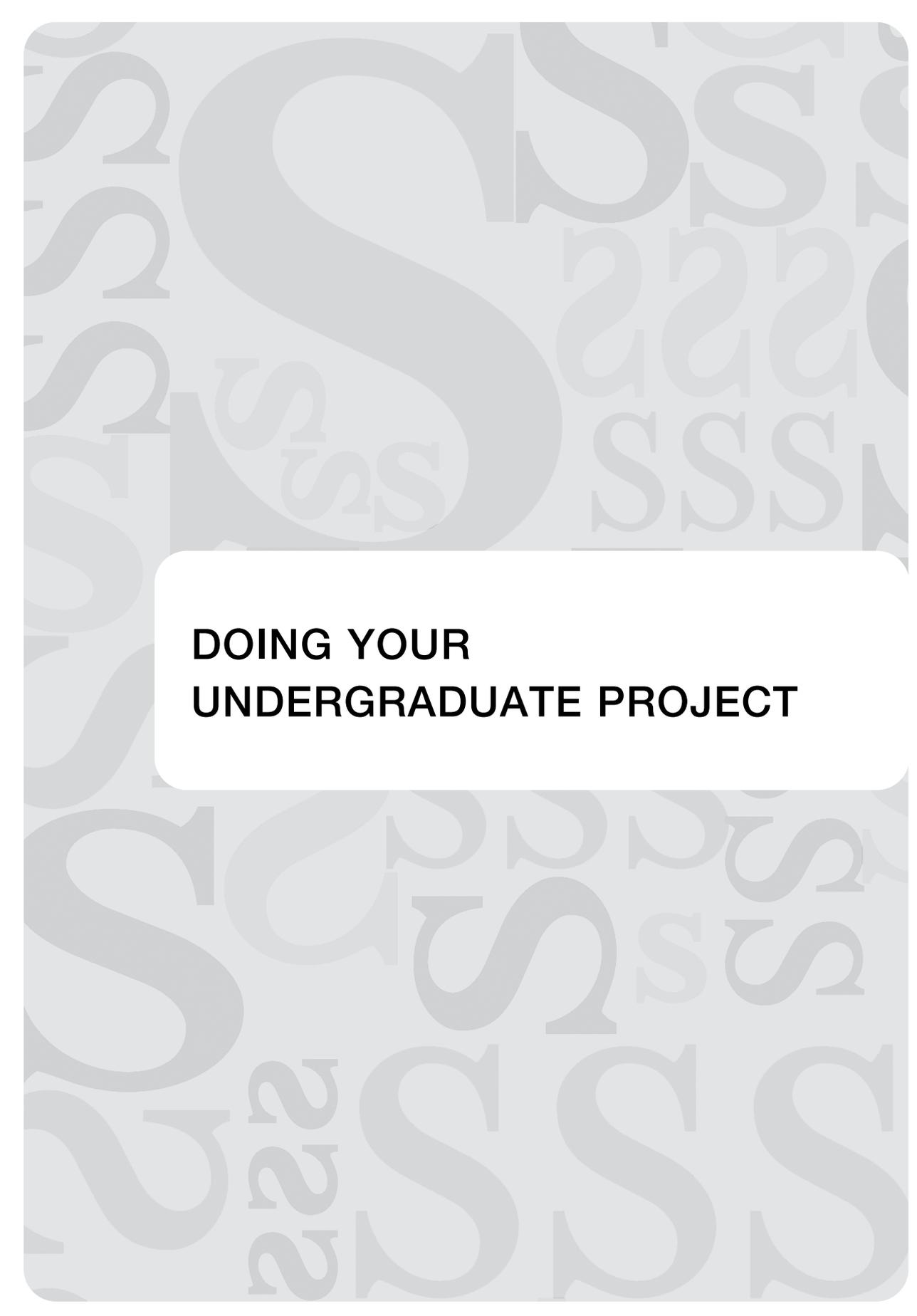


→ **SAGE Study Skills**

Doing Your Undergraduate Project

Denis Reardon





**DOING YOUR
UNDERGRADUATE PROJECT**

SAGE
Study Skills

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Denis F. Reardon

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Preface

An important requirement of many undergraduate courses in UK universities is that students do a major piece of research work, referred to as a project or dissertation. Whichever of these is required, the work is usually done during the final year of a three-year full-time degree, the equivalent period during a part-time degree, or is at least started and may be completed during the placement period of a sandwich degree, which may be of four years' duration. The time allowed for completion of the work is normally at least the two semesters of the final year and may be as much as 12 to 15 months if started during the sandwich placement. Precisely what a particular academic department requires will be determined, at least in part, by the nature and discipline of the degree being read, and will be specified in the course regulations. However, whatever an academic department specifies, most projects have much in common in terms of shape, form and style and in terms of the parameters within which the work has to be done. In essence, this book is concerned with both managing and doing the undergraduate project to reflect the fact that the undergraduate may be regarded as unique in the sense that he or she will be both the project manager and the researcher – and will manage herself or himself because, under university rules, the project normally has to be done as an individual piece of work.

This book is written primarily for undergraduate students and draws on experience gained from more than 30 years of teaching undergraduates about project work and supervising projects undertaken in the workplace by full-time and part-time students and by sandwich students on placement. These students have ranged in age from direct entrants from secondary education to mature students returning to learning in their 30s and 40s. Much has been learned from these students about factors that can affect project work, including lack of confidence in their ability to manage what many of them regard as a very substantial and daunting piece of work, through inadequate professional skills such as time management and work scheduling, lack of knowledge of basic writing skills, underdeveloped intellectual potential, and no recognition or understanding of ethics. Thus, advice is given on all that is involved in undertaking a project, from the choice of the topic through writing the proposal, reviewing the literature, selecting and using methods of investigation, recording, interpreting and discussing results to drawing conclusions and writing the final report.

Though the book is intended primarily for undergraduate students, experience gained from teaching and assessing professional diploma students studying project management

has provided some insights into difficulties that many of them experience due to having to manage full-time employment, part-time study and life. It became clear that diploma and degree students have much in common in respect of managing what amounts to a full work schedule during the period of their courses. They need much guidance, but the demands of work coupled with part-time study do not give much time for tutorial support. Therefore, this book is provided to supplement such support and to substitute for it becoming, in effect, a set of tutorials on project management, suitable for undergraduates and, to a large extent, non-graduate diploma students.

Acknowledgements

This book would not have been written without the encouragement that I received from former colleagues in the School of Information Studies at the University of Central England in Birmingham. In particular, I would like to thank Chris Hart, with whom I shared much of my teaching in the later years of my career at UCE. Over the years from 1970, I had developed a range of materials to support classes that I was teaching in undergraduate project management and Chris suggested that I should develop these materials into a guide for undergraduates. He also put me in contact with Sage. I owe much to Anna Luker, from the editorial department at Sage. She has been very supportive and encouraging, providing suggestions and insights, and much helpful advice. Other former colleagues whom I must thank are Barbara Chivers and Clare Nankivell, both of whom provided constructive criticism of some of the material that evolved into this book. Indirect contributions came from the many students who attended my classes over the years. Students are usually very forthcoming with comment and opinion on class materials provided by tutors. I was fortunate in that my students were very helpful and positive in the opinions that they offered. Also, their performance in project work was the source of much useful but ‘unconscious feedback’ on the value of my Project Manual and my paper on Literature Reviewing that were provided to each student at ‘project time’ and which have been incorporated, with modifications, into this book.

Denis F Reardon
Tamworth 2005

1 The Value of a Project

CHAPTER CONTENTS

- How to use this book
- What will be learned from this book?
- Why do a project?
- The general aims and objectives behind the project, and its assessment
- Qualities and attributes of a researcher
- Summary
- Further reading

How to use this book

The main purpose of this book is to serve as a guide for the preparation, management and presentation of an undergraduate project to be undertaken during a degree course in the humanities, arts, or social sciences. It is intended to answer the sort of questions asked by undergraduates and to enable them to ‘break down’ the seemingly rather daunting process of managing what is usually the most important piece of course work that they will undertake during their degree course. Because of the similarities and overlapping definitions of project and dissertation at different universities, much of this book may be applied judiciously to the preparation and writing of a dissertation.

The chapters represent the main elements of the undergraduate project research process. The experience referred to earlier has shown that students have found that breaking down the project process into these elements has provided them with a systematic and structured way of tackling their work. The chapters are arranged in an order that has proved helpful over many years, though each may be used independently to understand specific aspects of managing and doing your project. Thus, there may be

repetition of certain points in some chapters rather than provision of references between chapters. As well as introducing this book, this chapter is intended to explain the practical value of doing a project and its importance in your future career. Also, it provides a guide to assist you in deciding what type of potential researcher you are by showing you how to identify your strengths and weaknesses and your likes and dislikes in respect of your general knowledge and understanding, and of the subjects that you have studied on your course. From this, you should be able to develop sound ideas of what you could and could not do as a project topic.

Chapter 2 is designed to assist you in preparing your mind to do your research work and so provides a detailed description of what a project is and what research is, because experience has shown that many students do not realise what is involved in either of these. It is useful to understand the context within which the research is to be done since this will enable the literature search and review to be better informed and will help to ‘prove the value’ of the work to be done. Attention is drawn to the importance of ethical conduct in research and, finally, the administrative matters that are such important contributors to a successful project are set out.

Many students have difficulty in choosing a topic for their project. Sometimes the difficulty is of their own making, as they do not seek advice or guidance from tutors or supervisors. They appear to hold the view that only they, the individual students, should be involved, but ‘do not know where to start’. **Chapter 3** takes you from ‘an idea for a topic’ to the hypothesis and shows how to develop one through analysing the topic, formulating the research question and creating a knowledge map – all of which will help you to choose and know your topic intimately.

Most university departments will require a project proposal from you and this will have to be considered satisfactory by your tutors before you are permitted to proceed with your project. Many students neglect the proposal. Do not fall into the trap – a trap of your own making – by thinking that it is an easy task to prepare a proposal or that you can do it whilst ‘getting your research underway’. A well-prepared, well-structured proposal will act as an excellent desk reference tool throughout your research, and in **Chapter 4** you will find out how to write one.

In **Chapter 5**, the way to plan your project is explained. This is another element that is often neglected by undergraduate students on the basis that ‘I don’t need to plan because I know exactly what I want to do’. Can you always recall exactly what you want to do? A well-made plan will act as a detailed reminder and route map for your research, making sure that you know what must be done, when it must be done and what is needed to do it. The planning method provided is based upon the life cycle approach to project

management, which is systematic, structured and quite straightforward and has been used with success by many students.

There are risks associated with every aspect of life, not least with undergraduate project work. Generally, the risks are small, even insignificant, but there are occasions when a major risk event has severely adverse effects on a project. Learn how to assess and manage risks; such learning will be useful in professional employment after graduation. In **Chapter 6**, the risks that may be associated with your project and possible ways to assess and plan for them are discussed.

There are many books available on research methodology and so **Chapter 7** alerts you to methods that have been frequently used in undergraduate projects. Choice of method is critical to the success of any project, so how do you choose methods appropriate to your topic? This chapter contains guidance on what methods are available, how to choose methods suitable for your investigation and how to use them. You must review the literature of your chosen subject to ensure that you know what has been done before and this makes reviewing the literature the most important research method that you will use. As it is regarded as so important, a separate chapter, **Chapter 8**, provides a detailed examination of the literature review, how to do it, and how not to do it.

Chapter 9 focuses on how to use the results that you will obtain in your investigation. Experience has shown that many students either substantially under-use their results because they do not realise their significance or try to make too much of them, possibly due to their enthusiasm for the work. An undergraduate project is not likely to produce world-changing outcomes since it is intended more as a proof of ability to research than as a results-oriented piece of work, though the results are important.

Chapter 10 is devoted to writing the project report. This is a seemingly arduous task, difficult to start, to plan and to finish, yet if you approach it systematically and give yourself enough time, you will find that it is very satisfying. After all, it is the story of your research and is the only proof that you have done your project. This chapter contains guidance based upon more than 40 years of writing, reading and assessing reports at undergraduate, postgraduate and professional levels.

What will be learned from this book?

The project is intended to be a major learning vehicle, so it is important for you to know exactly what a project is, why you have to do it, and how to do it. Therefore, in using this book, you will begin the process of learning to be a project designer, manager and a researcher. You will acquire a range of skills and understanding that may be transferable

to other situations. The main skills and understanding that you will need to complete the project successfully are listed in Box 1.1.

You will learn what research is and how to do it, what is required of a researcher in terms of qualities and attributes, and what is demanded in respect of standards in research, recognising that, at this stage, you are doing undergraduate work.

In the time available to do an undergraduate project, normally no more than 20 hours a week for 30 to 50 weeks, it will not be possible for you to get very detailed knowledge of each of the skills listed, but you will gain sufficient knowledge and experience to understand what is required for successful project completion.

Box 1.1: Skills and understanding needed to complete the project

- Project planning and management
- Time management
- Work scheduling
- Risk assessment and management
- Resource planning and management
- Ethical behaviour and standards
- How to self-audit your skills
- Reflection – an essential intellectual process for the researcher
- Report writing
- Subject knowledge
- Research – a body of intellectual and practical skills, many of which are dependent upon the topic in which the research is being done.

Why do a project?

Your university requires a project for several reasons. One of these may well stem from opinions that have been offered by senior figures in commerce, government, and industry, namely that graduates are lacking in project management skills. These opinions reflect the fact that much nominally routine work done in commerce, government and industry has a lot in common with project work since it is done in discrete time, work and resource frames. Therefore, your degree includes project work to give you the opportunity to begin to develop project planning and management skills and research skills that will be valuable in employment after graduation. However, as the project is done at undergraduate level, it is not intended that you should seek to do what is often called leading edge, ground-breaking or wave front research that might produce a major contribution to the body of

knowledge in your chosen topic area. Indeed, such work requires substantial knowledge of the subject field and considerable research experience. Nor is it intended that your investigation should result in a definitive solution to a specified problem, proof of a theory or the development of an innovative idea or product.

The project is intended to enable you to grasp the fundamentals of research, whether theoretical or practical, and of project management. To achieve this, your project must normally be simple and straightforward. It will enable your tutors and examiners to determine your ability to define, design, do and deliver a piece of research. Thus, it will be the way that you plan, organise and do your research that will be under test, more than the subject content and topic-specific results or outcomes of the research, though these will be of significance. In other words, your project is a learning vehicle that will enable you to gain essential academic, professional and practical skills and, when completed, will enable you to demonstrate your capabilities. Keep in mind that a project that is well done will be an impressive addition to your curriculum vitae.

The general aims and objectives behind the project and its assessment

The aims are statements by which you declare your intentions in carrying out your project. They are the purposes that you expect to fulfil by doing your project. In the case of your undergraduate project, certain general aims will be established for the project by your academic department to enable your tutors and examiners to undertake the required assessment of your skills. These aims relate directly to what you have to prove about yourself as an investigator or researcher. They are concerned with the extent to which you have to learn research and project management skills and use them appropriately in the definition, design, planning, completion and reporting of your project. Can you cope with what is involved in doing a major piece of investigative work? Can you do the work and report it in a way that conforms to academic standards? You will establish other aims in consultation with your tutor and these will relate to the specific investigation that you will do. All the general aims will normally be set out in the project briefing issued by your tutor and should be repeated in your project proposal. The briefing will usually also contain the objectives and assessment criteria, and administrative and regulatory details relevant to the project. The precise form in which the general aims are given to you will depend upon the subject that you are studying for your degree, the nature of the project that you choose to do, and the regulations of your university.

The aims are summarised in column 1 of Table 1.1: *General aims, objectives and assessment criteria*, in which they are presented together with the objectives and the criteria for assessment. This table enables the links that must exist between the aims, objectives and assessment criteria to be identified. There must be direct and logical links between

your objectives and your aims; the linkage is one of dependency. Similarly, there must be links between the assessment criteria and the objectives. In the final analysis, the best way to assess your potential as a project worker or investigator is to determine how well you have conformed to accepted practice and to measure the quality, extent and manner in which you achieve your objectives, using agreed criteria.

At first reading, the general aims may appear rather daunting. Yet they are not if you recognise that the earlier parts of your course have contained elements that will have introduced many of the underlying skills and knowledge necessary to help you to fulfil these aims. These skills will be honed as the project progresses and you will develop others as a direct result of doing the work. Similarly, your knowledge of the subject area will be expanded and deepened. In order to fulfil these aims, you will have to achieve the general objectives specified for the project in the project briefing. Typical objectives are listed in column 2 of Table 1.1.

The objectives are the achievements that you must attain in order to demonstrate whether the aims have been fulfilled. The aims and objectives may be differentiated in general terms by regarding the aims as qualitative intentions and the objectives as quantitative intentions. Thus, objectives are measurable or quantifiable. For example, one aim of the project is: 'To test the student's ability to interpret and evaluate data and information gathered during research'. This is primarily concerned with the intellectual skills that enable you to 'tease out' meanings, trends, patterns, relationships, causes, solutions and explanations of results using, for example, analysis, synthesis, integration and appropriate presentation of the results. This aim is, therefore, linked to the second objective: 'To demonstrate the ability to use the research skills acquired whilst on the course, by satisfactory completion of a major piece of research work'. The extent to which this objective is attained will be demonstrated by the methods that you have chosen, the effectiveness and efficiency with which you have used them, the quality of the results obtained by using these methods, and the soundness of the analysis, interpretation, evaluation and presentation of the results.

Recognise that, although particular objectives are linked to particular aims and particular assessment criteria, such linkages are not exclusive. The achievement of a particular objective may ensure that parts, or all, of more than one aim are fulfilled. Similarly, one specific assessment criterion may link to more than one objective. When assessing your project, tutors and examiners will have created in their minds an image of your work based upon your stated intentions. They will also have created in their minds a 'quality framework' within which they will place your project and by which they will assess it. This framework will be an integration and synthesis of the assessment criteria, not a set of 'tick boxes' linked to specific criteria.

Table 1.1 General aims, objectives and assessment criteria

| Aims | Objectives | Assessment criteria |
|--|---|--|
| To enable the student to design and carry out research in an academic, professional, commercial or technological environment. | Demonstrate the ability to formulate an hypothesis, establish a research question and prepare a proposal for its investigation. | The quality of the project proposal in terms of its clarity, definition, precision, realism and objectivity and its relationship to the outcomes of the project. |
| To provide the opportunity to use research skills acquired whilst on the degree course. | Demonstrate the ability to use research skills acquired whilst on the course, by satisfactory completion of a major piece of research work. | The appropriateness and quality of use of the research methods. |
| To encourage the development of an ethical, systematic, rigorous approach to the selection and use of research methods. | Demonstrate the ability to manage research using project management skills, by completing a project to agreed parameters. | The scope and quality of the literature search and review. |
| To encourage the development of an ethical, systematic, objective approach to the collection and use of data and information. | Produce a report that demonstrates the ability to apply the written communication skills developed during the course. | The quality of analysis, synthesis, integration and evaluation of the data and information gathered. |
| To test the student's ability to interpret and evaluate data and information gathered during research. | Demonstrate oral skills, utilising learning gained by doing the work, in a viva and during seminars and tutorials. | The quality of the argument based upon the data and information gathered, both in the research and from the literature reviewed. |
| To test the student's ability to provide a cogent, reasoned and objective argument based upon data and information obtained by research. | Demonstrate recognition of the academic standards, including ethical standards, essential in the undertaking and reporting of research work, by applying these in the work done and reported. | The quality of use of project management skills. |
| To test the student's ability to manage a substantial and demanding piece of research using project management skills. | | Adherence to academic and professional standards, including ethical standards. |
| To test the student's ability to write a formal document reporting research. | | The quality of the report in terms of the structure and the clarity, brevity, precision and accuracy in the use of language. |

The assessment criteria are used primarily to determine whether the project objectives have been achieved and, if so, the extent to which they have been achieved. Thus, they are more than just parameters to measure your research results. They will also be used to assess the quality of the learning gains that you have made as a consequence of doing the project. In other words, the criteria are intended to assess your potential as a project 'manager' and research investigator. They are not just measures of how good the research itself was.

When tutors assess the project report, it is certain that they will use a range of criteria that may include some or all of those listed in column 3 of Table 1.1. Therefore, it is important that you have a clear understanding of the general aims and objectives and of the assessment criteria before the research work is started. They may be listed and explained in a project brief given to you when the 'project period' of your course starts. You should discuss these with your supervising tutor or course director in order to be completely clear as to what is required of you in terms of breadth, depth and quality. In other words, undertake careful preparation before you start on your project. You know almost from the start of your course what will be required of you, at least in general terms, and so you can form some of your ideas gradually over 12 to 18 months before the project period is upon you.

Qualities and attributes of a researcher

The project is designed to test your potential as a project planner and manager and to test your ability to carry out the project that you have planned. Thus, you will have to prove yourself as a researcher or investigator, though at a fairly elementary level. As your abilities as a researcher will be assessed, it is useful to explore the features of a researcher. This will help you to determine the extent to which you enter the project phase of your course with an understanding of what you must be in order to fulfil the project requirements. What qualities/attributes do you have or can you develop that will possibly mark you out as a potential researcher?

All researchers will demonstrate some of the qualities or attributes that are essential to the proper and satisfactory conduct of research. Most of these are developed by experience rather than being inherent in a researcher. Your project is a major tool for encouraging this development explicitly, though development will have begun much earlier, perhaps even before you enrolled on your degree course. The course work that you have already done, such as essays and seminars, will have demanded of you that you show certain qualities and attributes in order to meet the assessment criteria and so successfully complete the work. Your hobbies may have contributed to development of certain qualities. For example, many hobbies require persistence and the ability to concentrate for

lengthy periods of time, and demand great attention to detail and accuracy – qualities that are valuable in a researcher.

What else is desirable in you as a researcher? A critical attribute is objectivity. All researchers must be able to carry out their research in an objective manner and with an open mind. In essence, the researcher must be able to ‘stand back’ from the matter being investigated and consider all aspects of the research work in a completely dispassionate manner. There must not be any predisposition to particular points of view, no seeking to prove a point or an hypothesis. However, enthusiasm and a strong interest can and should accompany objectivity. Opinions, conclusions and any proofs related to the research topic must be formed as a consequence of the research, not in order to shape and form it. Therefore, do not allow yourself to become a slave to an idea, a method or a theory. Nevertheless, it is the case that all research, to greater or lesser extent, is value-laden. Thus, there is nothing wrong with you having a point of view as long as you recognise this and rigorously examine your attitude to your proposed topic. What assumptions have you made? Are they valid assumptions, do they have a sound basis? Is there any possibility that you may have a personal bias, an enthusiasm or some preconceived notion or notions to which you are particularly strongly attached and which you cannot ‘leave behind’ when starting your research? Do not despair if you recognise such ‘errors’. It is natural for people to have preconceptions. Preconceptions suggest that we may have quite strong opinions on, or enthusiasm for, particular matters. We are entitled to these and they may prompt ideas for research. However, it is important for you to recognise your preconceptions and enthusiasms and to ensure that you compensate for them during the course of your project. You must ensure that they do not have a prejudicial effect on the objectivity of your work.

Other attributes include the ability to think analytically, and to synthesise ideas – of others engaged in research on or writing about the topic, those you had that prompted your research and those that you form as a result of doing the research. The researcher has to be able to think inductively, that is, to build up individual ideas into mental constructs, for example, representing clear images of problems, processes or the hypothesis and research question being investigated. It is also important for you to be able to think deductively, that is, have the ability to reason from the general to the particular, for example, being able to infer from examination of a known construct what the constituent parts are, how they are related and what the relative significance is that these parts have in the overall construct.

Absolute honesty is a fundamental requirement in all researchers. It is essential that all researchers act with integrity at all times. Indeed, whatever their field of research and whatever their seniority in that field, all researchers must conform to a code of practice appropriate to the field in which they are researching. It is common for universities,

research institutes and professional associations to have a code of ethics that will include specific elements devoted to research. This code will include an unequivocal requirement to abide by high ethical standards when designing, conducting and reporting research. Responsible conduct in research is dealt with in Chapter 2.

Summary

When you enrolled on your degree course, you committed yourself to doing a project at some time during the course. At enrolment, the project was 18 months to 2 years off and, from such a distance in time, did not appear to be threatening. Also, it is possible that you had only a hazy idea of what would be involved and that you would have a year or more to do it. However, when the project period is a semester away, the 'threat' seems substantial. How can you deal with this threat? By preparing for it, by learning just what a project is and how to go about formulating your ideas, by learning about yourself and what is involved in being a project researcher. The discipline required of a researcher begins before the project is formulated, training your mind to do research, and discipline in the acquisition of the 'rules' of research, from the initial idea through to the submission of the final report, reflection on the work and the viva based upon the research. The learning gains achieved by doing a project will prove to be valuable in professional life. Therefore, it is worth the effort to ensure that this work is carefully prepared and well presented. Pay close attention to the aims, objectives and assessment criteria; together they provide quite detailed and systematic guidelines on how to do the project.

Further Reading

- Allan, Barbara (2004) *Project Management: Tools and Techniques for Today's ILS Professional*. London: Facet.
- Martin, Paula K. (2001) *Getting Started in Project Management*. Chichester; New York, N.Y.: Wiley.
- Moore, Nick (1999) *How to Do Research* (3rd edn). London: Library Association Publishing.
- Young, Trevor L. (2003) *The Handbook of Project Management: A Practical Guide to Effective Policies and Procedures* (2nd edn). London: Kogan Page.

2 Preparing to Do Your Project

CHAPTER CONTENTS

- What is a project?
- How big should the project be?
- What is research?
- Why a code of ethics is necessary
- Research misconduct
- The consequences of research misconduct
- Detecting research misconduct
- Administration of the project
- Summary
- Further reading

This chapter is intended to help you to clarify your mind when preparing to do the project and to help you to realise that you can do it. When about to start any project, however small, the route to successful completion will be made clearer, straighter and smoother by proper preparation. Your undergraduate project is small in comparison to industrial and commercial projects but is big to you as the individual who has to do it alone. So, what are you letting yourself in for in your chosen project? How can you prepare yourself for this substantial piece of work? What commitment are you making?

To answer these questions, we will firstly define and discuss what a project is, and then we will consider in some detail what research is and why it is done. We will examine why it is important to adopt and maintain a responsible attitude to the conduct of research and show some consequences of not doing so.

Preparation must also include the establishment of the administrative procedures that will be essential in keeping control of your project. Therefore, having considered what