Research Methodology: Qualitative or Quantitative?


The dogmas of the quiet past sleep quietly beneath the turbulence of the present;
And those who bestir that turbulence: The thinkers of today, the pioneers of tomorrow create new methodologies that affect us all

A method is, very simply, a way of accomplishing an end result. It is how one operates, a way to get the job done. So far, in those two sentences one word has occurred twice. Were you aware of it and, particularly, of its importance? That word is the key to the meaning of method.

Method is a word coined of two Greek elements: meth- and odos. The meth- is an element meaning "after," odos means "way." A method is, therefore, a following after the way that someone found to be effective in solving a problem, of reaching an objective, in getting a job done.

Recall a teacher you have known whose inimitable way of presenting subject matter has fixed that educational experience irrevocably in your mind. What you remember is the way that teacher taught you: the method and the fact.

Consider Aristotle, his pupils around him, walking with them in the peripatos of the Lyceum, imparting his thoughts on physics, on biology, on politics, on ethics, on poetry, and even on the Soul. They took notes on the thoughts of this most unusual teacher who taught them in a most unusual way: by the peripatetic method.

So much for method. Now what about the -ology? That, too, is Greek. It means "the study of." Hence, methodology is merely the study of a particular method, or methods, for reaching a desired end.

Research methodology is a continuing process. It is a continuum that is ever changing, ever developing, and this aspect of research methodology has disturbed some.
To Each One's Own

We should not be disturbed, however, that the methodology of research is in continual ferment. Anyone who follows the literature is aware of this turmoil. It is the restlessness that is characteristic of youth. It is also the restlessness that accompanies the seeking of new worlds of knowledge and more effective ways to deal with the problems of the present, whether of greater (understanding the universe) or lesser magnitude (how do individuals learn?). The academic disciplines whose roots are in the trivium or the quadrivium of medieval education are, perhaps, less vulnerable to methodological turbulence. Compared to these, research, and its methodology, is a relative newcomer to the epistemological hierarchy. Even today it is scarcely beyond its unstable adolescence. In the long history of the human quest for knowledge, the short span from the last quarter of the nineteenth century to the threshold of the twentieth is a miniscule period for the development of any system whose purpose is to solve human problems and enlarge human knowledge.

Modern research probably began as an outgrowth of the empirical methods in psychology promoted by Wilhelm Wundt (1832-1920) in the last quarter of the nineteenth century. Wundt’s method of investigation was experimentalism, an early form of research. In 1879, in Leipzig, Wilhelm Wundt instituted the first laboratory for the systematic experimental study of experience and the mental processes.

Up to that time knowledge of the human mind and mental behavior was discussed under such labels as mental philosophy, metaphysics, and rational philosophy. The approach was didactic. The concepts were figments of the imagination.

Wundt turned this whole conceptual process around and made the study of psychology an inductive process subject to the scientific method, and in so doing founded the study of mental behavior known as experimental psychology. No more was the manic-depressive syndrome attributed to a "disturbance of the soul, a matter of melancholia-black bile," a remnant explanation that invoked the theory of the humors of medieval medicine-or a "fever in the brain." These causes had no foundation in fact and were phantoms of the imagination.

The epistemological revolution spearheaded by Wundt and given momentum by his students was enormous. Such names as Titchner, Cattell, and Thorndike, among
others, planted the seeds and nourished the growth of empirical research in American higher education\(^1\). Hence, the introduction of research as an academic discipline was initially under the aegis of psychologists and educators. But research did not long remain a monopoly of those two areas. Scholars in other disciplines soon adopted the research methodology for the resolution of problems and the enlargement of knowledge in their own areas. Adaptation demanded in many instances a reevaluation of the investigative and methodological goals of the discipline. Seismic tremors soon were felt throughout academia as each discipline began to adapt basic research methodology to its own specific needs.

For example, Lewis Robert Binford jolted archeological research by introducing a new direction to archeological investigation. The older research in archeology was merely concerned with reconstructing the past out of the available dues and artifacts. The "new archeology," introduced by Binford and others, argued that archeological research should be directed not only at reconstructing the past but also at determining the processes responsible for that past thereby injecting a causal factor into the methodology."\(^2\).

In the same decade that Binford was introducing a new research emphasis in archeological research, a major change was taking place in the methodology of geographic research. It was prompted by the desire to make geography more acceptable as an advanced academic discipline and was characterized by an attempt to study the factors, not only with the features of the earth but also with those that control the spacial organization of the human species. This new emphasis in geographic research was known as locational, or spatial, analysis. The new methodology led to the adoption of statistical methods as a major research technique."\(^3\).

\(^1\) Edward Bradford Titchener (1867-1927) headed the new psychological laboratory at Cornell University where he was research professor, probably the first in the history of American higher education to hold that title. James McKee Cattell (1860-1944) was among the first American psychologists to introduce the methods of psychological experimentation to the American campus. Edward Lee Thorndike (1874-1949), from 1922 served as Director of the Division of Psychology at Columbia University, in the Institute of Educational Research. His principal contributions to research were in the areas of measurement of intelligence and in learning ability.


\(^3\) This is not to imply that statistics was a new aspect of geographical research. The science of statistics had been used by Torsten Hagerstrand in Sweden and Walter Christaller in Germany as early as the 1930s, but the influence of statistics in affecting research methodology in geography was given a new impetus in the 1960s'.
constructed models have become the new tools that geographical researchers are adapting to predict future trends, or spatial patterns, in the world of tomorrow.

In biological research, a major advancement was introduced with the technique of tissue culture. Tissue culture methodology has let researchers study specific cells and their interactions, which has greatly facilitated the study of cancer cells, the isolation of specific viruses, and the production of viral vaccines and hormones, and has aided in identifying genetic defects, in classifying malignant tumors, and in determining tissue compatibility for organ transplants. Like a mushroom cloud, research has unfolded new methodologies in every academic discipline with startling rapidity.

The Data Controls The Methodology: Qualitative Or Quantitative

All research methodology rests upon a bedrock axiom: The nature of the data and the problem for research dictate the research methodology.

All data, all factual information, all human knowledge must ultimately reach the researcher either as words as numbers. This may not sound true, but it is, and it is such a common phenomenon that we seldom notice it. Take this example: I am interested in aerobics, but I do not know how strenuously to exercise. I pick up a medical guide with a chapter on "The Healthy Body" and a subsection of that chapter entitled, “The Essentials of a Good Exercise Program.” Here is the first directive I encounter. It tells me exactly what I want to know.

Have at least 3, and possibly more, exercise sessions every week, preferably at regular intervals and stated times. Make each session 20 minutes or longer, with little or no pause for rest.”

I have the data I need. But in what form? Binary: 30 words and 2 numerals: 3 and 20. It is a tacit acceptance of this fact that forces us, as researchers, to consider for research purposes basically a binary methodology.

The nature of the data dictates the methodology. If the data is verbal, the methodology is qualitative, if it is numerical, the methodology is quantitative. There is, of course, an alternative to this strict dichotomy. It consists of a hybrid variation,

---

discussed in the literature under the designation of triangulation.\(^5\). All research methodologies can be classified under one of these categories.

**Qualitative Research Methodology**

Earlier we commented on the adolescent turbulence characterizing the thought and literature of modern research. Fads, new ideas, contemporary emphases come and go, One decade has its methodological emphasis and that wanes while another arises. To read the literature of qualitative research is to be besieged by conflicting and contrary currents of thought. We must remember that the rise of the qualitative emphasis in research methodology is recent: it did not ascend to prominence in the professional literature until the 1960s. That may account for some of the obfuscation and diversity of interpretation that one meets in the literature.

I did my research and wrote my dissertation in the late 1950s\(^6\). It was pure qualitative research, but I never referred to it as such. At the time, I never heard the term mentioned from any member of my doctoral committee or in any of my research seminars. In the idiom of that decade it did not exist. So quickly do academic fashions change.

In another sense, nothing is new about qualitative research\(^7\). Qualitative research has always been a viable mode of investigation, but has not always been welcome in serious graduate research. It was overshadowed by the inordinate recognition given to quantitative research. From this emphasis arose the pronouncement in graduate academia: "If it's not experimental, empirical or statistical, it's not research!"

Wilhelm Wundt and his emphasis on experimental psychology gained dominant influence through his students, who came to Leipzig to study with him and who subsequently taught others. And so, like a virus, the devotion to experimentalism spread throughout graduate academia, biased our thinking about the nature of basic

---


research, and dictated its methodology.

**Aftershocks Still Felt**

Old ideas die hard. Ideas that have been deeply rooted as accepted *modus operandi* die even harder. Even to this day, some in the academic community look askance at any research that deviates from the experimental or quasi-experimental methodology.

New departures are frequently born among disarray, and need standards and guidelines.

Thus has it been with qualitative research: professionals can seldom even agree on what qualitative research really is. One significant and thoughtful statement, by Nancy Burns, appeared in *Nursing Science Quarterly*\(^8\). In defining the elements of qualitative research, Burns leans heavily upon others who have attempted to formulate the same conditions\(^9\).

Qualitative methodology should

1. be an alternative to the experimental method,
2. consider words as the elements of data,
3. be primarily an inductive approach to data analysis, and
4. result in theory development as an outcome of data analysis.

Another author defines qualitative research in terms of its demands:

*The qualitative research approach is both creative and scholarly.... [It] is frequently new to students, and they often become enthusiastic about its use. However, this approach should not be undertaken by students simply because it appears to be interesting, different, and does not require statistical analysis. It is a creative, scientific process that necessitates a great deal of time and critical thinking, as well as emotional and intellectual energy. One must have a true desire to discover meaning, develop understanding and explain phenomena in the most thorough way possible .... Qualitative research is not slovenly, undisciplined, "soft" research but creative scholarship at its*

---

\(^8\) Nancy Burns, "Standards for Qualitative Research," *Nursing Science Quarterly."


\(^10\) See the discussion on meaning in chapter I.
This sets a rigorous agenda for the student who may be considering an alternative to empirical research and statistical analysis; this is perhaps even more true when we consider that quantitative researchers have the computer as a slave to do the statistical computation and to render yeoman's service in many other ways. A glance at the plethora of statistical software will soon change the concept that the modern quantitative researcher is still taking hours to do complicated calculations with pencil and paper.

On the other hand, those of us who write know that dealing with ideas and concepts and converting these to verbal form is quite as exhausting and intellectually demanding as any numerical computation. For this process no computer can achieve or approximate what is the sole responsibility of the human brain, although one can certainly alleviate much of the drudgery.

Many students, who have never been subjected to the intellectual rigor of thinking in terms of ideas and words, and their representation on paper, fail to comprehend the meaning of the last five words quoted above: "creative scholarship at its best." Creative scholarship at its very best is the ultimate criteria for the qualitative researcher, and to achieve it may well require nothing short of "sweat, blood, and tears!"

The task of the qualitative researcher is one of analysis and synthesis. Historical data, for example, is almost completely qualitative. History arrives localized, in bits and pieces-isolated events, dates, individuals. Synthesis is indispensable to research history; you must fit the pieces together to form a meaningful matrix. Read Toynbee. He gathers analogous situations from many civilizations and national happenings from various periods in time, and from this disparate collection draws from the past the "meaning of history."

Say you are a sociologist or a social worker. The responses of the poor, the homeless, the distressed are telling you something. What is it? It may not be the glib panaceas to "the problems of society" that the "theorists" voice. It may not be

---

11 Caria Mariano, "Qualitative Research: Instructional Strategies and Curricular Considerations," Nursing and Health Care II (September): 354-59.

as simple as the "specialists" portray it.

It may, in fact, reside in what the homeless tell you, in what the poor in their poverty plead for, what the disenfranchised say. Creative scholarship takes this potpourri of words-these are the data-and from them synthesizes the real problems underlying the condition of and causation for poverty. This is the creative scholarship at its best to which Mariano refers.

In *The Enlightened Eye*, Elliot Eisner outlines the “six features of a qualitative study.”¹³ I briefly outline them here.

1. Qualitative studies tend to be field focused. In education, those conducting qualitative research go out to schools, visit classrooms, and observe teachers.

2. Qualitative research [considers] the self as an instrument. The self is an instrument that engages the situation and makes sense of it. This is done most often without the aid of an observation schedule; it is not a matter of checking behaviors, but rather of perceiving their presence and interpreting their significance.

3. A third feature that makes the study qualitative is its interpretive character. Interpretive here has two meanings:
   (a) Inquirers try to account for what they have given an account of.
   (b) Qualitative inquirers aim beneath manifest behavior to the meaning events have for those who experience them.

4. Qualitative studies display the use of expressive language and the presence of voice in the text.

5. A fifth feature of qualitative studies is their attention to particulars.

6. A sixth feature of qualitative studies pertains to the criteria for judging their success.

7. Qualitative research becomes believable because of its coherence, insight, and instrumental utility,

There is a danger that in presenting these three authors' definitions of the nature and character of qualitative research we may be forming a fundamentally erroneous concept of both qualitative and quantitative methodologies. At this point,

---

you may be thinking in terms of exclusives: that they who practice the qualitative research must eschew quantitative research and vice versa.

Eisner corrects this misconception and sets the record straight:

The term *qualitative* suggests its opposite *quantitative* and implies that qualitative inquiry makes no use of quantification. This is not the case. For some aspects of education, quantification may be the most appropriate means for describing what one needs to say. *Qualitative* also implies that other forms of inquiry—like the scientific experiment, for example—have nothing to do with qualities. Nothing could be further from the truth. All empirical phenomena are qualitative. The difference between "qualitative inquiry" and "quantitative research" pertains mainly to the forms of representation that are emphasized when presenting a body of work. The difference is not that one addresses qualities and the other does not.¹⁴

Qualitative and quantitative data may compatibly live in the same house; the terms refer more to a global atmosphere in which the researcher attempts to solve the basic problem for research, not to any exclusive method of operation.

**Let Your Thoughts Be Clear; Your Words, Precise**

Mariano has some solid advice for students in terms of writing skills and requirements that pertain especially to verbal presentation in qualitative research.

Qualitative dissertations and theses are usually book-length narratives.¹⁵ Students desiring to conduct qualitative research should have or develop an articulate and interesting writing style. Timely advisement by the dissertation/thesis committee regarding the need for effective writing skills can often alleviate arduous, frustrating, and nonproductive hours of writing for the student.¹⁶

In chapter 3, we stated that you must express your thoughts clearly and explicitly. This ability is absolutely required if you are expecting to do qualitative research. The academic areas for which the qualitative approach to the problem is perhaps the most logical methodology are anthropology, business, education, history, home economics, journalism, language and literature, minority studies,

---


¹⁵ Earlier, I described my dissertation as "pure qualitative research." The length of that study was 493 pages—7 pages short of one ream of paper!

¹⁶ Mariano, "Qualitative Research." 358
nursing, physical education, political science, social work, sociology, urban studies, and women's studies.

That is an impressive list, but not unrealistic. Those who fumble with words will have difficulty in articulating the qualitative research requirements in these subjects using the qualitative methodological approach.

We shall discuss the qualitative approach more fully in chapters 8 and 9, which discuss areas in which problems will likely require qualitative data: "The Historical Study" and "The Descriptive-Survey Study."

**Quantitative Research Methodology**

The qualitative research methodology might be considered a "warm" approach to the central problem of research. We consider it warm because in great part it is concerned with human beings: interpersonal relationships, personal values, meanings, beliefs, thoughts, and feelings. The qualitative researcher attempts to attain rich, real, deep, and valid data and, from a rational standpoint, the approach is inductive.

As we have called the qualitative approach "warm" we might categorize the quantitative approach as "cold." It is impersonally experimental. The attitude of the quantitative researcher is an either/or attitude. Decisions are made with the coldness of a steel rule.

Quantitative methodologies manipulate variables and control natural phenomena. They construct hypotheses and "test" them against the hard facts of reality, or all quantitative hypotheses, the null hypothesis is perhaps the most often tested: "the researcher decides what factors or variables might cause certain results (cause and effect) and carries out tests to either support or reject the null hypothesis at some level of statistical probability." The whole process is cold, calculating, deductive logic-from the positing of a hypothesis to the supporting or not supporting it.

We discussed the quantitative approach by inference in the first chapter of this book.


18 Rarner, "Quantitative Versus Qualitative Research?", 7.
Chapters 10 and 11 will be devoted to it as well. Methodologically, therefore, this book is a dichotomy, giving equal emphasis to both qualitative and quantitative methodologies: two chapters devoted to qualitative research methodology and an equal coverage to quantitative methodology.

**Triangulation**

The basic situation regarding the separateness of qualitative and quantitative methodologies is clearly stated by a quartet of authors in an article entitled, “Blending Qualitative and Quantitative Approaches to Instrument Development and Data Collection”19 Their opening paragraph states the current attitudes:

Debate continues over the relative merits and appropriate uses of qualitative and quantitative research. Recently there has been a growing emphasis on combining approaches in single studies. Goodwin and Goodwin20 concluded that "many studies could be enhanced considerably if a combined approach were taken." In a similar vein, Reichardt and Cook admonished readers that “it was time to stop building walls between methods and starting building bridges."

Despite this recognition of the advantages of combining quantitative and qualitative methods in a single study, few guidelines exist for accomplishing this goal. Texts on research design and methods typically devote separate chapters to quantitative and qualitative methods, with little, if any, discussion of how to combine these approaches. Articles on combining approaches, or triangulation, discuss the potential gains of combining methods without addressing how to implement such an approach.

While the article is valuable in voicing the desirability of triangulation, its authors, too, give no specific guidelines as to implementation. That remains for Duffy to delineate21:

1. Theoretical triangulation involves the use of several frames of reference


20 See "For Further Reading" at the end of this chapter for full reference to the documentation quoted in this paragraph

or perspectives in the analysis of the same set of data.

2. Data triangulation attempts to gather observations through the use of a variety of sampling strategies to ensure that a theory is tested in more than one way.

3. Investigator triangulation is the use of multiple observers, coders, interviewers, and/or analysts in, a particular study.

4. Methodological triangulation is the use of two or more methods of data collection procedures within a single study."

Further guidance is offered by E. S. Mitchell, who notes that the application of methodological triangulation requires careful application of four principles:

1. The research question must be clearly focused.

2. The strengths and weaknesses of each chosen method must complement each other.

3. The methods should be selected according to their relevance to the nature of the phenomenon being studied.

4. Continual evaluation of the methodological approach should be done during the course of the study to monitor whether the first three principles are being followed or not.

It is only through such continual vigilance that the researcher can keep track of the playing of each method off against the other so as to maximize the validity of the entire research endeavor22.

We close this discussion with a direct contrast between the qualitative and the quantitative methodologies, drawn by Stainback and Stainback23 (as cited in Duffy).

1. Outsider/insider perspective. The quantitative researcher attempts to arrive at an understanding of facts from the outsider's perspective by maintaining a detached, objective view that, hypothetically, is free from all bias. In contrast the qualitative researcher focuses on the perspective of the insider, talking to and/or observing subjects who


have experienced firsthand the activities or procedures under scrutiny. The qualitative researcher believes that firsthand experience provides the most meaningful data.

2. Stable/dynamic reality. The quantitative researcher focuses on the accumulation of facts and causes of behavior and believes that the facts gathered do not change. The qualitative researcher is concerned with the changing or dynamic nature of reality.

3. Particularistic/holistic focus. To gain control of the events under scrutiny, the quantitative researcher structures the situation by identifying and isolating specific variables for study and by employing specific measurement devices to collect information on these variables. In contrast, the qualitative researcher attempts to gain a complete or holistic view of what is being studied. To achieve this end, wide array of data are needed: documents, records, photographs, observations, interviews, case histories and even quantitative data.

4. Verification/discovery orientation. The procedures employed by the quantitative researcher are usually highly structured and designed to verify or disprove predetermined hypotheses. To eliminate as much bias as possible, flexibility is kept to a minimum. In contrast, the research procedures used by the qualitative researcher are flexible, exploratory and discovery oriented. As the study progresses, the researcher can add to or change the types and sources of data gathered. This type of flexibility permits a deeper understanding of what is being investigated than can be achieved through a more rigid approach.

5. Objective/subjective data. The quantitative researcher focuses on the objective data that exist apart from the feelings and thoughts of individuals and is typically expressed in numbers. On the other hand, the qualitative researcher focuses on subjective data that exist the minds of individuals and typically expressed or reported through language. The qualitative researcher believes that it is essential to understand the meaning that person attach to events in their environment.

6. Controlled/naturalistic conditions. Usually quantitative data are
collected under controlled conditions in order to rule out the possibility that variables other than the ones under study could account for the relationships among the variables. In contrast, qualitative data are collected within the context of their natural occurrence. This permits any variables that naturally influence the data to operate without interference.

7. Reliable-valid results. Both the quantitative and the qualitative researchers want reliable and valid results. The quantitative researcher focuses heavily on reliability--data that are consistent or stable as indicated by the researcher's ability to replicate the findings. The qualitative researcher tends to concentrate on validity--data that are representative of a true and full picture of what the researcher is attempting to investigate.

**Why Research Methodology?**

A clear statement of your research methodology, with its rationale, should be an integral part of both your proposal and your research report. Why? It informs your reader exactly how you intend to proceed (proposal) or proceeded (research report) and how you handled the data. It helps to explain what the nature of the data were, and what method you used to process them to arrive at your conclusions. A pragmatic presentation regarding the data may be perhaps most expeditiously handled by spelling out, in concise detail, four principal items with respect to the data:

1. What data do you need?
2. Where are the data located?
3. How do you intend to get the data?
4. Precisely and in detail, what do you intend to do with the data?

This may seem like an elementary exercise, but if you give fully and concisely the information to answer each of the above four questions you will find that you are proceeding with a much clearer awareness, than if you proceed merely by fortuitous hope and relying on a certain amount of luck.

Nothing in the research process should be done secretly or haphazardly. That others may give full credence to your efforts, it is obligatory on your part to lay out to full view every aspect of your research endeavor. Careful researchers, especially
in academic research projects, include the data, usually as an appendix to their study (especially if those data are numerical in character). Furthermore, they give any statistical formulae and explain any quantitative approaches or techniques not in common statistical use.

While you are the researcher and have planned and executed the study, you should always be conscious that a host of critical eyes are looking over your shoulder--eyes that are not necessarily unfriendly--but that would like to know exactly what you are planning to do, or have done, and how you did what you did, why you did what you did, and what reasoning formed the bedrock upon which the "how" and "why" was justified. A statement concerning the methodology, whatever that methodology might be, should be clearly expressed and substantiated to validate your study.

Figure 6.1

The methodology of research

Qualitative research
- Data: principally verbal
  - Descriptive studies, Survey studies, historical studies, case studies

Quantitative research
- Data: principally numerical
  - Experimental studies, quasi-experimental studies, statistical-analytical studies

Triangulation: A compatibility procedure designed to reconcile the two major methodologies by eclectically using elements from each of the major methodologies as these contribute to the solution of the major problem
This chapter has discussed the two broad generic types of methodology: Within each of these are submethodologies: the descriptive method, the survey method, the historical method, the case study method, the statistical-analytical method, and the experimental and quasi-experimental methods. Each of these has its own protocol—its paradigm-governing data collection and procedural agenda.

The chapter may be graphically summarized as shown in Figure 6.1.

**Significant and Influential Research**

In the general population there are unknown numbers of individuals who are suffering from either gross or mild language impairment. Mild cases often go unnoticed except by the skillfully trained specialists in linguistic therapy. Generally, little significant research has been done in the neurological bases for language deficiency.

Innumerable textbooks indicate—as though it were established fact—the cortical areas of the brain that relate to speech, reading, hearing, and allied linguistic manifestations. Most of this insight into the human cortical organization for language has stemmed from the nineteenth century investigations of Broca (1861) or Wernicke (1874). Findings done over the past two decades suggest, however, that revising the earlier models is long overdue. Recent data obtained by various methods of clinical investigation suggest an organization of language in the human brain involving compartmentalization into separate systems subserving different language functions. Instead of a neatly circumscribed area responsible for one aspect of language, as shown in most textbooks, recent research has shown that each neural system subserving a specific language function includes multiple essential areas localized in the frontal and temporoparietal cortex of the dominant hemisphere, as well as widely dispersed neurons.

Studies of many different subject populations have shown a remarkable variance in brain organization for language. Furthermore, different patterns of localization of essential areas for language functions have also gender and verbal differences, as measured by the verbal IQ.

This recent advance in the discovery of knowledge regarding the neurological bases for language proficiency and disability should be particularly interesting to speech and language therapists, teachers, pediatricians, and others who specialize in linguistic phenomena. George A. Ojemann, M. D., of the Department of
Neurological Surgery, University of Washington discussed these recent developments in *The Journal of Neuroscience*\(^{24}\) The article is accompanied by an extensive list of references.

### The Computer as a Tool of Research: Sort and Research Functions

We have said almost nothing so far about the sort and search database functions of the computer. The sort function lets you select and sort (alphabetize) words, lines, or rows in a table; it is also possible to sort dates by month, day, and year. This feature should be particularly attractive to those doing historical or archival research.

The *search* capability of the computer is also of great convenience in gathering together all items (words, dates, locations, first names, last names) of the same kind. For those doing questionnaire and mail survey research from a selected population, it is possible to create a sorted list of all who have the same ZIP code.

Both search and sort features are especially helpful when compiling an index, a glossary, or a concordance.

Precisely how sorts and searches are performed with each type of software will be outlined in the manual that accompanies the software, but it is well to know that such functions are available and for those who need to amass data of a particular genre, the sort and search capability of the computer is invaluable.

### For Further Reading


---


