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Survey instruments of many kinds are being used extensively in most states for gathering needed data which may re relevant in solving various educational problems. This study presents evaluative criteria and evaluative criteria test items which can be used to serve as guidelines in the designing, constructing, and evaluating of survey instruments and survey reports. Procedures in preparing this report included (1) More than 300 survey instruments and completed survey reports were collected, studied, and analyzed, (2) An intensive study was made of the published literature since 1930 in an effort to isolate and consolidate additional evaluative criteria, and (3) These evaluative criteria, together with evaluative test items for each criterion, were classified. For each criterion, several criterion test items are given to aid the evaluator in making value judgments about the degree to which the particular instrument is fulfilling the criterion listed. Provision is made after each criterion test item for the evaluator to rate that particular item. Chpaters of the report are (1) Prerequisites to Planning a Survey; (2) Types of Survey Instruments, (3) Writing Items for Survey Instruments, (4) Assessing the Adequacy of Survey Instruments, and (5) Reporting the Results of Survey Research. (PS)

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EVALUATIVE CRITERIA FOR SURVEY INSTRUMENTS IN BUSINESS EDUCATION

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SOUTH-WESTERN MONOGRAPHS IN BUSINESS AND ECONOMIC EDUCATION

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MONO 111

EVALUATIVE CRITERIA FOR SURVEY INSTRUMENTS IN BUSINESS EDUCATION

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

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L. W. E.

M. E. O.

TABLE OF CONTENTS

NATURE AND PURPOSE OF STUDY

This study was designed and written to help meet certain basic needs of various school personnel, and others, who conduct various types of survey research studies. It has evolved from an analysis of the actual survey tasks in which these people engage.

Survey instruments of many kinds are being used extensively in most states for gathering needed data which may be relevant in the solution of various educational problems. Time, effort, and money are involved in all such studies. In some instances, the net result of an expensive and elaborate survey may be little more than another report to be added to the educator's administrative library. To be assured that a study will have meaning and value and leave as little as possible to chance, the entire survey process necessitates painstaking planning of the overall study, careful designing of the survey instrument, insightful interpreting of the survey data, and accurate reporting of the survey findings.

Purpose of Study

A preliminary study of the problem of designing usable survey instruments revealed these persistent needs:

1. The need for a better understanding of the preliminary considerations which are pertinent in planning a survey. This would include an understanding of the function of the survey method in research as well as the values that may accrue when this method is used.
2. The need for classifying and defining the various types of survey instruments that may be used to collect needed or useful data.
3. The need to make survey instruments more nearly valid and reliable through a better structuring of the instrument and the writing of the items that make up the content of the instrument.
4. The need for assessing the overall adequacy of the survey instrument before it is used.
5. The need for improved reporting of the results of survey research.

The purpose of this study is to meet these needs through the formulation, definition, and presentation of evaluative criteria and evaluative criteria test items which can be used to serve as guide lines in the design, the construction, and the evaluation of survey instruments and survey reports. Survey instruments which are carefully designed and constructed and which are evaluated before use in accordance with prescribed criteria should help to provide more nearly valid and reliable data. The end result will be a report that is relevant to the educational problem that initiated the investigation.

Scope and Procedure of the Study

The following steps or procedures were followed in preparing this report:

1. A collection was made of various survey instruments which had been used in California as well as in other states in seeking answers to various educational problems. Letters requesting samples of survey instruments which had been used in survey studies were sent to the following educational groups:

Group	Number
California	
District Superintendents	462
City Superintendents	90
County Superintendents	53
Other States and Territories	
Chief Education Officer or Officers	56
TOTAL	661

More than 300 survey instruments and completed survey reports of various kinds were collected by this means.

2. The survey instruments and reports collected were studied and analyzed. An attempt was made during the analysis to isolate desirable elements which would form the nucleus for the development of evaluative criteria. An attempt was made, also, to classify the types of instruments which had been used in the various survey studies. This classification forms the basis for one of the chapters included in this report.

3. An intensive study was made of the published literature since 1930 in an effort to isolate and consolidate additional evaluative criteria.

4. The next step was to classify, define, illustrate, and present the evaluative criteria in a form which would be of value to research investigators who use survey instruments for gathering needed data. These evaluative criteria, together with evaluative criterion test items for each of the criterion, were classified according to the needs outlined under the *purpose of the study.*

5. The overall report was outlined in accordance with Step 4, and the five chapters which follow were prepared.

DIRECTIONS FOR USING EVALUATIVE CRITERIA

The criteria given are intended as guides for designing and improving survey instruments. (See Summary Highlights and Evaluative Criteria Sheets preceding each of the chapters of this report.) For each criterion, several criterion test items are given to aid the evaluator in making value judgments about the degree to which the particular instrument is fulfilling the criterion listed. A scoring system is provided for each test item. The directions for using each of these features follow:

The Criterion

The individual criterion should be rated by drawing a circle around the symbol that best describes the judgment of those making the evaluation of the survey instrument. The basis for this judgment should be the thinking that results from a careful evaluation of the criterion in terms of each of the criterion test items given with the criterion. The rating of the criterion should be done after the individual test items have been evaluated.

Criterion Test Items

Following the statement of each criterion in the chapter summary highlights, some suggested criterion test items are listed to help the evaluator decide if the listed criterion is being met and to what degree.

Provision is made after each criterion test item for the evaluator to rate that particular item according to the symbols listed below.

After all the criterion test items have been examined and rated, a general evaluation of the criterion should be made. This should be based on the criterion test items, but it should represent an overall general evaluation rather than an average of the criterion test items since these test items may not be of equal weight in the evaluation of a specific survey instrument.

Evaluative Criteria and Criterion Test Item Rating Scales

The symbols following each criterion have these explanations for the evalution or rating to be given to the criterion and the criterion test items:

"0" Indicates that the criterion or the test item is not met and that additional work is needed to improve the particular item.

"1" Indicates that the criterion or the test item is only partially met and that steps need to be taken for improvement.

"2" Indicates that the criterion or the test item is met about half as well well as it could be if the instrument were considered as ideal.

"3" Indicates that the criterion or the test item is adequately met but there is some room for improvement.

"4" Indicates that the criterion or the test item is fully met.

Note: If the criterion test item does not apply, it should be left blank and should not be included in the overall criterion evaluation.

Example of Use

Criterion—The principles of good grammar are not violated in writing the items for the survey instrument.

0 1 ② 3 4

The rating of "2" is not an attempt to average the various criterion test items but rather it is the evaluator's overall judgment regarding this

criterion. This rating is made after each of the criterion test items has been applied. It indicates that the instrument needs additional reworking if it is to be considered as grammatically correct.

Criterion Test Items

	Rating
1. Are the alternatives listed for multiple-choice items parallel in construction?	1

The rating of "1" indicates that the test item is only partially met and that steps need to be taken for improvement.

2. Are all statements complete?	4

The rating of "4" indicates that the test item is fully met.

3. Is there a consistency of grammatical person in the questions?	0

The rating of "0" indicates that the test item is not met and that additional work is needed to improve the particular item.

General

The various criteria and the criterion test items are intended to serve these purposes:

1. To provide guide lines for the researcher in each of the following areas:
   a. In planning the survey.
   b. In selecting the appropriate type of survey instrument to use.
   c. In writing the items comprising the survey instrument.
   d. In assessing the adequacy of the completed instrument before it is used.
   e. In reporting the results of the survey research.
2. To guide the researcher and others in making a general overall evaluation of the survey instrument.
3. To stimulate the desire to improve all aspects of the survey method of research so that adequate and meaningful data will be gathered.
4. To save time, effort, and money in the conduct of the research study or investigation.

Evaluative Criteria Summary Sheet

After each of the criterion listed for a particular aspect of survey instrument has been evaluated, the evaluative criteria summary sheet on page 86 should be completed. This is not to be an averaging of the criterion test items for the particular criterion, but rather, it is the evaluator's overall judgment of how well the criterion has been met by the survey instrument. This evaluation sheet will be partially completed before the survey instrument is used; an additional part of the evaluation sheet will be completed as the data are being collected as a check on the adequacy of the data collected; and finally, the remainder of the summary evaluation sheet will be completed after the research has been completed and the report written. The completed summary evaluation sheet will then serve as an overall measure or rating of the particular research study and it may indicate improvements that need to be made in future studies of a similar nature.

In addition to the foregoing analysis, the research report evaluation form given in Chapter V, page 82, should be completed before the research report is written in its final form. This form may be used, also, to evaluate a completed report to indicate areas of weaknesses and/or strengths of the report.

LIST OF ILLUSTRATIONS

SUMMARY HIGHLIGHTS
AND
EVALUATIVE CRITERIA

CHAPTER I—PREREQUISITES TO PLANNING A SURVEY

Criterion Test Items

	Rating
1. Has the problem to be studied been identified and clearly stated?	_____
2. Is there a clear statement of the purpose of the survey?	_____
3. Has a thorough and thoughtful study been made of related materials and literature?	_____
4. Is the survey method most appropriate for the problem to be investigated?	_____
5. Are the data desired unavailable elsewhere?	_____
6. Have the sources for the desired data been carefully identified?	_____

CHAPTER I

PREREQUISITES TO PLANNING A SURVEY

Finding answers to problems has become an occupational responsibility for many wòrkers in the field of education. As the task of the school has become more comprehensive, the need to seek answers is intensified. No longer is it adequate to look at the traditional sources of information—the tomes that contain records of the past. Evidence upon which decisions can be made and problems solved must be secured from contemporary sources.

The guidance department of a school is interested in securing parental opinion on the subject of homework. The guidance director makes a list of questions that he wants answered, develops an appropriate data-gathering instrument, and carries through his survey.

A school has developed a new work experience program. After an experimental period of three years, the school desires to determine the effectiveness of this new aspect of the program. The task is to secure answers to such questions as: "How valuable has the experience been from the students' point of view?" "How satisfied are the businessmen with the workers they have been receiving?" "What should the school now do—continue the program, modify the program, or delete it?" A group of teachers who have been working with the new program are given the responsibility for making a survey.

Students participated in an Outdoor Education in Science and Conservation program. The program was experimental in nature. The directors and their instructors wanted an evaluation of the program by the students enrolled. They chose a committee to develop a plan for a survey that would include responses from all participants as well as detailed reactions from a limited sample of the participants.

An array of situations could be enumerated to illustrate the occasions when surveys are appropriate for securing needed information. To be efficient in the gathering of needed data, a survey must be carefully planned and carried through. Much time and attention is needed to transform the vague, often general questions that initiate the desire for additional information into a refined plan with carefully written instruments, sufficiently sensitive to elicit the desired data.

I. THE SURVEY DEFINED

Although there are many variations of the survey, a simple definition might be: the collection of data concerning a contemporary topic. A survey may be a very simple undertaking as the determining of the number of children under six years of age in a school district. On the other hand, a survey may be as complex as probing into the social attitudes of a sample and meeting the rigorous requirements of any research undertaking. The data may be secured through mailed questionnaires or through face-to-face interviews.

Good and Scates, in discussing one type of survey, the descriptive-survey-status research, provide a type of definition:

> *. . . this method is essentially a technique of quantitative description of the general characteristics of the group. This approach to problem-solving seeks to answer questions as to the real facts relating to existing conditions. . . .*
>
> *Many survey-status studies emphasize present conditions with an implication of the idea that things will change. This vital interest in trends as the dynamics of status is in keeping with the general dynamic emphasis or*

outlook of present thought on research methodology. Although the status-survey study may be made as a matter of ascertaining facts, it is usually (and normally) made against a background of interests, purposes, and established values, so that the facts at once are seized upon by these mental backgrounds and employed in larger schemes of thinking or in application to specific problem situations.[1]

II. THE PRIMARY VALUES OF THE SURVEY

Knowledge of the current situation is valuable for a number of purposes. First, such knowledge can provide a basis of comparison if similar data are available from an earlier time. Trends or shifts can be noted and may provide clues for future action. The results of a survey undertaken to find out why professional staff members of the YWCA resigned their jobs, for example, was compared with a similar study done in 1926. The results of the 1958 study showed almost identical factors as did the earlier study. The committee, without the data collected, would not have believed that the same factors were still uncorrected in the present situation.[2]

Second, current weaknesses and strengths can be revealed through the knowledge of what the situation is presently. A study of the helping teacher in elementary school districts in the State of California was undertaken to determine, among other things, the nature of the responsibilities of this emerging position and the strengths and weaknesses of the position.[3]

Third, survey data are often used as the basis for making decisions. For example, with the continuing agricultural revolution has come the need for a different type of training for future agricultural workers in the State of California. As a basis for determining what the requirements were, a survey was conducted in 14 selected farm-center communities in 1956. From this initial survey and reports from other states has come the decision to undertake pilot studies that will ultimately develop into permanent agricultural business curricula in junior colleges.[4]

Good and Scates in discussing the value of the survey made the following comment:

A descriptive-survey study may be thought of in its relation to continuous (regular, periodical) reports in any country or industry. A survey is simply one of these reports, a cross-section at a given time, but it is usually of particular importance or presents special information; it may be the beginning of such reports or, if they are going as a series, may be extensive in character. Acting as an initiating agency the survey has a unique opportunity to do two things: (1) to establish the value of facts or to show their value, so that regular reports may then later be called for; (2) to center attention on the most important things to be reported; it is a great challenge to ascertain the central elements or the dominant and fundamental factors that will indicate the general conditions.[5]

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[1] Carter V. Good and Douglas E. Scates, *Methods of Research* (New York: Appleton-Century-Crofts, Inc., 1954), p. 551.

[2] Marie Updegraff, "Why Do They Quit?" *The YWCA Magazine* (June, 1959), 32.

[3] John William Wright, *An Analysis of the Emerging Position of Helping Teacher* (No. 13 of a Series Approved by the Committee on Research Studies, Los Angeles City School Districts, Los Angeles, California), May, 1958.

[4] S. S. Sutherland and O. E. Thompson, *Training Required by Workers in Agricultural Business and Industry* (Progress Report, Pilot Studies to Develop Junior College Curricula in Agricultural Business, California State Department of Education), 1957.

[5] Good and Scates, *op. cit.*, p. 552.

III. LIMITATIONS OF THE SURVEY METHOD

The survey method, by its very nature, does not provide directly the type of information about what is best. A picture of the most commonly found patterns in the contemporary situation is not necessarily a picture of what is best in the situation. There are, of course, instances where decisions are to be based on the concensus of the population surveyed. In much of the educational work, however, there is implicit in the research activity an endeavor to discover what is best or most appropriate. Data about the current situation are indeed helpful for clues as to possibilities for the future. The relationship, however, between "what is" and "what ought to be" is not a simple, direct one. Findings from surveys should not be used, therefore, to establish the best curriculum, the best program of activities, or the best practices.

A survey cannot probe into the causal factors influencing behavior or attitude. Some survey instruments are, of course, far more sensitive than others and do make an initial attempt at probing. As Good and Scates commented:

> *The descriptive-survey or normative approach has not characteristically delved deeply into interrelationships or causal factors. The typical survey has stopped with the disclosure of facts and a suggestion of relatively prominent possible connections between these facts and apparent causes, although more recently both educational and social surveys have shown an increased interest in the causes of the phenomena described.*[6]

There are limitations concerning the nature of evidence that can be secured. A survey can reveal how youngsters feel about the amount of homework they are getting in business mathematics; a survey will not reveal the effectiveness of the homework in increasing the learning of business mathematics. Through a survey, the attitude of students toward what kind of spellers they are can be determined; however, a survey cannot reveal how much skill the students possess in spelling difficult words.

The survey method, like other methods of research, is susceptible to limitations in the areas of sampling and adequacy of evidence gathered. The prevalence of such weaknesses demands that a few comments be made at this point.

An efficiently designed survey requires that a sample no larger than that needed to represent the population under study should be secured. In many educational surveys there is an attempt to solicit responses from the total population. Whether this is a wise way to undertake a survey is an appropriate concern. When the significant variables are known, an attempt should be made to employ sampling techniques.[7]

Another point in the process of completing a survey where attention must be given to the adequacy of the sample is at the time of the analysis of the returns. The investigator is plagued by the question: "Are those who respond to the questionnaire representative of the total group to whom questionnaires were sent?" Unless the investigator has evidence that the answer to the foregoing question is yes, he will not be able to make generalizations concerning the total group. An investigator cannot assume that his 20 or 30 or 40 per cent return represents his initial population. There are far too many instances when the assumption cannot be maintained. For example, in follow-up studies of graduates it is very probable that those who can report success in their after-graduation experiences will be most likely to return questionnaires. This same group may well evaluate their school experiences through rose-colored glasses.

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[6] *Ibid.*, p. 555.

[7] See Mildred Parten, *Surveys, Polls, and Samples: Practical Procedures*, Chapters VII, VIII, and IX, especially.

A few of the very disgruntled may be moved to respond. However, the many who don't return questionnaires should be encouraged to do so, or allowances need to be made for the silent ones. The caution noted in the review of a survey of the 1949 graduates of the Harvard Business School is one that should be common to many surveys:

> *More notes of doubt and bitterness would probably be heard if every member of the class had filled out the questionnaire. About 200 failed to do so, and (so alumni secretaries would speculate) this group probably includes most of the less successful members of the class.*
>
> *Among the missing may well be some who think Harvard was a great waste of time and who want nothing more to do with it.*[8]

Another weakness is the possibility of receiving inaccurate information for a variety of reasons. The respondent may be motivated to "look good" or to appear respectable. Furthermore, it is very possible that a person does not know even the facts about his own experiences. Payne made the statement:

> *The researcher can go astray by assuming that people are more aware of the commonplace than they actually are. The phenomenon of unobservance confronts us on every side. Its result is that answers come not in terms of facts as they exist but in terms of what the respondent thinks the facts ought to be. When we rely on the faulty memory of a cross section of people, the popular calendar designs, brands of beer, and breakfast foods appear even more popular than they are.*[9]

Jahoda, Deutsch, and Cook also comment on this topic:

> *Not only may there be lack of incentive to report openly one's beliefs, feelings, motivations, plans, and so on, but in addition there may be an inability to make such reports. As psychoanalysts have pointed out, many of our important beliefs and motivations are inaccessible or unconscious: not being aware of them, we cannot report them.*[10]

There must be tests made to determine the adequacy of the answers received. Such precautions will result in a more accurate interpretation of the data.

IV. PRELIMINARY CONSIDERATIONS IN PLANNING A SURVEY

Jahoda, Deutsch, and Cook succinctly identify the first step in a survey when they stated:

> *. . . the first step in a survey, as in any other research, is to define the question which the survey is to answer. Unless the objectives are specified sufficiently to ensure that the data collected are relevant to the question raised, the survey may not provide the desired information. . . .*[11]

A further confirmation of the need for giving attention to certain factors is contained in Parten's statement:

---

[8] "The $14,000-a-Year Man," *Fortune* (June, 1959), 116.

[9] Stanley Payne, *The Art of Asking Questions* (Princeton: Princeton University Press, 1951), p. 29.

[10] Marie Jahoda, Morton Deutsch, and Stuart W. Cook, *Research Methods in Social Relations* (Part I: Basic Processes; New York: The Dryden Press, 1951), p. 154.

[11] *Ibid.*, p. 50.

Designing, organizing, and conducting a survey is like establishing and running a business enterprise. Both require technical knowledge and skill, administrative ability, and specific experience or training in work similar to that being organized. . . . Only by carefully planning the survey from start to finish can reliance be placed upon the results and in many cases, will the findings ever reach the publication stage.[12]

Consideration 1: Has the problem to be studied been carefully stated? It is exceedingly important that the problem be clearly identified and stated so that there is no ambiguity about what the core of concern is to be. A statement of the problem together with a statement of the purpose will lay the groundwork for the further development of the plan of procedure. A problem carefully envisioned and identified should be stated in a hundred words or less in such a way that its dimensions are clear to the competent reviewer.

Consideration 2: Has a thorough and thoughtful study been made of related materials and literature? Few surveys will represent exploration into a totally untapped field of knowledge or inquiry. The investigator charged with undertaking a survey should attempt to profit from the experiences of others. A careful and systematic search should be made for related references. A group of teachers who are planning to do a follow-up study of their high school graduates will profit from reading similar studies that have been completed. Through a careful analysis of what has been done, the teachers will not overlook areas of relevance to the investigation under consideration. A review of the instruments used in securing data will be helpful to devising a more useful instrument for the investigation contemplated.

The investigator must also study the related theoretical material available in libraries. A survey to be significant must reflect the very best evidence and theory that are available to date. To begin a survey on the motivations for college possessed by high school freshmen before reading and studying the more relevant books and monographs on the subject is to fail to achieve the potential values of such a survey.

Every undertaking in the educational field ought to, in some respects, extend our basic knowledge or provide empirical evidence to confirm theories currently tenable.

Consideration 3: Is the survey method most appropriate for the problem to be investigated? The survey method is not necessarily the one that is appropriate for the problem under investigation. In fact, a survey may add little enlightenment to the problem under study. For example, if a school is interested in finding out how the family influences the occupational aspirations of students, the investigator might feel that a survey among a sample of high school students would provide the data desired. However, a more careful study of the information sought might lead the investigator to a realization that a more valuable method might be an intensive interview study where it would be possible to probe into the somewhat complex cluster of factors that influence young people in the interest they show in an occupational field.

A school may be interested in knowing if one method of teaching basic principles of accounting is more effective than another method. A survey to find out what method the schools in the state use and to determine the final results on an objective examination would indeed not be the effective way to find an answer to the problem. An experiment, carefully designed and executed, would be the method appropriate to the problem.

---

[12] Parten, *op. cit.*, p. 48.

Consideration 4: Are the data desired unavailable? It is important to make a careful search of sources for the data that are desired. Many a high school principal interested in knowing what courses are offered in other schools or the number of students taking particular courses has devised a questionnaire and mailed copies to a sample of the schools. He could have received the information in many instances from his state department of education where enrollment data are assembled, thus saving himself as well as other school officials time and effort.

Few people know, for example, that the Census Bureau will compile a variety of statistics at the cost of the actual job only. The Census Bureau has a wealth of data that can be provided in summary form. (Information on individuals is confidential and, therefore, never divulged.)

Consideration 5: Have the sources for the desired data been carefully identified? Identification of the persons from whom data are to be gathered is important for the basis of decisions concerning the vocabulary level of the instruments to be used, the technique for eliciting data, and for other purposes. Also, the investigator must be sure that the sources identified are the ones from which he can get the most direct information. An investigator, for example, would not go to the teachers to find out what the enrollment of the school was —he would go to the principal who would generally have such data readily available.

Consideration 6: Has the scope of the undertaking been carefully delimited? The investigator must establish boundaries around his survey. It is, unfortunately, generally not practical to undertake an omnibus study. If the investigator is interested, for example, in studying the work experience of students he must establish the boundaries of his survey. Is "work experience" to apply only to that work activity that is under the auspices of the school? Or, is the investigator interested in knowing the gamut of work experience that high school students have had?

An investigator who wishes to find out the value of a camping experience for high school sophomores must decide whether the youngsters only are to be involved or whether their parents, teachers, and possibly others in the community are also to be included in the inquiry.

How much of the universe will have to be included to secure the kind of information sought? It is expensive, as well as unnecessary, to include every person in the universe in the survey. There are instances, of course, when there is an attempt to account for every person, but generally some number less than the total is sufficient to use as the sample. If a survey is to be done of talented youth in the secondary schools of California, for example, it will not be efficient or economical to send questionnaires to all youth who qualify for the classification "talented youth." The investigator must determine how many will be included. He may want to consider the different types of schools and decide to choose all talented youth in each of a certain number of schools. The schools selected would be those that would be representative of all the schools in the state.

If knowing how 10 per cent of a group feels gives a clear pattern of the feelings of the 100 per cent, there is no need to use the 100 per cent. Of course, the responsibility for determining adequacy of sample rests with the investigator. The bibliography includes several books on statistical methodology that will provide assistance on the subject of sample selection.

Consideration 7: Are adequate personnel and financial resources available? The undertaking of a survey requires skills of competent people in the area of

survey methodology. The competency required can be learned through independent study as well as through formal instruction or on-the-task experience. A well-envisioned survey will not develop at the hands of the uninitiated or unsophisticated investigator.

Surveys cannot be done without financial resources. Inadequate funds may result in curtailment of the potential value anticipated in an undertaking. At the same time, it is possible to make wise use of limited funds when the original planning is done with intelligent awareness of the budget allocations.

V. SOME ILLUSTRATIONS

A Community Study of Business and Distributive Occupations.[13] The Santa Monica Unified School District undertook an investigation of selected business and industrial establishments in the city for the purpose of determining:

a. The number of part-time job opportunities in the business and distributive field for high school and college students.
b. The number of full-time job opportunities in business and distributive occupations available to high school and college students at graduation.
c. The type of training which the employers of the community require for these various jobs.

The report identified the main questions of the undertaking as:

a. What are the full-time business and distributive job opportunities for high school graduates and for two-year college graduates?
b. What are the part-time business and distributive job opportunities for high school students and for students in a two-year college program?
c. To what extent will the community support a cooperative training program at both the high school and college levels in the business and distributive occupations?
d. To what extent will the community support a general work experience program at the high school level in the business and distributive occupations?
e. What are the basic training needs in the field of business and distributive occupations?
f. What is the general attitude of the employers concerning business and distributive education training?

The investigation was limited to the job opportunities and training needs of the following types of enterprises:

a. Retail trades (omitting all liquor stores, second-hand stores, and non-store retailing)
b. Wholesale establishments
c. Service establishments (omitting bars)
d. Professional offices
e. Industrial plants

The data were collected through personal interviews with officials in each of the five types of enterprises included in the investigation.

[13] Taken from a *Survey of Business and Distributive Occupations*, Santa Monica Unified School District, Santa Monica, California (June, 1957).

MONO 111

A Follow-Up Study of a Work Experience Program. To what extent has the work experience been a valuable phase of the student's education? Has the work experience program affected drop-out rates, vocational planning, social maturity, scholastic attainment, attendance records, citizenship records of students? Did the graduates of the program possess sufficient preparation in basic and special skills required for the jobs they were assigned to do? Is the work experience program one that should be continued? The foregoing questions initiated a survey by the Torrance Unified School District to determine the effectiveness of their work experience program.

The officials felt that although there were large numbers of students participating, the success or failure of the program must be assessed in other ways. The investigators prepared two questionnaires. One was to be used in eliciting reactions from students; the other was to be used in seeking opinions of employers.[14]

A Survey of a New Position in the School System. There was little available information concerning the relatively new position, that of helping teacher, in the elementary school districts in the state of California. There was a general feeling that more effective use would be made of personnel assigned to such a position if the duties, status, and related factors of the position were known.

The investigating personnel outlined a series of broad questions that would form the basis for the questionnaire. The questions were:

a. What school districts have establsihed the position of helping teacher?
b. What is the basis for selection and assignment of personnel to the position?
c. What specific duties and responsibilities are assigned to personnel in the position?
d. What factors have contributed to the establishment of the position?
e. What incentives exist or are provided to encourage teachers to apply for the position?
f. What modifications should be made in further development of the position?

Following a review of the related literature and interviews in three school districts that employed helping teachers, the committee developed a tentative questionnaire. A pilot study was made to determine the adequacy of the instrument developed. Districts where helping teachers were employed were identified through a preliminary questionnaire. Teachers in the position as well as administrators responsible for supervising the position were participants in the survey.[15]

The foregoing are merely three illustrations of the nature of surveys done in the educational setting. In each instance a lack of information that was believed to be valuable was the motivation for the investigation.

VI. SUMMARY

The survey is a useful method for securing certain types of data that a school may need to make wise decisions. Prerequisite to a successful survey is the need to answer adequately the questions:

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[14] From *A Follow-Up Survey Report of Distributive and Diversified Work Experience Education Programs*, Publication No. 39, Torrance Unified School District, Torrance, California (January, 1958).

[15] John William Wright, *An Analysis of the Emerging Position of Helping Teacher* (No. 13 of a Series Approved by the Committee on Research Studies, Los Angeles City School Districts, Los Angeles, California, May, 1958).

a. Has the problem to be studied been carefully stated?
b. Has a thorough and thoughtful study been made of related materials and literature?
c. Is the survey method most appropriate for the problem to be investigated?
d. Are the data desired unavailable?
e. Have the sources for the desired data been carefully identified?
f. Has the scope of the undertaking been carefully delimited?
g. Are adequate personnel and financial resources available?

SUMMARY HIGHLIGHTS
AND
EVALUATIVE CRITERIA

CHAPTER II—TYPES OF SURVEY INSTRUMENTS

I. EXPLORATORY SURVEY INSTRUMENT

Criterion—The exploratory survey instrument is designed to get initial or tentative answers to the problem.

0 1 2 3 4

Criterion Test Items

	Rating
1. Are most of the items open-ended so as to allow for freedom of response?	_____
2. Will the items elicit the gamut of responses that are appropriate to the topic under investigation?	_____
3. Will the items be intrinsically interesting to the prospective respondent?	_____
4. Is the instrument designed, primarily, to secure qualitative data?	_____
5. Is the instrument to be sent to persons who will give insightful answers?	_____

Examples (Pages 15–16)

II. FACT-FINDING SURVEY INSTRUMENT

Criterion—The fact-finding survey instrument is designed to secure facts about a particular situation.

0 1 2 3 4

Criterion Test Items

	Rating
1. Are the questions so worded as to secure objective information?	_____
2. Since the possible answers are already known to the investigator, have the items been so arranged as to make it easy for the respondent to check the appropriate blank or blanks?	_____
3. Do the questions secure objective information about a prevailing situation?	_____
4. Do the questions ask for information in the manner in which it is generally maintained?	_____
5. Are the questions stated precisely and will they mean the same thing to all respondents?	_____

Examples and Illustrations (Pages 18–20)

CHAPTER II

TYPES OF SURVEY INSTRUMENTS

Any attempt to classify survey instruments ends somewhat short of being satisfactory. Mutually exclusive and comprehensive, exhaustive categories have yet to be devised. Overlapping appears inevitable. Instruments have been classified according to content such as school-census taking, administrative practices, classroom teaching techniques, and so forth. A few moments of reflection will cause the reader to realize that such a categorization is cumbersome because of the wide variety of content possible for the survey method. Another classification system sometimes used is that based on the group for which the instrument is intended; for example, the instruments for administrators, for teachers, for students, for parents, and for other groups. This classification also seems somewhat inadequate since the variable "group for whom intended" does not appear to be as critical as other variables when instruments are under study.

For purposes of the discussion in this chapter, survey instruments are divided into four broad categories based on the general purpose for which the instrument is to be developed. The four categories are: the exploratory instrument, the fact-finding instrument, the opinion-attitude instrument, and the evaluative instrument. This categorization, too, does not fulfill the requirements of a totally satisfactory division. However, it appears adequate for the discussion.

There will be occasions when the instrument used is a combination of two or more types. When a survey attempts to discover what the current practices are in a particular education situation as well as opinions of what are the best practices, the instrument would be a combination of the fact-finding and opinion-attitude survey instruments. The investigator would, in such a case, give consideration to the criteria for the two types of instruments.

I. EXPLORATORY SURVEY INSTRUMENT

The exploratory survey, as the name implies, attempts to discover initial or tentative answers to the problem under discussion. Such an undertaking generally represents the first venture into the area under study. The evidence available about the topic is generally exceedingly limited. The possible answers are not known to the investigator. Therefore, the instrument used will have little structure.

CRITERIA FOR OVERALL PLANNING

The items are usually open-ended. Because of the paucity of evidence or information about the topic under discussion, the questions must be wide open so that respondents will have the freedom to answer in the fashion that seems appropriate to them.

The items must elicit the gamut of responses that are appropriate to the topic under investigation. The investigator must keep uppermost in his mind the question: "Will the question as worded cause the respondent to include all the aspects of the topic that are relevant?" A question such as, "How valuable do you feel your high school experiences were?" is not a good question if the investigator wants students to be sure to include their reactions to non-classroom activities as well as classroom activities. "High school experiences" will mean only the classroom experiences to many students.

The items must be intrinsically interesting to the prospective respondents. Open-ended questions demand considerable thought and attention on the part

of the respondent. People tend to dislike writing out answers to questions. Only those who are highly motivated to do so will take the time and effort to answer free-response items. It is, therefore, very important that the investigator choose respondents who possess the requisite interest.

The exploratory instrument is most useful for securing qualitative data. The nature of answers to free-response, or open-ended questions, makes quantification difficult, if at all possible. The value of this type of instrument in those instances where quantification is desirable is highly questionable. The exploratory instrument is often a phase of a pilot study that leads to an instrument with more structure and, thereby, possible quantification. The responses to the question, "Why did you decided to send your child to the Outdoor Science Camp?" may in a final instrument become a multiple-choice item:

> "Check the reason or reasons for sending your child to the Outdoor Science Camp:
>
> _____ He has shown interest in science
>
> _____ He had never attended a camp and we felt he should have such an experience
>
> _____ etc."

The reasons listed as alternatives were secured through an analysis of the free responses in the pilot or exploratory study.

Insightful persons should provide answers to the items. This criterion is somewhat related to the characteristic of need for interest on the part of respondents; however, there is a different focus here. If an investigator, for example, is interested in determining the behavior patterns of talented students in the classroom situation through an exploratory survey with the teachers, he will want to choose those teachers who are sensitive to such patterns in their classrooms. There would be many teachers who would not have observed such differences among the students.

Jahoda, Deutsch, and Cook made a comment about the experience survey, which is in many ways an exploratory survey, that is relevant to the foregoing discussion:

> *Research economy dictates that the respondents in an experience survey be carefully selected. The aim of the survey is to obtain insight into the relationships between variables rather than (as in some other types of surveys) to get an accurate picture of current practices or a simple consensus to the best practices. Thus the respondents must be chosen in terms of their likelihood of offering insightful contributions. In other words, a selected—not a representative—sample of people working in the area is called for.*
>
> *In an experience survey it is a waste of time and effort to interview people who have little competence, or little relevant experience, or who lack ability to communicate their experience.*[1]

EXAMPLES

A study entitled "The Bases on Which Teachers Are Recommended for Dismissal" used an exploratory instrument. It was the attempt of the investigator to analyze the experience of selected school administrators in relation to

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[1] Marie Jahoda, Morton Deutsch, and Stuart W. Cook, *Research Methods in Social Relations* (Part I: Basic Processes; New York: The Dryden Press, 1951), p. 37.

the universal problem of teacher retention and dismissal. Henderson's questions, which were listed one to a page, follow:

1. What steps are followed to reach a decision of dismissal in your school?
2. Please list the items most consistently brought to your attention as reason for dismissal.
3. In your relationship with teachers that were recommended for dismissal, please relate one experience that verified that the techniques used in dismissal were sound and successful.
4. In your relationship with teachers that were recommended for dismissal, please relate one experience in which the teacher involved challenged your procedures.
5. In cases of dismissal that have gone to the board or the court, what procedures have your school or your district established to be certain that the case would be well presented?
6. In cases of dismissal that have gone to the board or to the court, what points in procedure have been challenged by the teacher, the board, or the court?
7. In cases of dismissal that have gone to the board or to the court, what reasons have consistently stood up as being valid?
8. Please list all cases that have gone before the board for a hearing or to court for trial.[2]

What is being done for the gifted child in the school district was the basis for an exploratory study in the San Gabriel School District. The teachers to whom the questionnaires were sent were given a list of characteristics of gifted children. The list gave the teachers a kind of operating definition for "gifted child." The introductory statement and the items on the second page of the instrument follow:

1. We realize that a formal program has not been instituted in this district, but we are eager to know of any classroom procedures that you have found successful in working with children who meet the criteria outlined on page 1. Please feel free to make comments in any or all of the following areas:

a. Mathematics
b. Social Studies (Including science and all related subjects)
c. Aesthetic Development (Art, Music, Language Arts)
d. Personality Development (Development of ethical sensitivity—Moral and Spiritual Values) [3]

A review of the items included in the foregoing illustrative survey instruments will reveal the need for insightful, interested respondents. At the same time, it is clear that the questions allow considerable flexibility to the respondents and should give the investigator valuable qualitative data that may or may not be conducive to statistical analysis.

II. THE FACT-FINDING SURVEY INSTRUMENT

There is frequently the need to secure the "facts" about a situation. A superintendent of schools may want to know whether elementary school teachers or secondary school teachers have the longer teaching day; a principal may want to know to what extent the core curriculum is found in other junior high

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[2] From unpublished questionnaire forms and covering memorandum by Wayne L. Henderson, Mt. Diablo Unified School District, Concord, California.

[3] From a questionnaire prepared by the San Gabriel School District, San Gabriel, California (November, 1957).

schools in his state; the board of education may want to know how many children of school age and under school age live in the community. Indeed, the types of "facts" sought of school personnel would make a long list.

CRITERIA FOR OVERALL PLANNING

The information sought is objective. Would another person who had access to the source of evidence provide the same answers to the questions asked in a fact-finding instrument as did the actual respondent? The courses taught in the core curriculum in the junior high school, the number of children in a particular household, the salaries paid beginning teachers—these and similar data are readily ascertainable, providing, of course, that such vital figures are maintained by the groups in question. In contrast to such data can be cited data that are not objective in nature; for example, the values of the core program to the total school's curriculum as determined by the teachers, opinions concerning what the beginning teacher's salary should be, or the estimates of average family size made by a sample of the community's residents.

The possible answers to the questions are generally already known to the investigator. Unlike the exploratory survey instrument, wherein the investigator is probing for answers, the fact-finding survey instrument is aimed at finding out how many responses will be made on each item. The possible answers are known. When the question: "How many children are there in this household who are under school age?" is asked, it is possible to list the alternatives beginning with 0 and running to 5 or 6. The question, "Are you using high school students for part-time positions in your company?" will be answered with a _____ yes or _____ no.

Since answers are anticipated, questions may be dichotomous, as in the case of the yes or no question, or multiple choice, as in the case of the first example given in the preceding paragraph.

The primary purpose of the fact-finding instrument is to determine the prevailing situation. Census-taking is the aim of the fact-finding instrument. What is the range of salaries found among school maintenance personnel? How many different subjects do secondary school social studies teachers teach during a year? What are the non-class responsibilities of teachers? These are some of the general questions that will be basic to the formulation of the fact-finding instrument.

The questions should ask for information in the manner in which it is generally maintained. The investigator must have considerable knowledge of the manner in which data sought are maintained by the respondents so that answers to questions can be easily recorded. If figures must be derived, there is less tendency to cooperate. If the salary of the beginning clerical worker is wanted, the investigation should indicate the choices according to weekly wages if it is the practice in the particular community to pay such workers weekly.

The need to state questions precisely is of primary importance. To secure data that are comparable the investigator must be certain that the items in the fact-finding survey are interpreted in the same way by all the respondents. Items must be stated precisely. An investigator interested in knowing how many workers are in a number of different job classifications needs to specify whether he wants actual numbers or percentages. Respondents may, unless given instructions, respond with either numbers or percentages. Such varied returns would not be comparable. Many beginning workers when asked if they participated in an orientation program when they entered the companies in which they are employed said "no." However, further exploration revealed that they had had

an orientation program—it had been called an induction program, an introduction to your job, etc. Words that may have special meanings need to be illustrated or defined so that the complete meaning becomes clear to the respondent.

EXAMPLES

A fact-finding instrument may be one question only. Such a brief instrument is given in Illustration 1, page 18.

Shutt, in an attempt to determine the leave of absence policies for certificated personnel in California School Districts, submitted a fact-finding instrument to the school districts. Illustration 2, page 19, gives a portion of the questionnaire he used.

Schwartz devised a fact-finding instrument to discover the organization and administration of the junior high school instructional program. A part of his 9-page instrument is shown in Illustration 3, page 20.

ILLUSTRATION 1

TAX RATES [1]

Please insert your basic school tax rates for current operations, 1958-59. (Exclude special taxes for community services, retirement, bond redemption, etc.)

	Legal Maximum	Rate Levied
Elementary district basic tax rate	_____	_____
High school district basic tax rate	_____	_____
Junior college district basic tax rate	_____	_____

Information supplied by:

_____ Name

_____ Position

[1] Adapted from fact-finding survey of Oakland Public Schools, Oakland, California.

ILLUSTRATION 2

LEAVE OF ABSENCE POLICIES FOR CERTIFICATED PERSONNEL IN CALIFORNIA SCHOOL DISTRICTS [1]

.....

Section II. Special Types of Leaves

IMPROVEMENT LEAVES

Sabbatical—General Information

5. Who is eligible for sabbatical leave (provided the seven year requirement has been met)? (a)__Teachers. (b)__Administrators. (c)__Not granted.

6. Who makes the routine recommendations for approval of sabbatical leave applications? (a)__Director of personnel. (b)__Supt. (c)__Asst. Supt. (d)__Leave committee. (e) Other: _____

7. Number in order (Number 1 being highest) the basis for priority of applicants in granting sabbatical leaves. (a)__Length of service. (b)__Time since last leave. (c)__Purpose of leave. (d)__Date of application. (e) Other: _____

8. What percent of the total number of teachers are permitted on sabbatical leave at one time? (a)__1%. (b)__2%. (c)__3%. (d) Other: _____

9. Have applications ever exceeded the allow number? (a)__Yes. (b)__No.

10. Is a priority list established after leave requests are in to indicate an order for granting requests? (a)__Yes. (b)__No.

.....

15. What pay is received by administrators and supervisors on sabbatical leave? (a)__None. (b)__Pay minus replacement. (c)__One-half regular pay. (d)__Full pay. (e) Other: _____

16. What limit is placed on additional income earned by teachers on sabbatical leave? (a)__No additional employment permitted. (b)__Up to equivalent pay of district. (c)__No limit. (d) Other: _____

17. What written policies cover situations when sabbatical plans are interrupted by unforeseen events? (a)__None. (b)__Leave postponed. (c)__Cancelled. (d) Other: _____

[1] From questionnaire form used by Noel M. Shutt, principal, Los Angeles City School.

ILLUSTRATION 3

A Research Study on
The Organization and Administration of the
Junior High School Instructional Program[1]

. . . . . .

II. ORGANIZATION OF INSTRUCTION

Exploratory Courses in Practical Arts and Fine Arts

Courses offered to permit pupils to discover their interests and capacities to help guide them in their future educational program and vocational activities.

1. Exploratory Courses	Circle Grades	Less than 10 weeks	10-15 weeks	16-20 weeks	One Year
Shop classes—boys	7 - 8 - 9	____	____	____	____
Shop classes—coeducational	7 - 8 - 9	____	____	____	____
Homemaking classes—girls	7 - 8 - 9	____	____	____	____
Homemaking classes—coeducational	7 - 8 - 9	____	____	____	____
Music classes	7 - 8 - 9	____	____	____	____
Art classes	7 - 8 - 9	____	____	____	____
_____	7 - 8 - 9	____	____	____	____
_____	7 - 8 - 9	____	____	____	____

Have no exploratory courses in practical arts or fine arts (__).

2. Primary objective of shop courses for boys

(__) a. Pre-vocational training
(__) b. Vocational training
(__) c. Exploratory experience
(__) d. General education
(__) e. Other (specify) _____
_____

3. Primary objective of homemaking courses for girls

(__) a. Pre-vocational training
(__) b. Vocational training
(__) c. Exploratory experience
(__) d. Training for parenthood and family life
(__) e. General education
(__) f. Other (specify) _____
_____

. . . . . .

5. Features of your orientation program for new pupils

(__) a. Orientation presented in block-time classes
(__) b. Orientation presented in English classes

[1] Page 3 from the instrument used by Dave Schwartz, principal, Pacoima Junior High School, Pacoima, California, for a Research Study on the Organization and Administration of the Junior High School Instructional Program.

Page 1 of the Distributive Education Survey form devised by the San Jose Unified School District and the Bureau of Business Education, California State Department of Education, provides the purpose of the undertaking, plus a series of fact-finding questions. A part of the first page of the 2-page form is reproduced in Illustration 4, below.

III. THE OPINION-ATTITUDE SURVEY INSTRUMENT

Numerous occasions arise in the American school system when there is need to determine how individuals feel on some issue. What do students think of the extra-class activities provided for them? What do parents think of the homework assignments their youngsters receive? How does the beginning teacher feel about the resources that are available to him? These are merely illustrative of the many questions that arise daily that initiate the opinion-attitude type of survey.

Whereas the fact-finding instrument seeks objective, easily-verifiable data, the opinion-attitude survey instrument seeks subjective data that provide an accurate description of current feelings and opinions.

CRITERIA FOR OVERALL PLANNING

The instrument must be developed on the assumption that the respondents have in some fashion developed an opinion or attitude toward the topic under study. This assumption must be ever evident in the planning for an opinion-attitude survey. The validity of the responses depends on the fulfillment of this requirement. Teachers in Los Angeles would not be asked to express an opinion on a core program for the schools of southwestern Kentucky.

ILLUSTRATION 4

Business Men: Section No. _____

Distributive Education Survey [1]

This survey is being made by the San Jose Unified School District and the Bureau of Business Education, California State Department of Education.

The purpose of this survey is to determine the extent to which a Distributive Education Work Experience program would be valuable to the business men of San Jose and to the students of the San Jose high schools.

In a Distributive Education Work Experience program the student takes a business course related directly to work in a store. The content of the course frequently includes such topics as working relationships, personality and sales, good working habits, good-will and its meaning, and the handling of confidential business affairs. While taking the course the student works in some retailing or service establishment for an average of 15 or more hours per week (includes Saturday work). The student is checked periodically to ascertain if the best principles of salesmanship are being applied by the student to the job. This checking is done by a representative of the school who is especially trained by education and actual work experience for this type of coordination.

Students are given school credit toward graduation and are paid an hourly wage by the employer.

The cooperation of your establishment in helping us with this survey will be of benefit to the school district. And we hope through the results of the survey we may find ways to help you.

[1] From *A Distributive Occupations Survey*, San Jose, California. Conducted and reported by Ross W. Atkinson, Co-Sponsors, San Jose Unified School District and Bureau of Business Education, California State Department of Education, Spring Semester, 1957.

1. Name of Business: _____
2. Person interviewed and position: _____
3. Address: _____ High School Area: _____
4. Number of full-time sales employees: M_____ W_____
5. Number of part-time sales employees: M_____ W_____

.....

9. Number of full-time clerical employees: M_____ W_____
10. Number of part-time clerical employees: M_____ W_____

Which age groups are you willing to hire? 16-19, 19-22, 23-40, 41-up.

The items must be sensitively developed to elicit the most accurate opinion or attitude of the respondent. The questions must not be so stated that one answer more than another would tend to be selected. Such biases will indeed distort the opinions or attitudes of the respondents.

Another consideration at this point is the need to be sure to include the range of possible opinion that might be expressed by the respondents. This would include making provision for the expression of "no opinion," unless, of course, there is the desire to force the respondent to express a specific opinion.

Furthermore, there must not be in the letter accompanying an opinion-attitude schedule any statements that cause the respondent to feel that one particular set of opinions would be favored.

Respondents must have complete freedom to answer truthfully. To be valid, the responses must be made with complete freedom. The respondent must believe that there will be no repercussions to what he records as his opinions. An opinion survey in which the respondents feel coerced is indeed a farce. If the principal of a junior high school, for example, wishes to know how the teachers feel about the new core program, he must establish the fact unequivocally that he desires their real feelings. If he has all along the way been a staunch supporter of the program, he may find it somewhat more difficult than it would otherwise be to establish the proper *rapport* to secure real feelings on the subject under study.

The items must be organized in a psychologically appealing order. The task of the investigator of an opinion or attitude survey includes the ordering of the items in a manner that will aid the respondent in thinking about the subject of the instrument. Parten, in discussing question arrangement, made the comment:

> *For example, in one study of the attitudes of people toward advertising, it was possible to get the respondents to think in terms of advertising toward which they approved without actually mentioning advertising. They were asked about dresses. Then when the question on advertising was asked they thought of dress advertising and responded more favorably to the idea of advertising than when the dress question was omitted. The question or questions preceding a given question may produce a certain "set" in the informant and cause him to reply very differently from the way he might if the preceding questions were different.*[4]

[4] Mildred Parten, *Surveys, Polls, and Samples: Practical Procedures* (New York: Harpers, 1950), p. 213.

EXAMPLES

Illustration 5, below, and Illustration 6, page 24, are excerpts of opinion-attitude survey instruments. Illustration 5 is a part of page 1 of an instrument used to determine how well the high school met some of the needs and interests of students. A Parent Attitude Inventory is shown, in part, in Illustration 6. The purpose of the survey as given in the instrument was to obtain an indication of parent's attitudes toward children.

Illustration 7, page 25, is a portion of Poll No. 2 used by the Metropolitan School Study Council of New York City to determine what the public felt the schools could do.

ILLUSTRATION 5

My Opinions [1]

1. As you think back over the past school year, how would you rate the help you received from your teachers in each of the areas listed below?

Very Helpful	Helpful	Little or No Help	
_____	_____	_____	a. Selecting my high school subjects
_____	_____	_____	b. Planning my life work (vocational guidance)
_____	_____	_____	c. Selecting activities that interested me (athletics, clubs, dramatics, etc.)
_____	_____	_____	d. Preparing to meet requirements for getting into college
_____	_____	_____	e. Learning how to go about getting a job
_____	_____	_____	f. Helping me learn how to solve problems of a personal kind (worries, home problems, getting along with others, etc.)

2. As you think back over the past school year, how would you rate the help you received from your counselors in each of the areas listed below?

Very Helpful	Helpful	Little or No Help	
_____	_____	_____	a. Selecting my high school subjects
_____	_____	_____	b. Planning my life work (vocational guidance)
_____	_____	_____	f. Helping me discover my abilities, interests, and weaknesses
_____	_____	_____	g. Helping me learn how to solve problems of a personal kind (worries, home problems, getting along with others, etc.)

[1] From form used by Long Beach Unified School District, Office of the Director of Research, June, 1958.

ILLUSTRATION 6

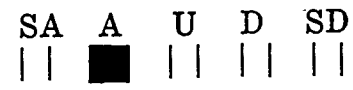
PARENT ATTITUDE INVENTORY [1]

Directions

This inventory consists of 120 statements designed to sample opinions about parent-child relations. There is considerable disagreement as to what these relations should be; therefore, there are no right or wrong answers. What is wanted is your individual feeling about the statements. Read each statement and decide how YOU feel about it. Then mark your answer on the space provided on the answer sheet. Do not make any marks on this booklet.

If you strongly agree, blacken space under "SA"

If you agree, blacken space under "A"



If you are undecided or uncertain, blacken space under "U"

If you disagree, blacken space under "D"

If you strongly disagree, blacken space under "SD"

SA—Strongly agree
A—Agree
U—Undecided or uncertain
D—Disagree
SD—Strongly disagree

1. Most children are obedient.
2. Children who "act smart" probably have too high an opinion of themselves.
3. Minor disciplinary situations should sometimes be turned into jokes.
4. Shyness in children is preferable to boldness.
5. Most children don't appreciate what a parent does for them.
6. A child's companionships can be too carefully supervised.
7. A child should keep his likes and dislikes to himself.
8. It sometimes does a child good to be criticized in the presence of other children.

. . . . . .

13. There is too great an emphasis upon children "keeping quiet."
14. A child's failure is seldom the fault of the parents.
15. There are times when a parent cannot be blamed for losing patience with a child.
16. A parent should never discuss sex problems with the children.

[1] From a *Parent Attitude Survey*, El Segundo Unified School District, El Segundo, California, March 19, 1957.

ILLUSTRATION 7

A STUDY OF PUBLIC OPINION ABOUT SCHOOLS[1]

.....

Poll No. 2

What Do You Think Schools Could Do?

We want to find out what you think public schools could do. We do not necessarily mean the schools which you attended or the schools which your youngsters attend. We are interested in schools as they could be if they were using the best practical methods of instruction that you know about. What could schools do over a period of time about the problems listed below?

Read each statement and put a circle around the letter or letters which complete(s) the sentence.

N—Nothing AL—A Little M—Much VM—Very Much

1. Schools could do N AL M VM to improve the physical health of youngsters.
2. Schools could do N AL M VM to improve the mental health of youngsters.
3. Schools could do N AL M VM to prepare youngsters who, as adults, will be able to manage their own family business affairs.
4. Schools could do N AL M VM to show youngsters how to spend leisure time happily.
5. Schools could do N AL M VM to aid students to select the vocation for which they are best suited.
6. Schools could do N AL M VM to produce an American people who can "see through" propaganda and misleading information.
7. Schools could do N AL M VM to produce an American people who can vote critically and intelligently.
8. Schools could do N AL M VM to improve interfaith and race relations.

.....

15. Schools could do N AL M VM to give the American people an understanding of and respect for law.
16. Schools could do N AL M VM to give youngsters an understanding of what is required of them as young people and later as adults in happy home and family living.

[1] From form *A Study of Public Opinion about Schools*, prepared by Metropolitan School Study Council, New York, New York.

IV. THE EVALUATIVE SURVEY INSTRUMENT

The judgment of participants or observers is often needed to make wise decisions about further action. Educational bodies are interested in answers to questions such as: "To what extent has the workshop fulfilled the expectations of the participants?" "How well does the supervisor feel the new teacher adjusts to the requirements of his job?" "How valuable do graduates feel their high school education was in preparing them for the jobs they are now in?"

An evaluative survey, on careful analysis, is in many respects a type of opinion-attitude survey. However, there is one significant difference that seems to justify separate treatment of the evaluative survey. This difference is: an evaluative survey attempts to assess the worth, the value, or the success of some phenomenon. In other words, a value judgment, an appraisal, is the core of the responsibility of the respondent to an evaluative survey instrument.

CRITERIA FOR OVERALL PLANNING

The pertinent factors concerning the phenomenon to be evaluated must be identified. Possibly, the most critical consideration of the investigator in an evaluative survey is to isolate the factors that will provide a valid appraisal. In any situation, there will be a multitude of factors that in some manner influence the activity. To choose the relevant factors demands a lucid image of the dominant influences. If an investigator wanted to devise an instrument for the evaluation of the beginning teachers in the school district, it is his first task to determine what aspects of the new experience should be questioned.

The number of points at which the respondent may evaluate should be no greater than the degree of differentiation possible in the situation. If the respondents have had occasion to determine only whether or not the person being evaluated accomplished the task, the items might have no more than two alternatives. One alternative would indicate that the individual did complete the task; the other that he did not. Now, if the situation were different and the observer was able to determine how well the task was completed, the investigator will have justification for asking the quality of the work done on a three-, four-, or possibly, five-point scale.

The number of differentiating points should be as few as is necessary to provide an adequate evaluation. As the number of points identified on the continuum increases so increases the difficulty of making judgments. It is much simpler to say that Student A is a satisfactory student and Student B is not satisfactory than it is to say that Student A should be given a rating of 7 on a 10-point scale, while Student B should be given a rating of 3 on the same scale. To determine if Student A belongs really at 6 or 7 or 8, or even 9, is far more difficult than to merely say he is satisfactory.

A corollary to the difficulty of determining the most accurate evaluation is the difficulty of achieving a high degree of reliability in evaluations. To use the same illustration, if a group of 10 teachers were asked to evaluate 20 students as satisfactory or unsatisfactory, there is considerable assurance that most of the 20 students would be evaluated in the same way. However, if we increase the points from two (satisfactory—not satisfactory) to ten, our responses would show considerable variance. The assumption here is that the evaluations by each of the ten teachers would be made independently of the others. Somewhere between the two, which may not provide sufficient differentiation, and the ten, which may be far too many for reliable evaluations, the investigator must choose a number that strikes a satisfactory balance between precision of evaluation and reliability of the evaluation. Three, four, and five gradations are most commonly used for evaluative instruments.

The items should be written so as to preclude the possibility of the "halo effect" in the responses. There has been considerable evidence to support the observation that a person in evaluating another individual is often influenced by his general feeling toward the individual and tends to evaluate the person in the same manner on a variety of factors. As one technique to discourage such a generalized evaluation, the investigator can list the points in different orders, as illustrated in the following two questions:

How much initiative has the student shown in the work he has done in your office?

_____ no opportunity to observe
_____ none
_____ a limited amount
_____ a reasonable amount
_____ a great deal

How much responsibility has the student assumed in doing the work in your office?

_____ a great deal
_____ a reasonable amount
_____ a limited amount
_____ none
_____ no opportunity to observe

EXAMPLES

In an attempt to discover how parents of Palo Alto rated the schools, an evaluative instrument was mailed to a random sample of the parent population. Page 1 of this 2-page form is given in Illustration 8, page 29.

Page 1 of a 3-page evaluation form used to determine the effectiveness of the beginning teacher in the Petaluma City Schools is shown in Illustration 9, page 30.

In Illustration 10, page 31, are included the first and fourth pages of the evaluative instrument used to determine criteria for evaluation of student newspapers in public junior colleges.

V. SUMMARY

An overall consideration of the criteria appropriate to the survey instrument to be developed is exceedingly important. The details of construction must be undertaken within the framework of the general criteria if the final instrument is to be effective. The criteria identified in this chapter are restated here:

The Exploratory Survey Instrument

1. The items are usually open-ended.
2. The items must elicit the gamut of responses that are appropriate to the topic under investigation.
3. The items must be intrinsically interesting to the prospective respondents.
4. The exploratory instrument is most useful for securing qualitative data.
5. Insightful persons should provide answers to the items.

The Fact-Finding Survey Instrument

1. The information sought is objective.
2. The possible answers to the questions are generally already known to the investigator.
3. The primary purpose of the fact-finding instrument is to determine the prevailing situation.
4. The questions should ask for information in the manner in which it is generally maintained.
5. The need to state questions precisely is of primary importance.

The Opinion-Attitude Survey Instrument

1. The instrument must be developed on the assumption that the respondents have in some fashion developed an opinion or attitude toward the topic under study.
2. The items must be sensitively developed to elicit an accurate opinion or attitude of the respondent.
3. Respondents must have complete freedom to answer truthfully.
4. The items must be organized in a psychologically appealing order.

The Evaluative Survey Instrument

1. The pertinent factors concerning the phenomenon to be evaluated must be identified.
2. The number of points at which the respondent may evaluate should be no greater than the degree of differentiation possible in the situation.
3. The number of differentiating points should be as few as is necessary to provide an adequate evaluation.
4. The items should be written so as to preclude the possibility of the "halo effect" in the responses.

ILLUSTRATION 8

PARENT EVALUATION OF PALO ALTO SCHOOLS [1]

Directions: Please rate the Palo Alto School District as YOU see it by placing an "X" in the appropriate square after each of the items listed below.

We do not expect that all parents will make their decisions on the basis of complete information, but we do want your opinion of our schools based on whatever information you presently have.

	SUPERIOR better than most schools	GOOD better than many schools	AVERAGE about the same as most schools	BELOW AVERAGE not as good as many schools	POOR not as good as most schools
1. Teaching reading					
2. Teaching arithmetic					
3. Teaching creative writing					
4. Teaching writing skills, such as spelling, punctuation, grammar					
5. Teaching social studies, such as history, geography, economics					
6. Teaching science, natural and physical					
7. Teaching good study habits and study skills					
8. Teaching library and reference techniques					
9. Developing in students a favorable attitude toward thinking					
10. Encouraging critical thinking					
11. Choosing good teachers					
12. Providing adequate materials in the way of books, art supplies, libraries, audio-visual aids					
13. Offering special services, such as psychologist, audiologist, speech therapist, dentist					

[1] From form *Parent Evaluation of Palo Alto Schools*, prepared by the Palo Alto Unified School District, Palo Alto, California.

ILLUSTRATION 9

PETALUMA CITY SCHOOLS
Petaluma, California

TEACHER EVALUATION [1]

Name _____
School _____
Evaluation Year _____
Date _____

KEY
1. Very good
2. Satisfactory
3. Improvement needed

_____ Evaluation by Principal
_____ Joint Evaluation by Teacher and Principal

Suggestions for Use

This instrument is:

1. to be presented to new teachers immediately
2. to be accompanied by a conference with the principal
3. to be used by all probationary teachers twice each school year and by permanent teachers each three years, or more often if requested by them
4. designed by teachers for the improvement and growth of the individual

Personal characteristics—A professional teacher has a wholesome personality, a sound character, enjoys good physical and emotional health, and shows that he:

_____ displays real enthusiasm in teaching
_____ is self-assured with humility
_____ is adaptable and can accept new ideas
_____ has a good sense of humor
_____ is objective about himself
_____ is punctual
_____ is free from annoying mannerisms
_____ exercises initiative
_____ is consistent
_____ uses good English
_____ has good physical health
_____ has high ethical and moral standards
_____ is well groomed and dresses appropriately
_____ is friendly, enthusiastic, tactful
_____ has dignity, poise, and self-control

Teacher-Staff Relationships—A professional teacher is a good team worker who is conscious that his attitudes affect all others on the school staff. He is loyal to the school's program and policies and gives evidence that he:

_____ is a good team worker
_____ shows responsibility toward the whole school as well as to own class
_____ is friendly to the whole staff
_____ is able to disagree pleasantly
_____ does not talk unfavorably about other school personnel, parents, or students in an unprofessional way

[1] From form *Teacher Evauation*, prepared by the Petaluma City Schools, Petaluma, California.

ILLUSTRATION 10

CRITERIA FOR EVALUATION OF STUDENT NEWSPAPER
in Relation to Educational Objectives
of the Public Junior College [1]

Inquiry Form

Data Regarding Evaluator. Please provide the following information:

Name _____ Date _____

Position _____

Address _____

Introduction. On the following pages are criteria for evaluating a student newspaper in terms of major educational objectives of the public junior college. It is intended that these criteria later be developed into a check list which may assist newspaper staffs, advisers, deans of student personnel, and others in determining whether such publications contribute to the over-all functions of the institutions they represent.

As a leader in either junior college education or in the field of journalism, you are asked to help decide which "evaluative criteria" are most important, which should be eliminated, and whether any additional criteria should be included.

Instructions. Please take the following steps in the examination of this material:

a. Read the criteria and circle one of the numbers to the right of each item in accordance with its approximate value to the particular junior college objective. The key for this purpose is as follows:

5—Of particular importance to the objective
4—Of "above average" significance
3—Of "fair" value
2—Of some use to objective
1—Of no importance to junior college objective under consideration; should be eliminated from criteria.

b. In the event that you wish to suggest additional criteria, please list them at the end of the section to which they are related and give each item a weighting of from 2. to 5. in the same manner that you have already marked the other criteria. Use additional sheets of paper if necessary.

c. Make any general observations, suggestions, or criticisms on the last page.

d. Return the criteria list and comments to Johns H. Harrington, Los Angeles City College, 855 N. Vermont Ave., Los Angeles 29, in the stamped, self-addressed return envelope which is enclosed.

Summary of results. Thank you very much for your valuable guidance! A summary of the results of this study will be sent to you if you wish. However, it may be six months or more before the study is completed.

---

[1] From form *Criteria for Evaluation of Student Newspaper*, developed by Johns H. Harrington, Los Angeles City College, Los Angeles, California.

II. VOCATIONAL EDUCATION

(Terminal Objective)

The student newspaper contributes to the achievement of the junior college objective of vocational education by publishing:

	Circle one (values range from 1, "of no importance," to 5, "of particular importance):
1. Descriptions of vocational curricula	1 2 3 4 5
2. Descriptions of opportunities in vocational fields	1 2 3 4 5
3. Reports of current employment requirements in vocational fields	1 2 3 4 5
4. Announcement of assistance to high school students and/or parents in making plans for completing vocational curricula	1 2 3 4 5
5. Announcement of counseling or other services provided by the junior college to assist incoming students in planning programs of training for vocational fields	1 2 3 4 5
6. Descriptions of activities of campus organizations concerned with students majoring in two-year terminal curricula, such as:	
a. Air Transportation	1 2 3 4 5
b. Business	1 2 3 4 5
c. Dental Assistants	1 2 3 4 5
d. Radio Broadcasting	1 2 3 4 5
e. Secretarial Science	1 2 3 4 5
Other (List coverage of any other groups which contribute to vocational objective.):	
f. _____	1 2 3 4 5
g. _____	1 2 3 4 5
h. _____	1 2 3 4 5
7. Reports of visits by representatives of local business or industry to interview or assist prospective employees	1 2 3 4 5
8. Announcement of work-study arrangements, employee benefits, or other special advantages offered by certain vocational fields	1 2 3 4 5
9. Announcement of performance or recognition of junior college graduates as a group in certain businesses or industries	1 2 3 4 5
10. Reports of activities of alumni of the junior college who are employed by business and industry	1 2 3 4 5

SUMMARY HIGHLIGHTS
AND
EVALUATIVE CRITERIA

CHAPTER III—WRITING ITEMS FOR SURVEY INSTRUMENTS

Criterion Test Items

	Rating
1. Have the words used for conveying the intent of a particular question been carefully chosen and tested?	_____
2. Has the general vocabulary level and the familiarity of the respondents with the topic under investigation been kept in mind as the words used were selected?	_____

Grammar

Criterion—The principles of good grammar are not violated in writing the items for the survey instrument.

0 1 2 3 4

Criterion Test Items

	Rating
1. Are the alternatives listed for multiple-choice items parellel in construction?	_____
2. Are all statements complete?	_____
3. Is there a consistency of grammatical person in the questions?	_____

Physical Arrangement of Items

Criterion—The physical arrangement of the items will be attractive to the respondent and will expedite the tabulation of the data when the survey instruments are completed and returned.

0 1 2 3 4

Criterion Test Items

	Rating
1. Has sufficient space been allowed for write-in answers?	_____
2. Are the items so arranged that the answers appear in as straight a column as possible?	_____
3. Has a variety of type styles been used for emphasis and for ease in reading items?	_____
4. Is the finished instrument neat and orderly?	_____
5. Does the finished instrument convey the impression that it is relatively easy to complete?	_____

CHAPTER III

WRITING ITEMS FOR SURVEY INSTRUMENTS

The art of writing items that are effective is not, unfortunately, one that is easily acquired. Unlike Humpty-Dumpty, who could make words mean anything he wanted them to mean, the investigator must set as his goal the use of words that will mean the same thing to all who read them. Of course, such a goal is actually achieved in few instances since the varied backgrounds with which individuals read words inevitably influence their interpretations. However, attention and effort directed toward writing clear, succinct items will add immeasurably to the success of a survey.

I. TYPES OF ITEMS

OPEN-ENDED QUESTIONS

The open-ended questions, also identified as the free-response or free-answer questions, are simply questions which are used most frequently to elicit answers that are not in any way influenced by possible alternatives. There are occasions when the investigator is interested in discovering what people believe on their own. In such cases this type of question is especially useful. For example, if an investigator wants to determine the personal attributes personnel directors feel are most important in the young people they hire, the investigator may choose to use an open-ended question. He may be more concerned with the attributes named when no list is provided than he is in tallying the number of times each attribute on a given list is checked.

Because open-ended questions require considerable writing on the part of the respondent, they tend not to bring as many returns as do questions where checking or underlining only is required. The open-ended question should be avoided if the investigator wishes to get comparable data. Respondents may fail to include aspects of their feelings or knowledge because they feel these aspects are obvious or so common that the investigator would not be interested in them.

If the questions are to be used for interviews, the open-ended type is often very satisfactory. The somewhat ambiguous open-ended question is helpful in probing beliefs, opinions, or knowledge possessed by the interviewee. Since people tend to enjoy talking far more than writing, the extent of response is no objection in the interview situation.

The meaning of the question to the respondent must be considered. Although there are occasions when the investigator is curious about the responses of individuals to an ambiguous question, generally the investigator has in mind a particular type of information. It is important that the investigator answer adequately the question: "What will these words mean to the respondent?"

Example: "How far is your company from downtown?" _____

Comment: What did the investigator want? Did he want to know the mileage? the time it would take to travel by bus? by car? on foot? Would the respondent know where "downtown" began? or ended? Did the investigator mean by "downtown" the corner of Main Street and Cross Town Highway where the city buses load and unload passengers for the mid-town shopping area? Or did he mean anywhere in the central shopping area, the boundaries of which seem to be growing less exact as the town

rapidly expands? A possible item to secure the information desired is:

"How much time is required to drive from your company to the Mid-Town Parking Center?

_____ less than 30 minutes
_____ from 30 minutes to less than an hour
_____ an hour or more"

Example: "What plans do you have for what you want to do when you graduate from high school?" _____

Comment: This is the first question of a section headed "Vocational Ambitions" on a counseling survey questionnaire. What does the investigator *really* want to know? How valuable is it to know "plans" without finding out "What you want to do." Can the investigator assume that the respondent in telling about plans will either deliberately or inadvertently reveal what it is he wants to do? If the latter is important, should it not be elicited in a more direct manner? Two items might more effectively secure the information desired. Suggested items to replace the one given in the example are:

"What would you like to do vocationally when you graduate from high school?" _____

"What plans have you made to pursue your vocational desires?" _____

Example: "What was your first full-time job after high school graduation?" _____

Comment: Is the investigator wanting to know the first permanent full-time job when the respondent began his working career or the first full-time job immediately accepted upon high school graduation? Will the graduate who took a temporary full-time job for the three months of summer record that job or will he list the job he took on a permanent basis upon his graduation from the agricultural program in the junior college? If the investigator is interested in knowing the type of position secured by the students who did not pursue further education, the question might be phrased:

"Did you begin full-time work when you graduated from high school?" _____ Yes _____ No

"If you checked 'yes' in the foregoing question, please indicate what your first full-time job was." _____

(This second item could also be a multiple-choice one with the jobs most commonly filled by high school graduates listed.)

The superiority of the open-ended question for seeking the data must be established. Although the appropriate situations when this type of question can be used are implicit in the introductory discussion, there is merit in further comment at this point. The key question that the investigator should ask himself in conjunction with this criterion is: "Could this question be converted into a two-way or multiple-choice item and achieve the same result as this open-ended question?" A good general rule for the mail survey instrument is: If the question as a multiple-choice or two-way item is as good as the open-ended item, then one of the former types should be used.

Example: "What type of course are you taking?" _____

Comment: This question appeared on a survey instrument mailed to former students of a junior college. Could not the investigator have listed the most common "types of courses" students generally pursue in college and thereby have a better item? One further ambiguity is what the investigator means by "type of course." Could he mean a two-year, a four-year, degree-granting course or a liberal arts, pre-medical, or history course? A multiple-choice item with the curricula offered in colleges would be a more appropriate item. The following is a suggestion: "In what curriculum are you now enrolled?

_____ Engineering
_____ Elementary Education
_____ Liberal Arts"

etc.

Example: "How are you occupied?" _____

Comment: From the nature of the survey instrument from which this item was taken, it appears that the investigator wanted to know the present occupation of the respondent. Answers such as: "going to school," "working for A & B Company," "doing secretarial work," "in college," etc., might very possibly appear in the questionnaires returned. The investigator might have intended classifying present occupations according to some scale of job status. With such a variety of responses, this would be difficult to do. A multiple-choice item in which the level of response would be clear would be a far more effective item. A possible phrasing for the item is:

"What is your present occupation?

_____ Clerical worker
_____ Gasoline station attendant
_____ Salesclerk"

etc.

Complex questions should be avoided. A question should ask for one item of information. As questions become more complex, the possibility of an inaccurate interpretation increases markedly. The investigator should not ask or expect the respondent to go through a series of mental calisthenics to arrive at the desired answers.

Example: "How many periods are special counselors allotted in the school day to individual counseling and what is the period time in

minutes?" _____

_____

Comment: The information desired should be asked for in two or more separate questions. The investigator should first find out if individual counseling is scheduled as a separate activity for the counselors. Then would come the question of how much time is spent in the activity, if it is provided. The length of the class period should be a still separate item. Three possible items to secure the information desired are:

"Is individual counseling scheduled as a separate activity for your special counselors?" _____ Yes _____ No

"If you answered the foregoing question by checking 'yes,' please indicate the number of class periods allotted for the individual counseling.

_____ One period per day
_____ Two periods per day
_____ Three periods per day
_____ Four periods per day"

etc.

"How long is a class period in your school?" _____
_____ (in minutes)

Example: "On the average (one month period) about how much time in hours and minutes does your child devote to homework each weekend period (Friday evening through Sunday evening)?"

_____

Comment: Now, the parent who attempts to tackle this question must think: "How much time does Janie spend on her homework on Friday evening, Saturday (day and evening), and Sunday (day and evening)? Does she spend about the same amount of time each week? Or, in one month, is she likely to be preparing for some sort of intermediate examination period?" Further thought of the parent attempting to answer the question could be imagined. Eventually, the keen parent comes to the question: "Am I to record the *average* amount per week, per day of the weekend, or the average for the month?" A far better question would have been one that asked the parent to record the amount of time Janie spent in studying *last* weekend. The investigator could determine the average per day, if he wanted it. The investigator's question might well be:

"How much time would you estimate your child devoted to homework during last weekend? (Friday evening through Sunday evening)" _____(hours)

The scope of the question must be indicated. The investigator cannot expect his respondent to go any further with his answer than the question implies. Questions do not necessarily stimulate the respondent to tell all. Many questions can be answered by the reluctant one with a "yes" or "no." If the investigator wishes to know more, he should ask for more.

Example: "Did you have a hard time getting a job?" _____

Comment: If the investigator felt that this question would uncover the difficulties beginning workers have when seeking employment, he is going to be disappointed. A great number will answer "yes" or "no," and the "why" will remain a mystery. Two questions that would secure more complete answers from the respondents are:

"Did you have any difficulty in securing a job when you graduated from high school? _____ Yes _____ No

"If you checked 'yes' in the preceding question, please discuss briefly why you believe you had some difficulty in securing a job." _____

Example: "Can you swim, ride horseback, play ping pong?" _____

Comment: A "yes" to this question as well as a "no" will tell the investigator little if anything about the recreational skills of his teen-age respondents. An "or" or "and" before "play ping pong" might be somewhat more enlightening. This item should be three separate ones or a multiple-choice item in which respondents are asked to check the skills they possess. The multiple-choice item might be:

"Check the activities you are able to do.

_____ Swim
_____ Ride horseback
_____ Play ping pong"

etc.

MULTIPLE-CHOICE ITEMS

By far the most popular items found on survey instruments are of the multiple-choice types. Such items require a minimum amount of writing; usually a check or a line is sufficient to indicate the response. When the choices possible are known, and there is a desire to get comparable data, the multiple-choice item is indeed appropriate.

The two-way, dichotomous question is a commonly used multiple-choice type. The two-way question can be used when only two alternatives are to be considered by the respondent. The "yes" "no," "approve" "disapprove," "belief" "disbelief," combinations are some of the alternatives used in such questions. Although the two-way question appears exceedingly simple, closer inspection will often reveal that there are indeed other alternatives in addition to the ones listed that might be more appropriate for the respondent.

Payne, in his discussion of the usefulness of the multiple-choice question, made the following comment:

> *Multiple-choice questions are useful in two situations. The first of these is the case where the issue clearly splits into more than two parts, as blonde, brunette, or redhead. The second is the case where gradations are asked*

for, as in very tall, tall, average, short, or very short. It may sometimes be difficult to distinguish between these two situations, but the distinction is not too important. Where either variety or degree is under consideration, the multiple-choice, or "cafeteria," question has possible application.[1]

The variety of possible responses must be included in multiple-choice questions. Although there are occasions when the investigator desires to "force a choice" on the part of the respondent, in general the investigator wishes to enumerate all the answers that the respondents would expect to find under the question. In cases where there is a possibility of a few other answers, it is satisfactory to add an "other" alternative, which permits the respondent to fill in an answer. The number of fill-ins should be very few if the item was well constructed.

Example: "Do you believe it is desirable to divide fast and slow learners into separate classes?

_____ Strong yes
_____ Yes
_____ No
_____ Strong no
_____ No answer"

Comment: Although the respondent is given several gradations of possible feelings from which to choose, the question of the adequacy of "no answer" might well be raised. Parents responding to such an item would be inclined in some cases to want to say, "I don't know." The "I don't know" response would convey a very different attitude from the "no answer" alternative.

Example: "Check those types of elections in which you consistently vote.

_____ Community government
_____ State government
_____ National government"

Comment: Since elections for school board members and local school tax elections are often separate elections, should they not be listed as separate items?

The number of responses allowed the respondent must be clearly indicated. The investigator may want some indication of intensity of belief held by the respondent. In such an instance he may want the item that the respondent would list *first*. However, unless the question indicates that one alternative only may be chosen, two or more may be selected. Many such returns would not be useful within the context of the investigator's wishes.

On the other hand, if the investigator wants to see how many are of importance or apply, then he should indicate the fact that a multiple answer is expected.

Example: "Which of the following awards seem to you to be the most desirable to award to high school students?

---

[1] Stanley Payne, *The Art of Asking Questions* (Princeton: Princeton University Press, 1951), p. 75. [In his discussion of the types of questions, Payne considers the two-way question as a separate category. However, "multiple" means more than one; therefore, the two-way question should be considered under the generic classification "multiple-choice."]

_____ Athletic letters
_____ Service medals
_____ California Scholarship Federation pin
_____ Gold Seal
_____ Cardinal Key
_____ Scholarships
_____ Other _____"

Comment: Did the investigator want as many as the graduate felt were "most desirable"? If such were the case, it is very likely that the answers would range from one check to all items being checked. To secure some feeling of "most desirable" there might have been merit in asking for the "two most desirable" or the "three most desirable." Only the most thoughtful respondents would attempt to differentiate in their own minds between *"most desirable"* and just *"desirable."* The others might have a tendency to check most of the items.

Example: "Please check from the following list of attitudes or characteristics the ones you consider the most important.

_____ Cooperation
_____ Enthusiasm and willingness to learn
_____ Willingness to give a full conscientious day's work
_____ Promptness"
(etc.—the list includes 19 different items)

Comment: The comment here is similar to the comment made about the preceding illustration. Here we have again a listing of items that many might consider "most important." If the investigator wanted to know which one item came *first* in the minds of respondents, he would not get his answer here!

The alternatives provided should be mutually exclusive. It is very confusing to the respondent to wonder where he should make his check when one is requested to check one item when two items are appropriate.

Example: "What is your approximate income per month? (Please check)

_____ $100—$300
_____ $300—$500
_____ $500—$700
_____ $700—$900
_____ $900—$1100"

Comment: Where does the graduate who is earning $300 or $500, etc., check? If he checks the first alternative when he earns $300, he will ultimately understate the overall average. His difficulty does not match that of the investigator who attempts to determine where those with $200 income per month *actually* did indicate their salaries!

Example: "Where do you get most of your information about your school system?

_____ school
_____ newspapers
_____ friends and neighbors
_____ children"

Comment: Where does the kindly taxpayer with no children but with many friends among the neighborhood children indicate her answer? There is a dual problem here, the investigator possibly meant by "children" "your children." This should have been clearly stated; one should not assume that such a meaning was intended.

The number of choices should be limited to no more than six or seven items. Payne [2] speaks of the experiments that indicate the wisdom of limiting choices to no more than six. There are, of course, instances when the nature of the question asked makes it possible for the respondent to eliminate immediately a certain number of alternatives so that when contemplation begins, the respondent is in effect thinking of only 3 or 4 or 6 alternatives. If the question asked requires an evaluation, the inability of the respondent to differentiate between too finely identified gradations must impose a limitation on the investigator's alternatives.

Example: "Check those weaknesses you usually find in beginning workers:

( ) lack of ability to follow orders
( ) lack of ability to spell correctly
( ) lack of ability to speak correct English
( ) lack of ability to write correct English
( ) lack of ability to do business arithmetic
( ) lack of ability to meet people
( ) lack of ability to get along with fellow workers
( ) lack of ability to assume responsibility
( ) lack of ability to be punctual
( ) lack of initiative
( ) unsuitable personal appearance"

etc.

Comment: To request an employer to consider such a variety of weaknesses is imposing a considerable burden. Indeed a far better idea would be to compose three or four questions in which like items are grouped together. Such a plan would provide the respondent the opportunity to consider the weaknesses from a cluster of similar factors. Unwittingly the respondent, in reading the items as given, must evaluate the relative value of the factors. This introduces an aspect that the investigator may not have considered if his intention was "What are the weaknesses. . . ."

Example: "My ability to use reference material has been:

_____ immeasurably increased
_____ considerably increased
_____ slightly increased
_____ not changed
_____ slightly decreased
_____ considerably decreased"

[2] *Ibid.*, pp. 92-93.

Comment: This item to be checked by students who have been enrolled in an extended study workshop, for example, has more gradations than students may be able to differentiate. A three- or four-point evaluation might have been sufficient. There should, of course, have been a place to check "unable to determine."

II. GENERAL CONSIDERATIONS IN WRITING ITEMS

LANGUAGE

The words used for conveying the intent of a particular question must be carefully chosen. The general vocabulary level and the familiarity with the topic under discussion possessed by the sample to whom the instrument is to be sent must be kept in mind as words are selected.

Example: "To what extent did the workshop experience develop creativity in your child?

_____ to a great extent
_____ to a limited extent"
etc.

Comment: The extent to which parents would understand what new behavior of their children would represent "creativeness" is highly questionable. Even the professional educators are not in agreement on the manifestation of this attribute. A far more concrete term should be used in eliciting from parents the value of the experience for their children.

Example: "Sociologists group families into various social classes. In what class would you rank your family?
_____ upper _____ middle _____ working _____ lower"

Comment: How realistic is it to expect high school youngsters to understand the class divisions represented by the alternatives? Sociologists have not yet agreed on one scale for classifying families. It would have been better if the investigator had asked youngsters to estimate family income, education of father, or some other aspect of "social class standing" that would provide a clue to the investigator.

Example: "Rank the following occupations in the order of prestige that you attach to them. Give No. 1 to that occupation that you would rank the highest, No. 2 to the next highest, etc.

_____ laborer
_____ physical education teacher
_____ elementary school teacher
_____ truck driver
_____ physician"
etc.

Comment: "Prestige" is a word that has special meaning. To what extent would high school students understand the sociological meaning of the word? An explanatory phrase following ". . . rank the highest," would help to make concrete the basis of evaluation.

Example: "Do you expect to improve your standard of living when you earn your own money? _____ Yes _____ No"

Comment: It is a conjecture to say what percentage of the ninth graders who were asked the above question would check "No." However, there is considerable question about their understanding of the meaning of "standard of living." Many adults are hesitant about defining this economic term.

GRAMMAR

The principles of good grammar should not be violated in the writing of items for the survey instrument. An instrument will not receive the attention of the knowledgeable respondent if it is replete with grammatical errors. The most common errors noted in survey instruments include:

a. Lack of parallel construction in alternatives

Example: "What are your students' needs for counseling? Check

_____ Need for training to take responsibilities
_____ Failure to work to capacity
_____ Developing respect for authority
_____ Problems of physical health
_____ Financial problems
_____ Understanding of self and formation of future goals
_____ Getting along with people
Others (list) _____
_____"

Comment: Although one may infer the "need" in each of the alternatives stated, the mixture of statements does not allow for smooth reading. Furthermore, from the question it appears that the alternatives will be items related to "Why the students come for counseling" and not "What they expect to receive." Both types of items are included here.

b. Failure to use complete statements

Example: "Have home room teachers specialized training in guidance?
yes or no

Before assignment
Are in-training courses provided
Others (list)"

Comment: Although the off-hand manner of asking questions represented in the foregoing example may be acceptable in informal speech, it is indeed not appropriate for a survey instrument. From the nature of the item, it appears that the investigator desires to know at what point homeroom teachers who have guidance functions in the school receive specialized training. The question should be complete.

c. Lack of consistency in person used for questions

Example: What is the married status of the student?

( ) He was single when he enrolled and he is still single.
( ) He was single when he enrolled but since enrolling he has married.
( ) He was married when he enrolled.

Do you expect to return to college to continue your same education goal in the near future?
( ) Yes
( ) No

Comment: In the survey instrument from which these two questions were taken, some items were directed to the individual answering the questionnaire, as in the case of the second question above; others were written in the impersonal third person, as in the first question.

PHYSICAL ARRANGEMENT OF ITEMS

After care and attention have been given to the development of items, some consideration must be allowed for making the items attractive to the respondent. In addition, attention to physical arrangement can expedite the task of transferring the information when the instruments have been returned. Some suggestions for the investigator to remember as he devises his instrument are the following:

1. Sufficient space should be allocated for answers that the respondent is expected to write in. Allowing one or two lines and then making the comment that the reverse side may be used for further discussion is not a good idea, unless the question comes at the end of the form.
2. Items should be lined up so that answers appear in as straight a column as possible. At the point of transferring the data, the ease with which answers can be read from one vertical column as contrasted with reading answers from all parts of the page makes for much faster and more nearly accurate recording.
3. A variety of type styles for emphasis and for ease of reading items should be used. A key word printed in italics can often provide a better idea of the meaning intended than a long descriptive sentence. A variety of type styles will also aid the reader in going from one section of the instrument to another.
4. Adequate spacing should be provided between items to encourage the reader to continue the task. The concern with keeping the questionnaire to a minimum number of pages should not preclude the consideration of the uncluttered page. Three pages attractively spaced is more likely to capture the attention of the respondent than is a two-page instrument that is so crowded that little unused space has been allowed. The finished instrument should be neat and orderly, and it should give the feeling that it is relatively easy to fill in.

III. SUMMARY

A carefully devised series of items will assure the success of a survey. Some key considerations discussed in this chapter are given below.

In writing open-ended questions, the investigator must

a. determine the meaning of the question to the respondent.
b. assess the superiority of the open-ended question for seeking the data desired.
c. check the simplicity of the question.
d. indicate the scope of the question.

In writing multiple-choice items, the investigator must

a. provide the variety of possible responses to each item.
b. indicate the number of responses expected.
c. check the mutual exclusiveness of alternatives.
d. limit the number of choices to no more than six or seven.

Language, grammar, and physical arrangement of items are aspects of instrument development that also deserve attention by the investigator.

SUMMARY HIGHLIGHTS
AND
EVALUATIVE CRITERIA

CHAPTER IV—ASSESSING THE ADEQUACY OF SURVEY INSTRUMENTS

Criterion—The survey results agree with some criterion which is regarded as an acceptable measure of the phenomena being studied.

0 1 2 3 4

Criterion Test Items

	Rating
1. Do the survey results agree with subsequent events?	_____
2. How do the survey results compare with results using some other research technique?	_____
3. Has a pretest and an analysis been made of the questions in the survey instrument?	_____
4. How do the survey results compare with objective records (if it is feasible to make such a comparison)?	_____
5. Has a comparison been made of responses to an existing situation with those to a nonexisting one?	_____
6. Have expressed attitudes or statements been checked against specific behavior or actual practice?	_____
7. Have the survey results been compared with the judgments of experts or persons qualified to evaluate the situation?	_____
8. Have tests been made of groups known to be biased, who were included in the survey population, to determine whether or not the survey results reveal such biases?	_____
9. Has the significance of no-response or no-opinion responses to the survey questions been investigated?	_____
10. Has the validity of the survey data met the test of "common sense?"	_____

Criterion—A repetition of the survey using the same data-collection procedures and covering a comparable sample population gives the same or approximately the same results.

0 1 2 3 4

Criterion Test Items

	Rating
1. Has the reliability of the survey data been tested by a repetition of the survey with a selected sample of the original survey population, or a comparable group, after a short interval of time?	_____
2. Does the survey data gathered by two equivalent or parallel forms of the survey instrument compare favorably?	_____
3. How do the responses given to two forms of the same question in the survey instrument compare?	_____
4. Does an odd-even comparison of question results give a favorable correlation?	_____

Criterion—A variety of special checks are made of the survey instrument, of the survey data, and of the survey population in assessing the adequacy of the survey instrument and the collected data.

0 1 2 3 4

Criterion Test Items

	Rating
1. Has an analysis been made of the preliminary form of the survey instrument after tryout with a representative pilot group?	_____
2. Has the survey instrument been evaluated by recognized research authorities or by an advisory committee?	_____
3. Has a final careful revision and inspection of the survey form been made?	_____
4. Have special validity and reliability checks been made of the survey data?	_____
5. Has a preliminary "editing" been made of the completed survey instrument forms before the data are tabulated?	_____
6. Has an analysis been made of the respondent population to determine if a proportional representation of the total survey population is included in the study?	_____
7. Has an analysis of the non-respondent group or subgroups been made as an indication of certain cau-	

CHAPTER IV

ASSESSING THE ADEQUACY OF SURVEY INSTRUMENTS

Jahoda [1] has indicated that the function of any data-collection technique "is simply to produce *precise* and *reliable* evidence which is relevant to the research questions being asked." The earlier chapters of this report stress that it is important that the researcher choose the best means for collecting needed or necessary data. Again, it may need to be emphasized that a survey instrument is but one of the tools of research that provides for the collection of data from which a variety of decisions, interpretations, or actions can be derived.

I. THE MEANING OF RELIABILITY AND VALIDITY

Reliability. Reliability is usually referred to as the accuracy and the consistency of the measuring instrument in securing data from time to time. A reliable survey instrument should, therefore, yield comparable data upon repeated administration to the same population; it is not unlike a yardstick or other calibrated measuring device which gives the same measurement, if used properly, each time it is applied. A special measuring device would tell us, for example, that the Empire State Building is 1,250 feet in height not including the 222 additional feet of television antennae attached to the top. This measurement would only vary slightly, if at all, when repeated again and again. Such high level reliability is impossible to attain, however, with any survey instrument.

Validity. A survey instrument would, in the strict sense, be considered valid if the data gathered were a true measure of what the instrument was designed to measure. A swimmer frequently will dip his foot into the water to test the temperature of the water before he jumps or dives in. To the extent that his foot is sensitive to the temperature of the water, it may be considered a valid measure or indicator of the overall temperature of the water. The sensations which the swimmer's brain received from his foot as he dipped it into the water would represent the rough data relative to the temperature of the water. Upon this evidence, he may make his decision as to whether or not the water is too cold for swimming.

Some general considerations. Herzog [2] has stated that "Reliability is prerequisite to validity. . . . Yet no amount of reliability in itself establishes validity." Perhaps in relation to the validity of a survey instrument, the question needs to be asked, "Validity for what?" If a survey instrument were used to assess skill deficiencies of beginning office workers, for example, and if a particular category were concerned with spelling ability, we would need to define quite carefully just what is meant by spelling ability before we could judge the validity of the questions making up this category. Is spelling ability, for instance, the ability to single out incorrectly spelled words as in proofreading? Or is it the ability to recall the correct spelling of words needed in the transcription of shorthand notes or machine dictation? Next, we would need to ask, "Why is this

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[1] Marie Jahoda, Morton Deutsch, and Stuart W. Cook, *Research Methods in Social Relations* (Part I: Basic Processes; New York: The Dryden Press, 1951), p. 92.

[2] Elizabeth Herzog, *Some Guide Lines for Evaluative Research* (U. S. Department of Health, Education, and Welfare, Social Security Administration, 1959), p. 41.

information of importance or how will we use it to modify or improve educational practice?" We need answers, therefore, which will provide direct or positive evidence of the kind of skill deficiency rather than an overall skill deficiency if the greatest value is to be gained from the analysis of the data. In a similar vein, if clerical aptitude were being assessed, we would need to ask, "Aptitude for what? For general office work? For statistical typewriting? For meeting the public? For accuracy in recording? etc."

A school district may want to assess the success of its evening program for adult office workers in terms of improved job performance. Herzog, in treating this problem from another viewpoint, discusses some important considerations which indicate that it is often possible to amass *reliable* evidence, but very difficut to demonstrate its *validity:*

> *The validity of findings about job performance will depend (a) on the extent to which job performance actually reflects improvement and (b) on the extent to which the indicators selected and the way in which they are applied actually reflect job performance.*
>
> *To start with (b), there is room for debate on the validity of indicators used to reflect job improvement. Neither a quantitative nor a qualitative measure is likely to be enough in itself. Increased quantitative production at the sacrifice of quality may not represent improvement. Improved quality at the exorbitant sacrifice of quantity may not represent improvement. These problems can be handled, but they suggest that to work out valid indicators of job improvement is by no means simple.*
>
> *. . . under certain circumstances better performance on a routine manual job could conceivably result from an individual's giving up aspirations to a more satisfying career for which he is in fact well suited. . . . even though improved job performance is reliable beyond question, its validity as a major criterion of improvement would remain in doubt.*[3]

The reader may well ask at this point, as Herzog suggests, "What, then, is the ultimate evidence on which validity rests? How can one *prove* that a person is better off (or worse off or unchanged) after, *let us say, an educational experience?*" (Italicized words those of the authors of this report.) Herzog answers this question as follows:

> *For the time being, at least, it appears that "objective" proof is not available. The most "operational" or "behavioral" definition of outcome is based on someone's conviction about what is desirable or undesirable, what is adjustment or maladjustment, what is improvement or deterioration. The "ultimate" criterion of success or improvement is an opinion. . . . Validity requires, then, that all measures and categories be explicit and theoretically tenable, and that the use of all measures and categories be reliable.*[4]

The validity dilemma may, in part, be solved by exactness in defining and wording the categories and questions to be used, coupled with a consistency in applying them, to make sure that everyone who is to receive the survey instrument will understand what is wanted. Herzog [5] again cautions that, "Lack of validity at any point can disturb the validity of the whole; and we have not yet achieved ability to test, control, and demonstrate validity at every point." It is necessary to recognize that absolute reliability or validity cannot be attained

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[3] *Ibid.*, p. 42.
[4] *Ibid.*, p. 48.
[5] *Ibid.*, p. 49.

even with so-called objective facts. Factual data, of course, have a higher degree of validity and reliability, but such data may be relatively unimportant in securing evidence which may help in the solution of the particular problem with which the survey is concerned. Limited findings can be very useful, provided the limitations are recognized and clearly stated and provided, also, they are considered in the interpretation of the findings.

From all this emerges the need to recognize the specificity of validity and reliability. A survey instrument may be valid and reliable only in relation to a carefully defined population; its validity and reliability may be affected by sex differences, interest differences, and the like. What may be concluded then is that the most important general test of the validity and reliability of a survey instrument, in any given instance, is local validation by the survey user in terms of his own particular purposes for making the survey.

II. EVALUATION OF THE SURVEY INSTRUMENT IN ACCORDANCE WITH CRITERIA GOVERNING ITS CONSTRUCTION

The researcher should make certain that the survey instrument has been developed in accordance with the criteria and criteria test items governing its construction. These are listed in Chapters I, II, and III of this report. According to Ryans,[6] the design and wording of the survey instrument is a matter of prime importance and one upon which the validity and reliability of the data will depend. The governing criteria and the criteria test items, designed to help insure such validity and reliability, are given in considerable detail in the previous chapters.

In addition, the researcher may subject the rough draft of the survey instrument to Kornhauser and Sheatsley's[7] check list of points to consider in formulating questions and to Payne's[8] "test of the meaning of words."

III. VALIDATION CRITERION AND CRITERION TEST ITEMS[9]

CRITERION: THE SURVEY RESULTS AGREE WITH SOME CRITERION WHICH IS REGARDED AS AN ACCEPTABLE MEASURE OF THE PHENOMENA BEING STUDIED.

To determine the validity of a survey instrument, the research worker is always concerned with the degree to which the survey results agree with some acceptable or evaluative criterion. It is not the intent of this report to discuss the statistical procedures by which the obtained results may be correlated with the "true" situation in determining the validity of the findings. For all practical purposes, when survey instruments are used in securing needed data in connection with some local educational problem such detailed analysis is not necessary.

CRITERION TEST ITEMS

Some of the common tests which may be used to test the validity of survey instruments are given here.

1. The survey results may be compared with subsequent events. The comparison of survey results with subsequent events may be especially important when an opinion-attitude survey instrument is used. Often there are differences

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[6] David G. Ryans (Unpublished *Syllabus in Research Design*, University of California, Los Angeles, 1954), p. 135.

[7] Arthur Kornhauser and Paul B. Sheatsley, "Guide for Questionnaire Construction," Appendix C, as included in Claire Selltiz, et al., *Research Methods in Social Relations* (New York: Henry Holt and Company, Inc., 1959), pp. 552-574.

[8] Stanley Payne, *The Art of Asking Questions* (Princeton: Princeton University Press, 1951), p. 141.

[9] See Mildred Parten, *Surveys, Polls, and Samples: Practical Procedures*, pp. 485-493, especially.

between what respondents say they "think they will do" and what they "really will do." The same may be true when a comparison is made between what respondents "say they do" and "what they actually do." It is possible to make additional checks to determine such discrepancies or differences. For example, the influence of a consumer education course on the buying habits of persons who have had the course could be tested at a later date by a check of the purchases actually made by the respondents. The agreement between what a person says he "intends to buy" and what he "actually does buy" need not be 100 percent to be an adequate test of the validity of a survey instrument designed to determine buying habits, since considerations such as having the money to buy or to make down payments may enter into the final purchase of consumer goods regardless of the consumer's desire in the matter.

2. The survey results may be compared with results obtained using some other research technique. It is always wise, if possible, to check results obtained by survey instruments with results obtained by a selected number of interviews with respondents who may be considered as a representative sample of the population being surveyed.

3. The questions used in the survey instrument may be pretested and analyzed. A pretest of the questions designed for use in a survey instrument often will reveal such things as lack of clarity of definitions, ambiguity or varying meanings of some words to different groups of people, words which have an emotional overtone, questions which may be misleading or misinterpreted, the need for no-opinion or no-response categories, or the omission of pertinent questions that may be of value in interpreting responses made to other questions.

4. The survey results may be checked against objective records. When a fact-finding survey instrument is used, it is often possible to check a sample of the returns with the actual records, or with the objective facts as revealed by means of interviews, selected observations, and the like.

5. A comparison may be made of responses to an existing situation with those to a nonexisting one. The inclusion of false items in a survey instrument may also be used to give an indication of the validity of the returns. If a survey were being made to determine the reading habits of office workers, for example, some of the categories may include some false book titles. The number of false items checked by the respondents would give an indication of the validity (truth) of the responses. It is relatively easy to provide for and to make such validity checks in every survey study.

6. Expressed attitudes or statements may be checked against specific behavior as revealed by follow-up interviews or other tests. Expressed attitudes are often in conflict with specific behavior or actual practice. For example, representatives of business enterprises frequently indicate that they prefer the liberal arts graduate of collegiate institutions to the graduates who may have studied business administration or some other specialty; however, their expressed attitudes are not always in accord with their specific behavior. A study of employment policies usually indicates that they still hire more college graduates in terms of a specific specialty than they do liberal arts graduates. Survey findings which indicated, therefore, that the business employers preferred liberal arts graduates to other kinds of graduates would give misleading information which could not be considered valid evidence of *employment practices.* Here, again, is another kind of validity check that it is important to make if meaningful and valid data are to be presented in the survey research report.

Another example where stated practice may not be in accord with actual practice is the following. Business employers frequently indicate that they want stenographers and secretaries who can take dictation at 120 words a minute, but when questioned they have little knowledge of a dictation speed of 120 words a minute. A tape recording and analysis of the dictation speeds used in regular office work usually shows that dictation is given at much slower speeds than 120 words a minute.

7. Survey results may be validated by comparison with the judgments of experts or persons qualified to evaluate the situation. Success is often evaluated in terms of job status. Many companies have found that they have been able to reduce the turn-over problem in some positions merely by changing the title for that position. The true job situation in some cases, then, may not be reflected by the job title. In other instances, respondents have been known to give misleading information about job positions during interviews. The classic example is that of a census taker who was interviewing selected members of the population with reference to varying aspects of their economic, social, and educational backgrounds. One housewife told the census taker that her husband was a bank director. The interviewer became suspicious because the home situation did not reflect the level of living that may have been expected of the typical bank director. Further investigation did reveal that the husband was indeed a kind of "bank director"—he directed customers of the bank to the various tellers, banking departments, and executives.

These examples indicate the need for and the importance of special checks of survey results in areas where the survey results, although not inaccurate, may not be entirely valid in terms of revealing the true or existing situation.

8. Tests may be made of groups known to be biased to see whether or not the survey results reveal such biases. Again, when an opinion-attitude survey instrument is used, and if bias is suspected, it is wise to check to see if the survey results accurately reflect any such biases. One method for doing this has been suggested by Lundberg.[10] It involves securing a consensus from selected persons included in the survey as to which of their close friends, who were also included in the survey population, hold pronounced attitudes on certain questions in the survey form. A comparison of the responses of such persons to certain questions on the survey form with the judgment of close associates as to their true attitudes will give the researcher an indication of the degree of validity of the responses made by these same individuals on the survey form.

9. The significance of no-response or no-opinion responses to survey questions should be investigated. Especially when an opinion-attitude survey instrument is used, a high "no-opinion" response to an item should lead the investigator to suspect the validity of the particular question. The question may be phrased in language which is too technical for the average respondent. Where this happens, the question doesn't measure what it was designed to measure. The question may actually be a more nearly valid measure of the educational background of the respondent.

Another possibility is that the question or item may not be phrased "naturally" or in the manner in which people ordinarily respond to the situation. In other words, the investigator may not understand how people actually talk about the topic being investigated. This may be the reason, therefore, for the nonresponse.

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[10] George A. Lundberg, *Social Research* (rev. ed.) (New York: Longmans, Green and Co., 1942), as quoted by Mildred Parten, *op. cit.*, p. 492.

10. Common sense may be used as a measure of the validity of survey data. Recently a secretary in a business office was asked to get the height in feet of certain office buildings in the New York City area. Her report of the height of the Empire State Building immediately revealed a common sense inconsistency. It was reported as 1,250 feet in height, with an overall height of 4,720 feet. The latter height included the television antennae that are attached to the top. Common sense would immediately indicate that there was an inconsistency in the figures since it would be rather difficult to attach more than a half-mile of television antennae to the top of a building, despite the remarkable engineering feats that we have come to accept as commonplace in recent years. A recheck of the data indicated that the overall height was in error. Common sense estimates or judgments may, however, be misleading; therefore, such estimates or judgments cannot be used as the sole test of the validity of a survey instrument.

The foregoing include many of the tests that may be made of validity. For many survey studies, it would neither be necessary nor desirable to make all these tests of the instrument to insure a usable degree of validity.

IV. RELIABILITY CRITERION AND CRITERION TEST ITEMS [11]

CRITERION: A REDEMPTION OF THE SURVEY USING THE SAME DATA-COLLECTION PROCEDURES AND COVERING A COMPARABLE SAMPLE POPULATION GIVES THE SAME OR APPROXIMATELY THE SAME RESULTS.

A survey instrument yields reliable data to the extent that the findings reflect true data that are free from variable error. A survey instrument is reliable if the respondents answer the same questions in the same way when the questions are asked at different times or are varied in their phrasing, assuming the phrasing is equally clear in both instances.

The preceding chapters have suggested various criteria which are important in the selection and design of survey instruments. If the instrument conforms to these criteria it will, at the outset, have a considerable degree of internal reliability; then, depending upon the care with which it is completed by the survey population, it may also have a high degree of external reliability. Reliability of a specific survey instrument may be expected to vary somewhat if readministered to the same or a comparable population. The differences that may be expected will depend upon such factors as the type of survey, the method of collecting the data, the kinds of respondents (sex differences, for example, often influence reliability—male responses are often different from female responses and the combined responses may give yet another degree of reliability), the interval between surveys, the interest and motivation of the respondents to give truthful or accurate answers, the care with which the form is completed by the respondent (when a considered opinion is desired it may be necessary to request a delayed response rather than an immediate response to the survey items), and/or the strengths of various conditions that may be operating between the initial survey and its reapplication.

To summarize, some of the factors which may influence the reliability of survey research data are the following:

1. The number of questions asked. (Generally speaking and within limits which the reader will recognize, the greater the number of questions pertaining to a particular category, the more reliable the resultant data will be.)
2. The time spent and the care exercised by the respondent in completing the survey form.

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[11] See Mildred Parten, *op. cit.*, pages 494-498, especially.

3. The objectivity of the plan for recording the responses of the survey population.
4. The homogeneity of the objects or responses measured.
5. The number of conditions which may lead to misinterpretation. (Emotional coloring of words used in directions or in survey items, inadequate or faulty directions, misleading intent of questions or directions—all affect reliability.)
6. The incentive or motivation of the respondent to furnish accurate information.
7. The effect of previous mental or emotional experiences on the part of a respondent to the survey item.
8. The desire of the respondent to give truthful and accurate responses (to avoid cheating or faking).
9. The stability of the situation in which behavior is observed from time to time.
10. The extent to which a representative sample of the population can be induced to complete the survey form and return it.

CRITERION TEST ITEMS

The more commonly used methods for testing the reliability of survey instruments are listed and discussed briefly in this section.

1. A repetition of the survey may be made with a selected sample of the original survey population, or a comparable group, after a short interval of time. The reliability of the survey data may be determined (1) by readministering the survey form with a selected sample of the survey population after a period of time and by making a comparison of the data with the original data; or, (2) by comparing the data collected in the pretest of the survey instrument with the data subsequently collected. The degree of correlation of the results will be an indicator of the reliability of the survey instrument.

The preceding test assumes, of course, that no systematic changes have taken place between the time the survey form was first administered and its readministration. Such an assumption is not always tenable.

2. A comparison may be made of the survey data gathered by two equivalent or parallel forms of the survey instrument. Two equivalent or parallel forms of the survey instrument may be administered one after the other to the same population, or to two similar samples of a survey population simultaneously. The greater the correspondence between the survey results, the more confidence the analyst may place in the findings of the survey instrument.

3. A comparison may be made of the responses given to two forms of the same question included in the survey instrument. If the two forms of the same question are equally clear, a comparison of the answers given by the respondent to such questions would give an indication of the reliability of the survey item.

4. An odd-even comparison of question results may be made. If a series of questions relating to a single issue or category can be summarized to form a single score such as an attitude score toward some current issue, the scores obtained when only the even-numbered items are employed can then be correlated with the scores resulting from using the odd-numbered items only. Here, usually, a special statistical analysis such as the use of the Spearman-Brown formula is required to determine the reliability coefficient existing between the two parts. It can be seen at once, however, that this test has limited application in terms of use with most survey instruments. Furthermore, the split-half method often leads to spuriously high reliability coefficients.

As is true for determining the degree of validity of a survey instrument, the degree of reliability may be computed statistically for the reliability tests suggested in the foregoing discussion. These specialized statistical techniques are discussed in most textbooks on statistical research procedures. For many research studies in which a survey instrument is used, it is often not necessary to make such a complete analysis of the reliability of the instruments as a data-collection device.

V. SUMMARY OF SPECIAL CHECKS THAT NEED TO BE MADE OF ALL SURVEY INSTRUMENTS

CRITERION: A VARIETY OF SPECIAL CHECKS ARE MADE OF THE SURVEY INSTRUMENT, OF THE SURVEY DATA, AND OF THE SURVEY POPULATION IN ASSESSING THE ADEQUACY OF THE SURVEY INSTRUMENT AND THE COLLECTED DATA.

A number of special checks should be made in assessing the adequacy of a survey instrument and the data collected by means of the survey instrument. These special checks are one indication that the investigator is aware of the need to take such precautions as will increase the validity and reliability of the collected data as well as the confidence with which the research findings may be viewed.

CRITERION TEST ITEMS

The following special checks should be made of the survey instrument, of the survey data, and of the survey population in assessing the adequacy of the survey instrument and the collected data.

1. Pilot group tryout and analysis of preliminary form of the survey instrument. A test or tryout of the preliminary survey instrument with a representative pilot group is usually considered necessary and advisable before the survey instrument is put in final form. Such a test can help the investigator determine the practicability of the instrument in terms of such questions as these: (1) Will the intended survey population respond to such a questionnaire or survey instrument? (2) Can their responses be interpreted as an indication of the existing situation? (3) What questions may need rephrasing or change on the basis of the respondent's reaction to the question? (4) What additional questions or categories may need to be provided in order to secure all necessary data relating to the survey problem? (5) What defects are there in the instructions used or in the form of the survey instrument? (6) What is the overall reaction of the pilot group to the survey instrument?

The pilot group may be asked not only to complete the survey form but also to comment, criticize, or make suggestions about it. If the latter procedure is followed, then these reactions should be tabulated and analyzed in preparation for necessary revisions which may need to be made in the survey instrument.

In addition, the data collected by means of this preliminary survey form need to be studied and analyzed. Rough tables should be drawn up to determine if the recorded responses can be tabulated satisfactorily and if the data of the tables will provide significant answers to the major questions with which the investigation is concerned.

2. Expert judgment of the survey instrument by recognized research authorities or by an advisory committee. Recognized research authorities may be asked to review the survey instrument and make comments or suggestions for its improvement; however, here it must be recognized that such authorities rarely have the time to do an extensive amount of such advisory or consultative work. Often, the State Department of Education may offer the services of its various research specialists in connection with survey design and development, or these specialists may be asked to react to the survey instrument and to offer comments or criticisms.

In his own school district, the researcher may organize an advisory committee and hold discussions with this group relative to the survey instrument as it is being designed and developed. Such committees frequently can offer much valuable assistance.

The researcher, however, must recognize that others also have busy schedules of work; it is not proper to ask them to do work which it is his job to do.

3. A final careful revision and inspection of the survey form. After the survey instrument has been evaluated through use with a pilot group and by research authorities or an advisory committee, a number of revisions may have to be made. The final inspection of the survey instrument should be in terms of such things as (1) content; (2) form; (3) sequence and number of questions; (4) spacing, arrangement, and appearance of the items; (5) adequacy of directions for completing the instrument; (6) need for coding of items to simplify the tabulation of the returns; and (7) proper identification of the survey instrument in terms of such items as the title of the study, date, origin or source of the instrument (name of author or authors, school district or other educational institution), and other pertinent or useful information which may be used for classification purposes at some later date. After these checks have been made, the final survey instrument and the covering letter may be prepared.

a. Physical appearance of survey form. The format, the style of printing to be used, the use of color, and the general physical appearance of the final survey instrument are all of importance. The final survey instrument should look as professional as the budget will allow. This is an important consideration from the point of view of inducing the survey population to respond to the form. In addition, as has been suggested earlier, the items should be arranged so that it is relatively easy for the respondent to complete the form. The use of color, provided the cost is not prohibitive, often gives an added attractiveness to the physical appearance of the form which may increase the percentage of returns, an important consideration in any survey research study.

b. The covering letter or letter of transmittal. The covering letter sent to the survey population with the survey instrument should explain the nature of the study and should attempt to arouse an interest in the study. Often the basic appeal used in covering letters is "for information as a personal favor." Such letters, as Lundberg [12] has suggested, are usually more productive of results than letters offering a trivial reward or stressing some alleged advantage to the respondent for answering. If the letters can be written on the official letterhead stationery of a school district, the percentage of returns may be increased. The covering letter usually should not be over one page in length. If the data requested is of a confidential or personal nature, complete anonymity of the respondent must be assured. A typewritten letter, because of its personal appeal, is usually more effective in getting returns than is a duplicated letter. If, because of number, the covering letters are duplicated, a handwritten postscript adds a personal appeal that is effective in increasing the percentage of returns. Finally, a fixed date for the return of the completed survey instrument should be suggested in the closing paragraph of the letter.

4. Special validity and reliability checks. In the interest of time, cost, and energy, the researcher may find that the following special validity and reliability checks of the adequacy of the survey instrument are sufficient:

a. Consistency of the survey responses as revealed by a comparison of the responses on the preliminary and the final survey forms. In the interest of an

[12] George A. Lundberg, *Social Research* (rev. ed.) (New York: Longmans, Green and Co., 1942), p. 185.

accurate interpretation of the data collected by means of a survey instrument, it is important that some analysis be made to determine the "consistency of response" as it relates to the data provided by the preliminary survey form and the final survey form. Although the final survey form may differ from the preliminary form, the comparison can be made on the basis of those questions which remained the same or essentially the same on both forms. The number of consistent and inconsistent responses to the same or similar questions can be tabulated and a "consistency-of-response" percentage can be computed. This percentage will not indicate complete agreement, but it will indicate whether or not it may be necessary to make additional checks to determine reasons for the inconsistencies as these may affect the interpretation of the data. Such analysis will always add to the confidence with which the survey results may be viewed.

b. Consistency of survey responses as revealed by selected interviews with a representative sample of the survey population. It is generally good research practice to check the conformance of data gathered by means of a survey instrument with data as may be determined by intensive and detailed interviews with a representative sample of the survey population. Such interviews may provide clues such as the following: (1) the consistency or inconsistency of responses and first-hand information about the causal factors leading to such consistency or inconsistency; (2) the respondent's attitude toward the survey instrument and the type of information it was designed to provide; and, (3) whether or not the respondent attempted to give or did give accurate responses to all questions included in the survey instrument.

5. Editing of survey instrument returns. Before the data on the completed survey forms are tabulated, the following steps are often necessary as a preliminary editing of the survey instruments:

a. If a respondent classification sheet is used with the survey form, this sheet should be inspected to see if the special classification data needed for purposes of the study have been furnished.
b. The survey instruments should be checked to determine whether or not different parts of the survey responses are consistent.
c. The responses to questions should be quickly reviewed for any apparent errors on the part of the respondent.
d. The responses and/or comments on each question should be inspected to bring the used, or the intended, summarizing categories into line with the comments written on the survey form or with the additional answer categories which the respondent may have used.
e. If the survey instrument qualifies for inclusion in the study after each of the foregoing steps, it may need to be numbered or coded for control purposes.

The survey instruments which may otherwise have qualified for inclusion in the tabulation, but which were judged as incomplete according to the foregoing suggested checks usually are not used in the study. They should be classified as non-returns or unusable returns in computing the "percentage of returns" in the study.

6. Analysis of the respondent population according to the returned survey instruments which are usable in the study. The researcher will rarely get a 100 per cent return of survey forms which are sent through the mails. Every effort should be made through follow-up letters and cards to secure as high a percentage of return as possible as this adds to the confidence that may be

given to the interpretations of the collected data. Eventually, however, if the study is to be completed within a reasonable time limit, the researcher will have to reach a cut-off point on the returns and complete the tabulation of the data collected. The assumption is made, of course, that the percentage of returns at the cut-off point is sufficiently high and that a proportional representation of the total survey population is included in the returned survey forms to give the degree of confidence that is necessary if meaningful interpretations are to be made of the collected data.

7. Analysis of non-returns in each of the subgroups of the survey population. If the survey population has been classified into various subgroups, an analysis of the non-respondent population may indicate cautions that need to be exercised in interpretating the data collected. If significant subgroup classifications of the survey population failed to respond to the survey instrument, some effort should be made to determine the reason for such non-response. This analysis of the non-returns may be important to the meaningful interpretation of the collected data.

On the basis of the preceding two special checks, the researcher can make important decisions as to whether or not the respondents who actually returned usable survey forms are typical of the total survey population.

8. Tabulation of the collected data and making any needed statistical analyses of such data. The researcher is always charged with the responsibility of presenting evidence of the appropriateness of the techniques used to tabulate, compare, and analyze collected data. The readers of his final report will then have an indication of the degree of confidence that may be given to any of the research findings that are presented in the report of the study.

a. Tabulation of data with special reference to coding. Usually in advance of sending out the final survey instrument, the researcher should have reached some decision as to the method that is to be used in the tabulation of the collected data. Rarely is it convenient to deal with data in the form in which they originally have been obtained.

Hand tabulation of data, when the survey population is large, is a laborious and tedious process. It is subject to recording or tabulating error. Such data-processing errors (errors in coding, tabulating, calculating, or consolidating data) may seriously affect the reliability and validity of the collected data.

Developing a system for coding questions on the survey instrument and coding the collected data is an aid in tabulation of the data, especially if machine tabulation is used. *Coding* is the assignment of numbers or symbols of some sort to the answers to questions or any kind of data that falls into some specified class. Coding simplifies the sorting and reassembling of the data into specified classifications according to some pre-determined characteristic of the data which may be useful in making interpretations of the data.

The coding system to be used must be pre-determined in view of (1) the nature of the data and (2) the kinds of cards, and sorting, to be employed. The coding system may be a simple, direct system, or may, in the interest of efficiency, be quite ingenious, involving combinations of code characters to serve various purposes in compiling the data of the study. Ryans offers these suggestions for coding:

(1) The code should be carefully prearranged, so there is no possibility of the assignment of data to a class as a matter of judgment.

(2) If the data are to be hand sorted, various symbols and colors may be used for coding as well as numbers. (For punched card sorting and tabulation, all data must be coded in numbers.)

(3) In dealing with numerical data, the data should be reduced to a simple common unit.
(4) The rounding off procedure to be used in dealing with numbers must be prearranged when the code is developed.
(5) Provisions should be made with a code number or symbol to indicate lack of response to a question or absence of data regarding a particular characteristic.
(6) It is usually better to use a more detailed classification at the time the data are being recorded than the classification that may be used later in summarizing the research data. (Data from smaller classifications can always be combined, but a broader classification cannot be broken down into its component parts once the data are recorded.)
(7) Coded data should be verified by an independent check.[18]

An illustration of a simple coding system that may be employed with responses to multiple-choice items in a survey instrument is given below.

9. Do you plan to go to college? Please check one of the responses given below.

1 ( ) I have definitely decided NOT TO GO to college.
2 ( ) I am UNDECIDED whether or not to go to college.
3 ( ) I plan to go to college ULTIMATELY but WILL NOT GO NEXT YEAR.
4 ( ) I have DECIDED TO GO to college and WILL GO NEXT YEAR.
5 ( ) Other (Please specify). _____

The preceding illustration shows the multiple-choice responses that are listed for a specific category that might be found in a survey instrument concerned with the educational plans of high school seniors. The numbers given just prior to the check-list response items represent the simple code that would be useful in the tabulation of the responses. In the tabulation of the responses, these code numbers would be used with this series of questions in the survey instrument. These code numbers have no qualitative values, however.

Various types of cards may be utilized for the recording of collected data so that they can be conveniently tabulated and used later in a variety of ways when interpretations of the data are to be made. Some of these cards are the following:

(1) *Uncoded data cards.* Uncoded data cards may be mimeographed or printed with spaces designed for recording various kinds of information and data.
(2) *Marked-edge cards.* Marked-edge cards are cards, approximately 5 by 8 inches in size, on which spaces around the four edges can be assigned for recording various characteristics of the data. The data on such cards may be recorded in numerical form or by qualitative description, such as sex, class in school, occupation, etc. In addition, they may be coded for convenient sorting by marking the edges of the card either in black or with various colors. When this is done, the cards can readily be hand sorted into various classifications.
(3) *Punched-edge or key-sort cards.* Punched-edge or key-sort cards are similar to marked-edge cards except that they are especially prepared

[18] Ryans, *op. cit.*, p. 169.

(manufactured) with a row of holes around each edge. Each group of holes may be assigned to a particular characteristic, such as sex, test score, response to a specific question, etc. Then a special punch may be used to make U-shaped notches indicative of certain identifying information that the researcher plans to use. The cards may then be sorted by running an ice pick or a similar instrument, or a special long needle, through the deck of cards. Those cards punched to reflect a given characteristic fall out of the deck. This is a quick and efficient classification system which gives the researcher ready access to data in making a variety of analyses.

(4) *Punched-hole cards.* Punched-hole cards are the rather well-known cards such as those used by IBM and other data-processing machines. The use of such cards requires pre-planning and coding of the survey instrument data in advance. They also have certain limitations which the researcher would need to discuss with a data-processing representative, if he were planning to tabulate the data by a machine process.

(5) *Punched or special magnetic tape.* Punched or special magnetic tape represents the newest method of recording or tabulating data. Such tape is now used with the newer electronic data-processing machines.

The tedious task of hand tabulating the data collected by means of a survey instrument can be eliminated to a large extent by adapting the data to a system of elecronic data processing. The facilities of data processing centers at various colleges and universities are available to certain qualified educational institutions and research workers. Before starting any study which may require the use of such facilities, it would be wise to first consult with a research specialist at one of the nearest colleges or universities, or the researcher may secure information by writing directly to the nearest data processing center. One such center is located at the University of California, Los Angeles; another is located at the Massachusetts Institute of Technology, Boston. Usually there is no charge for machine time or any other special data processing service, except for occasional c.o.d. mailings to a user of large numbers of tabulating cards or magnetic tapes. Also, for a fee, special arrangements may be made with various data processing machine manufacturers for the tabulation of the data of a study. These arrangements should always be made in advance of the mailing of the survey instruments to prospective respondents so that proper programming and coding schedules can be prepared and the survey instruments coded correctly for ease in machine tabulation of the collected data.

b. Statistical treatment of data. Unless the researcher has an extensive background in statistics, it may be well for him to consult with a research statistician. Such a specialist could indicate any statistical analyses that may need to be made if the data are to be properly interpreted and evaluated in terms of statistical significance. (Basic statistical reference books which may be of value to the researcher are listed in the *Selected References* at the end of this report.)

Best expresses a note of caution concerning the use of statistics:

> *Statistics is an important tool of the research worker, and an understanding of statistical methodology and terminology is important for the consumer of research. There are a number of limitations, however, that should be remembered in using statistical processes, in interpreting statistical processes, and in drawing conclusions from statistical evidence.*
>
> *1. Statistical process is the servant of logic and only has value if it verifies, clarifies, and measures relationships that have been established by clear, logical analysis. Statistics is a means, never an end, of research.*

2. A statistical process should not be employed in the analysis of data unless the basic assumptions and limitations underlying its use are clearly understood.

3. The conclusions derived from statistical analysis will be no more accurate or valid than the original data. All of the refinement of elaborate statistical manipulation will not yield significant truths if the data result from crude or inexact measurement.

4. All treatment of data must be checked and double-checked frequently to minimize the likelihood of errors in measurement, recording, tabulation, and analysis.

5. There is a constant margin of error wherever measurement by human beings is involved. This error is increased when qualities or characteristics of human personality are subjected to measurement, or when inferences about the population are made from measurements of statistical samples.

When comparisons or contrasts are made, a mere number difference is, in itself, not a valid basis for any conclusion. A test of statistical significance should be employed to weigh the possibility that chance in sample selection could have yielded the apparent difference. To apply these measures of statistical significance is to remove some of the doubt from the conclusions.

6. Statisticians and liars are often equated in humorous quips. There is little doubt that statistical processes can be used to prove nearly anything that one sets out to prove. Starting with false assumptions, using inappropriate procedures, or omitting relevant data, the biased investigator can arrive at false conclusions. These conclusions are often particularly dangerous becouse of the authenticity that the statistical treatment seems to confer.[14]

A knowledge of basic statistics, however, is a valuable tool for any research worker and is desirable for anyone engaged in educational work. Especially important to the researcher, too, is a knowledge of statistical sampling techniques that may be effectively utilized in any survey study. The researcher planning an important survey study involving sampling should either study the pertinent literature or consult a statistical specialist, preferably both.

Finally, it is necessary to express a note of caution, too, when percentages and the differences in percentages are made the basis for comparisons of data. When the total number of cases to be compared is less than 100, it is important to recognize that the addition or subtraction of a single case in any one category may unduly affect the resultant percentage figure. It is important to recognize this fact if correct interpretations are to be drawn from tables which give percentage figures as a basis of comparison.

VI. SUMMARY

When using a survey instrument of any type, the researcher will always need to know if the instrument will yield the kind of data required for the study (validity), and the extent to which the collected data are free of extraneous factors so that there is a consistency of measurement (reliability). To determine the validity of a survey instrument, the research worker must compare the survey results with some criterion of known validity which is related to the phenomenon being studied. Similarly, by a variety of checks, the reliability of the instrument must be determined.

Before a survey instrument is prepared in its final form, it should be given a variety of special checks, such as (1) tryout with a pilot group which is

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[14] John W. Best, *Research in Education* (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1959), pp. 243-244.

considered to be representative of the survey population selected for the study; (2) evaluation by research specialists and/or an advisory committee; and (3) special validity and reliability tests.

The completed returns need editing in terms of the usability of the data furnished; an analysis needs to be made to determine the adequacy of the respondent population in terms of the total survey population which has been included in the study; and, finally, the data collected need to be classified and tabulated in a convenient form for their interpretation and analysis. When this has been done, the research worker is ready to draw conclusions relative to the findings and to write the research report.

SUMMARY HIGHLIGHTS
AND
EVALUATIVE CRITERIA

CHAPTER V—REPORTING THE RESULTS OF SURVEY RESEARCH

I. GENERAL REPORT WRITING CONSIDERATIONS

Criterion—The research report is written in a clear, logical, and readable style.

0 1 2 3 4

Criterion Test Items

	Rating
1. Does the report conform to fundamental principles of English composition?	____
2. Does the report have an interest appeal and is it written with the reader in mind?	____
3. Does the report follow an acceptable form or outline?	____
4. Has time been allowed in the writing schedule for necessary revisions that must be made before the final copy of the report is prepared?	____

II. GENERAL PUBLICATION CONSIDERATIONS

Criterion—The research report is published in some form, or plans are made for publication, within a reasonable period of time after the completion of the survey study.

0 1 2 3 4

Criterion Test Items

	Rating
1. Have plans been made for report publication and has a "deadline" date been established?	____
2. Have plans been made relative to the form in which the report is to be duplicated?	____

III. CLASSIFICATION, ANALYSIS, AND INTERPRETATION OF SURVEY DATA AS A PRELIMINARY STEP TO WRITING THE RESEARCH REPORT

Criterion—The collected data are properly classified and analyzed so that valid and reliable interpretations can be made of the data.

0 1 2 3 4

Criterion Test Items

	Rating
1. Have the collected data been adequately classified as an initial step to interpretation?	____
2. Have the data been thoroughly analyzed as a second step to interpretation of the data?	____

Pages

Subtests:

a. Have tables, charts, graphs, and other summarizing forms been used for graphic presentation of the data? _____
b. Have the findings been analyzed in terms of their possible significance and importance? _____
c. Have immediate notes been made of implications that occur as the data are studied? _____
d. Has there been an awareness of the possible psychological effect of the survey instrument upon the respondents? _____

IV. PREPARATION OF CONCLUSIONS 75

Criterion—The conclusions are a logical outgrowth of the analysis and interpretation of the data

0 1 2 3 4

Criterion Test Items

Rating

1. Do the conclusions answer the questions which gave rise to the survey and are the conclusions limited to the data and the interpretations of the data? _____
2. Has there been strict adherence to the rules of logic and straight thinking in arriving at the conclusions? _____
3. Are the conclusions consistent with other known facts? _____
4. Have all facets of the data been considered in arriving at the conclusions? _____
5. Have the conclusions been developed with a conciseness and a clarity that is apparent to the reader? _____
6. If any of the conclusions represent generalizations from the interpretation of the data, has this been made clear to the reader? _____
7. Have the tentative conclusions been subjected to various tests as a measure of their soundness before the final draft of the conclusions is prepared? _____

V. ORGANIZATION OF THE RESEARCH REPORT ON PAPER 78

Criterion—Principles of correct presentation (style) and research report organization (form) are followed in writing the research report.

0 1 2 3 4

Criterion Test Items

Rating

1. Has a consistent style been followed in all parts of the report? _____
2. Has an acceptable format or research outline been followed? _____

CHAPTER V

REPORTING THE RESULTS OF SURVEY RESEARCH

This chapter presents the formal steps in the preparation and writing of a survey research report. Modifications in this formalized approach may need to be made in a survey report designed to provide data on a specific educational problem of a localized nature. The steps presented and the suggestions made are intended to provide guide lines and criteria of value to the survey research worker.

I. GENERAL REPORT WRITING CONSIDERATIONS

Making the necessary and proper interpretations of research data and writing the research report are matters that are much like the problem of "all the King's men" when they tried to put Humpty-Dumpty together. There is no magical word, such as *abracadabra*, that will do the trick. The process is challenging and interesting to the research-oriented person not so much because of the certainty of success, if the necessary time and effort is expended, but because of the promise of discovery.

CRITERION: THE RESEARCH REPORT IS WRITTEN IN A CLEAR, LOGICAL, AND READABLE STYLE.

It has often been said that, "If research is worth doing at all, it is worth reporting so that it can and will be read." Someone has said, too, that the research reporter "stops writing English when he begins reporting research."

CRITERION TEST ITEMS

Some of the report writing considerations which may be used as guide lines are included in the discussion which follows.

1. Does the report conform to the fundamental principles of English composition: Does it have unity, coherence, and emphasis? One of the tests that might be made of a research report is to check that the various parts conform to the basic principles of English composition. Unity, coherence, and emphasis should be apparent in the sentences and paragraphs making up each chapter. One chapter should logically follow another.

A clarity of style which includes unity, coherence, and emphasis, requires that the reporter possesses a good basic knowledge of English grammar. It is easy to find examples of "tangled sentences," incoherent paragraphs, and illogical organization in research reports.

If the writer does not have a sense of structure, he can hardly expect the reader to understand his pattern of thought. Often, too, the research reporter forgets that his long acquaintance with the problem under consideration enables him to see relationships that may not be apparent to the reader. He, therefore, must make sure that the structure of the whole report is clear to the reader. The best solution is to use clear sentences that hang together and present an uncluttered picture that gradually unfolds as the reader makes his way through the report. Thus it is that the reader travels the straight road, with no detours.

The research reporter who has difficulty expressing himself clearly will find many valuable suggestions in E. B. White's [1] interesting chapter titled "An Approach to Style."

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[1] William Strunk, Jr. and E. B. White, *The Elements of Style* (New York: The Macmillan Company, 1959), Chapter V, pp. 52-71.

2. Does the report have an interest appeal and is it written with the reader in mind? It is important to keep the reader in mind at all times when writing the research report. What sort of person will he be? How much background information will he have about the particular problem which is discussed in the report? How can the data be presented so that it will have an interest appeal?

What might be "dull research data" can come alive in the hands of the skillful reporter. The foregoing statement does not imply that the research reporter must write in the racy style frequently employed by the fiction writer. There are several principles of good writing that may be employed to make the report interesting. Some of these principles are listed here:

a. *The principle of personalization.* The principle of personalization means putting human interest into the research report by the use of specific examples and illustrations as the data are presented. It may be well to remember that respondents to a survey instrument are people, even after they have been dehumanized by statistical treatment. They can be used to personalize the report. The review of related literature can be a story of other research success and failure. It can point up the need for the present study. There can be drama in methodology. The research reporter can tell how he collected and treated the data. He can use illustrative cases to make concrete the generalizations derived from statistical treatment. He can explain and describe deviations from central tendencies.

b. *The principle of design and structure.* The survey instrument must have a clear design and structure. The research report, too, must meet this standard. This design and structure should be made clear to the reader. For example, out of his experience and study, the research reporter has formulated certain hypotheses regarding the problem which is the subject of the report. These hypotheses should be stated. The research reporter can then describe his plan for testing the hypotheses, or how he has treated the data collected. The presentation of the findings of the study then naturally follow with their interpretation and the generalizations or conclusions that are warranted.

c. *The principle of emphasis.* The reporter should make certain that the reader gets the important points. These can be "highlighted" by means of headings and subheadings. Too frequently the main ideas are cleverly disguised behind a facade of words which are scattered on the page in a scrambled jigsaw style. When this is done, the reader has the almost impossible task of "rattling the research brush pile with the hope that he can scare out a few rabbits which may represent the findings of the research."

   The reader, too, should be led along a straight-forward path to comprehension. Although the reporter should never make unwarranted conclusions from the data being presented, research reports are too often cluttered with "it would seem," "it should be recognized," "it was demonstrated," "one might judge," and other somewhat meaningless expressions. Translation of this cumbersome kind of writing into a terse, active form would help to vitalize many research reports.

   Another factor related to the principle of emphasis is to present and space ideas so that the reader has time to grasp them. The space between main ideas can be used for specific illustrations and supporting details which build up to main ideas.

d. *The principle of plain words.* Choice of words is important in making a report readable. First, the reporter should avoid "empty words" that do not express essential ideas; emotional words which may color or detract

from an objective presentation of the data; and words which may have dual meanings. Second, as suggested by Rudolf Flesch in his book *The Art of Plain Talk*, the reporter should use short, simple, concrete words whenever possible. If difficult technical words are necessary, the reporter should try to use them in a context that makes their meaning clear, or he should define and illustrate such words when they are used.

3. Does the report follow an acceptable form or outline? The logical presentation of the research data and findings is facilitated if an acceptable research outline is followed. Suggested outlines are found in many books on the preparation, writing, and planning of research reports (see the *Selected References* at the end of this report). Section V of this report illustrates one such acceptable outline and the divisions which are generally used.

In addition, there are various mechanical aids to clear report presentation. One such aid is the footnote. Footnotes can be used for a variety of purposes, such as (1) acknowledging quotations from the work of others, (2) giving credit to others who have been concerned with the same problem, (3) telling the reader where he can learn more about the particular issue being discussed, and (4) explaining points which may be somewhat obscure in the report itself. Another aid is to divide the report into chapters and sections and to use appropriate headings, subheadings, side headings, and paragraph headings. A third aid is the use of tables, charts, graphs, maps, and other graphic devices for classifying and summarizing data.

4. Has time been allowed in the writing schedule for the necessary revisions that must be made before the final copy of the report is prepared? It would be the unusual person who could prepare an acceptable copy of the research report on its first draft. In writing most research reports, it is often best to prepare an initial rough draft which can then be refined and checked to see that it conforms with the general writing considerations mentioned in this section. Time must be allowed for this necessary revision work in the writing schedule. The researcher may want to have others read the report in its various stages of development and pass on its acceptability.

As each page of the copy is prepared, the pages should be numbered for proper identification of the order of the copy. This may be done in pencil if additional pages are to be added later, or the additional pages may be given code numbers to identify the section where they are to be inserted when the final copy is prepared. If a number of drafts are necessary, it is suggested that each typed page bear a page number, chapter number, draft number, and date. Usually it is good practice to keep all draft copies (properly segregated, of course) of the report for some time after the final copy is prepared. These copies may have value in answering questions that may arise at a later date.

Prior to the final typing of the report, the copy should be laid aside temporarily. This "cooling off" period may enable the researcher to discover gaps in the report, additional implications of the data, or other weaknesses when he re-edits the report for clarity of style and organization, sentence structure, paragraphing, and wording. At this time, too, unnecessary material can be pruned from the report. This final critical study and analysis of the report should be a must on the part of the research reporter.

II. GENERAL PUBLICATION CONSIDERATIONS

CRITERION: THE RESEARCH REPORT IS PUBLISHED IN SOME FORM, OR PLANS ARE MADE FOR PUBLICATION, WITHIN A REASONABLE PERIOD OF TIME AFTER THE COMPLETION OF THE SURVEY STUDY.

Research is not complete until it has been reported and, if possible, published. Often survey research is undertaken in an attempt to seek answers to

some local educational problem in a particular school district. In such cases, the report of the research is frequently written for local consumption only; nonetheless, if such research has implications for educational practice in other school districts, the reporter has a research obligation to prepare a summary or abstract which he should submit to an appropriate educational journal for possible publication. Knowledge of such research and the findings may save other school districts time, effort, and money if they are contemplating similar studies, or if the findings may be adapted to the solution of specific educational problems in their own school districts.

CRITERION TEST ITEMS

Some of the considerations that are important in terms of report publication are listed below.

1. Plans should be made for report publication and a "deadline" date should be established. The value of most research lies in its timeliness; therefore, plans should be made for some form of publication of the findings within a relatively short period after the survey data have been collected. If it can be assumed that the survey study was of sufficient importance to be made, then it is equally important that time, funds, and personnel be budgeted for the preparation of the written report so that it can be published. When the survey is undertaken, the date of publication should be set and an appropriate time schedule should be developed to insure that this "deadline" date is met.

2. Plans should be made relative to the form in which the report is to be duplicated. It is important that a decision be reached before the writing of the report begins as to the form in which the report is to be duplicated. Depending upon the number of copies which may be needed, the research report may be typed, mimeographed, multigraphed, printed, or duplicated in a variety of other ways. Each process has special problems with respect to such items as arrangement; spacing; use of colors; cost of reproducing tables, charts, and graphs; and the time required for duplication.

The method of duplication used should be decided after consideration of the relative costs and merits of the various processes. The choice of the method of duplication will depend upon such factors as (1) the number of copies desired and the possibility of the need for additional copies at some later date; (2) the number and types of tables, illustrations, charts, graphs, photographs, or other special devices or aids to be included in the report; (3) the format desired, number of pages, and number of words to the page; (4) the price at which the report is to be sold (if it is to be sold); (5) the type of reader to whom the report is addressed; and, (6) the importance of a "finished-product look" in relation to the purpose and importance of the report.

If the research is sponsored, the sponsoring agency may provide funds for the publication of the findings in a special printed report, or a monograph, so that they will be available to a larger public; it may also assume the responsibility for the distribution of the completed report.

The purpose of the survey and the potential readers of the final report of the survey results must be considered, too. When the report is prepared for popular consumption by readers not familiar with survey procedures or terminology, the plan, emphasis, and style may have to be modified somewhat from that employed for use with educational specialists. The usual practice is to prepare a special summary report which highlights the findings when the report is prepared for a group of readers not directly concerned with the problem of the survey study.

Again, it should be emphasized that if the study may be of interest and value to others in the educational field, every effort should be made to get at least an abstract of the report published in an appropriate educational journal.

III. CLASSIFICATION, ANALYSIS, AND INTERPRETATION OF SURVEY DATA AS A PRELIMINARY STEP TO WRITING THE RESEARCH REPORT

CRITERION: THE COLLECTED DATA ARE PROPERLY CLASSIFIED AND ANALYZED SO THAT VALID AND RELIABLE INTERPRETATIONS CAN BE MADE OF THE DATA.

The classification, analysis, and interpretation of the survey data constitute important steps in the research process. It is this basic study of the data which is used to support the implications or conclusions that may be drawn from the study. If the survey research instrument has been properly designed, if the collected data have been adequately classified, analyzed, and presented in a logical and orderly manner, the conclusions drawn from the data will help to provide at least some of the answers to the questions that formed the basis for the study, or they will lead to the acceptance or rejection of the hypotheses which guided the research.

It is at this point in the study that the research person needs to ask himself this question: How good are these findings? If the data are valid and reliable, the answer is provided not by the findings alone, but by the findings plus the interpretation that is made of the findings. It is at the point of interpretation of data that the research skill and insight of the research person is tested. He must be able to make valid and reliable interpretations of the tabulated and classified data, and he should see the implications of such interpretations.

CRITERION TEST ITEMS

What, then, are some of the preliminary steps that need to be taken if the findings are to be properly classified and analyzed so that valid and reliable interpretations can be made of the data?

1. The collected data must be properly classified as an initial step to interpretation. Proper classification of data has a variety of functions which may be listed as follows:

a. It is the first step in quantitative description or analysis of data.
b. It provides for organization of collected data.
c. It is a form of definition in that it makes possible a more precise description of a thing, a concept, or a category.
d. It suggests possible relationships between groups of data.
e. It is basic to the quantitative or statistical analysis of data.

Usually at the time the survey instrument is designed, the researcher will attempt to set up classifications which divide the collected data into relatively homogeneous groups or categories. Often, too, even though useful classifications have been built into the survey instrument, additional classifications of the data are suggested at the time the data are tabulated. If the research instrument has not been designed so that the collected data will be pre-classified, it will be necessary to establish suitable and usable classifications of the data at the time they are tabulated.

Some of the principles governing classification of data may be listed as follows:

a. *Classification may be based on any common characteristic of the data to be sorted or classified.* (The characteristic may be one selected for con-

venience, resulting in an *artificial* classification, such as, an alphabetic classification; or, it may be a *natural* characteristic of the data to be classified, such as, kinds of work experience.)

b. *Classification requires clearly defined categories.*
c. *The various classes must be mutually exclusive* (must not overlap).
d. *The various classes must be comprehensively exhaustive.* (A place must be provided for every possible datum, including no response.)
e. *Classification presupposes extensive knowledge of the characteristics and properties of the data being classified.*
f. *Classification may be simple or complex.* (For example, the number of students in each high school class—freshmen, sophomores, juniors, and seniors—could be counted. This would be a simple classification. A more complex classification would be a division of the class groups into male, female, and age groups.) [2]

2. After the data have been properly classified, they should be thoroughly analyzed as a second step leading to accurate and meaningful interpretation of the data. After the data have been classified, the important question is this: How are the data analyzed? There is no one best way to answer this question. Some suggestions which may be of value to the research person are these:

a. Use tables, charts, graphs, and other summarizing forms for presentation of the data. Data are often best analyzed if the classifications of the data are presented in a series of tables, charts, graphs, or other summarizing forms. Such devices are also of value to the reader as they enable him to comprehend and interpret masses of data rapidly, and to see significant details and relationships.

When tables are used, the survey data are often converted into percentages as a basis for comparison and analysis. Such a procedure, however, may require special attention to the interpretation. For example, as was noted earlier in this report, when the number of cases is less than 100, the change of one case has an important effect upon the percentage figure; in some complex classifications (when the classifications may not be mutually exclusive) the sum of the percents may total more than 100 percent. Data in tables may be subjected to a variety of statistical analyses to test the significance of any differences noted.

The procedure usually followed by survey reporters is to examine the tables in the order regarded as most important at the time of the tabulation of the data. Parten suggests that for each table, the analyst asks such questions as these:

(1) What is the most important point revealed by this table?
(2) What other points are brought out?
(3) What is significant about the total shown?
(4) Are the averages higher or lower than one would have expected or than were known to have been the case at an earlier period or in another place?
(5) Are the averages pretty stable or is there great variability among them and in the components from which the average is computed?
(6) Why do the smallest figures shown fall in that particular grouping? How can the infrequent or low numbers be explained?
(7) What is the largest figure shown? Does it make sense? How does it compare with numbers or percentages found in comparable items, places, populations, on the same table or on other tables?

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[2] Adapted from David G. Ryans (Unpublished *Syllabus in Research Design*, University of California, Los Angeles, 1954), p. 88.

(8) What general trend seems to exist? If there is none, why not?
(9) What conspicuous exceptions to the general situation are observable? Can these exceptions be accounted for?
(10) Are any causal relationships apparent? If so, does the cause seem to operate throughout the table or just here and there? What checks from other tables can be made where these causes should also show up?
(11) Do certain sequences seem to occur with any amount of regularity?
(12) Is there something about the way the sample was drawn, or the questions asked, that could explain why the table shows these particular results?
(13) How do these facts compare with those already known or shown by other tables? Are they consistent? Are they more or less pronounced?
(14) Which groups could be combined and which could be shown in greater detail to reveal significant facts?
(15) Would it be desirable to go back to the original schedules from which the tabulations were made to see what kind of people and what responses account for certain portions of this table?
(16) What summary figures should be computed from those appearing on the table? What measures of central tendency, variability, or correlation are desirable? [3]

Questions such as Parten has suggested enable the research person to discover the important similarities, differences, sequences, causal relationships, and limitations of the data. Parten suggests, too, as the various questions are being answered by inspection and analysis of the tables, the researcher should jot down his observations so that when he begins writing the report he will need only to select and integrate the most significant findings into a meaningful presentation.

b. Study the findings in terms of their possible significance and importance. One phase of interpretation is the ability to separate the significant findings from the insignificant. The caution that is indicated here is one which the overly enthusiastic research person frequently gives to his findings: He endows the commonplace event with world-shaking interpretations. It is much like the witticism expressed by Mark Twain when he said: "Often a hen who has merely laid an egg cackles as if she has laid an asteroid." Wilson's [4] comment may be especially appropriate at this point, too. In discussing a similar problem of reporting in the field of science he cautions: "The momentary signal on the cathode-ray screen may be worth a Nobel prize; but it may also be the thermostat turning on the room heat." The survey research reporter must be certain, then, that what he has found is really significant. Often, if possible, a test of the statistical significance of such a finding should be made by use of a reliable statistical technique.

c. Make immediate notes of implications that occur as the data are studied. Usually at the time data are being studied and analyzed, the mind is most productive in terms of possible implications of the findings. It is important that the researcher make immediate notes of such implications since at a later time it may be difficult to try to recall them from memory. Implications occur, too, as he thinks in terms of the questions which formed the basis for the survey.

d. Look for unexpected findings that may be revealed by the data. A keen awareness and a sensitivity to even such things as "dull facts and figures" may

[3] Mildred Parten, *Surveys, Polls, and Samples: Practical Procedures* (New York: Harper and Brothers, 1950), pp. 522-523.
[4] E. Bright Wilson, Jr., *An Introduction to Scientific Research* (New York: McGraw-Hill Book Company, Inc., 1952), p. 149.

reveal unexpected findings. Many notable discoveries have been made by just such awareness. In the field of science, the discovery of the germ-killing power of pencillium was a chance discovery which was due to the awareness and alertness of a scientist pursuing the solution to another problem. Such highly desirable by-products of research are often referred to by the coined term "serendipity" —an expression that refers to "accidental. or unexpected discoveries," usually entirely unrelated to the research problem. Such discoveries open new vistas and new areas of investigation. They help man in his efforts to move into new areas of knowledge and in his efforts to push back the walls of his ignorance.

e. Be aware of the psychological effect of the survey instrument upon the respondents. The psychological situation or "halo" effect created by the research instrument upon the respondents may be a "variable" which affects the data. In other words, the research effect itself may be the variable and not the thing being investigated that leads to the results observed or collected. This is especially true in experimental studies with people, but it may also be true in survey research. The interpretation, then, may need to include a consideration of this factor.

IV. PREPARATION OF CONCLUSIONS

CRITERION: THE CONCLUSIONS ARE A LOGICAL OUTGROWTH OF THE ANALYSIS AND INTERPRETATION OF THE DATA.

The drawing of the conclusions from the analysis and interpretation of the survey data constitutes the final step in preparation for writing the research report. If the survey research design has been good, and if accurate interpretations have been made of the data, the conclusions can be definite and should provide answers to the questions that originally led to the need for the study. The conclusions should be based on the data and should be a logical outgrowth of the analysis and interpretation of the data.

CRITERION TEST ITEMS

Some of the considerations that enter the research picture at the point of drawing conclusions from the research data are these:

1. Do the conclusions answer the questions which gave rise to the survey and are the conclusions limited to the data and the interpretations of the data? It is somewhat axiomatic to state at this point that the conclusions reached through the accumulation of research data should provide answers to the questions or problem that originally led to the study. The researcher has an obligation to make certain that he gives a definite and full answer to all the questions which were posed for the survey investigation. These answers, however, must be limited to the data collected in the study; to generalize beyond this point may be dangerous unless the limitations of such generalizations are clearly indicated.

2. Has there been strict adherence to the rules of logic and straight thinking in arriving at the conclusion? Of equal importance to the preceding criterion test item is the criterion test item listed here. The conclusions arrived at must be drawn from the research findings in accordance with accepted logical principles, and the conclusions must be susceptible to logical treatment. Nearly everyone is susceptible to fallacies of reasoning. Many such common fallacies may be found in conclusions drawn from research data. It is important that the researcher be aware of these pitfalls.

Searles discusses several fallacies of induction and scientific methods. The research reporter may want to refer to this discussion. The list by Searles is as follows:

a. Individual prejudices and prepossessions

b. Fallacies of observation
- *(1) Incomplete observation*
- *(2) Inaccurate observation*

c. Fallacies of classification
- *(1) Incomplete classification*
- *(2) Overlapping classification*
- *(3) Cross classification*

d. Fallacies in the use of hypotheses
- *(1) Improbable hypotheses*
- *(2) Hypothesis "Contrary to Fact"*

e. Fallacies incident to the determination of causes
- *(1) Post hoc ergo propter hoc (After that, therefore, caused by that)*
- *(2) Insufficient analysis and enumeration of antecedents*
- *(3) Insufficient analysis and enumeration of differences*
- *(4) Accidental temporal or partial concomitance*

f. Hasty generalization

g. False analogy

h. Statistical fallacies
- *(1) Unrepresentative sampling*
- *(2) Application of results derived from group phenomena to individual cases*
- *(3) Failure to state the reliability of results*
- *(4) Fallacy of chance correlation* [5]

3. Are the conclusions consistent with other known facts? The conclusions arrived at should be consistent with what is known, or the possible reasons for any discrepancies should be explained. Here the researcher should make certain that (1) the conclusions are consistent with the findings or interpretations resulting from analyses of the survey data; and, (2) the conclusions are consistent with the findings of related investigations, with the facts revealed by other sources of information, and with the facts known to be valid and reliable in other comparable situations. It is appropriate here to apply "common-sense tests" in evaluating the validity of the conclusions.

4. Have all the facets of the data been considered in arriving at the conclusions? "Elementary, my dear Watson," was a favorite expression of Sherlock Holmes when he astounded Dr. Watson with his conclusions in the famous Sir Arthur Conan Doyle mysteries. Doyle endowed his hero with extraordinary powers of observation. This was apparent when Holmes explained his deductions to Dr. Watson. A similar "Sherlock Holmes" approach is suggested in arriving at conclusions based on survey research data: All facets of the data should be considered in arriving at the conclusions.

5. Have the conclusions been developed with a conciseness and a clarity that is apparent to the reader? If the research data are presented in a logical

[5] See Herbert L. Searles, *Logic and Scientific Methods*, Second Edition, (New York: The Ronald Press Company, 1956), Chapter 17, pp. 318-329, for a complete discussion.

order, the conclusions will be a natural outgrowth of the analysis of the data. The conclusions should be supported by a clear presentation leading directly from the survey results. If the results are not conclusive, this fact should be pointed out. The reporter also has an obligation to make clear the limitations of the data or the methodology of the study. If the data are the result of uncontrolled factors or variables other than those investigated, every effort should be made to indicate these factors or the reader will have a right to suspect the validity and reliability of the conclusions reached.

6. If any of the conclusions represent generalizations from the interpretation of the data, has this been made clear to the reader? If any of the conclusions represent generalizations from the data to a larger population than that involved in the study, or to other analogous situations, such conclusions should be stated with a degree of caution of which the reader is made aware. The limiting conditions of such generalizations, such as the sampling limitation, should be made clear. If the conclusion is not new, it is desirable that the origin of the conclusion be indicated with appropriate references.

7. Have the tentative conclusions been subjected to various tests as a measure of their soundness before the final draft of the conclusions is prepared? Parten offers advice regarding the careful scrutiny that should be made of tentative conclusions. She suggests that conclusions be reviewed to see whether:

a. It is possible to come to opposite conclusions with the same material.
b. Other persons on the staff would reach the same conclusions with the evidence shown.
c. The conclusions are consistent with one another and with other known facts.
d. They seem to make sense—and if not, why not.
e. They are colored by the writers' [sic] personal biases.
f. Their meaning is unmistakable.
g. They could be accounted for by the survey techniques used.[6]

Suggestions arising during the course of making these special tests of the tentative conclusions should be utilized in preparing the final draft of the conclusions.

On the basis of the conclusions which are drawn up from the analysis and interpretation of the data, the researcher may want to make a number of recommendations for the modification or change of educational practices, or he may want to suggest possible applications of the research findings. He will find that the persons who are expected to use the findings or adopt the recommendations made will more readily do so if an attempt has been made to involve them in the study. Conferences and discussions should be held with such persons. They should be made to feel that they had a part in the development of the conclusions and recommendations. A feeling on their part that it is "our program" rather than "your program" is a long step toward getting the findings into educational practice or use.

It is also appropriate for the researcher to indicate promising side problems that have been uncovered as a result of the investigation, and to suggest promising or fruitful areas for further research.

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[6] Parten, *op. cit.*, p. 524.

V. ORGANIZATION OF THE RESEARCH REPORT OR PAPER

All research reports are expected to follow a similar pattern of presentation and organization even though it is at this point that the similarity may end. These matters of research style and form are based upon principles of clarity in the organization and presentation of research data. The formal organizational plan for the presentation of the various parts of the research report are intended to help the reporter arrange his report in the most effective manner possible.

CRITERION: PRINCIPLES OF CORRECT PRESENTATION (STYLE) AND RESEARCH REPORT ORGANIZATION (FORM) ARE FOLLOWED IN WRITING THE RESEARCH REPORT.

A. STYLE

Various research style manuals have been published. These style manuals include a discussion and illustrations of such items as (1) the format of the report, (2) the use of quotations, (3) how to show footnote and bibliographical references, (4) the planning and form for tables and illustrations, (5) typing aids, (6) the mechanics of English or grammar, and (7) various specimen forms and guides. It is obvious that a style manual is an invaluable aid to the research reporter if the reporting style is to be consistent and acceptable. Several useful report writing style manuals are listed in the *Selected References* section at the end of this report.

B. ORGANIZATION OR FORM OF THE SURVEY RESEARCH REPORT

The following suggested outline indicates the usual sequence of topics as they appear in the survey research report. Modification of this formal outline may need to be made by the researcher in arriving at a plan for the most effective organization of his research report.

FORMAT OR OUTLINE OF THE SURVEY RESEARCH REPORT

I. Preliminary Section
   - A. Title Page
   - B. Acknowledgments (if any)
   - C. Table of Contents
   - D. List of Tables, Charts, and Illustrations
   - E. Abstract of Study (may or may not be given)

II. Text or Body of the Report
   - A. Introduction
     1. Statement of the problem
     2. Significance of the problem
     3. Purposes of the study
     4. Limitations and assumptions
     5. Definition of important terms used
   - B. Review of Related Literature or Analysis of Previous Research
   - C. Design of the Study
     1. Procedures used
     2. Sources of data
     3. Methods of gathering data
     4. Description of survey instrument or instruments used
     5. Analysis of survey population
     6. Treatment of data

D. Presentation of Data
   1. Text or report of findings (Presentation and classification of data—tables, graphs, etc.)
   2. Analysis and interpretation of data

E. Summary of Findings and Conclusions
   1. Restatement of the problem and purposes of the study
   2. Brief description of procedures used
   3. Summary of findings
   4. Conclusions
   5. Recommendations

III. Reference Section

A. Bibliography

B. Appendix
   1. Copy or reproduction of survey instrument used
   2. Other miscellaneous data pertinent to the study.

A brief description and discussion of each of these parts of the report follows:

PRELIMINARY SECTION

1. Title page. The title page includes the title of the report, the name of the author or authors, and other identifying information including the place and date of publication or release.

The title is the important "first impression" that the prospective reader gets of the study; on this basis he may decide whether or not the study is worth reading. The title should be chosen with care. It should accurately describe the study. The wording of the title should be studied carefully in order to keep it brief and yet increase its content of information.

2. Acknowledgments. An acknowledgments page is usually included in the report as a matter of courtesy. When used, however, the wording should be simple and restrained. On this page proper credit is given to others who have rendered special assistance in the conduct of the study. If the study was made under a financial grant, the contributing agency should be recognized and acknowledged.

3. Table of contents. The table of contents serves the special purpose of providing a general outline of the research report. It shows the division of the report by chapters and the main and subheadings of each chapter with page references.

4. List of tables, charts, and illustrations. Generally speaking, the list of tables should be separated from the list of charts and illustrations. If the report contains more than twenty tables, arabic numerals may be used in numbering the tables; if fewer than twenty tables, either arabic or roman numerals may be used.

5. Abstract. Some research reports contain an abstract of the study in the preliminary section. The abstract describes the nature, objectives, limitations, and data of the report. It usually includes a summary of the pertinent findings. It gives other research workers an indication of the worth of the research. They can then decide whether or not a detailed study of the research report itself would be of value to them.

TEXT OR BODY OF THE REPORT

Five sections or divisions of the body of the report have been listed in the preceding outline. In a complete research report, these divisions usually comprise the chapters of the report.

1. Introduction. The introduction to the report should be brief. Usually only a few paragraphs are necessary to orient the reader and acquaint him with the problem situation which led to the study.

a. Statement of the problem and its significance. The statement of the problem which led to the research study is the crux of the report. It is important that the problem be clearly identified and that its significance be described. Along with the problem, specific questions which the research was designed to answer are usually given.

b. Purposes of the study. In this part, the specific purposes of the study are stated. Often, after a brief introduction which includes a discussion of the problem which led to the research, the reader is led directly into a brief but clear statement of the purpose of the study.

c. Limitations and assumptions. Here, too, it is important that a clear and complete discussion of the limitations of the study be given. The worthiness of the report is often judged by whether or not the researcher has clearly recognized the limitations of the study and how these may have affected the findings of the research. Also, if any specific assumptions were made, these should be discussed.

d. Definition of terms. If any words or terms are used in the research report with which the reader may not be familiar, these words and terms should be carefully defined. Such definitions are necessary if the reader is to understand the concepts underlying the development of the investigation. Also, "operational" or "working" definitions should be given for any words that have special significance for the survey.

2. Review of related literature or analysis of previous research. This section of the report reviews the important literature related to the study. It provides background information for the reader. This part of the report gives evidence, too, that the researcher is aware of the related work that has been done in the field and that he is cognizant of where his particular investigation fits into the accumulated knowledge. The important findings of previous investigations may be listed. The research review should show the relationship of the previous studies to the present study and should give some indication of the need to go beyond the findings of previous research in the solution of the problem with which the present study is concerned.

3. Design of the study. This section or chapter of the research report describes the design of the study. The procedures used, the sources of data, and the methods used to gather the data should be adequately described. Ideally, sufficient information should be given to enable another person to duplicate the research investigation if he so desired.

The data-gathering instrument or instruments should be described from the point of view of their appropriateness, and some evaluation of their validity and reliability should be given.

It is important, too, that an analysis of the survey population be given. If sampling techniques were followed, these should be described so that the reader may have some indication of the adequacy of the sample. In this part, also, the percentage of returns of the survey form should be shown and the respondent population should be analyzed. The research reporter should provide evidence of his awareness of the character of the non-respondent survey population and how

consideration was given to this aspect of the research in the interpretation of the data.

The reader should be told how the data were treated. This part of the report may well present a brief discussion of the following points as related to the treatment of the data: (1) the kind of data collected, (2) how the data were classified and tabulated, (3) the plan used in presenting the data, and (4) how the data were analyzed and interpreted.

4. Presentation of the data. All of the foregoing in a research report is by way of prologue to the presentation of the data. The presentation, analysis, and interpretation of the data are the heart of the research report. The textual discussions of the data are usually supported by tables and other graphic devices. The data should be so clearly and logically presented that the reader is led to the conclusions which follow this section, or chapters, of the research report. The analyses to which the data have been subjected and the interpretations made should be so clearly and completely specified that there can be no misunderstanding on the part of a reader qualified to read the report.

5. Summary of findings and conclusions. The summary of the findings and the conclusions that may be drawn from the findings is another vital section of the research report. Often, this may be the only part that the busy educator and other readers will have time to study and evaluate in their search for significant information.

This section of the report should open with a restatement of the problem and the purposes of the study. A brief description of the procedures followed and an analysis of the survey population should be included. Other pertinent information concerning the treatment of the data should be presented in capsule form.

A summary of the findings are then presented. The principal findings should, as a general rule, be numbered and presented in as succinct a fashion as possible. If the findings can be arranged or grouped in a form that may lead to answers to the questions posed for the research, this would be desirable.

The conclusions follow the summary of the findings. The conclusions, as indicated in the previous chapter, are a significant and important part of the report. The final conclusions should lead directly from the analysis and interpretation that was made of the data presented in the research report. They should be objectively stated, and they should be based on the evidence presented in the report. If there is a possibility that the basis for a conclusion may not be clear to the reader, supplemental argument and evidence should be provided.

Finally, it may be appropriate for the research reporter to make suggestions or recommendations for the practical application of the survey findings in educational work or for other courses of action that may be desirable. The recommendations may indicate how the findings can be used in the solution of the problem upon which the survey research was based. If this cannot be done on the basis of the findings, it is appropriate to indicate areas in which additional research may be needed.

REFERENCES

The reference section is the final section of the research report. It includes the bibliography and the appendix.

1. Bibliography. The bibliography contains a listing of the references that were used or referred to during the course of the research study. An approved style-manual form should be followed in listing the various books, pamphlets, monographs, research studies, and periodical references making up the bibliography.

2. Appendix. A variety of supplemental materials may be included in the appendix. A copy or reproduction of the survey instrument used in the study should be included. Other data-gathering instruments that may have been used, the covering letter, the follow-up forms used, and special tables or other data (considered important but not essential to an understanding of the report) are also displayed in the appendix. Each separate item is given a special appendix listing, such as Appendix A, Appendix B, Appendix C, etc.

VI. FINAL EVALUATION OF THE SURVEY RESEARCH REPORT

CRITERION: THE RESEARCH REPORT IS SUBJECTED TO A FINAL CRITICAL ANALYSIS AND EVALUATION BEFORE PUBLICATION OR BEFORE IT IS DUPLICATED IN ITS FINAL FORM.

The research report should be evaluated in terms of a number of factors. Some of these factors are the following: (1) the significance of the problem and a clear statement of that problem; (2) the adequacy of the review of the related literature; (3) the appropriateness of procedures used; (4) the analysis of the data and the conclusions reached; and (5) the overall form and style of the report.

CRITERION TEST ITEMS

Best [7] suggests that a critical analysis and evaluation be made of the research report. Several factors should be considered in making this analysis and evaluation. A suggested research report evaluation form is shown below.

VII. SUMMARY

Considerations pertinent to the writing, publication, analysis and interpretation of survey data, preparation of conclusions, organization of the research report, and final evaluation of the completed survey research report have been discussed in this chapter.

It is important that the research report be written in a clear, logical, and readable style. This means that the report must conform to these basic requirements: (1) it has unity, coherence, and emphasis; (2) it has an interest appeal and it is written with the reader in mind; (3) it follows an acceptable order or form for the presentation of the various parts of the report; and (4) it has been subjected to careful study and revision before the final copy is prepared.

RESEARCH REPORT EVALUATION FORM [8]

	0 1 2 3 4 Rating *		0 1 2 3 4 Rating *
Problem		Review of related literature	
significance recognized	____	adequately covered	____
clearly stated	____	well-organized	____
properly delimited	____		
assumptions given	____	Form and Style	
limitations recognized	____	margins	____
important terms defined	____	balance	____
Process		spacing	____
appropriate	____	headings	____
described adequately	____	quotations	____

[7] John W. Best, *Research in Education* (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1959), pp. 280-281.

[8] Modification of suggested form given by Best, *Research in Education*, p. 307.

* See suggested Evaluative Criteria and Criterion Test Item Rating Scale given in the introductory pages of this report.

skillfully planned ____
appropriate data-gathering device ____

Analysis and Conclusions

logical ____
based on data presented ____
objectively stated ____
effectively summarized ____

footnotes ____
pagination ____
typing ____
tables ____
figures ____
bibliography ____
punctuation ____
spelling ____
sentence structure ____
writing style ____

In addition, plans should be made for publication of the research findings, in some form, within a reasonable period of time after completion of the study. This is especially important if the survey findings have broad, rather than purely local, implications; or if they may be of value in other areas of education where similar problems exist.

As a preliminary step to writing the research report, the survey data must be classified, analyzed, and interpreted. This preliminary step leads to the preparation of the conclusions. These conclusions should be based on the data collected, and they should be a logical outgrowth of the analysis and interpretation of the data. A number of tests to which the conclusions should be subjected are suggested.

The final research report should be evaluated in terms of (1) the significance of the problem, (2) the recognition of the limitations of the study, (3) the thoroughness with which the related literature has been reviewed, (4) the adequacy of the survey population and the appropriateness of the procedures followed, (5) the presentation and interpretation of the survey data, (6) the acceptability of the conclusions in terms of the analysis of the data, and (7) the overall form and style of the report.

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EVALUATIVE CRITERIA

SUMMARY SHEET *

PREREQUISITES TO PLANNING A SURVEY	
The survey is so planned, organized, co-ordinated, and controlled that accurate and meaningful data which are relevant to the question or problem raised are collected.	0 1 2 3 4
TYPES OF SURVEY INSTRUMENTS	
1. *Exploratory survey instrument*—The exploratory survey instrument is designed to get initial or tentative answers to the problem.	0 1 2 3 4
2. *Fact-finding survey instrument*—The fact-finding survey instrument is designed to secure facts about a particular situation.	0 1 2 3 4
3. *Opinion-attitude survey instrument*—The opinion-attitude survey instrument is designed to secure subjective data that provide an accurate description of current feelings and opinions.	0 1 2 3 4
4. *Evaluative survey instrument*—The evaluative survey instrument attempts to assess the worth, the value, or the success of some phenomenon; hence, it should elicit value judgments from the respondents.	0 1 2 3 4
WRITING ITEMS FOR SURVEY INSTRUMENTS	
1. The questions are carefully developed so as to elicit meaningful answers which express beliefs, opinions, or knowledge of the respondents.	0 1 2 3 4
2. The questions are clearly stated so as to elicit the choice of the most appropriate alternative listed with the question.	0 1 2 3 4
3. The words used convey the intent of a particular question and will mean the same thing to all respondents.	0 1 2 3 4
4. The principles of good grammar are not violated in writing the items for the survey instrument.	0 1 2 3 4
5. The physical arrangement of the items will be attractive to the respondent and will expedite the tabulation of the data when the survey instruments are completed and returned.	0 1 2 3 4
ASSESSING THE ADEQUACY OF SURVEY INSTRUMENTS	
1. The survey results agree with some criterion which is regarded as an acceptable measure of the phenomena being studied.	0 1 2 3 4
2. A repetition of the survey using the same data-collection procedures and covering a comparable sample population gives the same or approximately the same results.	0 1 2 3 4
3. A variety of special checks are made of the survey instrument, of the survey data, and of the survey population in assessing the adequacy of the survey instrument and the collected data.	0 1 2 3 4
REPORTING THE RESULTS OF SURVEY RESEARCH	
1. The research report is written in a clear, logical, and readable style.	0 1 2 3 4
2. The research report is published in some form, or plans are made for publication, within a reasonable period of time after the completion of the survey study.	0 1 2 3 4
3. The collected data are properly classified and analyzed so that valid and reliable interpretations can be made of the data.	0 1 2 3 4
4. The conclusions are a logical outgrowth of the analysis and interpretation of the data.	0 1 2 3 4
5. Principles of correct presentation and research report organization are followed in writing the research report.	0 1 2 3 4
6. The research report is subjected to a final critical analysis and evaluation before publication or before it is duplicated in its final form.	0 1 2 3 4
OVERALL SURVEY INSTRUMENT RATING	0 1 2 3 4
OVERALL RESEARCH REPORT RATING	0 1 2 3 4

* See "Directions for Using Evaluative Criteria," page vii.

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