Evaluation is quantitative or qualitative, the criteria determined by or given to the student. The criteria show how close he has come to the program's objectives and the ranking of individual performance. Vocational education programs susceptible to evaluation are listed and relevant evaluative techniques discussed. Graduate interviews concerning job, school, or other plans, can relate the question closely to the program. Career follow-up studies, going beyond mere placement to identifiable changes in the trainee's work life, can reveal a program's success or failure. Seven basic achievement tests (Ohio Trade and Industrial Supervisors Workshop 1958), on different trades, are simple but useful tools. Official licensing exams are less so, for they assess the student's total education, not a specific program. Industry advisory committees, properly interested in successful programs, are quick to recommend improvements. A systems approach requires breaking goals into analyzable units, to aid both definition and solution of problems. Geared specifically to student vocational needs, accreditation helps maintain program standards. Self-initiated evaluation is most pertinent to local program study. Changes in the trainee's self-image and motivation demonstrate a program's effectiveness. Evaluation criteria apply to structure, process, or product; on-going evaluation allows quick adjustment of facilities/funds to any program's objectives. [Not available in hard copy because of marginal reproducibility of original.] (HH)

EVALUATION PROCESSES USED TO ASSESS THE EFFECTIVENESS
OF
VOCATIONAL-TECHNICAL PROGRAMS

A SEMINAR PAPER
PRESENTED TO

THE GRADUATE SCHOOL
OF
EDUCATION
UNIVERSITY OF CALIFORNIA AT LOS ANGELES
AND
DR. RALPH PRATOR

IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS OF

EDUCATION 441-D

BY

ARTHUR E. BRUHNS
DECEMBER 14, 1968

CHAPTER I

OVERVIEW EVALUATION

"Evaluation is defined as the making of judgments about the value, for some purpose of edeas, works, solutions, methods, materials, etc. It involves the use of criteria as well as standards for appraising the extent to which particulars are accurate, effective, economical or satisfying." The judgments may be either quantitative or qualitative, and the criteria may be either those determined by the student or those which are given to him."[1]

"A measure of educational achievement provides two kinds of information: The first is the degree to which the student has attained the educational objectives...The second is the relative ordering of individuals with respect to their performance."[2]

The two previous items define evaluation and describe what is sometimes measured in such an evaluation. Much has been written relating to the evaluation of the pupil, the programs, and the processes. Little has been written or done in the field of vocational-technical education. Jerome Moss, Jr.,[3] in a recently published document from the University of Minnesota, September, 1968, comments concerning the importance of program evaluation in vocational-technical education:

> In light of its importance, how can the fact be
> explained that program evaluation in vocational, tech-
> nical, and practical arts education has been an inci-
> dental, casual, and sporadic activity? As a matter

of fact, why have relatively few evaluative studies
been conducted since the passage of the Vocational
Education Act of 1963?

There are philosophical-political reasons. We
are faced with critical manpower and social problems.
The public policy decision has been to divert most
available human and financial resources from both
research and evaluation into the most visible
approaches that can at least sustain the illusion
of progress. With most public agencies under
pressure to produce immediate results, it is no
wonder that the need for a good show often over-
whelms scientific objectivity; it is not surprising
that there is little time to revise, throw out, and
frankly compare. Careers are often at stake. Fur-
ther, it is somehow un-American to be indefinite
and doubtful, or to adopt a try-and-see attitude
about any proposed public program. Legislators are
loathe to provide large sums of money to try out
several alternative solutions; we pick one "solu-
tion" and go. Obviously, evaluation is done hesi-
tantly, with very grave consequences usually asso-
ciated with unfavorable findings. "When ideas that
are promising as objects of research and honest ex-
perimentation [are accepted prematurely and] give
birth, through artificial dissemination, to a brood
of hysterical fads, there is the danger that angry
reaction will dump out the egg with the shell"
(Oettinger, 1968, p. 76-77).

There are personnel reasons for the relative
inactivity. Vocational, technical and practical
arts education has been handicapped by a shortage
of well-trained researchers, and evaluation has not
been looked upon (mistakenly from my perspective)
as a specially rewarding, creative form of research.

Finally, there have been (and still are) techni-
cal difficulties. The remainder of this paper will
touch on some of these problems so they will not be
enumerated here. Suffice it to say for the moment
that evaluation is a highly complex, technically
and conceptually demanding activity. Until relatively
recently, we lacked the statistical and computational
tools necessary to do a reasonable job.

From now on, however, the picture must change.
The Advisory Council on Vocational Education has
demanded greater efforts at evaluation. Social
scientists from a wide variety of disciplines are
turning their attention to the assessment of various

systems of manpower training. Our social obli-
gation for evaluation is being assumed by others,
and the results could determine our very existence.
We must evaluate our own programs using appropriate
criteria and methodology so that decisions concern-
ing our future can be based upon data which properly
reflects our educational perspectives.

He further suggests that first, evaluation must be com-

parative because evaluation involves making a judgment and

second, differences in the outcomes compared must be attributed

to program characteristics or the interaction of program and

student characteristics.

It becomes necessary, whenever the problem of evaluation

is broached, to have an awareness of what it is that needs to

be evaluated. Harold Starr[4] of Ohio State suggests the follow-

ing as program goals that could be the subject of evaluation

if it were desirous to evaluate a program of vocational-

technical education:

1. To provide vocational-technical education
   and training to youth and adults who will
   be entering the labor force and to those
   who seek to upgrade their occupational
   competencies or learn new skills.

2. To provide comprehensive curricula which
   relate general and vocational-technical
   education offerings to the vocational
   objectives of students.

3. To provide increased accessibility to pro-
   grams of vocational-technical education to
   meet the needs of those to be served.

4. To provide quality instructional programs
   which meet the vocational aspirations of
   people while being compatible with employ-
   ment opportunities

5. To provide a systematic and continuous evaluation of vocational-technical education in terms of national and state interests, student benefit, and manpower requirements as a means for making decisions concerning alternative investments of human and economic resources and the redirection of program objectives.

There seems to be little question in the minds of concerned vocational educators at local, state and national levels that evaluation of vocational-technical education is a "must" because of the level of federal involvement that is developing. Educators find that what they thought in the past was adequate reporting on successes (and failures occasionally) has proved to be too little, too late in many instances, and despite commitment at the highest levels, vocational education has been the subject of continuous heated and at times even bitter debate. This debate centers on issues such as usefulness or adequacy of vocational education. Do graduates really use the training they receive in school? How effective is this training? Does it really prepare for the types of jobs young people obtain on graduation? Should training be conducted in comprehensive or separate vocational high schools? Another issue often raised concerns the image of vocational education which is seen by some observers as appropriate only for those students who cannot succeed in the more demanding academic curriculum. Another point which is being emphasized tiday is the role of vocational education as it relates to minority groups and others from disadvantaged backgrounds. We need to regard the elevation of entry skill levels as a focal point for some of our less able students.

CHAPTER II.

EVALUATION TECHNIQUES

How does the average teacher of any vocational-technical class evaluate his students? Generally, it is done with teacher-made tests which have dubious value except to regurgitate those phases of a program that have been emphasized enough to establish a basis for recall. True, there are some standardized tests in academic subjects but rarely are these adapted to vocational-technical education. Tests in math are a good example.

How does the average instructor evaluate his program in total? The current concept is that he either doesn't or he bases his evaluation on test scores of his successful students, or placement (not retention) of jobs his students have. The literature points an accusing finger at vocational education for lack of evaluation of the kind that is descriptive and definitive of what is actually happening in the vocational-technical program. Jerome Moss, Jr.[3] places the onus squarely on the shoulders of vocational-technical educators.

The following are some evaluation techniques that have been described in recent research:

1. Graduate interviews: This is a process whereby all graduates of a school are interviewed as to job plans, school plans, military or marriage plans before they leave school. This is a tructured interview technique so the data can be catalogued and related to programs. The point of interest here is the ratio of job to school, etc., plans of the vocational

student as opposed to the general or academic graduate. It
has been contended in the past that the vocational graduage has
a much better job concept formulated than the general or aca-
demic graduate. This interview process is counselor oriented
and very costly.[5]

2. Career follow-up study: One of the most commonly
used techniques, career follow-up study probably produces the
greatest quantity of data today. Some of the relevance of the
data is under heavy fire, but this type of study seemed to be
the easiest to use to establish (erroneously or not) that voca-
tional-technical programs were in fact producing a useable pro-
duct (students placed in jobs).

> Some of the items evaluated were:
>
> a. Relatedness of first job to trade student
> b. Assessment of skill origins and requisites
> c. Past high school, occupational history
> d. Off-the-job interests and affiliations
> e. Leisure activities
> f. Organization affiliations

Sharp and Krasnegor[7] comment concerning follow studies
of the more common descriptive variety, "...studies can be good
or bad, valid or invalid and yield new insights or document the
obvious."

Sharp further commented that the more complex studies of
follow-up were offering hopeful signs that the narrow and self-
conscious "placement" criteria were being replaced with more
sophisticated evaluation devices which take a wider view of
employment outcomes and attempt to relate specific training
approaches to identifiable changes in the trainee's work life.[8]

Eninger stated in a recent study related to follow-up techniques, "If the graduate's first job is not in the trade studied or highly related, the chances are high that he will never enter the trade or a highly related trade."[6] It can be suggested that at best placement data from follow-up gives the school administrator speedy and inexpensive feedback high-lighting the extremes of program success and failure. An aspect of this relates to the disproportionate number of students re-cruited for vocational education from disadvantaged or low-achieving groups and then trying to establish a statistical inference related to general education dropouts or job success of other kinds of students.

3. <u>Achievement testing</u>: Harry Davis[9] states that the process of learning in vocational-technical education is no different from any other instructional area. He assumes, there-fore .   to test the behavioral changes that occur with stan-dardized instruments designed by the Ohio Trade and Industrial Supervisors Workshop of 1958. These tests have been used in eight states. There are seven basic achievement tests in the series, each related to a different trade field. The develop-ment methods do not appear as careful and sophisticated as the major test developers might use, but the tests could be con-sidered as a useful tool.

4. <u>State and national licensing examinations</u>: Here is an interesting technique that works from the ultimate product at a "point of no return." The product of the program (student) is evaluated for licensure after he has passed all the evaluative

devices that the program imposes, much like a doctor or dentist would be licensed but as a sub-professional level. The value of such procedure is questionable as two years plus of education in many respects are being evaluated as a total in one examination. It could be questioned what such exaamination really evaluates at the point at which it is administered.[10]

5. <u>Industry advisory committees</u>: To the true believer in vocational education, the use of the advisory committee as part of a program is a "must." To use it as an assisting device in evaluation makes good sense.[11] The question is raised as to whether or not a local advisory committee would "tend to white-wash" a program it was vitally concerned with, and Mr. Burt comments that it has been his experience to find the reverse. They tend to be vitally interested in having the best possible program as a result of their efforts. They will in effect criticize its weakness and recommend change.

6. <u>The systems approach cycle</u>: The computer has changed concepts of evaluation to the extent that models are being developed on a systems analysis approach. This allows programs to be broken down into digestable segments which can be dealt with on a system flow basis. As the programs are disassembled into flow units, objectives have to be analyzed into units that permit study. Two major areas of problem definition and problem solving face the evaluator as he establishes a systems approach.[12]

7. <u>Accreditation as an evaluation technique</u>: Accreditation of a school involves the total concept of the school in

all aspects. It was the practice for a time to ignore the
vocational-technical aspects of a school's program as not being
a part of the process of accreditation because accreditation per
se was related to an acceptance function by colleges and univer-
sities. This acceptance function has given way to total evalua-
tion from the standpoint of fulfilling the student's needs, the
community's participation, etc. All nationally recognized
accrediting agencies now follow four functions:[13]

1. They publicly establish the standards by which they
   will judge quality.

2. They send qualified educators to serve as inspectors
   on visits.

3. They approve and include on their lists of accredited
   institutions only those which satisfactorily meet the
   standards.

4. They revisit and revaluate these institutions per-
   iodically and remove from their lists any institu-
   tion that is not continuing to meet their standards.

From these statements of intent the agencies that do
accreditation state that now they do not accredit vocational-
technical education separately but as a part of the total insti-
tution.

From these points of view has come an expression that
"The technical institute that turns out excellent technicians
is a quality institution just as the graduate school producing
fine scholars at a doctoral level are quality institutions.
...Each institution must be evaluated in terms of the function
it proposes to perform."[13]

The Southern Association of Colleges and Schools in a

publication of May, 1967,[14] said in part, "...Vocational schools in particular are in the mainstream of change and should be sensitive to it. Some [educators] fear that accreditation would lessen this sensitivity, bring rigidity and create conflict between the needs of business and industry on the one hand, and the standards of the accrediting association on the other."

    8. <u>Self initiated evaluation</u>: This technique has, built in, a number of elements that relate to local program study:

        a. Selection of competent leadership

        b. Involvement of faculty in the evaluation process

        c. A focus on the output of programs

        d. Identification of real objectives of the total program

        e. Use appropriate methods of data gathering

        f. Study the essential elements of programs

        g. Involving citizen groups

Several other major points Byram[15] emphasizes are development of faculty understanding of the evaluation because of the threatened feeling many faculties have whenever evaluation is mentioned. Some of this threatened feeling comes from unhappy previous experiences. They need to be assured that program evaluation is not teacher evaluation. Michigan State has developed an instrument called the "Vocational Education Understandings Inventory," which was designed to alleviate areas of misunderstanding and threat to teachers. Another point is the care that should be used in determining expected outcomes based purely on societal or local needs. Eninger states, "Schools are for people and are not to be thought of as tools of the labor force or the economy."[6]

9. <u>Personality change as a result of occupational education and evaluation</u>: Joseph Champagne[16] states, "The position I adhere to is that occupational education must give focus to educating the entire man...so that the individual appreciates the dignity of his worth. ...The individual needs to be educated to function with a newly acquired skill rather than to be merely trained in a skill." He further states, "There is a noticeable lack of discussion of techniques of attitude assessment specifically in occupational education." He alludes to the extensive efforts related to adult education orientation to develop sound attitudes toward reception of training, but the general ignoring of this same phase of pre-training in our high schools. He suggests this process could be conceptualized as achievement motivation which needs to be aroused and nurtured with some self-perpetuating force that carries the student through as much of his work life as possible.

10. <u>Evaluative criteria</u>: Ralph Tyler in a recent article[17] listed three kinds of evaluation criteria that may be used to judge schools and programs.

    a. <u>Structure</u> - Facilities, plant and equipment

    b. <u>Process</u> - The way in which the school carries on

    c. <u>Product</u> - Ultimate evaluation--how far does the school carry out what it tries to accomplish

The National Study of Secondary School Evaluation suggests that areas of program and schools be evaluated in terms of its objectives and related to how the reaching of those objectives

fills the needs of its students.

Many other criteria could be formulated that could be related to the specifics of course content and objectives as well as to an entire program or school philosophy.

CHAPTER III

<u>CONCLUSIONS</u>

It becomes obvious from the literature that the problem
of evaluating vocational-technical education to determine its
effectiveness, content, and future is moving forward with ever
increasing speed. Conferences such as the Upjon Conference in
Atlantic City on October 6-9, 1968, are but indicators on the
horizon of what is to come. Evaluation is to be the keystone
of future programs and it is felt and could safely be predicted
that future programs will of necessity have built-in evaluation
programs and techniques that will provide a continuing fund of
data as the program evolves.

The legislatures, boards and the congress are no longer
content to wait ten years or more before educators decide to
find out if the programs are in fact doing what was claimed
for them at the outset. There are warning signs along the way
that education must need or it will find outside sources will
be brought in to do what education has failed to do for itself.

There are some pluses too for the educator and programs.
As it can be established that programs are or are not function-
ing as a result of immediate evaluation, adjustments can be made
which will make the utilization of facilities and funds as
economical as possible. This will provide for a dynamic attitude
development within education as educators recognize the merits
of real flexibility within their institutions.

FOOTNOTES AND BIBLIOGRAPHY

[1] Bloom, Benjamin S. et al. <u>Taxonomy of Educational Objectives</u>, The Classification of Educational Goals, <u>Handbook I</u>: <u>Cognitive Domain</u>. David McKay Company, Inc., New York, 1956.

[2] Lindvall, C. M., editor. <u>Defining Educational Objectives</u>, a Report of the Regional Commission on Educational Coordination and the Learning Research and Development Center. University of Pittsburg Press, 1964.

[3] Moss, Jerome, Jr. <u>The Evaluation of Occupational Education Programs</u>, University of Minnesota Technical Report, Research Coordinating Unit in Occupational Education, September, 1968.

[4] Starr, Harold. <u>Sample of Evaluation System Program Objectives</u>, Unpublished paper (mimeo) 10/6/68, The Center for Vocational and Technical Education, The Ohio State University Project 20.

[5] Kaufman, Jacob J. et al. <u>The Role of the Secondary School in the Preparation of Youth for Employment</u>, Institute for Research on Human Resources, The Pennsylvania State University, University Park, Penn., 1968. (mimeo, unpublished)

[6] Eninger, Max. <u>The Process and Product of T & I High School Level Vocational Education in the United States</u>. Educational Systems Research Institute, Pittsburg, Penn., April, 1968.

[7] Sharp, Laure M. and Krasnegor, Rebecca. <u>The Use of Follow-up Studies in Evaluating Vocational Education</u>, Bureau of Social Science Research, Washington, D.C., May, 1966.

FOOTNOTES AND BIBLIOGRAPHY, continued

[8]Sharp, Laure M. Student Follow-up Study Procedures as a Technique for Evaluating Vocational and Technical Education Programs, Bureau of Social Science Research, Inc. Washington, D.C., 1968.

[9]Davis, Harry F. Standardized Achievement Tests as a Technique in Evaluating Vocational-Technical Programs. State Department of Education, Division of Vocational Education, 1967.

[10]Shimberg, Benjamin. State and National Licensing Examinations as a Technique for Evaluating Vocational-Technical Education, Educational Testing Service, Princeton, N.J., 1968.

[11]Burt, Samuel M. Use of Industry Advisory Committees as a Technique for Evaluating Vocational-Technical Education Programs, the W. E. Upjohn Institute for Employment Research. October, 1968.

[12]-----, The Systems Approach Cycle, Pennsylvania Vocational Education Study, (unpublished, mimeo). Presented at W. E. Upjohn Conference, October, 1968, Atlantic City, N.J.

[13]Dickey, Frank G. Accreditation by Regional Associations as a Technique for Evaluating Vocational-Technical Education Programs, National Commission on Accrediting, Washington, D.C. October, 1968. (unpublished mimeo).

[14]----- We Shall Not Rest, Southern Association of Colleges and Schools, May, 1967.

[15]Byram, Harold M. Strategy and Methodology for Self-Initiated Evaluation of Local Programs of Vocational Education. Michigan State University, 1968.

FOOTNOTES AND BIBLIOGRAPHY, continued

[16]Champagne, Joseph E. Evaluating Personality Changes in Occupational Education, Center for Human Resources, Houston, Texas; University of Houston, Houston, Texas, October, 1968.

[17]Edwards, Charles W. Use of the Evaluative Criteria of the American Council on Education as a Technique for Evaluating Vocational-Technical Education Programs, Illinois State University, Normal, Illinois, October, 1968.