using already proven evaluation designs and procedures,
- sampling,
- using instruments that can be machine scored, and/or
- using data routinely collected by the programme.

Keeping costs manageable should not overshadow the need for credible information. Changes made for the sake of economy could very well reduce the believability of an evaluation.

You have now completed five planning worksheets. Review each worksheet and summarise data on the one-page evaluation plan. Attach the worksheets to the plan as supporting documents. Be sure to indicate, at the top of the plan sheet, who the responsible person(s) will be.

Summary

Good evaluations are carefully planned and executed. A plan for collecting and analysing data increases the likelihood that an evaluation will be successful. Five aspects of an evalaution are described in a plan:

- Scope
- Programme
- Measures and designs
- Data concerns
- Budget

Information for each aspect is collected using five planning worksheets. Each worksheet has a series of steps to follow. Completion of each step enables you to gather information necessary to complete the evaluation plan. A completed sample evaluation plan and five planning worksheets appear in this section. Copies of these worksheets appear in blank form in Section VI. Use them to guide your planning efforts.

SECTION III

INFORMATION REQUIREMENTS

INFORMATION REQUIREMENTS

Information from different sources is used to evaluate various components of the curriculum. Some of the more appropriate information sources for each component are shown in Exhibit 3.1.

Exhibit 3.1

INFORMATION SOURCES FOR CURRICULUM EVALUATION

CURRICULUM	INFORMATION SOURCES
Curriculum Planning	. Employer opinions . Manpower supply and demand reports . Expert opinions . Advisory committee opinions
Curriculum Development	. Expert opinion . Curriculum standards . Programme documents . Teacher reactions
Curriculum Materials Development	. Materials specialist opinion . Commercially produced materials . Materials check lists . Teacher opinions
Curriculum Effects on Students	. Student reactions . Teacher reactions . Test results . Programme and resource standards . Programme records
Curriculum Effects on Former Students	. Employer reactions . Former student opinions . Employment records

To illustrate, consider that you are trying to determine whether or not students are learning curriculum content. You can get appropriate information about content mastery from test results, teacher grade books, and programme records. Student opinions and teacher reactions are also good sources of information. Focus your data collection on sources which are most likely to give you the information your evaluation audience wants to see in the final report. Also look for data sources that provide complementary information. This allows results from the programme under evaluation to be compared with another programme or standard.

Before commencing the "exhibits" and the data collection work sheets, an "information sheet" will indicate the source and objective or target aim. This could be as follows:

DATA COLLECTION GENERAL INFORMATION WORKSHEET

Please check:

[ ]	Vocational Training Centres
[ ]	Adult Education/Training Centres
[ ]	Secondary Technical Institutes

Please fill in:

X	Institute District: .....
X	Institute or Centre: .....
X	Principal/Director: .....
X	Title of Course: .....
X	Occupation covered: .....

Please check:

Type of course

[ ]	Practical work
[ ]	Related technical
[ ]	Other related

Please fill in:

X	Instructor: .....
X	Evaluation carried out by: .....
X	Position/title: .....
X	Date: .....

Tests, records and documents

Test results, school records and published standards are good sources of information. Exhibit 3.2 shows examples for each of the three major information sources. Use this exhibit to guide your information collection activities.

Exhibit 3.2

INFORMATION SOURCE DOCUMENTS

Tests

Teacher developed achievement tests
Standardised achievement tests
Interest inventories
Scholastic aptitude tests
Manipulative aptitude tests
Performance tests
Attitude assessments

School Records

Memoranda
Grade reports
Teacher grade books
Official transcripts
Diplomas or certificates of completion
Logs, journals, diaries
Textbooks, manuals, booklets
Student worksheets
Progress charts
Rental agreements
Letters
Bills, requisitions, invoices
Student assignment sheets
Circulation files on books and materials

Documents

Programme promotional brochures
Curriculum outlines
Courses of study
National safety and health standards
Workshop and equipment standards
National curriculum standards
International workshop standards
International health and safety standards
International curriculum standards

A vast array of tests is available to help you collect information about curriculum effects on students. Tests range from teacher developed achievement tests to norm referenced scholastic aptitude tests. The information needs of your audience must be considered when you select tests as a means of providing required data. Be sure the tests you are considering will provide appropriate information.

School records are another valuable source of information. They allow you to put together a reliable picture of what has occurred in the past. Exhibit 3.2 lists some of the more commonly kept records. These records are helpful in describing a curriculum or programme. Use them when it is necessary to do a descriptive analysis of a programme's history.

Standardised documents describing curriculum components are good sources of complementary data. They provide data that can be compared with results from curriculum components under evaluation. Nine such documents are listed in Exhibit 3.2.

Information needs and supporting data

Exhibit 3.3 shows the kinds of data to provide an audience when their information needs are known. To provide appropriate data, identify "who" or "what" the audience wants to know about. Then determine specifically what they want to know about that person or thing. Suppose, for example, your audience wants to know about teachers. You must find out what it is they want to know about teaching staff. Assume they want to know whether or not teachers are of good quality.

Checking Exhibit 3.3, you will see that when the audience wants to know about teachers, you provide data on some or all of the following:

- teaching experience
- work experience
- teacher training
- education level
- gender, age
- special characteristics
- teaching evaluations

Exhibit 3.3

AUDIENCE INFORMATION NEEDS AND SUPPORTING DATA

IF, THE AUDIENCE WANTS TO KNOW ABOUT ...	THEN, PROVIDE DATA ON ...
Students	. Employment record of graduates . Grade point average . Achievement, aptitude, or intelligence test scores . Courses completed . Attendance . Addresses, phone numbers . Gender . Age . Physical characteristics . Punctuality
Teachers	. Years of teaching experience . Work experience . Years of teacher training . Education level . Gender, age . Special characteristics . Teaching evaluations
The school	. Enrolment total . Class size . Average daily attendance . Budget . Physical plant . Faculty size and composition
Instructional processes/procedures	. Teaching/learning processes . Goals and objectives . Course of study . Instructional materials . Supporting resources . Equipment and supplies

Facilities	. Classrooms . Workshops . Anciliary spaces
Safety and health	. Personal protection . Machine and equipment guards . Accident reporting system . Accident prevention programme

Because the audience is concerned with quality, data from student evaluations of teacher performance might be provided to them. You must decide if this data best meets the information needs of the audience.

However, this data alone is not enough. To be credible, the results from the teacher group under evaluation must be compared to another teacher group or standard. Student evaluations of teachers in a similar school setting could be used to compare results. Making these comparisons allows you to say, "compared to student evaluations of teachers in a similar school and setting, this school's teachers exceeded all comparison group mean scores on a standard instrument". This statement is more credible than one that only describes student evaluations of teachers without benefit of a comparison group or standard.

Data collection worksheets

What remains is to fulfil information needs in an orderly and timely manner. A series of data collection worksheets (Exhibits 3.4 to 3.14) has been included to meet this need. Each worksheet is designed to collect information about a specific curriculum component -- students, teachers, instructional processes, facilities. When used in combination, they fulfil data requirements of a comprehensive curriculum evaluation. Used separately, they supply data about one component of the curriculum -- objectives, methods or facilities.

Whether used separately or jointly, the worksheets should be used in conjunction with the objectives, measures and designs stated in the evaluation plan. Consult your plan before starting to collect information. A careful review of the plan may save you from collecting unwanted data.

Setting evaluation ratings criteria

The following ticks may be used:

 provisions exist extensively

 provisions exist to some extent

 provisions are limited

 provisions do not exist but are needed

 provisions not desirable or not needed

Exhibit 3.4

. WHEN your audience wants information on the ....

SCHOOL

. YOU may need to provide information on ....

|V|	CHECK
| |	Philosophy of school
| |	Aims, goals, objectives
| |	Administrative organisation
| |	Governing bodies/advisory committees
| |	Programmes offered
| |	Number and description of students
| |	Number and description of administrators
| |	Number and description of support staff
| |	Employment status of former students
| |	Budget
| |	Equipment
| |	Facilities
| |	Audio-visual resources
| |	Community served by school
| |	Industrial relations
| |	Staff development programme
| |	Teacher evaluation system

. CHECK your evaluation plan before deciding what data to supply.

Exhibit 3.5

. WHEN your evaluation audience wants information on....

OBJECTIVES

. YOU may need to provide information on ....

[V]	**CHECK**
[ ]	Institutional aims
[ ]	Curriculum goals
[ ]	Programme objectives
[ ]	Extent to which objectives:

- fulfil training needs,
- identify students for whom the objectives are intended,
- define the competence of the students upon completing the course,
- define conditions under which performance will be exhibited, and
- define the criteria of acceptable performance.

[ ] Number of objectives by domain and learning level:

- number of cognitive objectives at the knowledge, comprehension and application levels,
- number of affective objectives at the receiving, responding, valuing and characterising levels, and
- number of psychomotor objectives at the imitation, manipulation, precision, and automation levels.

. CHECK your evaluation plan before deciding what data to supply (Mager, 1967).

Exhibit 3.6

. **WHEN your evaluation audience wants information on....**

STUDENTS

. **YOU may need to provide information on ....**

[V]	**CHECK**
[ ]	Age and gender
[ ]	Grade point average
[ ]	Attendance
[ ]	Punctuality
[ ]	Goals
[ ]	Attitudes
[ ]	Social and economic status
[ ]	Test scores

- achievement,
- aptitude,
- intelligence, or
- performance

[ ]	Courses completed
[ ]	Physical characteristics
[ ]	Entry level behaviour
[ ]	Employment status of former students
[ ]	Satisfaction with programmes

. **CHECK your evaluation plan before deciding what data to supply.**

Exhibit 3.7

. WHEN your evaluation audience wants information on....

TEACHERS

. YOU may need to provide information on ....

[V]	**CHECK**
[ ]	Number of teachers
[ ]	Age and gender
[ ]	Teaching experience
[ ]	Work experience
[ ]	Education level
[ ]	Years of teacher training
[ ]	Upgrading experience
[ ]	Teaching evaluations
[ ]	Professional development plans
[ ]	Extra-curricular contributions
[ ]	Special abilities or training
[ ]	Limitations

. CHECK your evaluation plan before deciding what data to supply.

Exhibit 3.8

. WHEN your evaluation audience wants information on....

TEACHING METHODS

. YOU may need to provide information on ....

CHECK	
|V|	**CHECK**
| |	The kinds of methods used for instruction, including:

- lectures
- discussions
- demonstrations
- simulations
- practical exercises
- rojects
- ndividual modules
- case studies
- on-the-job training
- computer assisted

| |	The value of a method as a teaching and learning tool
| |	Appropriateness of a method for objectives
| |	Appropriateness of a method for students
| |	Teacher success in using a method
| |	Availability of equipment to support a method
| |	Availability of facilities to support a method
| |	Availability of time to properly use a method
| |	The costs of using a method

. CHECK your evaluation plan before deciding what data to supply.

Exhibit 3.9

. **WHEN your evaluation audience wants information on....**

WORKSHOP FACILITIES

. **YOU may need to provide information on ....**

CHECK	
[V]	
[ ]	Available space

- Ratio of width to length
- m^2 of workshop
- m^2 per student
- m^2 for materials storage
- m^2 for student storage
- m^2 for equipment storage
- m^2 for assembly area
- m^2 for classroom
- m^2 for teacher planning
- Location of various areas to one another

[ ] Workshop orientation

- Location in relation to main school building
- Location in relation to ground

[ ] Floors, doors, partitions

- Floor material of workshop
- Width of corridor doors
- Width of workshop service doors
- Type of service doors
- Type of hardware on doors
- Flexibility of partitions

[ ] Visual conditions

- Window area in workshop
- Window arrangement
- Height of windows
- Type of window glass
- Artificial light source
- Light reflection of ceiling, walls, benchtops, furniture, machinery, floor
- Illumination level at workstations

☐ Sound conditions

- Sound absorbing value of ceilings
- Sound absorbing value of walls

☐ Plumbing

- Drinking and washing facilities
- Work sinks
- Automatic sprinkler systems
- Location of air compressor
- Distribution of gas outlets

☐ Heating and ventilating

- Kind of ventilating system
- Heating system
- Temperature controls
- Exhaust system
- Relative humidity of workshop

☐ Electrical system

- Power circuit system
- Branch circuits
- Overload protection
- Spare circuits
- Power cut-off safety buttons
- Fire alarm system

☐ Health and safety

- Fire extinguishing agents
- First aid supplies

☐ Color conditioning

- Wall color
- Floor color
- Ceiling color
- Machinery color

. **CHECK your evaluation plan before deciding what data to supply.**
(Adapted from Modern School Shop Planning, Prakken, 1982).

Exhibit 3.10

. WHEN your evaluation audience wants information on....

HEALTH AND SAFETY CONDITIONS

. YOU may need to provide information on ....

[V]	**CHECK**
[ ]	Workshop accident prevention programme
[ ]	Accident reporting system
[ ]	Personal protection

- head
- eye and face
- hand
- foot
- ear and mouth
- total body protection

[ ]	Materials movement
[ ]	Machine guarding
[ ]	Hazardous materials precautions
[ ]	Emergency treatment supplies/materials
[ ]	Utilities safeguards
[ ]	Fire safety
[ ]	Ventilation

. CHECK your evaluation plan before deciding what data to supply.

Exhibit 3.11

. WHEN your evaluation audience wants information on....

EVALUATION METHODS USED BY TEACHERS

. YOU may need to provide information on ....

|V|	**CHECK**
| |	How student performance is assessed
| |	How student attitudes are assessed
| |	How student knowledge is assessed
| |	How grades are determined
| |	How student records are kept and managed
| |	How student performance criteria are assessed

. CHECK your evaluation plan before deciding what data to supply.

Exhibit 3.12

. **WHEN your evaluation audience wants information on....**

FINANCIAL RESOURCES

. **YOU may need to provide information on ....**

V	**CHECK**
[ ]	Type of budget used

- revenue and expense budget
- time, space, material budget
- capital expenditure budget
- cash budget
- variable budget
- zero base budget

[ ]	Budgetary control devices

- statistical data
- special reports and analyses
- operational audit
- personal observation
- time-event network analyses
- programme budget

[ ]	Income
[ ]	Expenses
[ ]	Costs per student
[ ]	Cost per programme
[ ]	Costs per teacher
[ ]	Costs per unit of time
[ ]	Cost for equipment, physical plant, materials, staff, transportation, utilities

. **CHECK your evaluation plan before deciding what data to supply.**

Exhibit 3.13

. **WHEN your evaluation audience wants information on....**

LEARNING MATERIALS

. **YOU may need to provide information on ....**

CHECK	
V	CHECK
	The kinds and types of materials used
	Appropriateness of materials to - objectives - student abilities - student interests - student cultural background
	Prerequisites for material use
	Extent to which materials provide meaningful student participation
	Accuracy of materials
	Technical quality of materials
	Accuracy of information presented
	Evidence of effectiveness of materials
	Equipment requirements for material use
	Facility requirements for material use
	Personnel requirements for material use
	Costs of materials
	Strengths of learning materials
	Weaknesses of learning materials

. CHECK your evaluation plan before deciding what data to supply.

Exhibit 3.14

. **WHEN your evaluation audience wants information on....**

SPECIFIC PROGRAMMES

. YOU may need to provide information on ....

[V]	**CHECK**
[ ]	Programme goals and objectives
[ ]	Prerequisites
[ ]	Target population
[ ]	Content
[ ]	Teaching methods
[ ]	Learning materials
[ ]	Facilities
[ ]	Safety and health
[ ]	Teachers
[ ]	Programme effects

- on in-school students
- on former students

[ ]	Budget

. **CHECK your evaluation plan before deciding what data to supply.** (Ohio State, A-11).

Exhibit 3.15

. WHEN your evaluation audience wants information on ...

ADMINISTRATIVE STAFF

. YOU may need to provide information on ...

☐ Secretarial support staff

- Total number of staff
- Grade and classification
- Secretarial support input in working hours, weeks or months
- Staff costs

☐ General administrative support staff

- Total number of staff
- Grade and classification
- Administrative support input in working hours, weeks or months
- Staff costs

☐ Cost control support staff

- Total number of staff
- Grade and classification
- Cost control support input in working hours, weeks or months
- Staff costs

. CHECK your evaluation plan before deciding what data to supply.

Summary

Curriculum evaluation requires information from many different sources. A series of data collection worksheets was included in this section to help you decide what information is needed and where you can get it. When used in combination they fulfil data requirements of a comprehensive curriculum evaluation. Used separately, they supply data about one component of the curriculum. Whether used separately or in combination, they must be used in connection with your evaluation plan.

SECTION IV

ADMINISTERING AND SUPERVISING THE EVALUATION

ADMINISTERING AND SUPERVISING THE EVALUATION

To properly administer and supervise an evaluation you must follow an orderly process. This process requires that you perform five functions -- planning, organising, staffing, activating and controlling (Bittel, 1980).

The major functions and supporting documentation are shown in exhibit 4.1. The planning function precedes all others. Your efforts to perform this function will be aided by the evaluation plan developed in Section II. Efforts to organise and staff the evaluation will be supported by using the expense control worksheet and evaluation schedule presented this section. The activating function uses support information that has been funneled through the first three functions as well as an evaluation initiation checklist. A management control worksheet is used to support the controlling function. As you perform each function use supporting documents to guide your actions.

Planning

Planning requires definition of purpose and preparation of an evaluation plan. An evaluation plan increases the likelihood that the evaluation will be successful. Presented in Section II, an evaluation plan describes the scope of the evaluation, programme background, measures and designs, data concerns, and budget. These components give direction to the evaluation effort. A good plan makes your job easier as you administer and supervise the evaluation.

Standards

A set of standards has been included to help you make comparisons between results obtained from the programme evaluation and an external criteria. Appearing in Section VI, the standards are statements of ideal conditions which exist in successful TVE programmes. They describe a set of conditions in five areas of programme operations -- curriculum and instruction, students, staff, organisation and administration, and physical plant, equipment and supplies. Use these standards to make comparisons between actual and ideal conditions.

The standards are intended only as guides for comparative analyses. Standards will vary according to the situation. For example, the standard for the number will vary according to the TVE programme, available resources and local practice. Use local standards whenever possible. Apply standards from this guide only in the absence of local ones.

EXAMPLE

STANDARDS STATEMENTS

Curriculum and Instruction

1.1 Programme Description

There are written descriptions for each TVE programme that describe who the programme is intended for, scope and sequence, and general outcomes.

1.2 Performance Objectives

There are statements of expected student performance for each TVE programme. Each statement contains performance indicators, conditions under which students must perform, and standards criteria.

1.3 Admission Criteria

There is a set of written criteria for admission to programmes.

1.4 Instructional Methods and Procedures

There are written courses of study for each TVE programme. They are on file in the school's main office. Courses of study describe objectives, methods, procedures, facilities, equipment and resource list.

1.5 Learning Process

Learning resources (textbooks, manuals, handouts, booklets, tests, audio-visuals and special materials) required for instruction are easily accessed by students and staff.

Students

2.1 Orientation to Programme

There is an on-going orientation programme to acquaint students with TVE programmes.

2.2 Guidance for Programme Placement

There is a guidance programme to test, evaluate and counsel students.

2.3 Records

A student record system is maintained.

2.4 Student Evaluation

There is an evaluation programme to test students' progress and to certify attainment of competencies and/or skills.

2.5 Licensing and Credentialing

Students are given an opportunity to enter and complete programmes leading to appropriate licensing and credentialing.

2.6 Guidance for Job Placement

There is a job placement programme that develops jobs, makes them available to students and assists students in securing appropriate work.

2.7 Follow-up

There is a comprehensive follow-up of programme graduates that determines the degree of relevance and success of the institution's training activities and job placement services.

Staff

3.1 Selection and Preparation

There is a written staff selection plan for TVE personnel.

3.2 Salary and Promotion

There is a published salary schedule and fringe benefits programme which includes a plan for evaluation and promotion.

3.3 Professional Growth

There is a written professional growth plan which provides for upgrading of technical and professional competencies. It provides for in-service activities, on-the-job experiences, participation in related professional organisations and university training.

3.4 Business and Industry Involvement

There is a written plan to involve teachers, placement officers and counselors with business and industry.

3.5 Staff Evaluation

There is an evaluation plan which determines the adequacy of professional preparation, performance and growth of each staff member.

Organisation and Administration

4.1 Philosophy, Purpose and Means of Providing Vocational Programmes

There is a current written statement describing the institution's TVE philosophy, programmes and ancillary services provided for students.

4.2 Advisory Boards

There is a functioning advisory board for the TVE curriculum which advises staff on philosophy, policies and procedures.

4.3 Committees

The institution uses TVE programme trade and craft committees to enhance programmes for purposes of evaluation, community relations and curriculum development and revision.

4.4 Policy and Procedures

There is a set of written policies and procedures for the administration and operation of TVE curricula.

4.5 Administrative Staff

The institution has properly qualified and/or certified TVE administrators, supervisors and support personnel.

4.6 Teaching Load

There is a plan for determining appropriate teaching load consistent with the characteristics and demands of the programme being taught, the characteristics of the students, the nautre of the facilities and the needs of the teachers for non-instructional time.

4.7 Financial Policies and Procedures

There are written financial policies and procedures which provide for stable programme budgeting to supply resources necessary to meet TVE objectives.

4.8 Community Relations and Support

There are written community relations plans for the TVE programme(s).

4.9 Planning, Research and Development

There is a written plan for continuous planning, research and development activities dealing with TVE programme operations, policies, procedures, curriculum, facilities, staff, equipment and budget.

4.10 Evaluation

There is a written plan for continuous collection of evaluation data about TVE programmes' operations, policies, procedures, curriculum, facilities, students, staff, equipment and budget.

Physical Plant, Equipment and Supplies

5.1 Operation Plan

There is a documented plan for the operation and use of TVE facilities, equipment and supplies including use manuals and emergency procedures.

5.2 Maintenance Plan

There is a plan for preventive maintenance and house-keeping activities for all TVE facilities, equipment and supplies.

5.3 Short and Long-Range Planning

There is a plan for short- and long-range development of new facilities, acquisition of new equipment and supplies and modification of existing facilities and equipment.

5.4 Safety and Health Conditions

Each TVE programme's safety and health conditions meet local, regional and national standards.

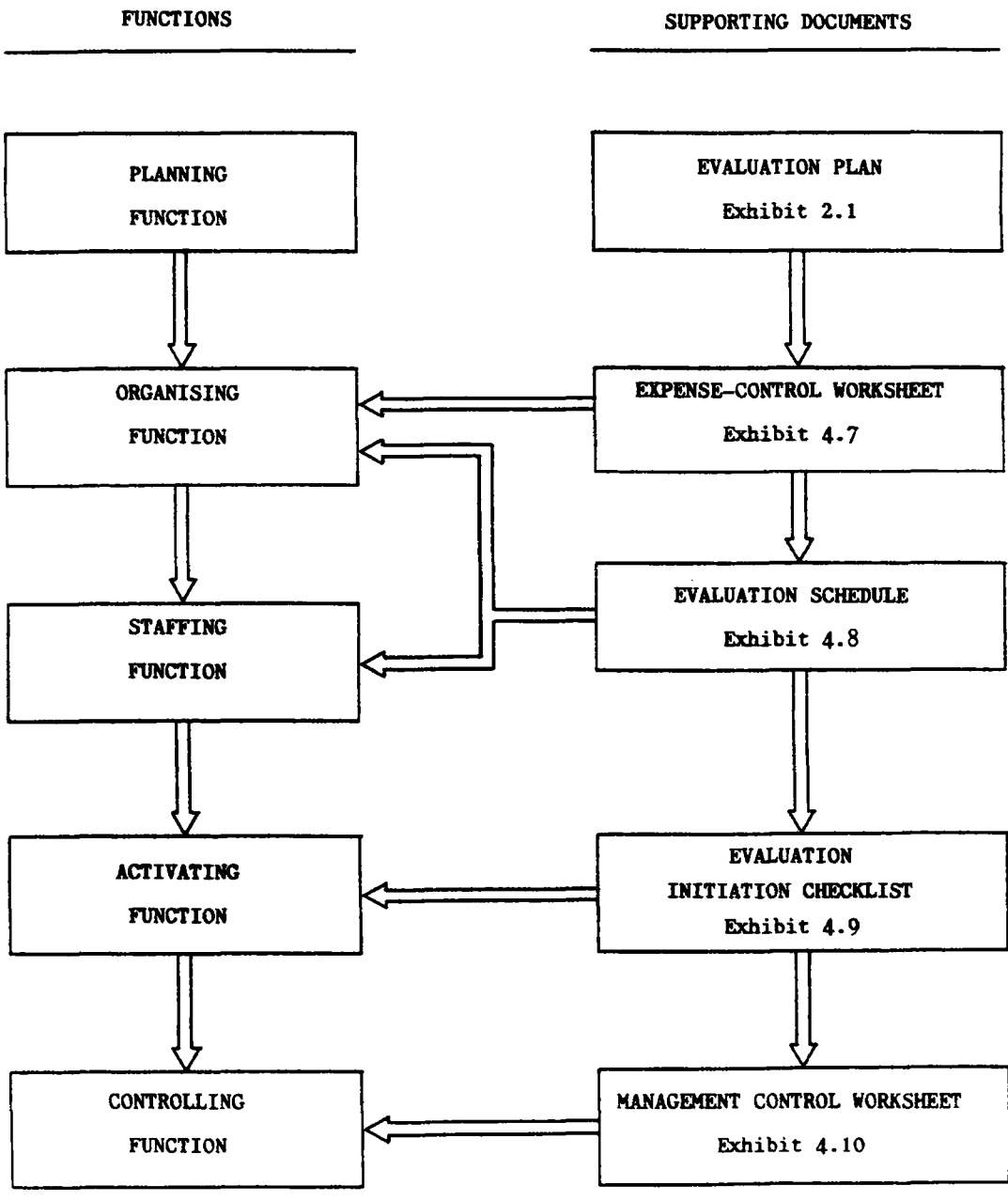
5.5 Workshop Conditions

Each TVE workshop meets local, regional and national standards .....

5.5.1 Number teaching periods per week = 40 - 45 periods
5.5.2 Number of students per class = 24
5.5.3 Workshop use factor not to exceed 80%
5.5.4 Classroom use factor = 85% - 90%
5.5.5 Standard workshop unit area = 200 m^2
5.5.6 Workshop area per student (depending on subject & level) = 4 m^2 to 12 m^2
5.5.7 Classroom area per student = 1.6 m^2
5.5.8 Workshop proportion = 1 : 2
5.5.9 Average workshop storage area (1/5 size of workshop) = 55 m^2
5.5.10 Average classroom size = 7 x 7 m
5.5.11 Minimum workshop ceiling height = 4 m
5.5.12 Minimum classroom ceiling height = 3 m
5.5.13 Classroom lighting level = 300 lux
5.5.14 Minimum workshop task lighting level = 300 lux
5.5.15 Optimum average workshop temperature (cold climate) = 18 C°

Exhibit 4.1

MAJOR FUNCTIONS AND SUPPORTING DOCUMENTATION FOR ADMINISTERING AND SUPERVISING EVALUATIONS



Organising

To be effective, evaluations must have proper resources. People, space, materials, equipment, time, and money are major resources. These resources must be organised to meet evaluation objectives (Exhibit 4.2).

Exhibit 4.2

ORGANISING RESOURCES

Evaluation Objective

Determine effectiveness of modular instruction on student achievement.

Resources Requiring Organisation

- Students, teachers, assistants, clerks
- Workshops
- Modules
- Audiovisuals
- Test instruments
- Money

In this example, success of the evaluation depends on bringing people, facilities, instructional materials, teaching aids, tests, and money together at the proper time. These resources interact with each other and have an impact on the effectiveness and efficiency of the evaluation.

Human resources must first be organised. They include all people, either directly or indirectly, involved in the evaluation process. Exhibit 4.3 shows examples of such people.

Exhibit 4.3

EXAMPLES OF HUMAN RESOURCES REQUIRING ORGANISATION

People directly involved in evaluation

- Students who are being evaluated
- Teachers
- Teaching assistants
- Collaborators
- Consultants
- Evaluation specialists

People supporting the evaluation process

- Clerks
- Typists
- Data analysts
- Test scorers
- Administrators
- Advisory committee members

To achieve evaluation objectives, it is important to organise people for the task ahead. you must convince them of the importance of evaluation. One of the best ways to get their support is to show them how they will benefit from actively participating in the tasks ahead.

The spaces (facilities) in which evaluations occur are another important resource requiring organisation. Some examples are shown in Exhibit 4.4.

Exhibit 4.4

EXAMPLES OF SPACES REQUIRING ORGANISATION

- Classrooms and workshops
  - for control groups
  - for experimental groups
- Work-sites
- Offices
- Media and materials rooms
- Libraries
- Computing facilities

The availability of appropriate spaces will increase the likelihood that an evaluation will be successful.

Evaluation materials and supplies must also be organised. They include those items used by evaluators and students alike. Some of the more common evaluation materials are shown in Exhibit 4.5.

Exhibit 4.5

EXAMPLES OF EVALUATION MATERIALS REQUIRING ORGANISATION

- Testing materials
  - Test instruments
  - Answer sheets
  - Scoring sheets
  - Evaluation manuals/handbooks
- New programmes, materials, methods
  - Modules
  - Curriculum materials
  - Audovisuals
  - Manipulative aids

Equipment to support the evaluation must be carefully organised. Without proper machines or instruments to score tests, evaluation objectives cannot be achieved. Consideration should also be given to special tools or machines required for implementing a new programme or teaching technique -- computers, television, or workshop equipment.

Time is a finite resource. It cannot be produced like automobiles, stored like grain, compressed like gas, speeded-up or slowed down (Gane, 1972). Time can only be used. Therefore, it is important to use time very effectively -- to get done what is needed and meet evaluation objectives. Exhibit 4.6 shows aspects of the evaluation situation where time management is critical.

Exhibit 4.6

EXAMPLES OF KEY EVALUATION ACTIVITIES REQUIRING TIME MANAGEMENT

Pre-evaluation activities

Prepare evaluation plan

- scope of evaluation
- programme description
- measures and designs
- data concerns
- budget

- Get approvals
- Set dates/schedule evaluation
- Secure personnel
- Order evaluation materials
- Organise resources
- Confirm all arrangements
- Final check for people, places, things

Evaluation activities

- Start evaluation
- Administer instruments as per plan
- Collect data
- Monitor progress/budget
- Conclude evaluation

Post-evaluation activities

- Score instruments
- Analyse data
- Prepare report
- Deliver report to audience
- Follow-up

It is important to recognise that time is required for the preparation of evaluation materials -- instruction sheets, manuals, test instruments, reports. Preparation time for one instruction sheet or test instrument may vary from several minutes to many hours. It will vary with the evaluator's experience and objectives to be achieved. Consider the following as you organise time:

- evaluator background, qualification, and interests;
- evaluator experience with the evaluation design to be used (how recently and/or frequently has he or she used it);
- quality and availability of evaluation materials;
- time required to prepare tests;
- time required to score instruments;
- design to be used.

Finally, money must be organised. A budget must be developed ensuring sufficient funds to support the evaluation as it is proposed. A process for planning an evaluation budget was described in Section II. Use the information from that process to guide your management of financial resources. A sample expense-control worksheet has been included to help you manage the budget (Exhibit 4.7). It first appears in this section in completed form and again in Section VI as a blank worksheet. This worksheet will help you keep track of how expenses compare with budgeted amounts.

A worksheet should be prepared for each major evaluation period -- week or month. The length of an evaluation will determine whether you prepare weekly or monthly worksheets. Start by entering the total budgeted amount for each category of evaluation expense -- $ 1,550 for personnel. You get this figure from the budget worksheet in your evaluation plan. Now enter the remaining total budgeted amounts on the expense-control worksheet. Indicate the current period for which the worksheet will report expenditures -- Exhibit 4.7 reports March expenditures. The exhibit assumes two months have passed since the evaluation started.

As expenditures are made, record the amount under the column headed "Current period expenses" and opposite the proper expense category -- $ 500 for personnel. Add this figure to the previous period's personnel expenses to date and enter the sum under "Evaluation expenses to date" -- $ 500 plus $ 150 (previous period expenses to date) equals $ 650.

Repeat this process for each of the budget categories. You can get a balance for each category by subtracting "Expenses to date" from the "Total budgeted amount" -- budgeted amount for personnel $ 1550 minus personnel expenses to date $ 650 equals $ 900 "Balance". This worksheet will help you keep track of expenditures on a continuous basis. When kept up-to-date it will help you spot areas where there are likely to be cost overruns.

Exhibit 4.7

SAMPLE EXPENSE-CONTROL WORKSHEET

Categories of expenses	Current period expenses (March)	Evaluation expense to date	Total budgeted amount	Balance
Personnel	$ 500	$ 650	$ 1550	$ 900
Travel/lodging/food	5	15	25	10
Test items/analysis	25	50	85	35
Communication	30	55	60	5
Other costs	--	--	--	--
Total costs	$ 560	$ 770	$ 1720	$ 950

Staffing

This is the function where you determine exactly how many people will be needed to carry out each task. You will screen or interview people and select those who appear to be most suitable to fill the jobs. It may be necessary to develop job descriptions for the most critical evaluation jobs. Selection of competent people to fill these jobs is important for the credibility of the evaluation. Credibility is affected by audience perception of the evaluator's competence. The greater the perception of the evaluator's competence, the more likely evaluation findings will be judged accurate.

What remains is to organise all resources in a way that promotes achievement of evaluation objectives. A scheduling worksheet has been included to help you organise resources (Exhibit 4.8). It first appears in completed form and again in Section VI as a blank worksheet. Use it as a guide for organising and staffing your evaluation.

Exhibit 4.8

EVALUATION SCHEDULE

Programme to be evaluated _____

	Weeks	Start Date	Due Date	Tasks	Person Responsible
Before Evaluation	8	29.06	01.07	Get evaluation plan approved	B. Sato
		02.07	15.07	Select evaluation staff	B. Sato
	7	15.07	22.07	Order evaluation instruments	A. Hendi
	4	27.07	15.08	Check arrangements for staff, students and tests	W. Dani
Evaluation				**EVALUATION**	
		24.08		Administer pretest	A. Hendi
				Collect data	W. Dani
				Administer posttest	A. Hendi
		25.09		Collect data	W. Dani
After Evaluation	1	28.08	09.10	Score test data	B. Robert
		09.10	16.10	Analyse data	Hendi, Dani
	3	16.10	23.10	Write evalaution report	Hendi, Dani
		26.10	28.10	Deliver report	B. Sato
	5	29.10	02.11	Conduct evaluation, debrief session	B. Sato

Use your evaluation plan to get information for this worksheet. A good plan will specify objectives, tasks and deadlines. Follow these procedures as you complete the scheduling worksheet.:

- list all the tasks, responsible persons and deadlines required before, during and after evaluation;
- list deadlines by length of time remaining prior to the start of evaluation;
- specify the length of time needed to complete each task;
- working backwards from the due date for each task, specify the start date;
- determine which tasks depend on completion of other tasks; revise due dates and start dates as needed;
- rearrange beginning dates so the schedule will show the proper order in which tasks must occur (Sauer, 1981).

Upon completing the worksheet, show it to other people. In this way, you can check your work for accuracy. You may discover important items have not been adequately addressed or completely overlooked. Be safe, always check your scheduling activities with others.

Activating

Before starting the evaluation make a final check to see that everything and everyone is ready. A checklist for activating an evaluation appears in Exhibit 4.9. Use it to verify the status of your preparations. Items considered essential to the successful initiation of an evaluation are listed in the first column -- staff assigned and ready, tests are available.

The second column requires you to judge the status of each item. You must decide whether or not each item in column one is in the proper state of readiness to allow the evaluation to start as planned. Enter "READY" in column two if the item meets your expectations. if an item does not meet expectations, enter "NOT READY" in the second column.

Exhibit 4.9

CHECKLIST FOR INITIATING AN EVALUATION

ITEMS	STATUS READY, NOT READY	ACTION GO, STOP. REMEDIATION
Have clearances been secured?		
Has schedule been approved and distributed?		
Are evaluation staff assigned and prepared to start?		
Are consultants prepared to start?		
Are support staff assigned and prepared to start?		
Are back-up staff on alert?		
Are students, participants, or programmes to be evaluated prepared to start?		
Have test, materials, documents been secured?		
Has equipment been secured?		
Have facilities been scheduled?		
Are you prepared to start?		

Use the third column to indicate appropriate actions. If an item's status is judged "READY", enter "GO" in the last column and proceed to check the status of the next item in column one. When you judge an item's status as "NOT READY", enter "STOP" in column three and explain what must be done to change that item's status to "GO". For example, when an evaluation consultant cannot fulfil his assignment because of illness, you must "STOP" the process until a suitable substitute is found. When you locate the alternate, change the status of that item to "GO" and proceed with your countdown. Repeat this procedure until you have judged the status of all items on the checklist.

At this point you direct all resources into action by issuing orders and instructions. You must communicate with those who will carry out evaluation tasks. The best kind of communications are those that combine the written or spoken word with action. Try to show and tell such as showing an aid how to score tests as well as telling her. Face-to-face communication is the ideal because you can see whether or not your timing, tone, or choice of words has been successful. Use informal talks, planned appointments and telephone calls to communicate with individuals. Because talking to one person at a time is so time-consuming also consider speaking to groups of co-workers. Consider forming an evaluation team or task force with whom you meet regularly. This approach will minimise the number of form letters, memoranda, and directives you will have to issue. All messages intended to be official, for the record, or that affect several people should be written. Whenever you amend previous directives, also document these actions in written form. Oral changes are forgotten or misinterpreted over time.

Controlling

When evaluation activities are in motion, you must keep track of how well they are working. You must measure results, compare them with expectations, make judgements of how important deviations may be, and take actions to bring results into line with intended outcomes.

In theory you perform the five functions in the order listed. in practice, you will find cause to alter the sequence and even repeat some fuctions. What you do depends upon your observations of the evaluation's progress over time. What remains is to perform these functions in a way that promotes achievement of evaluation objectives. A process and procedures for achieving this end follows.

A management control worksheet (Exhibit 4.10) has been included to hep you keep track of how well the evaluation is going. It appears in this section in completed form and again in Section VI as a blank worksheet. Use it as a guide in your efforts to control evaluation activities.

Exhibit 4.10

MANAGEMENT CONTROL WORKSHEET

Results	Expectations	Judgements	Actions
Plan approved	Evaluation plan approved by 1 July	On-time	--
Staff selected	Evaluators and aid hired by 15 July	On-time	--
Tests ordered on 25 july	Tests ordered on 22 July	Late order, not critical	--
Staff & students ready, tests not delivered	Staff, students, test ready by 15 August	Cannot give pretest as planned	Get delivery date, adjust schedule
Test received	Test received 28 August	Okay to begin testing	Notify staff
Costs of tests	Test costs $ 50	Cost overrun on tests	Charge excess to travel savings
Tests administered one week late	Start testing as scheduled	On-time, new schedule	--
Data collected as planned	Collect data before & after treatment	On-time, new schedule	--
Tests scored as indicated	Data scored as planned	On-time, new schedule	--
Analysis two weeks behind schedule	Analyse data on schedule	Late report, critical	Move report date back two weeks, adjust schedule.
Report two weeks late	Report on schedule	Okay to deliver report late	Deliver report to audience

Follow these procedures as you complete the worksheet:

1. List all the required evaluation tasks under the column labelled "EXPECTATIONS" - evaluation plan approved, tests ordered. Get evaluation tasks from the scheduling worksheet you prepared earlier. The evaluation plan will also provide good information.

2. As resources are put into action, list the actual results for each expectation -- the evaluation plan was approved by expected deadline.

3. Then compare the results with expectations. Enter your decisions under the column heading "JUDGEMENTS" -- the approach was on time.

4. If a judgement requires "ACTION", specify what kind of activity is required in the last column -- call test supplier, get delivery date, move test date back one week, adjust schedule.

Judicious use of this worksheet will enable you to control activities so evaluation objectives are more likely to be achieved.

Summary

You must perform five functions -- planning, organising, staffing, activating, and controlling -- to properly administer and supervise an evaluation. Planning requires definition of purpose and preparation of an evaluation plan. A good plan increases the likelihood that an evaluation will be successful. A second function requires that you organise all resources in a way that promotes achievement of evaluation objectives. You must arrange to bring people, facilities, materials, equipment, and money together at the proper time. Finding appropriate people to carry out evaluation tasks is the third function. You will need to screen and select qualified staff. It may be necessary to write job descriptions for key evaluation jobs. The credibility of an evaluation is dependent, in part, on the credentials of its staff.

The activating function directs all resources into action through orders and instructions. You must combine the written or spoken work with action to communicate most effectively. Always place amendments to

directives in written form. Controlling evaluation activities requires a continuous and orderly approach. Using a management control worksheet will help you monitor progress. The worksheet included in this section will enable you to see how well things are going.

SECTION V

CASE STUDIES

CASE STUDIES

This section gives you a chance to prepare evaluation plans. Four case studies are presented. Each one addresses a different curricular concern:

Case	Curricular Concern
1	Curriculum planning
2	Curriculum materials development
3	Curriculum effects on students
4	Curriculum effects on former students

Read each case study. Select one for which you want to prepare an evaluation plan. Make photocopies of the evaluation plan sheet and five planning worksheets found in Section VI.

Using information from the case study you selected, complete the five worksheets. Then transfer worksheet information to the evaluation plan sheet. Check your plan and supporting worksheets against the examples given for the case study you chose. Your responses may be different from the examples. This is to be expected. Remember, good evaluations use comparative data. Compare responses, analyse differences and make decisions based on these analyses. Your responses may be as good as or better than the example answers.

Case studies

CASE STUDY 1

School officials have received many inquiries about the availability of an agricultural mechanics programme. The school does not offer one. To determine whether or not to start such a programme, the director has asked you to give him information about this vocational area. This request was made on 1 September and the final written report is due on 1 December. You have been given US $ 700 to conduct the evaluation.

CASE STUDY 2

Commercially produced individualised learning packages have been introduced into the metalworking programme. The packages address major leaning outcomes in sheetmetal layout, cutting, bending, forming, soldering and fastening with mechanical devices. Students acquire skills by making sheet metal projects. They require sound, slide projectors and a work station for every two students. A journeyman teaches the class in a 200 m^2 workshop that has 10 fully equipped workstations. The curriculum director wants to know the effects of these packages on student achievement. This information will help him determine whether or not to recommend continued use of these packages. You have been directed to provide the director with a written report of effectiveness within 60 days. During this period there is but one class of 30 students in which to determing effectiveness of the packages. A sum of US $ 200 has been allocated for the evaluation.

CASE STUDY 3

Students in the woodworking programme are not achieving objectives set forth in the course of study. They are not mastering the skills of measuring, cutting, forming, shaping, drilling, fastening and finishing. Students learn these skills by making wood products to sell. They are under the direction of a skilled craftsman. Instruction occurs in a 200 m^2 workshop containing 15 fully equipped workstations. The teacher maintains that the problem is poor equipment and inadequate facilities. The vocational supervisor has told you to find out whether or not poor equipment and inadequate facilities are at fault. You have two weeks in which to provide a written report. A budget of US $ 50 has been approved.

CASE STUDY 4

During the past four years the provincial vocational training board has funded an automotive repair programme. The programme develops skills in repair and maintenance of electrical, fuel, transmission, hydraulic, and mechanical systems. Students learn by working directly on motor vehicles under the supervision of a licensed mechanic. Instruction takes place in a 200 m^2 workshop equipped with 10 workstations. They find employment as mechanics on farms, in small garages, and auto agencies. Because of budget cut-backs the board must make reductions in and even terminate funding for some TVE programmes. The board chairman has asked you to provide him with information about the automotive programme's effects on former students -- whether or not they are employable. You have been given US $ 2000 and three months to complete the evaluation. You are expected to present your findings before the board and also to prepare an executive summary.

CASE STUDY 1

EVALUATION PLAN

Person(s) responsible for the evaluation: Vasamillet

1. Evaluation scope

There is interest in a programme that prepares agricultural mechanics. While the school does not offer such a programme, the director would initiate one if a real need is proven. The objective of this evaluation is to determine the need for an agriculture mechanics programme.

2. Programme description

Appropriate documents will be reviewed to determine programme goals, activities and required resources. Existing resources will also be assessed to determine if they are compatible with programme requirements.

3. Measures and design

A random sample of potential students and prospective employers will be surveyed to determine needs. Manpower reports and curriculum documents will also be reviewed. Complementary information will be analysed, similarities and discrepancies noted and conclusions drawn.

4. Data concerns

Questionnaires will be sent to students and employers on 15 September and again on 15 October to non-respondents. Review of manpower reports, curriculum documents and existing resources will start on 15 September. Tabulation and analysis of data will commence on 15 November. Bar graphs will be used to present data. The final written report will be delivered to the director by 1 December.

5. Budget

A total of US $ 700 has been set aside for evaluation. Personnel expenses will be US $ 270. Test items will cost US $ 30 and communications US $ 400.

CASE STUDY 1

PLANNING SHEET 1

SCOPE OF THE EVALUATION

Steps

1.1 **What programme is to be evaluated?**

Agricultural mechanics

1.2 **Who wants to know about the programme?**

School director

1.3 **What decisions will be based on the evaluation?**

Whether or not to start an agricultural mechanics programme

1.4 **What information must be given to the audience?**

- Supply of and demand for agricultural mechanics
- Pool of qualified students
- Programme goals, activities and required resources

1.5 **What is/are the objective(s) of the evaluation?**

- To determine the need for an agricultural mechanics programme
- To determine if the school has sufficient resources to implement such a programme

CASE STUDY 1

PLANNING SHEET 2

PROGRAMME DESCRIPTION

Steps

2.1 **What are the programme outcomes?**

To be determined by assessment

2.2 **What are the programme activities?**

To be determined by assessment

2.3 **What are the required resources?**

To be determined by assessment

CASE STUDY 1

PLANNING SHEET 3

MEASURES AND DESIGNS

Steps

3.1 **What will be measured?**

- Students and employers to be served by the programme
- The supply of agricultural mechanics
- The demand for agricultural mechanics
- The pool of qualified students
- Programme goals, activities and required resources

3.2 **What instruments will be used?**

- Student and employer questionnaires
- Manpower supply and demand documents
- Curriculum and facility documents

3.3 **How will data be analysed?**

- Descriptive analysis of observed agreement/differences between official statistics and employer and student responses
- Descriptive analysis of existing resources and those prescribed in curriculum documents

3.4 **What designs will be used?**

- Informal comparisons of:

  - manpower data and student-employer responses
  - existing resources and those prescribed in standard documents

3.5 **What sampling strategy will be used?**

Random sample of employers and students

CASE STUDY 1

PLANNING SHEET 4

DATA CONCERNS

Steps

4.1 What are the deadlines?

1 September - Develop questionnaires, order documents
15 September - Send questionnaires, read documents
15 October - Send second questionnaire to non-respondents
15 November - Tabulate/analyse data
1 December - Final report

4.2 How will data be presented?

Bar graphs will be used to show employer, student and manpower data

4.3 How will data be reported?

Written report delivered to the school director

CASE STUDY 1

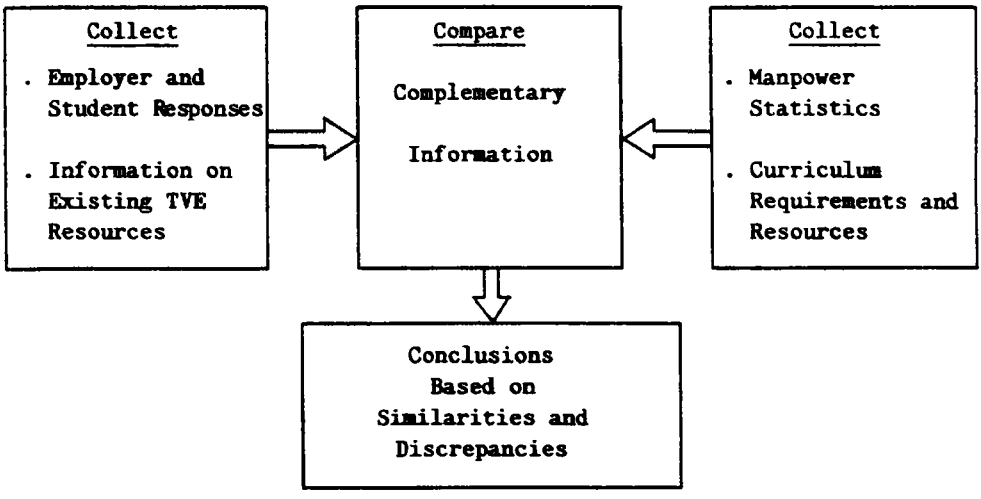
PLANNING SHEET 5

BUDGET

Steps		Costs Estimated	Actual
5.1	**What are the personnel costs?**		
	Evaluator		
	Consultant	$ 200	
	Clerical	20	
	Typist	50	
5.2	**Travel/lodging/food**		
	Transportation		
	Housing		
	Meals		
5.3	**Test items/analysis**		
	Test purchase	30	
	Test scoring		
	Data processing		
5.4	**Communication**		
	Telephone	100	
	Postage	300	
	Telex		
5.5	**Other costs**		
5.6	**Total costs**	$ 700	

Discussion of case study 1

This case study addressed curriculum planning -- whether or not to offer a TVE curriculum. To provide appropriate information a needs assessment was proposed. This design uses complementary information to draw conclusions.



Needs Assessment

Information is drawn from different sources -- employer and student responses to questionnaires and published manpower data. A second dimension looks at proposed programme goals, activities and required resources in terms of existing curricula and resources. This information helps the director decide if the school has sufficient resources to implement the new programme.

Needs assessments are highly speculative. Decisions are subjective because reliable evidence about the supply of and demand for workers is not always available. Also, changes in society, technology and the economy create an everchanging job market. At best, a needs assessment provides a snapshot in time of the employment situation (Mager, 1967).

CASE STUDY 2

EVALUATION PLAN

Person(s) responsible for the evaluation: Sano

1. Evaluation scope

The metalworking programme has adopted individualised learning packages to teach basic sheetmetal practices. Because these materials are costly, there is a need to know how effective they are in helping students achieve objectives. Effectiveness data will help the curriculum director decide whether or not to recommend continued use of the learning packages. The evaluation objective is to determine how effective modules are in helping students meet objectives.

2. Programme description

This programme enables students to perform basic sheetmetal operations -- layout, cutting, bending, forming, soldering and fastening. A journeyman teaches the course using learning packages. The packages require sound, slide projectors and a work station for every two students.

3. Measures and design

A single group, pretest-posttest design will be used to measure the relative effects of learning packages on student achievement of objectives. All students will receive an objectives-based test on basic sheetmetal practices. Using a programme objectives checklist, gains made over time will be reported by subtracting average pretest scores from posttest scores for each desired outcome.

4. Data concerns

A pretest will be given on 15 July. Seventeen days of instruction will be given using learning packages. A posttest will be given on 10 August. Bar graphs will be used to present data about achievement of objectives. A written report will be delivered to the curriculum director by 31 August.

5. Budget

Funds to complete the evaluation equal US $ 200. Personnel will require US $ 120 with test items and postage requiring US $ 70 and $ 10 respectively.

CASE STUDY 2

PLANNING SHEET 1

SCOPE OF THE EVALUATION

Steps

1.1 What programme is to be evaluated?

Metalworking

1.2 Who wants to know about the programme?

Curriculum director

1.3 What decisions will be based on the evaluation?

Whether or not to recommend continued use of learning packages

1.4 What information must be given to the audience?

Data on how effective learning packages are in helping students achieve objectives

1.5 What is/are the objective(s) of the evaluation?

To determine how effective learning modules are in helping students meet objectives

CASE STUDY 2

PLANNING SHEET 2

PROGRAMME DESCRIPTION

Steps

2.1 **What are the programme outcomes?**

Students will be able to perform the following operations:

- layout,
- cutting,
- bending,
- forming,
- soldering, and
- fastening

2.2 **What are the programme activities?**

Students work under the direction of a journeyman and make projects. They:

- layout sheetmetal projects,
- cut sheetmetal,
- form metal,
- solder metal joints, and
- join metal with mechanical fasteners

2.3 **What are the required resources?**

- Sound, slide projectors
- Work station for every two students
- Learning packages
- 200 m^2 workshop with 10 fully equipped workstations

CASE STUDY 2

PLANNING SHEET 3

MEASURES AND DESIGNS

Steps

3.1 **What will be measured?**

Relative effects of individualised learning packages on student achievement

3.2 **What instruments will be used?**

- Objectives-based sheetmetal test
- Programme objectives checklist

3.3 **How will data be analysed?**

- Using a programme objectives checklist, gains made over time will be reported by subtracting average pretest scores from posttest scores for each desired outcome

3.4 **What designs will be used?**

- One group , pretest, posttest using an objectives-based instrument
- Informal comparison with objectives checklist

3.5 **What sampling strategy will be used?**

None

CASE STUDY 2

PLANNING SHEET 4

DATA CONCERNS

Steps

4.1 What are the deadlines?

1 July	-	Assign a person to administer pretest and posttest
2 July	-	Order tests and checklist
15 July	-	Pretest
10 August	-	Posttest
11 August	-	Score tests
12 August	-	Analyse/compare results
20 August	-	Prepare reports
31 August	-	Final report

4.2 How will data be presented?

Bar graphs will be used to present data about the achievement of objectives. Each bar will represent one objective

4.3 How will data be reported?

Written report to the curriculum director; to include findings on how effective learning packages are in helping students achieve objectives

CASE STUDY 2

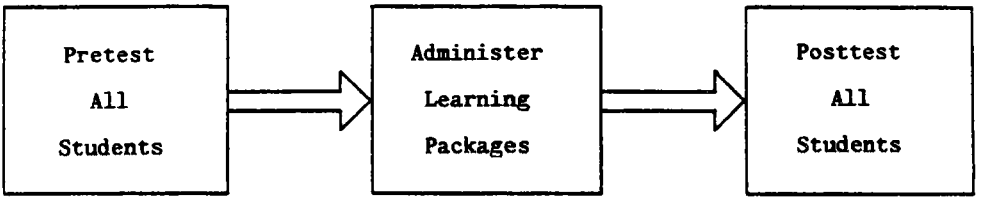
PLANNING SHEET 5

BUDGET

Steps		Costs Estimated	Costs Actual
5.1	**What are the personnel costs?**		
	Evaluator		
	Consultant	$ 90	
	Clerical	10	
	Typist	20	
5.2	**Travel/lodging/food**		
	Transportation		
	Housing		
	Meals		
5.3	**Test items/analysis**		
	Test purchase	50	
	Test scoring	20	
	Data processing		
5.4	**Communication**		
	Telephone		
	Postage	10	
	Telex		
5.5	**Other costs**		
5.6	**Total costs**	$ 200	

Discussion of case study 2

Because only one group of students was available for evaluation, a before and after - pretest - posttest design was selected.



Before and After Design

Programme goals were clearly specified and easily converted into objectives. This allowed the evaluator to write or find tests to measure attainment of programme objectives. The evaluator was able to report student achievement by objectives, communicating to the audience what was achieved over the evaluation period.

This design provides no comparative data which can be used to judge the quality of the learning package's results. It is not possible to attribute achievement of objectives to the learning packages alone. Achievement gains might be due to out-of-school work experiences. Failure to achieve objectives might be due to a shortage of tools and supplies, not to poor learning packages.

CASE STUDY 3

EVALUATION PLAN

Person(s) responsible for the evaluation: Amad

1. Evaluation scope

Some people believe the woodworking programme is ineffective because workshop equipment and facilities are deficient. The vocational director must decide whether or not this is true so he can take corrective action. It is the objective of this evaluation to describe existing workshop conditions in relation to documented standards and to report discrepancies.

2. Programme description

Students should be able to measure, cut, form, shape, drill, fasten, and finish wood products. Students construct wood products under the supervision of a skilled craftsman. Construction activities occur in a 200 m^2 workshop containing 15 fully equipped workstations.

3. Measures and design

A comparative analysis of existing workshop conditions will be made with external standards. Existing equipment and facilities will be measured using a self-developed checklist. Comparative data will be obtained from review of standards documents. The data will be compared and deviations from standards reported.

4. Data concerns

Assessment of existing workshop conditions and review of standards will begin on 5 April. Comparative analyses will commence on 10 April. Results will be presented in a three column table -- with the first showing existing conditions, the second standards, and the third discrepancies. A written report will be delivered to the supervisor by 15 April.

5. Budget

A total of US $ 50 has been allocated for the evaluation. Clerical and typing personnel will receive US $ 30. Equipment and workshop standards will be purchased for US $ 20.

CASE STUDY 3

PLANNING SHEET 1

SCOPE OF THE EVALUATION

Steps

1.1 **What programme is to be evaluated?**

Woodworking

1.2 **Who wants to know about the programme?**

- Vocational supervisor
- Teacher

1.3 **What decisions will be based on the evaluation?**

Whether or not equipment and facilities are the cause of poor student achievement

1.4 **What information must be given to the audience?**

- Description of available equipment and workshop facilities
- Description of ideal woodworking equipment and facilities
- Discrepancies between existing conditions and standards

1.5 **What is/are the objective(s) of the evaluation?**

To describe existing equipment/facilities in view of ideal or model workshop conditions and to report discrepancies.

CASE STUDY 3

PLANNING SHEET 2

PROGRAMME DESCRIPTION

Steps

2.1 What are the programme outcomes?

Upon completion of the programme, students will be able to:

- measure,
- cut,
- form,
- shape,
- drill,
- fasten, and
- finish wood products

2.2 What are the programme activities?

Students produce wood products under the direction of a skilled craftsman

2.3 What are the required resources?

200 m^2 workshop containing 15 fully equipped workstations

CASE STUDY 3

PLANNING SHEET 3

MEASURES AND DESIGNS

Steps

3.1 **What will be measured?**

- Existing equipment and workshop
- Ideal or prescribed equipment and workshops

3.2 **What instruments will be used?**

- Equipment checklist
- Workshop facility checklist

3.3 **How will data be analysed?**

- Descriptive analysis of existing equipment and facility
- Descriptive analysis of prescribed or ideal equipment and facilities
- Comparative analysis of existing and prescribed equipment and facilities

3.4 **What designs will be used?**

- Informal comparisons of existing equipment and facility with an external standard

3.5 **What sampling strategy will be used?**

None

CASE STUDY 3

PLANNING SHEET 4

DATA CONCERNS

Steps

4.1 What are the deadlines?

1 April	-	Get equipment and facility standards, develop checklist
5 April	-	Using checklist, evaluate equipment and facility
10 April	-	Compare existing with standards
12 April	-	Analyse and write report
15 April	-	Report

4.2 How will data be presented?

Tables will be prepared that show existing conditions in one column and prescribed standards in another. A third column will illustrate differences and/or similarities.

4.3 How will data be reported?

Deliver written report to vocational supervisor. Document will describe existing conditions compared with documented standards.

CASE STUDY 3

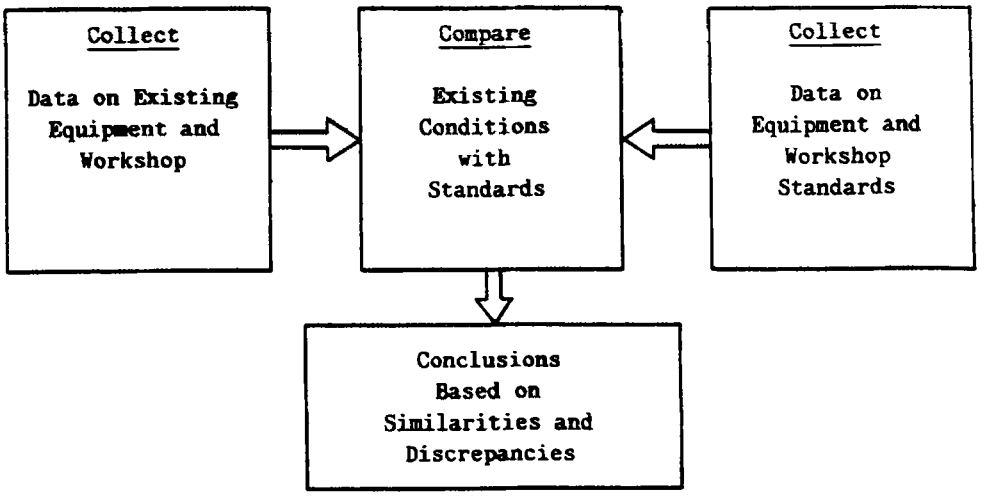
PLANNING SHEET 5

BUDGET

Steps		Costs Estimated	Actual
5.1	**What are the personnel costs?**		
	Evaluator		
	Consultant		
	Clerical	$ 10	
	Typist	20	
5.2	**Travel/lodging/food**		
	Transportation		
	Housing		
	Meals		
5.3	**Test items/analysis**		
	Test purchase		
	Test scoring		
	Data processing		
5.4	**Communication**		
	Telephone		
	Postage		
	Telex		
5.5	**Other costs**		
	Equipment and facility standards documents	20	
5.6	**Total costs**	$ 50	

Discussion of case study 3

In this case, the director was concerned with curriculum effects on students -- whether or not skills were learned by students. He was told the curriculum was ineffective because equipment and workshop were deficient. To help him determine whether or not this was true, the evaluator gathered and analysed complementary information.



Informal Design Using Complementary Information

Complementary information is collected from different sources -- existing equipment and workshop and published equipment and workshop standards. This information is compared and used to draw conclusions. The comparison may show a discrepancy between what equipment/facilities exist and that which should be available in a standard programme. This discrepancy can be used to draw conclusions and make recommendations for correcting equipment and facilities deficiencies.

CASE STUDY 4

EVALUATION PLAN

Person(s) responsible for the evaluation: Richy, Cline

1. Evaluation scope

Faced with declining resources the vocational training board must reduce, and even terminate, its financial support of some TVE programmes. To help the board make these decisions, its chairman has requested information on the automotive repair programme. He wants to know whether or not the programme affects the employability of former students. The evaluation objective is to determine programme effects on employability.

2. Programme description

Students learn to repair and maintain electrical, fuel, transmission, hydraulic, and mechanical systems. They learn skills by repairing motor vehicles under the direction of a licensed mechanic. Instruction occurs in a 200 m^2 workshop with 10 fully equipped workstations. Former students get employment as mechanics in small garages, on farms, and in auto agencies.

3. Measures and design

A follow-up study will collect information from former students and employers. Questionnaires will collect complementary information for purposes of comparative analyses. A second component will collect and report data on the number of former students employed in the field for which they were trained.

4. Data concern

Questionnaires will be mailed on 10 January and again on 1 February to non-respondents. The number of former students employed as mechanics will be presented in tabular form. An oral report will be presented to the board on 31 March, accompanied by a written document.

5. Budget

A sum of US $ 2000 has been budgeted. Personnel require US $ 1300 while travel and communication require US $ 200 and $ 500 respectively.

CASE STUDY 4

PLANNING SHEET 1

SCOPE OF THE EVALUATION

Steps

1.1 What programme is to be evaluated?

Automotive repair

1.2 Who wants to know about the programme?

Chairman and members of the provincial vocational training board

1.3 What decisions will be based on the evaluation?

Whether or not to continue, reduce or eliminate funding for the automotive repair programme

1.4 What information must be given to the audience?

Programme effects on former students; employability and satisfaction

1.5 What is/are the objective(s) of the evaluation?

To determine the automotive programme's effect on former students -- employability

CASE STUDY 4

PLANNING SHEET 2

PROGRAMME DESCRIPTION

Steps

2.1 **What are the programme outcomes?**

Students will be able to repair and maintain:

- electrical,
- fuel,
- transmission,
- hydraulic, and
- mechanical systems.

They take jobs as mechanics in small garages, on farms and in auto agencies.

2.2 **What are the programme activities?**

Students learn to repair and maintain motor veichles under the direction of a licensed mechanic.

2.3 **What are the required resources?**

A 200 m^2 workshop with 10 fully equipped workstations.

CASE STUDY 4

PLANNING SHEET 3

MEASURES AND DESIGNS

Steps

3.1 **What will be measured?**

- Employement record of former students
- Employer satisfaction with former students
- Former students' satisfaction with their job
- Former students' satisfaction with their training

3.2 **What instruments will be used?**

- Employer questionnaire
- Former student questionnaire
- Employment record

3.3 **How will data be analysed?**

- Descriptive analysis of employer comments
- Descriptive analysis of former student comments
- Comparative analysis of employer and former student comments
- Tabulate employment rate

3.4 **What designs will be used?**

- Informal comparisons of employer and former student comments

3.5 **What sampling strategy will be used?**

None

CASE STUDY 4

PLANNING SHEET 4

DATA CONCERNS

Steps

4.1 What are the deadlines?

1 January	-	Get staff, order materials, get addresses
5 January	-	Develop questionnaires
10 January	-	Send questionnaires
1 February	-	Send second questionnaire to non-respondents
20 February	-	Tabulate responses
25 February	-	Analyse data
11 March	-	Prepare report
31 March	-	Final report

4.2 How will data be presented?

- Employer and former student data will first be graphed separately
- Then bar graphs will be made showing comparisons of employer and former student responses
- Table showing employment record

4.3 How will data be reported?

An oral report will be given to the board along with a written document. The reports will describe programme effects on former students.

CASE STUDY 4

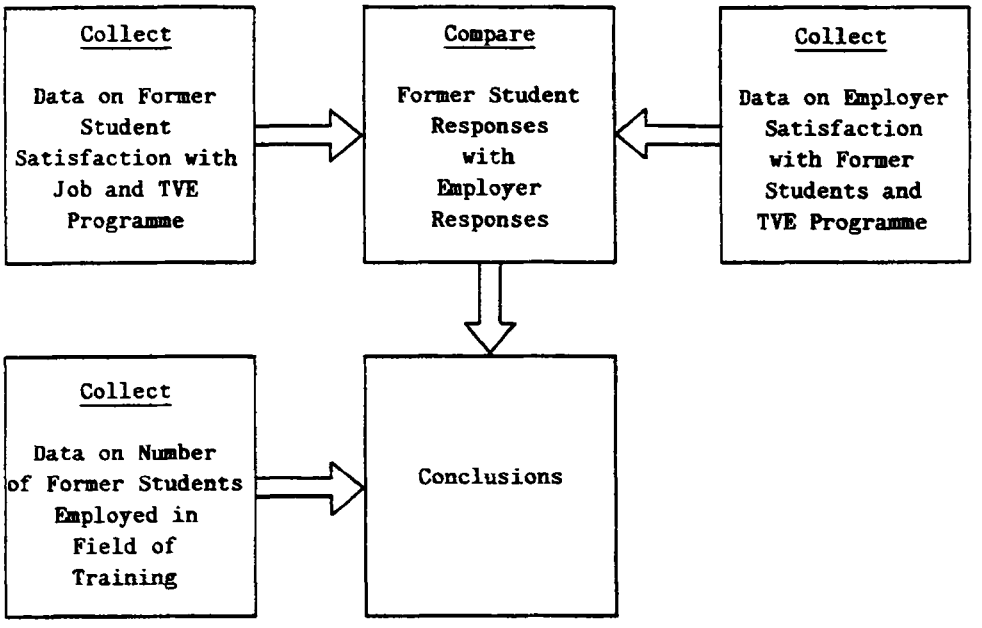
PLANNING SHEET 5

BUDGET

Steps		Costs	
		Estimated	Actual
5.1	**What are the personnel costs?**		
	Evaluator	$ 500	
	Consultant	500	
	Clerical	100	
	Typist	100	
	Other	100	
5.2	**Travel/lodging/food**		
	Transportation	200	
	Housing		
	Meals		
5.3	**Test items/analysis**		
	Test purchase		
	Test scoring		
	Data processing		
5.4	**Communication**		
	Telephone	200	
	Postage	300	
	Telex		
5.5	**Other costs**		
5.6	**Total costs**	$ 2,000	

Discussion of case study 4

The vocational training board asked about curriculum effects on former students -- whether or not the curriculum affects the employability of former students. To answer this question a follow-up study was designed.



(Ohio State, A-10) **Follow-up Design**

Complementary information is collected from former students and their employers. Their responses are compared and conclusions drawn. A second component collects and reports data on the number of former students employed in the field for which they were trained.

Summary

Four case studies were presented in this section. Each one addressed a major curriculum concern -- planning, materials, and programme effects on in-school students and former students. You were given a

chance to prepare an evaluation plan for one or more cases. Examples of completed plans enabled you to compare your work with that of another person. Discussions following each example plan pointed out the strengths and weaknesses of each solution. There were no right or wrong approaches to the cases. However, some are better in one situation than in another. Situational constraints dictated which designs and methods were most appropriate.

SECTION VI

CHECKLISTS, WORKSHEETS, AND VOCABULARY

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G L O S S A R Y *

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* The definitions contained herein are primarily based on two works:

- Benjamin, H. Dictionary of Education. New York, Mc Graw-Hill, 1959.
- Page, G. and Thomas J. International Dictionary of Education. London, Kogan Page, 1977.

GLOSSARY

Activating. Directing resources into action by issuing orders and instructions.

Aim. A foreseen outcome that gives direction to an activity and motivates behaviour (see Goal).

Assessment. The process by which one attempts to measure the quality and quantity of learning and teaching using various techniques.

Assessment, needs. Determining the needs and priorities of a person, group, or organisation.

Behaviour. Any observable act.

Case study. The presentation of a true or simulated situation to develop the judgement of students who evolve and prepare possible solutions.

Categories. Classes to which certain statements uniquely apply.

Community. Synonym for the general public.

Competency. Ability to control the environment -- job tasks, personal life, financial affairs.

Control group. Research team used for group of individuals who match as near as possible, a similar group which is the subject of experimental research or evaluation. The effects of any change in an experimental group treatment is measured against the base line of the control group.

Control group, non-equivalent or non- ramdomised. A group similar to the experimental one, but not formed by random assignment.

Control group, true or equivalent.
A group formed by random assignment.

Controlling. Measuring and correcting activities to assure that events conform to the evaluation plan.

Cooperative work experience.
A programme that provides for alternation of study in school with a job in business or industry.

Credibility. The extent to which evaluation information is believable.

Criterion. Recognised standard or level of performance against which individual scores may be compared.

Curriculum. A training design or plan that defines: aims, goals and objectives of an educational activity; the ways, means and activities used to achieve desired outcomes; and procedures and instruments needed to evaluate actions.

Curriculum development.
Course of action design to produce a set of learning experiences.

Curriculum materials.
All printed matter , audio-visuals and manipulative aids used for instructional purposes.

Developmental stages, curriculum.
Period in a curriculum's evolution characterised by a specific cluster of components or by the completion of specific tasks.

Early leavers. Students of academic ability who leave TVE programmes at the earliest opportunity before achieving their potential.

Education. The total process developing human ability and behaviour.

Education technical.
Educational preparation for occupations between the skilled trades and the professions.

Education, vocational.
A programme of education below college grade organised to prepare the learner for entrance into a particular vocation or to upgrade employed workers.

Education, vocational adult.
Instruction below the college level intended to prepare the student for work in an occupation that requires technical skill and knowledge.

Education, vocational-technical.
Instruction below the college level intended to prepare the student for work in an occupation that requires technical skill and knowledge.

Effect, programme.
The effect of an experimental factor or treatment under controlled conditions -- when other factors are held constant.

Evaluation. A decision enabling process.

Evaluation design.
A plan that describes the who, what, where, when and how of an evaluation.

Evaluation instrument.
A test or procedure used in evaluation.

Evaluation plan. A framework for collecting, analysing and reporting data.

Experimental group.
A group of people who all receive the new or experimental material, technique or programme.

Faculty. The teaching staff of a school, college, institute or university.

Gender. The sex of a person -- male or female.

Goal. An aim or purpose. A general statement of an outcome or end to be attained in any behaviour situation. (See outcomes).

Group. A collection of people defined by the treatment or programme they receive -- experimental group or control group.

Instruction. See teaching.

Instruction, individualised.
Differentiation of instruction according to individual differences in students.

Interest inventory.
An instrument used to obtain information on the personal and/or leisure interests of students.

Mastery learning. Concept in which mastery of a topic is possible for all individuals provided that each learner is given the optimum quality of instruction which is appropriate for his/her make-up and that each learner is given the time he/she needs.

Measurement. Act of finding dimensions of any object and the quantity found by such an act.

Model. Representation of a concept or system in a two or three dimensional diagram or a mathematical or other analogous form.

Module course. Unit of work in a course of instruction which is virtually self-contained.

Module training. Method of training based on the concept of building-up skills and knowledge in discrete units.

Norm-referenced test.
A test which enables an individual's performance on that instrument to be compared with normal or average performance for a whole group of similar individuals.

Objectives, behavioural.
Specific statements of observable behaviour which a learner displays.

Objectives, evaluation.
Specific statements of observable outcomes which an evaluation produces.

Objective test. Test or item in a test which can be scored objectively.

Occupation. (1) Person's trade, vocation or principle means of earning a living;
(2) Group of jobs with a significant number of tasks and skills in common.

Organising. A process that involves determinig activities required to achieve goals, grouping these activities, assigning people to do them, delegating authority to carry them out, and coordinating these actions.

Outcomes. An end or goal to be attained in any behaviour situation. (See goals).

Performance. Actions of a person or group when given a learning task.

Philosophy. A point of view that serves to guide the school's actions and thinking.

Planning. A decision making process involving the selection of courses of action to be followed.

Planning sheet. A prepared form to aid evaluators in organising their work effectively.

Posttest. Test administered at the end of a programme to check the effectiveness of the programme and/or the performance of students.

Pretest. Test given to a student before taking a training or education programme to test his/her suitability for it and, by comparison with a posttest, to gauge the programme's effectiveness.

Programme. One component of a curriculum that addresses an instructional area or course -- welding, child care, electronics.

Random sample (sampling). Individuals chosen for study in a way tha guarantees equal likelihood of their having been picked for all possible samples of similar size that might be selected from the members of the population involved.

Randomisation. A means of assuring sameness or representativeness of assignment or selection.

Range. Statistical term to indicate the difference between the highest and lowest values on a set of measurements.

Ranking. To distribute scores or items in order of merit or magnitude.

Rank order. Listing of students or items in order of merit or attainment or other agreed attributes.

Ratings. Ranking students or items on a particular characteristic as high, medium or low.

Ratio. Indicated quotient of two numbers which show the measures of two similar quantities.

Resources. People, space, materials, equipment, time and money are major resources.

Sample. A group which is selected from a larger group or population for the purpose of examination with a view to making generalisations about the population as a while.

Sampling. Statistical term for the general process of selecting a sample from a study population. In general, sampling attempts to extract random samples. In much educational evaluation, randomisation is not possible. Two principal classes of non-random sample are probability samples which are partially random and non-probability samples which have no random element.

Scholastic aptitute test.
Predictive tests used to evaluate prospective students.

Scheduling. Planning and organising of evaluation time and schedules in the school.

Standard. Any criteria by which people or things are judged.

Standardised test.
A test for which content has been selected and checked empirically, for which norms have been established and for which uniformed administration and scoring exist, and which may be relatively objectively scored.

Standard works. Books which are recognised and regularly used as authoritative sources of information in their subjects.

Strategies. Techniques used in learning or thinking.

Statistical significance.
Where an occurance can be predicted on statistical evidence and there is low probability of it taking place on the basis of chance alone.

Target group. That group of people for which evaluation information is being collected.

(to) Teach. To impart knowledge or skill to another; to give instruction to another; to educate or to train another; to facilitate learning. (See training).

Teacher. One who teaches, especially a person employed by a school to teach.

Teaching methods. Standard procedures in the presentation of instructional material and content of activities.

Teaching techniques.
Specific ways of presenting instructional material or conducting instructional activities.

Time series design. An instrument related to the programme that will be started is administered at regular intervals before the programme begins, during the programme and after it ends.

Training. Systematic practice in the performance of a skill. (See education).

t-test. A way of testing the statistical difference between two means.

EXAMPLE EVALUATION REPORT

Evaluation Report for:	Tara Vocational School
Prepared by:	B. Wila
Submitted on:	06.07.84
Programme or Process Evaluated:	Curriculum Objectives
Submitted to:	Vocational Training Board

Background

To determine whether or not to propose changes in curriculum, the vocational training board chairman requested information on programme objectives. He wanted to know if each programme's objectives addressed industrial training needs. The objective of this evaluation was to determine, for each vocational programme, which objectives addressed training needs.

Data collection and analysis

A discrepancy analysis was used. Objectives of each vocational programme were compared with counterpart industry training needs. Results of the comparisons were analysed for similarities and differences. Discrepancies between programme objectives and industry needs were recorded and reported.

- continued -

Findings

Number of Discrepancies Between Industrial Training Needs and Objectives by Programme Areas

Vocational Programme	Number of objectives meeting needs	Number of training needs	Discrepancy
Agriculture mechanics	13	15	2
Business practices	10	20	10
Construction	15	20	5
Food preparation	12	19	7
Health care	15	21	6
Totals	65	95	30

Thirty instances were found where vocational curriculum objectives did not address industry training needs. The greatest number of discrepancies were found in the business practices programme (10). The next highest number (7) was found in the food preparation programme. Health care, construction and agriculture mechanics each accounted for 6, 5, and 2 discrepancies respectively.

Conclusions

Vocational curriculum objectives are not meeting all of industry's training needs. The greatest discrepancy between industry needs and objectives appears in the business practices programme. Discrepancies are also evident in the school's four other programmes.

Recommendations

1. Initiate continuing studies of the changing nature of industry training needs.

2. Revise curriculum objectives starting with business practices.

EVALUATION PLAN

Person(s) responsible for the evaluation: _____

1. **Evaluation scope**

2. **Programme description**

3. **Measures and design**

4. **Data concerns**

5. **Budget**

Section II

PLANNING SHEET 1

SCOPE OF THE EVALUATION

Steps

1.1 **What programme is to be evaluated?**

1.2 **Who wants to know about the programme?**

1.3 **What decisions will be based on the evaluation?**

1.4 **What information must be given to the audience?**

1.5 **What is/are the objective(s) of the evaluation?**

Section II

PLANNING SHEET 2

PROGRAMME DESCRIPTION

Steps

2.1 What are the programme outcomes?

2.2 What are the programme activities?

2.3 What are the required resources?

Section II

PLANNING SHEET 3

MEASURES AND DESIGNS

Steps

3.1 What will be measured?

3.2 What instruments will be used?

3.3 How will data be analysed?

3.4 What designs will be used?

3.5 What sampling strategy will be used?

Section II

PLANNING SHEET 4

DATA CONCERNS

Steps

4.1 What are the deadlines?

4.2 How will data be presented?

4.3 How will data be reported?

Section II

PLANNING SHEET 5

BUDGET

Steps		Costs	
		Estimated	Actual
5.1	**What are the personnel costs?**		
	Evaluator		
	Consultant		
	Clerical		
	Typist		
5.2	**Travel/lodging/food**		
	Transportation		
	Housing		
	Meals		
5.3	**Test items/analysis**		
	Test purchase		
	Test scoring		
	Data processing		
5.4	**Communication**		
	Telephone		
	Postage		
	Telex		
5.5	**Other costs**		
5.6	**Total costs**		

Section II

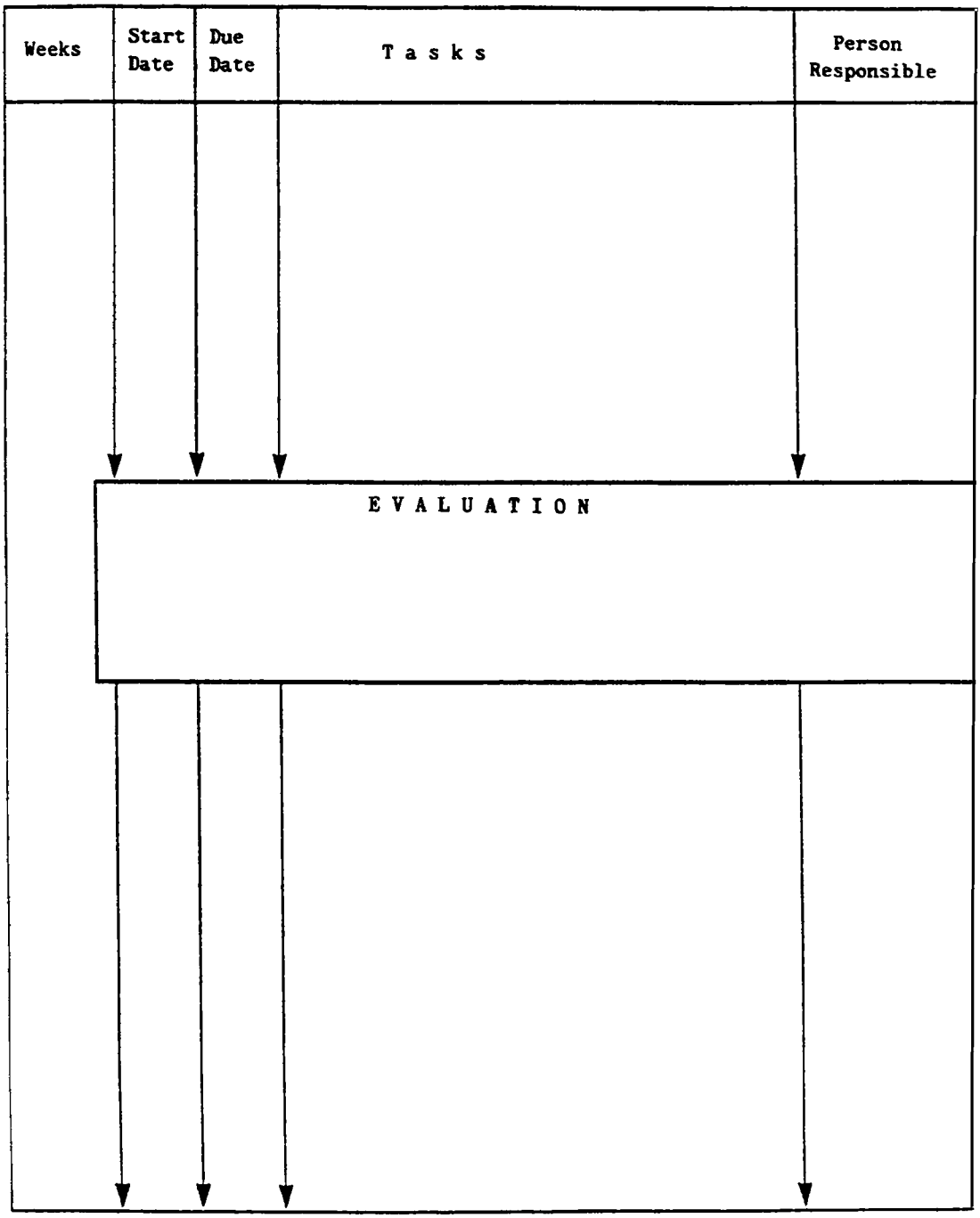
EXPENSE - CONTROL WORKSHEET

Expense Categories	Current Period Expenses (----------)	Evaluation Expenses to Date	Total Budgeted Amount	Balance
Personnel				
Travel/lodging/ Food				
Test items/ analysis				
Communications				
Other				
Total costs				

Section IV, Exhibit 4.7.

EVALUATION SCHEDULE

Programme to be evaluated _____



Section IV, Exhibit 4.8

MANAGEMENT CONTROL WORKSHEET

Results	Expectations	Judgements	Actions

Section IV, Exhibit 4.9.