

## THE RESEARCH

Scientific research involves a systematic process that focuses on being objective and gathering a multitude of information for analysis so that the researcher can come to a conclusion. This process is used in all research and evaluation projects, regardless of the research method (scientific method of inquiry, evaluation research, or action research). The process focuses on testing hunches or ideas in a park and recreation setting through a systematic process. In this process, the study is documented in such a way that another individual can conduct the same study again. This is referred to as replicating the study. Any research done without documenting the study so that others can review the process and results is not an investigation using the scientific research process. The scientific research process is a multiple-step process where the steps are interlinked with the other steps in the process. If changes are made in one step of the process, the researcher must review all the other steps to ensure that the changes are reflected throughout the process. Parks and recreation professionals are often involved in conducting research or evaluation projects within the agency. These professionals need to understand the eight steps of the research process as they apply to conducting a study. Table 2.4 lists the steps of the research process and provides an example of each step for a sample research study.

Step 1: Identify the Problem

The first step in the process is to identify a problem or develop a research question. The research problem may be something the agency identifies as a problem, some knowledge or information that is needed by the agency, or the desire to identify a recreation trend nationally. In the example in table 2.4, the problem that the agency has identified is childhood obesity, which is a local problem and concern within the community. This serves as the focus of the study.

#### Table 2.4

#### Step 2: Review the Literature

Now that the problem has been identified, the researcher must learn more about the topic under investigation. To do this, the researcher must review the literature related to the research problem. This step provides foundational knowledge about the problem area. The review of literature also educates the researcher about what studies have been conducted in the past, how these studies were conducted, and the conclusions in the problem area. In the obesity study, the review of literature enables the programmer to discover horrifying statistics related to the long-term effects of childhood obesity in terms of health issues, death rates, and projected medical costs. In addition, the programmer finds several articles and information from the Centers for Disease Control and Prevention that describe the benefits of walking 10,000 steps a day. The information discovered during this step helps the

programmer fully understand the magnitude of the problem, recognize the future consequences of obesity, and identify a strategy to combat obesity (i.e., walking).

### Step 3: Clarify the Problem

Many times the initial problem identified in the first step of the process is too large or broad in scope. In step 3 of the process, the researcher clarifies the problem and narrows the scope of the study. This can only be done after the literature has been reviewed. The knowledge gained through the review of literature guides the researcher in clarifying and narrowing the research project. In the example, the programmer has identified childhood obesity as the problem and the purpose of the study. This topic is very broad and could be studied based on genetics, family environment, diet, exercise, self-confidence, leisure activities, or health issues. All of these areas cannot be investigated in a single study; therefore, the problem and purpose of the study must be more clearly defined. The programmer has decided that the purpose of the study is to determine if walking 10,000 steps a day for three days a week will improve the individual's health. This purpose is more narrowly focused and researchable than the original problem.

### Step 4: Clearly Define Terms and Concepts

Terms and concepts are words or phrases used in the purpose statement of the study or the description of the study. These items need to be specifically defined as they

apply to the study. Terms or concepts often have different definitions depending on who is reading the study. To minimize confusion about what the terms and phrases mean, the researcher must specifically define them for the study. In the obesity study, the concept of “individual’s health” can be defined in hundreds of ways, such as physical, mental, emotional, or spiritual health. For this study, the individual’s health is defined as physical health. The concept of physical health may also be defined and measured in many ways. In this case, the programmer decides to more narrowly define “individual health” to refer to the areas of weight, percentage of body fat, and cholesterol. By defining the terms or concepts more narrowly, the scope of the study is more manageable for the programmer, making it easier to collect the necessary data for the study. This also makes the concepts more understandable to the reader.

#### Step 5: Define the Population

Research projects can focus on a specific group of people, facilities, park development, employee evaluations, programs, financial status, marketing efforts, or the integration of technology into the operations. For example, if a researcher wants to examine a specific group of people in the community, the study could examine a specific age group, males or females, people living in a specific geographic area, or a specific ethnic group. Literally thousands of options are available to the researcher to

specifically identify the group to study. The research problem and the purpose of the study assist the researcher in identifying the group to involve in the study. In research terms, the group to involve in the study is always called the population. Defining the population assists the researcher in several ways. First, it narrows the scope of the study from a very large population to one that is manageable. Second, the population identifies the group that the researcher's efforts will be focused on within the study. This helps ensure that the researcher stays on the right path during the study. Finally, by defining the population, the researcher identifies the group that the results will apply to at the conclusion of the study. In the example in table 2.4, the programmer has identified the population of the study as children ages 10 to 12 years. This narrower population makes the study more manageable in terms of time and resources.

#### Step 6: Develop the Instrumentation Plan

The plan for the study is referred to as the instrumentation plan. The instrumentation plan serves as the road map for the entire study, specifying who will participate in the study; how, when, and where data will be collected; and the content of the program. This plan is composed of numerous decisions and considerations that are addressed in chapter 8 of this text. In the obesity study, the researcher has decided to have the children participate in a walking program for six months. The group of participants is called the sample, which is a smaller group selected from the

population specified for the study. The study cannot possibly include every 10- to 12-year-old child in the community, so a smaller group is used to represent the population. The researcher develops the plan for the walking program, indicating what data will be collected, when and how the data will be collected, who will collect the data, and how the data will be analyzed. The instrumentation plan specifies all the steps that must be completed for the study. This ensures that the programmer has carefully thought through all these decisions and that she provides a step-by-step plan to be followed in the study.

### Step 7: Collect Data

Once the instrumentation plan is completed, the actual study begins with the collection of data. The collection of data is a critical step in providing the information needed to answer the research question. Every study includes the collection of some type of data—whether it is from the literature or from subjects—to answer the research question. Data can be collected in the form of words on a survey, with a questionnaire, through observations, or from the literature. In the obesity study, the programmers will be collecting data on the defined variables: weight, percentage of body fat, cholesterol levels, and the number of days the person walked a total of 10,000 steps during the class.

The researcher collects these data at the first session and at the last session of the program. These two sets of data are

necessary to determine the effect of the walking program on weight, body fat, and cholesterol level. Once the data are collected on the variables, the researcher is ready to move to the final step of the process, which is the data analysis.

### Step 8: Analyze the Data

All the time, effort, and resources dedicated to steps 1 through 7 of the research process culminate in this final step. The researcher finally has data to analyze so that the research question can be answered. In the instrumentation plan, the researcher specified how the data will be analyzed. The researcher now analyzes the data according to the plan. The results of this analysis are then reviewed and summarized in a manner directly related to the research questions. In the obesity study, the researcher compares the measurements of weight, percentage of body fat, and cholesterol that were taken at the first meeting of the subjects to the measurements of the same variables at the final program session. These two sets of data will be analyzed to determine if there was a difference between the first measurement and the second measurement for each individual in the program. Then, the data will be analyzed to determine if the differences are statistically significant. If the differences are statistically significant, the study validates the theory that was the focus of the study. The results of the study also provide valuable information

about one strategy to combat childhood obesity in the community.

As you have probably concluded, conducting studies using the eight steps of the scientific research process requires you to dedicate time and effort to the planning process. You cannot conduct a study using the scientific research process when time is limited or the study is done at the last minute. Researchers who do this conduct studies that result in either false conclusions or conclusions that are not of any value to the organization.

This is an excerpt from Applied Research and Evaluation Methods in Recreation.

Qualitative research has an enormous amount to contribute to the fields of health, medicine and public health but readers and reviewers from these fields have little understanding of how to judge its quality. Work to date accurately reflects the complexity of the theoretical debate required but may not meet the needs of practitioners attempting to apply qualitative work in reviews of evidence. This article describes a simple, practitioner-focused framework for assessing the rigors of qualitative research that attempts to be inclusive of a range of epistemological and ontological standpoints. An extensive review of the literature, contributions from expert groups and practitioners themselves lead to the generation of two core principles of quality: transparency and systematicity, elaborated to summarize the range of techniques commonly used,



mirroring the flow of the research process. The complexities discovered are only summarized here. Finally, outstanding issues such as 'how much transparency is enough?', are flagged up.

## Scope of investigation

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### 1.1 Aim and scope of the investigation

#### 1.1.1 Aim

The aim of this thesis is to determine which stage in the linguistic development of Biblical Hebrew that is reflected in the syntax of the verb in the Priestly

(P) narrative

in the Pentateuch.

#### 1.1.2 Scope and limitations

The scope encompasses both practical and theoretical aspects of the investigation, since the formulation of the theoretical and methodological approaches to the study of diachronic verbal syntax (in part I), is considered integral to the practical application of these approaches in the

syntacticanalysis (in part II and III). In relation to the statement of the aim, the scope of this study may be qualified both positively and negatively in a number of respects. Firstly, this is a historical linguistic study of syntactic change in the corpus based language Biblical Hebrew. The primary corpus of this study – the P narrative – is a body of text situated within the larger unit of texts that is traditionally ascribed to the P source/document/code in the Pentateuch. Without evaluating the theories and methods originally employed in the delimitation of this material, it is safe to assume that P exists, at least in the sense that it has remained a well defined body of material in the wider field of pentateuchal research (cf. 1.3.1). Since there is no general consensus as to whether or not the P narrative continues in the book of Joshua, the scope of the P corpus included in this study is limited to the P narrative in the Pentateuch. This linguistic study is not concerned with the ‘purpose’ of P, i.e. its ideology or theology, its intent or ultimate goal or something else along these lines. Therefore, it is not within the scope of this study to assess the ‘nature’ of the P material, e.g. whether P should be viewed as an independent source, document, redactional

Schichten

, etc. Since the hypothetical division of P between parts belonging to the

Grundschrift

(P

g

) and parts designated as later supplements or secondary expansions (P

s

) also belong to this category, the traditional division between P

is not presupposed and maintained in the present study. Secondly, in the field of historical linguistics, the primary object of study is the linguistic system of a language as manifested at different stages of development in textual corpora (cf. 1.4.1). The present study of the P narrative is focused on a central part of that system, namely, the verbal system. The diachronic development of the Biblical (and extra-Biblical) Hebrew verbal system may be studied through observed change in the use of verbal syntax between corpora, which are representative of different chronological

18 stages of linguistic development, on typological grounds. This further entails that the study of syntactic change is made from both a diachronic and a synchronic perspective, and concerns both the verbal system and the syntax of the verb (cf. 1.4.2). In practice, in order to establish that syntactic change on the level of the text is indicative of diachronic change (as opposed to synchronic variation), syntactic change is studied with focus on the diachronic grammaticalization processes involved in the

renewal of the tense–aspect– modality categories of the Hebrew verbal system (cf. 1.4.3). On the level of the text, the description of the use

of verbal syntax in different textual corpora is informed by a synchronic textlinguistic theory and approach (cf.1.4.4). Due to the focus on verbal syntax and system, the scope of this study is restricted in that features belonging to other domains of the language in this corpus are not treated systematically. The focus on the corpus of the P narrative in the Pentateuch also entails that features of the verbal syntax in other parts of P are not treated exhaustively. Thirdly, the primary objective of this study is to relate features of the syntax of the verb in the P narrative to the historical development of Biblical Hebrew verbal syntax in narrative prose. In the Hebrew Bible, the linguistic profiles of two main corpora of narrative prose are commonly considered to be representatives of two main stages in the development of Biblical Hebrew, designated as Early/Standard Biblical Hebrew prose (cf. 1.3.2) and Late Biblical Hebrew prose (cf. 1.3.3). These corpora represent different chronological stages of linguistic development; on typological grounds, they form a diachronic linguistic continuum (cf. 1.3.4 and 1.5.2). However, only the Late Biblical Hebrew stage of development can be positively correlated with a particular historical period. Therefore, the aim of this study remains purely descriptive in that it is restricted to determining whether the syntax of the verb in the P narrative reflects Standard or Late Biblical Hebrew usage (cf. 1.1.1 and

1.5.4). The possible implications of the results of this study in terms of the relative date of the P narrative are of two kinds. First, in case this study finds that the syntax of the verb in the P narrative reflects Late Biblical Hebrew usage; the result converges with the post-exilic date of P, which is suggested by most scholars in the wider field of biblical studies, on (primarily) non-linguistic grounds. In the other case, if the syntax of the verb in the P narrative reflects Standard Biblical Hebrew usage; P cannot automatically be positively correlated with the historical pre-exilic period, since there is no external control by which it may be verified that a text written in Early or Standard Biblical Hebrew be dated to the pre-exilic period solely on account of its language.

Therefore, it is not within the scope of this study to decide whether a relative date of P on account of Standard Biblical Hebrew usage of verbal syntax intends that the P narrative was committed to writing in the pre-exilic period

A research methodology defines what the activity of research is, how to proceed, how to measure progress, and what constitutes success. AI methodology is a jumbled mess. Different methodologies define distinct schools which wage religious wars against each other.

Methods are tools. Use them; don't let them use you. Don't fall for slogans that raise one above the others: "research needs to be put on firm foundations;" "Philosophers just talk. is about hacking;" "You have to know what's computed before you ask how." To succeed at AI, you have to be

good at technical methods and you have to be suspicious of them. For instance, you should be able to prove theorems and you should harbor doubts about whether theorems prove anything.

Most good pieces of AI delicately balance several methodologies. For example, you must walk a fine line between too much theory, possibly irrelevant to any real problem, and voluminous implementation, which can represent an incoherent munging of ad-hoc solutions. You are constantly faced with research decisions that divide along a boundary between "neat" and "scruffy." Should you take the time to formalize this problem to some extent (so that, for example, you can prove its intractability), or should you deal with it in its raw form, which is ill-defined but closer to reality? Taking the former approach leads (when successful) to a clear, certain result that will usually be either boring or at least will not address the issues; the latter approach runs the risk of turning into a bunch of hacks. Any one piece of work, and any one person, should aim for a judicious balance, formalizing subproblems that seem to cry for it while keeping honest to the Big Picture.

Some work is like science. You look at how people learn arithmetic, how the brain works, how kangaroos hop, and try to figure it out and make a testable theory. Some work is like engineering: you try to build a better problem solver or shape-from algorithm. Some work is like mathematics: you play with formalisms, try to understand their properties, hone

them, prove things about them. Some work is example-driven, trying to explain specific phenomena. The best work combines all these and more.

Methodologies are social. Read how other people attacked similar problems, and talk to people about how they proceeded in specific cases

The overall objective of this project is to provide new understanding, through a novel combination of social and natural science skills, of the environmental and regulatory sustainability of deploying microbial biopesticides as alternatives to chemical pesticides for crop protection. This will be addressed by exploring the regulation and use of entomopathogenic fungi as inundative bio-insecticides for the control of aphids in leafy salad crops, a system of which the consortium has considerable expertise. The project will deliver improved knowledge of key natural and social science factors affecting the deployment of microbial biopesticides. The project will also facilitate dialogue between principal actors in the pesticide regulation system. When completed, the project will progress sustainability goals for the UK rural economy across the whole of the food chain.

Leafy salad crops are a very relevant model system because they are sold fresh and are frequently processed

as ready to eat, but at the same time they receive relatively large numbers of chemical insecticide sprays, particularly against aphid species. Retailers demand produce that is free of aphids at the point of sale and in some instances are introducing protocols on insecticide use that are more restrictive than formal regulations, including the demand for residue free crops.

This project comprises a series of four linked objectives that bring together the skills of both social and natural scientists to address the overall objective.

At the end of the course, the student will analyze the fundamentals of research, that will

allow you to consider problems of research in your area; apply methodological strategies to

solve these problems.

## 1. THE RESEARCH



Research is a process of investigation. An examination of a subject from different points of view. It's not just a trip to the library to pick up a stack of materials, or picking the first five hits from a computer search. Research is a hunt for the truth. It is getting to know a subject by reading up on it, reflecting, playing with the ideas, choosing the areas that interest you and following up on them. Research is the way you educate yourself. Research in all disciplines and subjects, not just science, must begin with a clearly defined goal. This usually, but not always, takes the form of a hypothesis.

For example, an anthropological study may not have a specific hypothesis or principle, but does have a specific goal, in studying the culture of a certain people and trying to understand and interpret their behavior.

The whole study is designed around this clearly defined goal, and it should address a unique issue, building upon previous research and scientifically accepted fundamentals. Whilst nothing in science can be regarded as truth, basic assumptions are made at all stages of the research, building upon widely accepted knowledge.

### 1.1. The research process

Scientific research involves a systematic process that focuses on being objective and gathering a multitude of information for analysis so that the researcher can come to a conclusion. This process is used in all research and

evaluation projects, regardless of the research method (scientific method of inquiry, evaluation research, or action research). The process focuses on testing hunches or ideas in a park and recreation setting through a systematic process. In this process, the study is documented in such a way that another individual can conduct the same study again. This is referred to as replicating the study. Any research done without documenting the study so that others can review the process and results is not an investigation using the scientific research process. The scientific research process is a multiple-step process where the steps are interlinked with the other steps in the process. If changes are made in one step of the process, the researcher must review all the other steps to ensure that the changes are reflected throughout the process. Parks and recreation professionals are often involved in conducting research or evaluation projects within the agency. These professionals need to understand the eight steps of the research process as they apply to conducting a study. Table 2.4 lists the steps of the research process and provides an example of each step for a sample research study.

### 1.1.1. Quantitative approaches towards a comprehensive model

The first step in the process is to identify a problem or develop a research question. The research problem may be something the agency identifies as a problem, some knowledge or information that is needed by the agency, or

the desire to identify a recreation trend nationally. In the example in table 2.4, the problem that the agency has identified is childhood obesity, which is a local problem and concern within the community. This serves as the focus of the study.

### 1.1.2. Qualitative approaches towards a comprehensive model

Now that the problem has been identified, the researcher must learn more about the topic under investigation. To do this, the researcher must review the literature related to the research problem. This step provides foundational knowledge about the problem area. The review of literature also educates the researcher about what studies have been conducted in the past, how these studies were conducted, and the conclusions in the problem area. In the obesity study, the review of literature enables the programmer to discover horrifying statistics related to the long-term effects of childhood obesity in terms of health issues, death rates, and projected medical costs. In addition, the programmer finds several articles and information from the Centers for Disease Control and Prevention that describe the benefits of walking 10,000 steps a day. The information discovered during this step helps the programmer fully understand the magnitude of the problem, recognize the future consequences of obesity, and identify a strategy to combat obesity (i.e., walking).

### 1.2 choice of topic

Many times the initial problem identified in the first step of the process is too large or broad in scope. In step 3 of the process, the researcher clarifies the problem and narrows the scope of the study. This can only be done after the literature has been reviewed. The knowledge gained through the review of literature guides the researcher in clarifying and narrowing the research project. In the example, the programmer has identified childhood obesity as the problem and the purpose of the study. This topic is very broad and could be studied based on genetics, family environment, diet, exercise, self-confidence, leisure activities, or health issues. All of these areas cannot be investigated in a single study; therefore, the problem and purpose of the study must be more clearly defined. The programmer has decided that the purpose of the study is to determine if walking 10,000 steps a day for three days a week will improve the individual's health. This purpose is more narrowly focused and researchable than the original

### 1.3 approach of the problem

Terms and concepts are words or phrases used in the purpose statement of the study or the description of the study. These items need to be specifically defined as they apply to the study. Terms or concepts often have different definitions depending on who is reading the study. To minimize confusion about what the terms and phrases mean, the researcher must specifically define them for the study. In the obesity study, the concept of "individual's

health” can be defined in hundreds of ways, such as physical, mental, emotional, or spiritual health. For this study, the individual’s health is defined as physical health. The concept of physical health may also be defined and measured in many ways. In this case, the programmer decides to more narrowly define “individual health” to refer to the areas of weight, percentage of body fat, and cholesterol. By defining the terms or concepts more narrowly, the scope of the study is more manageable for the programmer, making it easier to collect the necessary data for the study. This also makes the concepts more understandable to the reader.