Doing Research

For Jan Willem, Sharon and Sander

Doing Research
The Hows and Whys of Applied Research

Nel Verhoeven

Fourth edition

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Preface

When developing and teaching research methods, those in the business generally have to resort to using more than one book. I noticed this when I became involved in the subject at college and university level. Alongside standard textbooks, students are given readers containing chapters from other books, articles and examples. Moreover, lecturers at colleges often use books meant for university level to draw material for their lessons. In brief, there is no all-in-one, clearly laid out introduction to research methods and techniques for colleges. With *Doing Research*, I hope to fill this gap.

Subjects such as research methods and statistics are not the most popular among students. Often they dread these courses: they are afraid that they won't understand the subject matter, let alone be able to apply it. They tremble at the very thought of using formulas, and in their opinion they will never (again) have to put research into practice. When I wrote the first edition of *Doing Research*, I tried to lower this threshold to carrying out research and getting to know stats. From the numerous reactions I received I could tell that I had succeeded in my intentions. I also received many comments and remarks from other lecturers with ways to improve and supplement the text. In 2006, we used these suggestions in the new edition, to change the order of the book so that it matches the various research phases. The second edition also contained new material and the website was changed accordingly.

Learning research skills

This book contains an introduction to research methods and techniques for students at college level. It is practice-oriented, using current examples and case studies, and it teaches students research skills step by step, from the simple to the more complicated. The aim is to let students become acquainted with the research process in all its facets, using a clear, easy-to-grasp method. This is done in such a way that students do not lose sight of the big picture – i.e., that research as a whole is a cyclic procedure – by emphasizing the position that each phase has in the overall research process.

The fourth edition

When working on the fourth edition, a great deal of attention was paid to the balance between quantitative and qualitative research. Because *Doing Research* is an introductory book, it deals with elements of both kinds of research, without going into depth in either. Several references to the literature have been included on the website to give the reader more detailed knowledge about aspects in the book.

The additional attention for qualitative research is reflected, among other things, in the debate about the quality of research, the significance of validity and the reliability of qualitative research. The website also includes examples of alternative analysis methods, such as the Matrix Approach. Where necessary and possible, qualitative research techniques have been honed and discussed in greater detail, based on recent insights and comments from teachers in the field. Quantitative methods, too, have been examined, and in the process the piece about experimental research was rewritten.

In addition to new examples, some new tasks have been included. The assignments in the book consist mainly of questions for applying what has been learnt. In addition, a few theoretical questions have been included on the website in shape of multiple choice questions. In addition to the answers to the assignments, the website also has tips for teachers who supervise research. So more attention has been paid to graduation projects, and Chapter 11 includes a section about final presentations. The attention for thesis and final project supervision also led to the inclusion of references to the new research tool on www.doingresearch4edition.com.

New: digital research tool

New in this fourth edition is the digital research tool. As a student, you can use this research tool to set up and carry out your entire research project in stages and according to the phases in the book. The tool also includes a student tracking system, which makes conducting and supervising research projects a lot easier. You can access this tool on www.doingresearch4edition.com.

Finally, with the ongoing progress that is the digital age, renewed attention has been paid in the book to e-learning, social media, and the use for online tools for processing references.

Many thanks

Many people were involved in the compiling of all editions of this book. When I wrote the first edition, Bob Bouhuijs of Windesheim University of Applied Sciences, Annete Bogstra of University College Utrecht and Jan van Leeuwen of Fontys University Eindhoven all gave me advice. Jan Willem Zeijseink advised me on Chapter 6 and Rika Verhoef did the same for parts of Chapter 7. For the more recent editions, Peter Swanborn, Siep van der Werf of the University of Applied Sciences Amsterdam, and Anya Luscombe all went through the text meticulously and put forward their suggestions for changes. For the fourth edition, Mirca Groenen gave detailed editorial comments and went through the words for the index register with a fine-toothed comb. I would also like to thank Rianne de Klerk for all her advice and her quick response to all my questions and comments. For the fourth edition, Desiree Joosten-ten Brinke was helpful with advice about peer feedback. Many teachers took the trouble to complete a questionnaire about the book and to provide me with their useful

suggestions. Finally, I would like to thank Esther den Hollander, Barbara Reed, Leo Vogelenzang and (of course) Astrid van der Schee for their quick and useful advice and for their unflagging support during the writing process.

The field of 'research methodology' is continuously under development; teaching this subject and developing material for lessons is too. Which is why I am always keen to receive your comments and suggestions. Happy reading!

Middelburg, March 2015
Nel Verhoeven

Contents

Introduction

This textbook is intended for use in colleges and universities. It is a general introduction to the methods and techniques that you will use to set up and conduct – normal practice-oriented – research, in other words: getting answers to research questions from the field.
Which field? These days, research is carried out in virtually every field or profession. Clients and employers want to be able to substantiate and assess the policies they have drafted properly; they want to see their returns expressed in figures; they want to be able to make the correct diagnosis. Carrying out research in the field correctly is growing in importance.

What does it actually mean: doing research? It means that researchers use a systematic way to collect and analyze information so that they can use it to answer theoretical questions or practical questions. Practice makes perfect! You learn about research by doing it! But also by reading about it, and by doing practice-based exercises and assignments. During your studies, you will come across research in its various manifestations.
This book is about designing and setting up research, gathering and analyzing information and evaluating the results, all of these from a practical point of view.

Transfer problems

During the course of your study, you'll come across a lot of questions that need answering. For instance:

- How can I best structure my research?
- Which methods should I use?
- How can I formulate the central question?
- What would be a good time schedule?
- How do I find information about a subject and where do I find reliable sources?
- How do I gather data? Which methods would be best for my purposes?
- Which analyses do I need to carry out?
- How can I draw good conclusions?
- What is the best way to present my research results?

Starting in your first year, you'll do stats, often in combination with a crash course in SPSS. Then you will be taught about qualitative and quantitative research, methodology that is, as separate subjects.
By the time you get to structuring your own research project, during your final year when you are conducting practical research for a graduation project, the assumption will be that you know about the various methods and techniques.

Due to the fragmented nature of your exposure to research thus far, this is where you will encounter problems, problems that may well render you unable to put what you have learned about research into practice. You've never had a bird's eye view of the subject. It's difficult for you to combine the bits and pieces of knowledge that you have picked up over the years, to integrate them into a well-formulated research design, one that will stand you in good stead during your research project.
The information in this book will allow you to tackle this problem of transference (Pieters & Jochems, 2003). It will not only give you tips and hints, but also a lot of exercise material, practical examples, and prompts to research things yourself, in such a way that bit by bit you will be able to bring the separate pieces of 'doing research' together, and all the different aspects will fall neatly into place. Once again: You don't talk about research, you do it!

The objective of this book

The *main objective* of this book is to equip you with enough tools so that you can train yourself to design, execute and assess a simple research project. The objective is that you learn to integrate and co-ordinate the knowledge, skills and attitude that you have acquired in such a way that you can adequately answer a well-formulated research question.

Bear in mind that 'doing research well' does not necessarily mean that you arrive at the right answer, it means that you can ask the right questions! In short: learn to be curious!

The structure of this book

The book is divided into four parts that correspond to the *phases* of a research project, as illustrated in Figure 1 (see also Section 1.6).

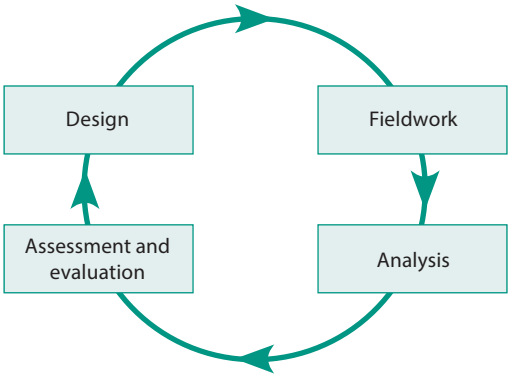

Figure 1 Research phases

Methodology

Before you start actually practicing research, you get to know the underlying principles of 'doing research', i.e., the theory. Chapter 1 includes the theory of *the science of methodology*. This requires an explanation. By 'methodology' we mean a number of basic research principles, i.e., 'norms'. Even though this book is mainly about how to set up and carry out research in the field, it is important that you know about a few of these basic principles. These research norms (and methodologies) are particularly important when it comes to fundamental research (more to do with theory than with practice). Fundamental research is mainly done at universities. There they develop the basic principles that give research in the field the necessary theoretical depth and ensure that you tackle research with the right attitude. Knowing about these basic research norms is crucial for a good understanding of the function of research.

'Methodology' should not be confused with its meaning as it is used in research practice. There it has a more practical meaning to do with research procedures as in 'methods and techniques'. According to Swanborn (1987, p. 41), the use of the word 'methods' is more general and broader. In this book we'll be using Swanborn's definition.

Introduction to Doing Research

The questions we'll be answering in Chapter 1 are: what does 'doing research' mean? How do you start, what are your basic assumptions, which steps do you have to take as a researcher? You'll be given an introduction to all these aspects in the form of an overview of the more theoretical principles of research. Chapter 1 is therefore the least 'practice oriented' chapter in the book. It deals with the more general principles and concepts of research, rather than with specific aspects. It is an introduction to the next chapters, which are divided into four parts.

Part I Design

Part 1 deals with all the aspects that have to do with demarcating your research, as well as research design and planning. Chapter 2 is about the background to your research, your choice of subject, briefings with clients and so on. Chapter 3 discusses the objectives, theoretical aspects and defining the central question.

Part II Fieldwork

Part II is all about gathering data. Chapter 4 discusses quantitative data collection methods while in Chapter 5 qualitative data collection methods are explained. Operationalization of concept to instruments is discussed in Chapter 6, and this includes introducing concepts that determine the 'quality of research'. Chapter 7 deals with all those aspects to do with the practical side of your research, such as determining the size of the sample and approaching research participants. We will be dealing with research surveys as well as in-depth interviews.

Part III Analysis

Chapters 8 and 9 handle aspects of quantitative and qualitative analysis. These chapters also contain information about the software that you require for analysis, and the literature that has been written about this software. For the statistically minded, this book's website has additional information about stats.

Part IV Assessment and evaluation

Part IV describes how you arrive at conclusions, how you review your research, how you evaluate it and how you report your findings. Chapter 10 discusses concepts such as validity and reliability (the quality of research) and Chapter 11 shows you how to evaluate and report on your findings. Having said that, research quality is a topic that is discussed from Chapter 6 onwards.

What you'll come across in every chapter

There are several elements that appear in each chapter. We will go through them.

Learning objectives

The learning objectives for each chapter are given at the beginning of each chapter. They may look easy, but you will understand that you will have to apply the knowledge found in the chapters in order to reach these objectives. You will have had to practice a lot before you are capable of actually setting up a good research project.

Section structure

The chapters are structured as follows. Per section, the necessary information is presented in short paragraphs, where necessary the text will have headings. Most of the figures are there to illustrate the text, making it easier to understand. In the boxes you will find examples concerning the research design, planning, problem definitions, research schedules, analyses, results and conclusions. The examples are indicated with the example icon.

Summary

Each chapter closes with a summary in the shape of a table containing a glossary of the most important terms used in that chapter and their meaning.

Assignments

At the end of each chapter you will find a number of assignments, indicated with the assignment icon. There will be a few questions about what you have learned, but most questions are about applying this knowledge. Sometimes the assignments will be ordered according to difficulty (ascending). This means that you must complete the assignments consecutively. Make sure that when you have group assignments, you divide the tasks properly.

Reading guide

If research is new to you, then start at the beginning of the book and work your way through. Hone your research skills by undertaking the assignments in phases, in ascending degree of difficulty.
If you have some research experience, it will suffice to go through specific chapters in the book, such as the chapters on interviewing techniques, qualitative analysis or reporting. The index is a quick reference guide to finding the places in the book where a specific term is discussed. In any event, it is prudent to read Chapter 3, specifically where it discusses the information that you need for setting up a research plan. A good plan is the ultimate basis for a thorough research project.

The website

The Internet is in a constant state of flux, which means that information about interesting and relevant sites becomes outdated very quickly. URLs change, changes become out of date and, before you know it, the information you have presented can no longer be found, even though it remains relevant.
For this reason we have set up a website where teachers and other users can access new material, examples and current sites (www.doingresearch4edition.com). The site also contains Power Point presentations for each chapter, as well as extra material and the solutions for all the assignments and cases. Teachers will also find tips for assisting their students in carrying out the design cases and other assignments in the book, and where necessary course oriented background information (such as additional analysis techniques, specific examples, assignments and so on). We will also give tips for setting up, supervising and conducting project research and final projects. The site also contains a library with assignments and their solutions. Finally, an introduction to SPSS is also available on this site.

There will be a website icon in the text wherever reference is made to the website.

On the website you will find two ongoing *design cases*: these are the connecting factor in the *assignments* in the book. Practice makes perfect: you learn research by doing it over and over again, by going through the cycle again and again, and by not only looking forward during your research, but by looking back too.
By carrying out the assignments with the help of the design cases you can practice these skills.
The cases start with a fictitious question about a client. In each section, the assignments confront you with the choices you have to make, the steps that you can and must take, and the techniques that are relevant at that point. The cases are extended during each research phase. Having undertaken all the assignments, you will have a research design, database, analysis, evaluation and report to call your own.

The cases are structured from various points of view, corresponding to the structure of the research type under discussion. One of the cases, for instance, gives you the opportunity to design a plan for open interviews; in another you will design the questionnaire to be used for a large group of respondents.

New: The research tool

The *Doing Research* website contains a useful tool which you can use when setting up and conducting applied research. You can use this online program to design and carry out your entire research project according to the phases given in *Doing Research*. Using forms and an options chart, you are guided step-by-step when conducting your research. It is also a useful tool for teachers. Students and teachers can be linked to each other using the student monitoring system. It enables teachers to offer study supervision without being dependent on the time of day or where they are. They can then monitor the progress of their students.

Tools per phase

The research tool broadly follows the structure and phases of the book.
Material is offered for each phase. Which tools will you find on the website?

- inspirational instructional videos;
- questions and forms to get your thought process going;
- flowcharts for design and analysis;
- links to analysis and calculation tools;
- Word and Excel templates to document your research project;
- checklists to check your findings;
- tips on how to take care of your project administration.

Cross-references

The research tool can be used alongside the book to support your research project. So in each chapter of the book you will find an icon that refers to the tool (shown here on the right). In the same way, the research tool includes bookmarks in each phase for further studying in the text.

Useful for lecturers: the monitoring system

The monitoring system in the research tool shows you how you make progress in your project. Lecturers and research supervisors can view (and download) their students' progress. To be able to do so, they must be linked to a student. They use a special teachers account for this.

As a lecturer, you can use this account to:
- follow the answers that the student has given;
- monitor the student's progress;
- download the student's documents;
- place comments in the text.

The supervision can be done for individuals as well as for groups; it is independent of time and place.

Logbook

The choices and progress that you make during your research journey can be recorded in a 'research log'. With each assignment, you will be given instructions on how to set up this logbook. The logbook enables you to integrate all the separate parts of the research project into one design, as well as provide you with an overview of your research. We will talk about this later when we discuss research design for the first time in Chapter 2. There is a logbook template in the research tool.

Method

Generally, you will first read the corresponding text in the book. You can then use the questions, input forms and flowcharts to shape your plans. During and after completion of each phase, you document the progress and you update your logbook online. Reporting can be done using templates; you can check your progress using the checklists. Finally, your lecturer or supervisor uploads your report and logbook as soon as it is ready to be assessed.

Methodology blog

The website 'nelverhoeven.nl' offers a lot of information about methodology. Apart from useful links, you will find a blog with experiences and tips from teaching and research practice on this website.

The Purpose of Research

1

Think of research as a journey. Along the way – from the start of your journey until the end (your report) – you come across several forks, crossroads and side roads. These represent the choices that you'll have to make during the research process. Bill Trochim brings this route to life in his 'research road' (see Figure 1.1). Research design, execution and evaluation, according to Trochim, are all interlinked, they are not independent of each other. This road is a dual carriageway. By this he means that you must look at your research with a critical eye, not only during the project, but once it is completed as well. You should also assess research carried out by your colleagues and fellow students: by studying one another's methods you can learn from each other.

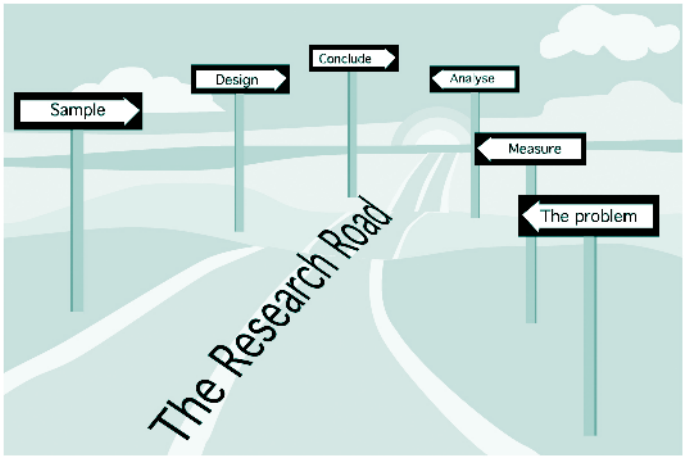

Figure 1.1 Research road according to Trochim
Source: www.socialresearchmethods.net

Without a good foundation, without departure points, your research will be a bumpy dirty road full of potholes, mud and rocks. The road will be uneven, you'll get bogged down. The foundation of research, the assumptions, objectives, research questions and methods are the tarmac that make the road smooth. Without the structure that these departure points provide (call them road signs and the highway code) the project will become bogged down and

you won't be able to proceed (Trochim 2006). Starting a project from scratch is a dangerous business, as illustrated in Text box 1.1.

Example Look before you leap …

Mary-Anne has just finished college where she completed a diploma course in Human Resources and Labor Relations. Her first project for a big accounting firm involves tackling the high staff turnover problem that they are experiencing, i.e., an intervention is called for. Mary-Anne is keen: it's her first big assignment. She gets to work straight away. She talks to the people in the human resources (HR) department. They know what the problem is: high staff turnover. It's because the staff aren't given enough financial incentives to carry on working for the firm – that's according to HR. incentives, good leave conditions, study breaks, a decent pension scheme and extra bonuses: all of these together will bring staff turnover down to an acceptable level, Mary-Anne is assured.

Mary-Anne draws up her plan of action and comes up with several financial incentives. The presentation of her plan to the board goes well and she's given the go-ahead to put her plan to the test for one year. It will be evaluated every three months (how's it going, has turnover dropped, how much has it cost so far?).

After six months it becomes clear that her measures are costing an awful lot of money and staff turnover has not really dropped. The measures are not working. The board decides to call it a day.

Had Mary-Anne done some thorough research, it would have helped. Mary-Anne shouldn't have just adopted the objectives of the organization. She should have spoken to the departments concerned and carried out interviews with the staff involved. If she had done research, she could have reduced the problem to its proper proportions and gotten answers to the following questions:

- Is there really a staff turnover problem?
- If so, to what extent?
- What are the factors underlying this turnover?
- How can it be reduced?
- To what extent will it be reduced if measures are put in place?
- Over what period of time can they expect to see results?

Had she adopted an independent frame of mind, she would not have been swayed by the subjective opinions of the HR department. Instead she could have compared these opinions with the views of the others who were involved. Mary-Anne may then have discovered that money played no role in poor staff motivation, that it had a lot to do with a bad working atmosphere. She would have realized that effective measures had nothing to do with throwing more money at people; instead something needed to be done about staff relations. The problem should have been tackled by using coaching, team building and, where necessary, changing staff round.

In brief, Mary-Anne should have researched things properly, put together a thorough research plan, and presented it to the board. It may have cost more time and money in the beginning, but it would have paid in the end. Now Mary-Anne has no choice but to walk away, disappointed and with her tail between her legs.

Box 1.1

This situation may seem like a 'worst case scenario'. But in practice it happens far too often that action is undertaken or changes are made without good reason, which is not only costly but bad news for the organization too. All too often it emerges that the root of the problem is something altogether different (see Text box 1.2).

Example Unrest

During a period of problems with labor, the trade unions organize a strike to try and force a pay rise. After a day of striking, the parties involved (employer, employees and the union) once again sit down and agree to a small monthly increase of 2.5%. But it becomes clear in the months that follow that people are still leaving the company. Had they researched the reasons for the unrest, they would have discovered that the real reasons had nothing to do with low wages, instead the problem involved the company manager. The hope was that he would go because of the strike. When that didn't happen, several members of staff left anyway.

Box 1.2

Learning objectives

At the end of this chapter, you will be familiar with several basic research principles, you will be able to tell the difference between various types of research and you will know what is required for a proper scientific approach. In addition, you will able to recognize the various phases in a research project and you will know what the requirements are for good scientific research.

Box 1.3

1.1 You Have to Learn to Do Research

Learning how to do research involves much more than merely acquiring knowledge. This book can teach you how to set up a plan, design a research project, and define a central question. It can also teach you how to analyze your results, write a report and present the findings. When it comes to actually *conducting* research, there's a lot more to it. You have to be able to combine the knowledge and skills that you've acquired; you have to develop a kind of helicopter view of your research. Finally, you must be able to put into practice what you have been taught. Doing research has much more to do with skill than with knowledge. In brief, you have to get experience. You learn research by doing it!

Example Queues at ticket sales

A famous pop group is coming to town. They're playing at Madison Square Garden. You and your friends go down to the box office to buy tickets. The queue is around the block! What if the tickets sell out! You check out the lines and take the shortest one.

Box 1.4

Maybe you don't realize it, but when you have a problem or a question, you often use research techniques to find the answer. Look at the example in Text box 1.4:

- Your question is: how can I get to the till in the shortest space of time?
- To answer your question, you look at the queues. You count how many people are in each.
- Your conclusion is that the shortest queue will mean the shortest wait.
- You go to the queue with the fewest people.

Example Train trip

You've made a date to have dinner with a friend downtown. You arrange to meet at Central Station at 7:30 in the evening. It's busy and the trains are delayed. You check the board and it says the trains going downtown are delayed by ten minutes. You see a conductor walking around, maybe he has the latest information. He reassures you, the trains are only running 5 minutes late. You go to the platform where you see other travelers looking worried. You ask again, and they mumble '… there's a fifteen minute delay …' You call your friend and let her know about the delay.

Box 1.5

For the example in Text box 1.5, you've taken the following steps:

- The question is: when can you expect to arrive at Central Station?
- To answer this question, you use the following methods:
  - You look at the board (ten minutes delay).
  - You ask the conductor (five minutes delay).
  - You ask the other passengers (fifteen minute delay).
- The answer to your question is that the expected time of arrival is probably ten minutes after your planned time of arrival.

Both before and during the train journey, you carried out research: you formulated your question and you came up with a research method (you made observations, and asked questions), you gathered information, you formulated an answer to your question and drew your conclusions.
The fact of the matter is that we all carry out research activities, even when we do so subconsciously. By using this book you will get experience in the logical order of research, you will become acquainted with the steps that need to be

taken for any research project. These steps are the same regardless of whether you're trying to predict the time the train will arrive (as dicey as that may be) or whether you're setting up a complicated research project into the causes of a particular disease.

These examples are very simple. When you're involved in research for a client, practical research that is, it is much more complicated. The research project is normally big, and a lot of people may be involved, you carry out extensive and complex analysis, you write a long report and present it to the client. Still, whether research projects are complex or simple, they all follow the same pattern.

Example Reflections on a vacation

The weather is great, it's the end of August and you're on vacation. You're visiting London and it seems like an excellent day for a boat trip on the Thames. Once on the boat you see a group of young Oriental people. Complete with cameras and strange shoes, they're jabbering in what sounds like Japanese, but then it would, wouldn't it? Must be Japanese tourists, you think to yourself. Are they really? What you're looking at is a group of first year students who have come to study at the London School of Economics. It's their introduction week.

Box 1.6

Is anyone who makes a casual observation automatically a proper researcher? No, not quite. As you can see from Text box 1.6, you observe things and then you draw conclusions. Because you yourself are on vacation, you automatically assume that the young Japanese people are too. You use your own frame of reference to draw your conclusions. This is all about informal observation, while researchers use systematic observation.

Characteristics of a researcher

Researchers have three characteristics or attributes that distinguish them from non-researchers. They are: attitude, knowledge and skills.

Attitude

The first thing that sets researchers apart is their *attitude*. This ought to be objective – we know this from Mary-Anne's example. By this we mean that your own personal preferences should play no role in your research. But that is not all. As a researcher you strive for openness in your research, you are open to comments from your peers. You are accountable for your findings. If the findings of your research are contradicted by other research, it is not because your research was inferior, it's because the findings have been 'refuted'. This means that your research project may be the first in a series of thorough scientific analyses. It is the start of a scientific investigation; the research is ongoing,

developing. This 'scientific attitude' is important because it will reinforce your research findings.

Knowledge

Obviously you can't apply research methods if you don't know what they are. *Knowledge* of methods is and always will be an important part of doing research. Even this book will expose you to it. Alongside knowledge about methods, you will also need to know about the subject you intend to research. This is the kind of knowledge that you have to polish up on each time. You can look for information on the subject; you can read about it. Knowledge about research methods, on the other hand, is consistent: you always need to know what research methods exist, what criteria they use and what the pros and cons are of applying a particular one.

Skills

Besides acquiring knowledge about how to set up and structure a research project, you polish the skills you need for research by actively going out and doing it. As a student, you become familiar with all the aspects of research, step by step, through examples and cases, and then you learn how to apply this knowledge. The methods that you use for this not only give you the background information that you need, they also contain a whole lot of 'recipes' that you can use when it comes to stats, software and so on.
Sometimes when you're doing research it's important to know a few 'tricks of the trade'. Some examples: selecting the research group, entering data in a software package, devising a test, crunching the numbers or making diagram. See Text box 1.7 for an example.

Example Highlands Sports Club

Every year, Highlands Sports Club organizes a cross country meet. Cross country involves running, not only on the roads, tracks and paths, but also across fields and streams. The distances and age categories vary. During a study for Highlands, a question is raised about the average age of the participants. The reason for this is that they need to know which age group shows the most interest in Highlands' cross country meet so that they can focus their advertizing more effectively. To answer the question, a researcher asks all the participants what their age is (in years). The researcher then works out the average age. To do this, he has a choice:

1. either add all the ages together and divide the result by the number of participants that answered; in other words 'do it by hand' (generally using a calculator);
2. or enter all the age groups into a computer: one push on the button and the average age pops up, a trick of the trade!

The result: he lets the client, Highlands Sports Club, know what the average age of the participants is.

Box 1.7

1.2 Research Approaches

You don't do research in a vacuum. First you draft a research plan; you define the central question; you check whether anyone else has researched the problem and what their conclusion was; you set a deadline and you draw up a budget to see what is necessary (and available) for carrying out the study; you consult your supervisor, your client, and your co-researchers. These are the practical aspects of research. Besides these, there are other, underlying approaches that can be used to classify research. For instance, there's a difference between fundamental and practical research, between qualitative and quantitative, between induction and deduction. You can also do research within a particular 'movement', also known as a 'paradigm'. In this section we discuss the basic principles of research. In the next section, we will discuss the schools of thought in research.

Fundamental or applied research?

In principle, and according to the science of methodology, there are two main types of research: *fundamental* (empirical) research and *applied* research. University students are more often than not confronted with fundamental research, while college students mainly carry out applied research.
The main difference between these two approaches is the type of problem to be solved. The questions raised in fundamental research are generally not primarily concerned with practical application; this is called a theoretical question. Applied research however is all about solving problems that have a practical application; i.e., a practical question.

A theoretical question tests scientific theory, and the solution is sought using fundamental research. A practical question is normally one that arises in daily life, from the world outside the scientific one. Applied research, therefore, often has social relevance. Fundamental research tends to have scientific relevance. This does not detract from the fact that both fundamental and applied research can address theoretical questions. Equally, fundamental research can test theories so that social problems can be solved. Scientific research into the effects of earthquakes, for instance, may well have far-reaching social relevance for those living in earthquake prone areas. You will have realized that the difference is not very clear: theoretical questions can also be answered in applied research, and practical questions are also investigated in fundamental research.
Text box 1.8 contains an example of fundamental research. The topic under investigation is not a practical one. The researcher wants to test a theory's validity by carrying out a newly developed experiment.