How to get Ph.D

- **Dr. Robert C Clift**

Introduction

The purpose of this booklet is to introduce research and research methods in a user-friendly way to people who, so far, have had no experience in investigation (research).

I have deliberately equated the terms “investigation’ and “research” even though I realise that many people see research as something different and harder than investigation. For the purposes of this book I contend that there is no difference – both words mean “go and find out something”, perhaps for some earth-shattering reason or, perhaps, just to win an argument. I believe that both of these possibilities involve the same types of thinking and information gathering procedures. As a consequence, in the following pages there is a minimum of definition and statements about academic virtue and seeking after truth.

I know from experience that you, like me, often lose arguments, even about relatively trivial matters, because we do not have enough relevant information. If someone tells you that X’s restaurant is better than Y’s restaurant, how do you respond? Do you accept your friend’s judgment and say, “OK, I will try it?” or do you call for justification? “Why, have you been to both of them?” If the answer is “yes”, one party has direct evidence about the matter. If the answer is “no”, neither party has any direct evidence about relative quality so the decision to go or not to go is not based on facts but is made in the spirit of adventure.

In many cases, such a decision may not warrant the expenditure of very much effort in getting “facts” but what if you wanted to impress your dinner guest? I believe that the application of the thought processes described in this booklet will minimise the risk of many failures in our personal lives such as going to poor restaurants, changing jobs or buying a new house.

I also know from experience that there are many people in universities, polytechnics and similar institutions who, for one reason or another, have convinced themselves that research, even if I call it investigation, is not for them; however, those people are under pressure to do some “research”. In fact, in many countries, university funding is increasingly being tied to research output and members of staff are being classified as “research active” or “not research active”. As the transition from the “teaching only” category to research active is seen by many to be a severely demanding process, even a terrifying process, there is an unwillingness to become involved.

You, the reader, must be made aware that because I have spent my life working, teaching and writing in the general field of business, the examples which come most easily to my mind relate to that field. However, I do not think that my experience limits the usefulness of the following material because I believe that the principles discussed are universal. Even so, throughout this book I have used examples from other fields. Sometimes those examples are based on my perceptions of what the other person’s problems may be but, on most occasions, they have been drawn from practitioners in other fields – medicine, engineering, politics and so on.

In one sense, the accuracy of the examples, even those in my own field, is not of great importance as the primary purpose is to provoke some reaction rather than to teach. So, even if you can say “he has it wrong again”, my purpose is served if you correct the example and follow up the thought.

The causes of the unwillingness to become involved in research mentioned above run from lack of faith in personal abilities to a misconception of what the word really means.

Researchers have discovered or developed fantastic things: life-saving drugs; fascinating electronic gadgetry; various spectacular inventions; and new ways of doing things. One result of these spectacular achievements is that many people believe that only geniuses can hope to succeed. Without any intention of denigrating those achievements we must remember that despite intelligence tests, Mensa and various forms of eccentricity, genius is recognised after the event. Until then, the individual is likely to be described as egotistical, arrogant, stubborn, a dreamer or some other word implying criticism. In other words, I believe very strongly that most of us are capable of devising and carrying out an investigation that will add to the sum of human knowledge, that is, to do some research.

That leads me state what I think that the word, research, means. Clearly, the conduct of experiments, which seek the development of new life-saving drugs, is research, perhaps with a capital R. Such research is likely to take years of hard, often frustrating, work by many highly skilled people.

Incidentally, it may also cost millions. However, at the other end of the continuum, there are thousands of short-term, almost costless, discoveries being made by competent practitioners of various trades and professions.

One example is the famous story about James Watt. In 1770, he was supposed to be sitting in front of the fire watching his mother’s kettle boil. He noticed that the steam was so powerful that it lifted the lid of the kettle. He then began to work out how to harness that power and invented the steam engine.
A more recent and even simpler example is the story about the man who worked in a paper mill. He was so worried about the waste of scrap paper that he decided to glue several bits together to make notepads. Unfortunately, I cannot trace the source of this story but it is a good one.

These examples imply keen observation, imagination and determination to solve some problem rather than the possession of genius.

Another reason that many able people do not involve themselves in research is a misplaced belief that the barriers against entry are too high. Conventionally, the starting point is seen as enrolling in a research degree course at a university which would usually involve a large commitment of time and money. While this “degree route” is often an effective and fairly rapid way to acquire certain skills, it is not the only way. Always remember that the people who invented fire and the wheel did not attend university.

Having said a “minimum of definitions” I will break that promise immediately by trying to find one for research. It is a term which crops up everywhere – in universities, in laboratories, in hospitals, in many commercial and industrial organisations, even in primary schools.
People in universities talk about “pure” research which usually means pushing at the bounds of human knowledge without being concerned about the prospects of commercial application. A clear example of this is the astronomer devising ways to measure the weight of a planet. Of

course, a great deal of pure research, for example, in medicine or nuclear physics, soon affects the way that we do things.
People in industry and commerce talk about research and development. A great deal of pure research is carried out by the staff of corporations but most research and development (R&D) relates to devising ways and means to turn those great results of pure research into useful products or services. This is called "applied" research, for example, applying the knowledge gained from the discovery of DNA to making healthier cosmetics or other products.

People in other occupations use the word much more loosely. I can remember my granddaughter being told by her primary school teacher to do some research on the continents. While this could be described as stretching things a bit, the basic point is valid. She was being instructed to go and find out for herself rather than being given the material. She had to learn how to use the services of the library, how to read an atlas and other skills. At her level of knowledge and experience this was a demanding activity which increased her knowledge dramatically.

The foregoing range of uses of the word, research, clearly indicates the principles involved. Someone does not know the answer to some question, that is, there is a problem, so, time, effort, skill and knowledge are used to investigate the matter. The varied use of the word also indicates the potential range of difficulty and complexity; some types of research can be carried out by any intelligent person, other types require very high levels of specialised skills.

As ego always provides support for ability, although it is sometimes a substitute for it, I confidently claim that the material in the following pages will be useful for anyone interested in strengthening their investigative and analytical skills. In order to honour that boast the material is presented under four topic headings:

finding a topic to investigate;
developing questions to which clear answers can be found;
collecting valid evidence; and
winning the argument – writing a convincing report.

As some of these topics are more complex than others, the sections are of different lengths and involve different methods of presentation. However, wherever possible, "extending" questions have been inserted and it is hoped that you will seek "answers" or at least satisfaction by discussing them with colleagues.

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