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Edited by

*Clive Opie &
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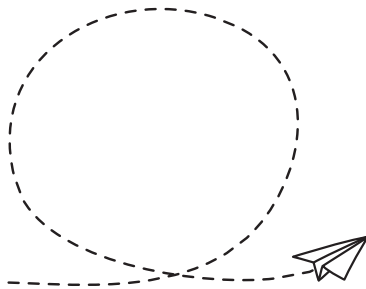
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1

CARRYING OUT EDUCATIONAL RESEARCH – THE START OF YOUR JOURNEY

Clive Opie

Overview

If you are faced with the task of undertaking a research project for the first time, it is not uncommon to find yourself asking a plethora of questions such as:

- Where do I start?
- I have never done anything like this before – can I do it?
- How do I go about selecting a topic for my research?
- How do I know if what I want to research is doable?
- I know little about research theory – how do I find out what I need to know?
- What are the key elements my research project will need to present?
- What procedures are available and appropriate for any research I do?
- How will I present what my research finds?

(Continued)

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The aim of this chapter is to begin to explore the answers to these questions and, in so doing, provide initial guidance to help you get started on your research project journey. It can only offer initial guidance. What this book sets out to do is to offer sufficient, clearly written, but not overly technical, detail supported by example material, to take you from first thoughts through to completion of your educational research project. In employing as straightforward and as readily understandable means as possible, this book aims to inspire you with confidence to travel your journey and realise you can do educational research.

INTRODUCTION

Your undergraduate studies in a field of education, e.g. Childhood Studies, Early Years, Education, Education and Psychology, Education Studies, Social Work, Teacher Training or Youth Studies, or M-level degree which you might be taking while being employed in related fields, will invariably require you to complete a small research project. Such projects will involve some form of investigation with the aim of acquiring some new knowledge associated with the degree you are studying. Whilst the focus of any research project will have to be negotiated with your supervisor, for reasons which will become apparent through the chapters in this book, it will also, hopefully, reflect an interest you have. You will almost certainly have limited time to carry it out, and for many the research project element of your degree will usually last around 3–6 months.

Although the time available for your research project will be limited and this will impact upon the depth of research and content, this does not mean it should not be regarded as an important piece of work nor adhere to fulfilling basic criteria as highlighted (see Table 1.1). Doctoral students, who will typically have several years to complete their research, may find the contents of this book a useful starting point, and even possibly enough for some of their requirements (see Chapter 7). There is no question though that the requirements of their degree will need them to delve far more deeply into the various aspects of educational research contained within it.

It is worth re-iterating at this early stage that the context for this book is to provide for the needs of new researchers. Years of personal experience of working with undergraduate and M-level students new to research in completing their degrees has taught all those contributing to this book that following a well-trodden pathway can go a long way in helping to alleviate the apprehensions you may feel in the initial stages of your project. This apprehension is common and felt by many new and even more experienced educational researchers. The order of chapters in this book has been deemed to offer one such pathway, but to say it doesn't have pitfalls, or that it is travelled in a sequential manner, would be to deny the realities of undertaking research, or indeed the needs of the researcher. For example, you would be wise at least to think about your data

presentation whilst considering your research procedures, to ensure the latter will provide you with the data you need.

As noted in the Preface each of the chapters can be considered as self-contained. For example, Chapter 2 by Jon Scaife, provides a critical insight into the importance of engaging with theory; Desma Brown's Chapter 3 articulates what is one of the key stepping stones in conducting any research, framing your research question; and Chapter 12 by Lee Fallin on 'Understanding Qualitative Data Analysis' provides a clear, easy-to-follow introduction for anyone wanting to start applying the intricacies of NVivo, the most commonly used qualitative data analysis software (QDAS). Similarly, engaging with the contents of this book, or indeed any other text, cannot guarantee that any advice offered, or suggestions made, will ensure a straightforward, trouble-free research project. It might be convenient to think this could be the case, but educational research is often not this obliging. At this point I would like to emphasise the critical role tutors have in providing support and guidance, and you will be constantly reminded of this throughout this book.

The audience this book aims to cater for – undergraduates and M-level students who are new, or relatively new, to educational research – also underpins the decision taken to limit the research terminology engaged with, and to use certain terms in preference to others. The truth of the matter is that, to 'do' educational research at undergraduate and M-level, you need only work with a subset of the research terminology that exists. To help you the terminology and terms deemed most important are italicised the first time they are raised in this book, indicating they are detailed further elsewhere.

What terms should be included? What criteria for their selection have been used? Why are those that have been excluded so treated? What is the validity (a term which will be explored more fully later in this book) for making these choices? One could, and rightly so, be criticised for a level of personal subjectivity in selection of the terminology deemed to be 'appropriate' at undergraduate and M-level. However, the terms are chosen to reflect the recurring needs of such students, as experienced by those supervising them and the authors of this book. In this way, the terminology presented here takes on a level of objectivity. If you wish to widen your knowledge of educational research terminology then there are numerous other eloquently written texts on the market, far more detailed, which more than adequately cover any 'deemed missing' elements (Coe et al., 2017; Cohen et al., 2018; Creswell, 2014a; Newby, 2014; Walliman, 2011).

MAIN ELEMENTS OF EDUCATIONAL RESEARCH

Everything associated with your research project will require writing up, and will include such sections as an abstract (or summary) of the research; why, with appropriate supporting literature, the research undertaken was deemed to be necessary; how it was carried out i.e. the approach and procedures (methods) used; and presentation of what it revealed and what was learnt in the process.

I have presented each of the key sections of any research project in Table 1.1 along with a few notes for some exemplification of what they should aim to achieve. No attempt is

made to develop these elements as this is provided in future chapters either in this book or the associated website. For example, in Chapter 7 David Hyatt develops each of these sections with his constructive advice on writing up a project, and in Chapters 8 and 9 I go into much more detail about research approaches and procedures (methods).

Table 1.1 Key sections of a research project

ABSTRACT

There should be one – is there? It should give you a clear and concise picture of what you can expect to read in the dissertation i.e. purpose of research, procedures used, key findings.

INTRODUCTION

Does it provide an understanding of what the research is about? Why was the research conducted? What does it hope to achieve? Does it offer appropriate research questions?

LITERATURE REVIEW

An essential and crucial part of any thesis. Does it provide satisfactory/reliable background referenced material from others to support the need for the research? Does it offer a degree of criticality of what is presented, not just a 'shopping list' of articles?

METHODOLOGY

Is the theory behind the research explained (even if simply)? Is a suitable research approach applied? Are the details of the sample chosen and procedures used appropriate?

FINDINGS

Do they adequately present the data obtained from the research procedures used? For example, is presentation of numerical data clear and easy to interpret? Are quotes from any interview data used appropriately, and do they accurately articulate what is being argued?

ANALYSIS/CONCLUSIONS

Do they follow clearly from the findings? Do they instil confidence that they are reliable/valid? How trustworthy/credible is any interpretation of qualitative data?

RECOMMENDATIONS

If given (there may not be any at this level of project) do they follow from, and are they supported by, as they should be, the Findings and Analysis? Are they appropriate given the research undertaken?

REFERENCES/BIBLIOGRAPHY

Is this complete? Are references given accurately represented, e.g. in the format required?

Having provided a brief overview of key sections required when undertaking a research project, Exercise 1.1 is aimed to help you further appreciate their significance.

Exercise 1.1

Assessing the presence of key elements of a research project

For Chapter 1 the website holds five published articles: Able et al., 2015; Marsh et al., 2017; Odhiambo and Hii, 2012; Spencer et al., 2017; Yamamoto, 2015, all of which are related to some aspect of educational research. It is suggested you choose one of these to read and then critically reflect on it in terms of the key sections indicated earlier in Table 1.1. To help you, a template **Assessing Key Elements of a Research Project** has been provided on the accompanying website, where you can jot down notes for your own use or as an *aide-mémoire* for discussion with others. It is likely to be more advantageous if you can get several people, new to research, to read the same article, make comments and share these. The website also holds comments on these published articles in the folder **Assessment of Articles for Chapter 1** put together by the editors of this book, although it is suggested that these are looked at only after your own initial analysis of the article. You may not agree completely with the editor's comments and/or pick up other points for consideration, but this is the nature of educational research.

Note: Tutors are welcome use this template for an assignment, e.g. a 2000-word report.

Throughout this book reference is made to the accompanying website **<https://study.sagepub.com/opie>**. The website holds a series of articles and templates to support example exercises as well as additional notes to complement the contents of this book and to support the researcher. The material has also been cleared for use as potential teaching materials.

You will often hear the request to be 'critically reflective' and this is something you need to get into the habit of doing. It is easy to criticise aspects of an article, others' research procedures or the recommendations from a piece of research. Your task, though, is to reflect on your criticism by asking yourself, and providing answers for, questions such as 'Why am I being critical?', 'Do I see this as a key issue that, whilst not major, would have improved the overall tenor of the article/research if addressed?', 'How would/might I have minimised this criticism?', 'How might the author of the article have minimised this criticism?', 'How have others avoided this criticism?'. In short, you need to engage in a dialogue which discusses your criticisms and offers personal reflections on them as appropriate.

If you have completed Exercise 1.1 and had the opportunity to share your views with others, then it will be surprising if analyses do not show a degree of commonality, but they will also undoubtedly throw up differences of opinion. This is to be expected, welcomed and indeed valued in that only through debate of such discourses does one start to come to appreciate the potential complexities of undertaking educational research. Discussion and analysis of such articles and other material offer you greater understanding of the

vocabulary associated with research; a deeper appreciation of the importance of individual beliefs, values, culture and philosophical viewpoints in framing approaches to research; and recognition that although disputes abound these add to, rather than diminish, the ability to better comprehend the intricacies of social reality.

It is also worth noting that the website articles in Exercise 1.1 may not seem to ideally meet all the sections noted in Table 1.1. Some may seem short or lacking in some detail, but this could well be due to limitations of imposed word length of the journal they have been published in rather than any inherent weakness of the research. So, for example, in some the Abstract and Introduction may have been merged. Others may have merged the Findings and Analysis. The key point is, irrespective of how they are presented or the amount of detail in each, all sections ought to be present in some form or other in each article.

The aim is that working through Exercise 1.1 will provide you with a valuable insight into what ought to be reported for any research project undertaken. If analysis of any one paper throws up apparent weaknesses, and it would be surprising if it did not, then this ought to be helpful in avoiding these when embarking upon your own research project.

Having provided a general overview of what a research project will typically require let's assume you have attended the appropriate lectures on Research Methods and perhaps discussed preliminary ideas of what to research with tutors and peers. You are still likely to be faced with what appears to be a daunting, perhaps even seemingly impossible, task ahead. Questions arise such as, 'How do I focus my research question(s)?', 'How do I start my literature review?', 'What is a suitable sample size?', 'How do I select my sample?', 'How should I present my findings?' These are all legitimate questions for which answers will be found in appropriate chapters in this book.

It is inevitable that your research will involve working with people, who have their own beliefs, values, thoughts, ideas, feelings and opinions. Given this fact, any research you undertake could result in findings being as varied as the number of people you involve in it. This realisation often prompts further questions such as, 'How will my research show that...?' or 'How can I draw relevant conclusions from my research?'. Answers to these questions will also be provided through the contents of the chapters in this book.

What the rest of this chapter sets out to do is to offer a little confidence boosting and settling of apprehensions to help you appreciate, no matter how unsure you might be feeling at this moment in time, you can complete the research required of you. To convince you of this, we will explore some expectations, often held by those new to research, of what, in general terms, a research project requires. In so doing we will aim not only to dispel some misconceptions but to enable you to start to build up your own understanding of the terminology and requirements of the kind of research in which you will be engaged.

EXPLORING SOME EXPECTATIONS OF WHAT IS NEEDED TO COMPLETE A RESEARCH PROJECT

The experience of those contributing to this book suggests that those new to educational research have various preconceived ideas of what it requires, such as the need:

- 1 to have an in-depth knowledge of the academic field in which their research is situated
- 2 to start with a hypothesis designed to prove something
- 3 to lead to some clearly defined and replicable outcomes
- 4 for a collection of statistically relevant amounts of data for analysis

This is not a definitive list and it is important to recognise that each will have its own significance, depending on the kind of research being undertaken. However, delving a little further into each will allow us to begin to appreciate the key elements of educational research within the constraints of an undergraduate or M-level degree. Just to remind you, throughout this section of this chapter you will find terms italicised. This indicates these are key terms which will be explored in more depth in other chapters.

RESEARCH REQUIRES AN IN-DEPTH KNOWLEDGE OF THE ACADEMIC FIELD IN WHICH IT IS SITUATED

A commonly held view is that research is 'done' by academics, who are specialists in their field, who understand the vocabularies which permeate their field of expertise, and the specialist discourse that surrounds them. For our purposes, the vocabulary might include terms such as *action research*, *case study*, *constructivism*, *critical theory*, *epistemology*, *ethnography*, *existentialism*, *grounded theory*, *interpretivism*, *humanism*, *objectivism*, *ontology*, *paradigms*, *positivism*, *realism*, *subjectivism*, *symbolic interactionism*, *worldviews*. This list is by no means exhaustive and it would be no surprise if several of those noted were deemed, at this stage, to be bewildering. However, as noted earlier, the argument being made in this book, based on the years of experience of its contributors, is that at undergraduate and M-level the terms researchers need to engage with can be limited, and it is these that will be defined and explored in the preceding chapters.

So, where does the new researcher start with navigating through what can often seem to be an academic minefield? In short, there is no definitive answer to this question as the feedback you will get will vary depending on whom you talk to. Knowledge and understanding of various terms pertinent to your specific area of study or general concepts of research theory will be critically important but, given the level you are working at, it would be unreasonable to expect you to have an in-depth knowledge of the field of study you have chosen to research. Perhaps the best way to address this expectation is to consider the following key questions, which, if you can answer them with a reasonable degree of authority and confidence, using appropriate supporting material, should help you on your way to balancing academic requirements with achieving a successful project.

- Is/are the reason/s for proposing my research well founded (see Chapter 3)?
- Have I provided appropriate literature evidence to support the need for it (see Chapter 4)?
- Is the research being proposed doable, for example: within the timescale I have for it; in terms of access to my sample; within the culture I find myself working; in terms of ethical considerations (see Chapter 5)?

- Assuming the research is doable then have I provided the appropriate theoretical arguments to support my choice of *methodology*, i.e. what my research sets out to do (see Chapter 2)? Am I employing the right *research approach* and *research procedures* to complete it (see Chapters 8 and 9)?
- Have my findings been clearly presented e.g. through easy-to-understand tables/graphs for any quantitative data; are my conclusions, and any recommendations, supported by appropriate material from my findings (see Chapter 10)?

As a means of supporting you with completion of these elements of your project, these questions have been incorporated into a template in the file **My Research Journey Travel Diary**, which you will find on the accompanying website. As its name suggests, this template provides you with space to jot down notes on points such as what you feel you have completed as far as you can, what you still need to do, further questions, next steps and reflections to date.

As noted these questions will still leave the new researcher asking others, for instance, ‘How much supporting material do I need?’ and ‘How much research theory do I need to discuss?’. There are, again, no definitive answers to such questions and this is where the importance of regular discussion with your tutor and peers, something we will continually recommend, cannot be underestimated. Such discussion will also help answer other points you will need to consider, e.g. about the overall credibility of your research.

In conclusion, it is important that you have a working knowledge of the literature within the area you are researching. You should provide some critical reflection of this literature i.e. not just offer a ‘shopping list’ of what you have found, to show how it has informed your research (see Chapter 7). You should also be able to use appropriate terms, such as epistemology, without necessarily having an in-depth knowledge of them, to provide supporting theoretical arguments (see Chapter 2), which will underpin your chosen research approach and procedures(s).

RESEARCH NEEDS TO START WITH A HYPOTHESIS DESIGNED TO PROVE SOMETHING

From the outset, there is a need to recognise that the premise of starting with a hypothesis is perfectly sound. If you look up definitions of hypothesis they all revolve around the suggestion of a relationship between two variables to support a theory. However, semantics play an important part in how the term hypothesis is interpreted. In everyday life we often make simple hypotheses where we predict that two variables are related purely on some anecdotal or personal knowledge we have, e.g. ‘The taller you are the more likely you are to suffer back pain as you get older’. Whilst there may be an evidence base to support or reject this simple hypothesis, knowing it, or being able to quote it, is not important.

However, now let’s say we are looking to support or reject the hypothesis that there is a relationship between these variables. In this case the hypothesis needs to be tested, thereby taking on a very different status, and one of statistical significance. To test the

hypothesis would require that some empirical research is undertaken to collect data, which could then be subjected to the appropriate statistical analysis to support or reject it. What we would test for is known as a *null hypothesis* to reflect the reality of probability (see Chapter 13 for more detail). Such a hypothesis is written so as to contradict our theory, so in this case it might read, 'There is no relationship between a person's height and the increased occurrence of back pain as they get older' and this is what we set out to support or reject.

As we shall see, it is the format of the hypothesis which determines how it might be investigated, so let's begin to explore this from the perspective of the commonly held view that setting a hypothesis is synonymous with the requirement to gather evidence as to its veracity.

The reason hypothesis setting, and proof, are often linked arises because of the research *paradigm* (model), *positivism* developed by the French philosopher Auguste Comte in the 1830s (Bridges, 2016; Newby, 2014: 99). Comte believed that truth arose from verifiable facts i.e. that reality can be observed and measured (quantified), and as such saw the application of scientific methods (*experiments*) as the means of providing the proof to find it. By undertaking well-structured experiments, being meticulous in the organisation of the numerical data collected and methodical in its analysis using *statistics*, the ability to better understand society could be achieved. Here is our first foray into linking research terminology: *positivism (model) – scientific method (experiments) – collection of numerical (quantitative) data – statistical analysis*. This takes on what is regarded as an objectivist approach to research i.e. truth is not affected by 'individual biases or prejudices' and there is a 'pure kind of knowledge which is not vitiated by subjective experiences' (Palaiologou et al., 2016: 33).

As we have started to consider research terminology, it is worth highlighting that this is not an area which finds unified agreement over terms used. This doesn't matter if one is consistent with the terms that are used, and they reflect an accepted understanding. One example of this is the widely accepted use of the term 'paradigm' (Kuhn, 1962) to 'represent a person's conception of the world' (Coe et al., 2014: 17), which, as we shall see later in this chapter, inevitably influences the type of research engaged in. However, the concept of a 'worldview' (Guba and Lincoln, 1994), is also used in place of the term paradigm or in conjunction with it, e.g. a 'constructivist worldview' is sometimes referred to as a 'interpretivist paradigm'. Jon Scaife will develop the concept of 'worldview' in the next chapter, but you might also find the discussion by Coe et al. (2014: 5–8) on paradigms and the article on the website from **Willis** (2007) on worldviews and paradigms useful to read.

Similarly, *quantitative research* is a term you will find in books often described as an approach to research which is based on the collection of numerical data for statistical analysis. This is an approach based on positivism. However, some would proffer the view that this term does not exist, as noted by Coe et al. (2017: 20), who argued 'quantitative' refers to the type of data gathered, not to an approach to research.

Returning to our discussion, we have noted research, completed within a positivist framework, requires a null hypothesis, for which we can collect quantitative data to support or reject it. Whilst the requirement for a null hypothesis is not in dispute, we have resisted claiming that the linked research will end up proving or disproving it. Before we

explore this further, you might like to look at the two files on the accompanying website **Benefits of Using a Word Processor** and **Links Between English and Foreign Languages** which offer some of the potential pitfalls of drawing such conclusions.

Let's take some extensive research work carried out by Steven Proud (2009) for his doctoral degree, which centred around how a child's peer groups affect their educational outcomes up to the age of 16. One of his results suggested that boys perform significantly worse in English when the proportion of girls is increased. The null hypothesis to be tested, which we have noted already is written to contradict our theory, might read as *'Irrespective of the number of girls in a mixed English class there is no significant difference in the performance of boys in the class'*.

To help you appreciate the practicalities (or rather impracticalities) of collecting numerical data to support or reject this theory, it is suggested you might like to work through Exercise 1.2.

Exercise 1.2

Working through the requirements of positivist research

Consider Proud's theory that 'The more girls there are in a mixed English class, the worse boys perform'. The template provided on the website in the file **Undertaking Positivist Research** has been designed to help you work through designing research which you think might provide some evidence to support or reject the theory, and then to consider the issues surrounding carrying it out.

It would be very surprising if, in working through this exercise you didn't start to appreciate the complexities of undertaking positivist research. Whilst you could probably suggest a research design to obtain data with which to try and support or reject the null hypothesis, the practicalities of carrying it out coupled with the ethical restrictions it would raise (see Chapter 8) make the undertaking of such research anything but straightforward – or even doable. Also ask yourself the following questions, 'If I did undertake this research, how much data would I need to convince others of the *validity* of my findings, or of their *generalisability*?'

You might now like to read a short synopsis of the research undertaken by Steven Proud (Shepherd, 2009). In doing so look particularly at the size of his sample and the time he had to carry out his research. What is also interesting is that even with his arguably extensive analysis, his recommendations were still debated and challenged. The key point to take away from this latter discussion is that very little educational research will end up 'proving' anything despite the desire from various quarters that it should do so. To remind ourselves the best you can hope for is that you will get some evidence to support, or reject, any theory you might have but this is, as we shall see, just as valuable.

There is, then, no question that when undertaking positivist research, starting with a hypothesis has value, as Walliman notes:

A good hypothesis is a very useful aid to organising the research effort. It specifically limits the enquiry to the interaction of certain variables; it suggests the methods appropriate for collecting, analysing and interpreting the data; and the resultant confirmation or rejection of the hypothesis through empirical or experimental testing gives a clear indication of the extent of knowledge gained.

(2011: 284)

On this basis, starting with a hypothesis to support a theory and carrying out an experiment to provide evidence to support or reject it is not altogether inappropriate in positivist research. Indeed, an example of such research is discussed later (see Chapter 8) but note, when you read about it, that the research is questioned, particularly in terms of the ethical issues it raised.

Carrying out positivist research work is certainly not beyond the scope of the undergraduate or M-level student, but you should consider very carefully the implications of doing so.

So far, we have only talked about undertaking positivist research, which is based on the premise that the actions of people can be controlled or conditioned by external circumstances. Basically, they are the products of the environment they find themselves in. However, for this type of research personal attributes such as thoughts, creativity, feelings, beliefs, values, relationships etc. are considered irrelevant, and to the social scientist this is an anathema. Research which values and regards the social world as being created by such personal attributes is based on a different paradigm called *interpretivism*, often linked with the equally contested term *qualitative research*, which is research that uses non-numerical data to interpret and analyse people's experiences and actions. So, interpretivist research revolves around seeking to understand (not measure) the personal construct (quality) behind views, trying to make sense of the personal attributes we have mentioned and how they influence outcomes. As with positivist research we can link associate research terms for interpretivist research: *interpretivism (model) – naturalistic methods (interviews, observations) – collection of non-numerical data – descriptive analysis*.

At first glance, it might seem that starting with a hypothesis does not seem to make much sense for interpretivist research. In short, interpretivist research is not setting out to prove anything, even though data analysis might result in common views arising. However, starting with a hypothesis is just as relevant, it just takes on a different structure. As an example, let's work from the earlier theory of Steven Proud that 'The more girls there are in a mixed English class, the worse boys perform'. From a positivist research perspective, we came up with a possible hypothesis that '*Irrespective of the number of girls in a mixed English class there is no significant difference in the performance of boys in the class*'.

From an interpretivist research perspective, your hypothesis would not set out to quantify anything, and so might become '*In mixed English classes performance differs between boys and girls*'. Here there is no presumption of what this difference might be, or that there is a need to measure anything or it is linked to the number of boys and girls in a class. Instead it puts as paramount exploration of whether there is a difference and

why this might be so. As an example a general observation might suggest in mixed classes an apparent difference in how often boys and girls offer answers to questions or that a teacher appears to favour boys or girls when asking questions. The interpretivist researcher would then seek to explore whether their observation is shared or not, and why, from the perspective of those in the class.

As another example let's consider the new UK GCSE grading system, which was used for all subjects in 2018 and for which, at the time of writing, a provisional set of exam results had been announced (GCSE, 2018). However, these results were also linked to a significant change in the assessment structure of the UK GCSE with the removal of assessed course work and a shift to end-of-course exams. Now let's say you are interested in testing the null hypothesis that '*The new UK GCSE assessment structure has resulted in changes in the workloads of teachers and the students taking them*'. Again, there is no assumption any change is measurable, or what it might be, and it only seeks to find out views of whether there has been one. You might like to work through Exercise 1.3 to help you appreciate the differences.

Exercise 1.3

Working through the requirements of interpretivist research

Consider the theory '*The new UK GCSE assessment structure has resulted in changes in the workloads of teachers and the students taking them*'. The template provided on the website in the file **Undertaking Interpretivist Research** has been designed to help you work through designing research which you think might provide some evidence to support or reject the theory, and then to consider the issues surrounding carrying it out.

Hopefully, this section has clarified that starting with a null hypothesis and collecting data to support or reject it has value irrespective of the type of research, positivist or interpretivist, carried out, although the format of the hypothesis will vary. In turn this has allowed the introduction of various key research terms, all of which will be discussed further in other chapters. We have also argued for the use of the terms 'support' and 'reject' rather than 'prove' or 'disprove' in relation to the outcome of any hypothesis testing and offered some insights into why we have done so. This does not mean that in doing so hypothesis testing is somehow diminished in value, but simply that it should reflect the reality of what can be stated from it.

RESEARCH SHOULD LEAD TO SOME CLEARLY DEFINED AND REPLICABLE OUTCOMES

In the previous section we discussed the differences between the two key types of research, positivist and interpretivist. From this discussion, it would be reasonable to

argue that clearly defined and replicable outcomes can only be secured by undertaking the former. In short, only positivist research, using experiments and statistical analysis, can provide the necessary objectivity to enable knowledge to be built upon demonstrable facts or observations. As McMillan and Schumacher note:

[...] objectivity means unbiased, open-minded, not subjective and as a procedure refers to data collection and analysis procedures from which only one meaning or interpretation can be made.

(1984: 5)

This might be the case in scientific fields, but how objective can we be in educational settings? The quantitative measurement of outcomes in research is certainly possible, but what we have noted is that undertaking experimental research in education settings is not without its problems. Whilst it might provide evidence to support or reject a theory, it will not lead to you being able to prove or disprove it.

We have also noted that undertaking positivist research assumes people can be controlled or conditioned by external circumstances. Basically, people are the products of the environment in which they find themselves, and to the social scientist this is an anathema in that it excludes '*notions of choice, freedom, individuality, and moral responsibility*' (Cohen et al., 2018: 14). The reality is that the kind of research which you are likely to be involved in will regard the social world as being created by personal attributes which will impinge upon views, and in turn answers, to any questions you might ask. This leads to interpretivist research.

We have used the terms 'objective' and 'subjective' and it is important that we understand what they mean when we use them in the context of educational research. They both refer to the degree of influence that personal feelings and opinions should have in any argument. As we have seen from a purely objective standpoint such conscious perceptions have no place. Knowledge must be built upon demonstrable facts or observations. A subjective stance takes an opposing view. Here knowledge is regarded as belonging to the individual because of their own consciousness and thoughts. In this way prominence is given to individual points of view and the need to have a collective opinion is of secondary importance. Up to this point we have refrained from discussing issues of research philosophy but it is now appropriate to introduce two philosophical terms, *ontology* and *epistemology* (see the website article by **Scotland** (2012) and Chapter 2 for more detail) and how these impact upon you as researcher.

Ontology focuses on how one sees social reality (Coe et al., 2017: 16; Cohen et al., 2018: 53; Newby, 2014: 35). In terms of what we have already discussed, do you see social reality as objectively real or subjectively experienced? How might your beliefs and values influence your research? This is your 'researcher position' (see Chapter 2) and is critical as it has implications for the approaches you take (see Chapter 8) and procedures you use (see Chapter 9) for your research. In the context of ontology, you will come across a range of terms but we will stick to *realism* (accepting what you find as real) in the context of positivist research and *relativism* (multiple realities exist as constructed by individuals) in the context of interpretivist research.

Ontology then reflects a personal position with respect to how one perceives social reality. Whatever that position is, it will inevitably influence the type of research the

researcher considers to align best with it. Research is about acquiring knowledge and, more importantly, how that knowledge is communicated to others with a view to not only informing practice or policy but, ultimately, improving them. In short, what constitutes knowledge? What is it possible to know? What confidence do we have as the reader of any research that the approaches and procedures applied reflect the knowledge it claims it does? These are all questions linked to the theory of knowledge, epistemology.

Your epistemological position will be influenced by your ontological position. As Burrell and Morgan (1979) note:

The view that knowledge is hard, objective and tangible will demand of researchers an observer role, together with an allegiance to the methods of natural science; to see knowledge as personal, subjective, however, imposes upon researchers an involvement with their subjects and a rejection of the ways of the natural scientist.

(Burrell and Morgan, 1979, quoted in Cohen et al., 2018: 5)

If we regard the terms ‘realism’ and ‘relativism’ as the extremes of an ontological position, then *objectivism* (this assumes meaning solely resides in objects, not in the conscience of the researcher) and *subjectivism* (all knowledge and truths are subject to the individual’s interpretation and experience) can be considered as the corresponding extremes of an epistemological position. Although we have talked about ‘extreme’ paradigm positions, these rarely manifest themselves in any educational research, which almost inevitably ends up becoming a blend of research procedures (methods) along a continuum between both paradigms as appropriate to, and achievable within, the research proposed. To aid understanding, Figure 1.1 provides an overview of the components of a research paradigm, whilst Table 1.2 provides an overview of the research

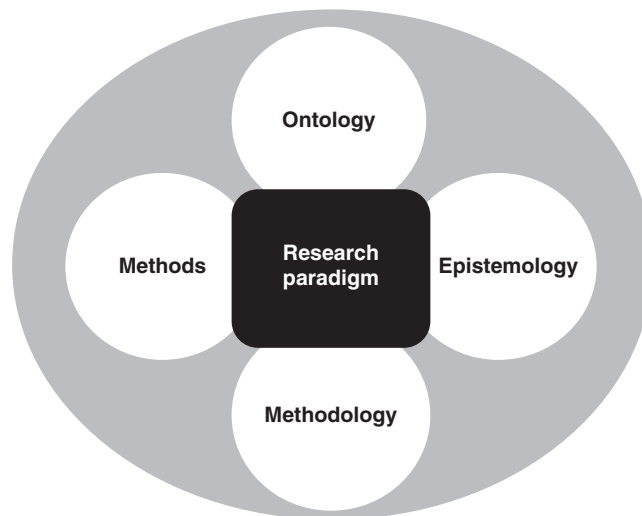


Figure 1.1 The components of a research paradigm

terminology associated with those we have discussed, whilst remembering that some of this terminology is contested.

We started this section with the expectation of the need for any research to lead to some clearly defined and replicable outcomes. Arguably, what we have seen is this is most likely to be achieved if one commits to positivism. However, whilst this has its place in educational research, it ignores personal attributes and the influence they have

Table 1.2 Research terminology associated with positivism and interpretivism

Type of research	Quantitative	Qualitative
Worldview (paradigm)	Positivism	Constructivism (Interpretivism)
Ontology	Realism – objects have an existence independent of the knower. A discoverable reality exists independently of the researcher.	Relativism – reality is subjective and differs between people. Reality is individually constructed.
Epistemology	Objectivism – discovering absolute knowledge about an objective reality. Meaning solely resides in objects, not in the conscience of the researcher. No knowledge exists beyond that which is immediately observable. Knowledge is viewed as hard, real and capable of being transmitted in tangible form.	Subjectivism – our world does not exist independently of our knowledge of it. Knowledge is viewed as softer, subjective, based on experience and insight of an essentially personal nature.
Methodology	Emulation of scientific research: hypothesis setting, identification of cause, formulation of laws, prediction, empirical testing. Use of random samples, controlled variables and control groups.	Directed at understanding a phenomenon from an individual's perspective. Investigating interaction among individuals as well as the historical and cultural contexts which people inhabit.
Methods	Quantitative procedures such as experiments, surveys, standardised tests, closed-ended questionnaires and descriptions of phenomena using standardised observation tools. Analysis involves descriptive and inferential statistics. Large-scale studies searching for generalisable results. Validity and reliability.	Qualitative procedures such as open-ended interviews, questionnaires and observations. Analyses are the researchers' interpretations; consequently researchers need to make their agenda and value system explicit from the outset. Focus is on individuals or small groups and concerned with understanding personal constructs. Credibility and dependability

on research, which leads us to interpretivism. This values individual interpretations, which infers that achieving clearly defined and replicable outcomes would seem unattainable.

So, what criteria should be used to judge your research? What should you be seeking to achieve with your research? As you will read in other chapters, and in other texts, the positivism–interpretivism paradigm dichotomy throws up significant debates around the criteria that should be applied in judging the research output of each. Chapter 6 looks at these criteria through terms such as *validity*, *reliability* and *objectivity* when talking about positivism (quantitative research outcomes) and the concomitant terms of *credibility*, *dependability* and *confirmability* for interpretivism (qualitative research). However, as with paradigms, seeing these as ‘extreme’ positions can be viewed as a false dichotomy and even the use of the terms is contested with the argument that having them only adds confusion (Newby, 2014: 129). What is less contested is that any research should reflect a high degree of integrity and honesty on the part of the researcher, e.g. about their research position and how this informed the research approach and procedure(s) they used; and that their analysis of their findings supports any conclusions arrived at. In this way, a level of ‘researcher objectivity’, important to all research, can be evaluated.

The conclusion we are coming to is that achieving clearly defined and replicable outcomes, in the context of the research being carried out at undergraduate and M-level, is not very likely. From a positivist standpoint achieving these outcomes is problematic because of trying to cater for a variety of variables and acquiring enough evidence to secure any generalisation. From an interpretivist standpoint the very definition of this research identifies that its outcomes will vary.

At this point it would be entirely appropriate to ask yourself the question, ‘If I am not going to achieve either outcome, then why am I undertaking any research at all?’ The things to bear in mind are the implications either for your personal practice, or others working in similar areas. As Bassey notes: ‘the study of single events is a more profitable form of research (judged by the criterion of usefulness)’ (1984: 105)

In terms of generalisations, Bassey draws a distinction between those he views as ‘open’ where ‘there is confidence that it can be extrapolated beyond the observed results of the sets of events studied, to similar events’ and ‘closed’, ‘which refers to a specific set of events and without extrapolation to similar events’ (1984: 111). He goes on though, to link the latter with the ‘reliability’ (1984: 118) of a piece of educational research i.e. how it can be related to what is happening in another similar setting, such as a classroom, school, youth centre, library or nursery, and to:

the extent to which the details are sufficient and appropriate for anyone working in a similar situation to relate (their) decision making to that described.

(1984: 119)

In short, whilst generalisability of any research results will not be achievable, their influence on one’s own practice, and reliability to others working in similar situations, could have significance.

COLLECTION OF STATISTICALLY RELEVANT AMOUNTS OF DATA FOR ANALYSIS

Before we explore the issue of how much data we might collect let's just remind ourselves of Table 1.2 and note that the 'extreme' paradigm positions shown rarely manifest themselves in any educational research, which almost inevitably becomes a blend of research procedures (methods) along a continuum between both paradigms. This is important to keep in mind as the type of research will inevitably influence the amount of data you will end up working with. There is no definitive answer as to the amount of data you might collect. This quantity, as it should be, will be determined by your research question, the methodology you choose to investigate it and the procedure(s) you select to gather the data to answer it.

This probably sounds less than helpful, but it reflects the realities of research. However, guidelines (see Chapter 9) based on experiences of working with undergraduate and M-level students are offered in determining your sample size and consequently the amount of data you will collect when administering questionnaires or conducting interviews. They are guidelines as there are no hard and fast rules and, as always, listen to your tutor's words of advice. What is important to recognise is that any results/outcomes will be specific to your situation and to the participants involved.

Before moving on to discuss the expectation that carrying out research requires statistical data analysis, it is worth mentioning the two data types which you might collect: *primary data* and *secondary data*. Primary data, put simply, can be considered as newly generated data resulting from your research, irrespective of whether collected by positivist or interpretivist research methods. In short, it is data which did not exist until you carried out your research. You will almost certainly be engaging in the generation of this type of data.

Secondary data is that which already exists, for example, in official statistical sources, published documents (academic journals, books), and which is being subjected to further analysis. In other words, secondary data is the further analysis, after publication of what was once primary data. There isn't space to consider the complexities of working with secondary data but, if your research is based on secondary data, we will refer you to the discussion of this topic in other texts (Coe, 2017: 215; Newby, 2014: 154–9; Sapsford and Jupp, 2006: 142)

Now let us return to the expectation that when undertaking the analysis of data, particularly when considering numerical data, the application of statistical tests is required. Just the mention of the word statistics gives rise to disquiet in many new researchers, with any indication a working knowledge of statistics may be needed invariably turning this into a full-blown panic attack. The expectation that there is a requirement to use statistics is often attributed to the misguided importance, especially in some cultures, simply of needing to include them.

Statistics have their rightful place and, used appropriately, are an important part of the toolbox for educational research. To help alleviate concerns you may have at this point the most widely used are what is known as *descriptive* statistics. As its name indicates, this just describes data collected, for example, '178/227 (78.4%) of final year nurses surveyed were in the age range 19–21 years'. How this type of statistics is presented varies depending on the data to hand, but ostensibly it is all just about describing what has been found.

However, should you want to test any hypothesis that might have been made, or extrapolate any conclusions from data collected from a sample population, to the whole population the sample came from, then this requires another type of statistics known as *inferential*. Such statistics, as you might imagine, are more complex to work with and require appropriate statistical tests, *parametric* or *non-parametric*. Recognising this additional complexity, Chapter 13 presents an overview of associated terminology to provide the new researcher with a set of building blocks to understand the key aspects of statistics, both descriptive and inferential. It is worth repeating that at undergraduate and M-level the chances are that you may well need to go no further than using descriptive statistics with recourse to inferential statistics being limited to a few specific areas.

Often it is the associated calculations with any statistical test which cause the greatest anxiety. Given the plethora of software packages which exist to aid in these calculations, Chapter 14 has been written to provide you with examples of the use of the spreadsheet program Excel and statistical package for the social sciences (SPSS) for this purpose. The use of such programs has been of benefit to researchers and reflects a more authentic approach to the use of statistics – that the correct statistical test is applied – not, as we shall see, that one is necessarily conversant with intricacies of the calculations behind them.

The introduction to the last section of this chapter stated that our objective was to convince you that, irrespective of any misgivings you might have, you could complete the research required of you. To do this we explored some expectations, often held by those new to educational research and, in doing so, looked to dispel them and build up your own understanding of the terminology and requirements of the kind of research you will be engaged in.

To fully achieve our objective will require reading other chapters in this book, engaging in discussion with peers and consulting your tutors, but you might be surprised at how much you have already travelled along the understanding research requirements pathway. To gauge this look at Exercise 1.4 and see how far you can get in making decisions on the type of research you think you would need to undertake to get evidence to answer the questions set. When carrying out the exercise remember the constraints of time you will have for your research and any possible problems with undertaking the type of research you decide upon. Consider also the practicalities of undertaking the research proposed, the sample size which might be reasonable to work with and the procedures you might use.

Exercise 1.4

Linking research paradigms with research questions

Chapter 1 of the book by Opie and Brown (2019) presented two research paradigms. Can you recall what they were and the general philosophical underpinning of each? What are the typical research procedures associated

with these research paradigms? If not, look back at the details in the chapter to help you remember.

Having clarified the two research paradigms we discussed, this exercise now asks you to try and decide which you think links best with each of the following research questions and, if you feel neither is an ideal fit, just note why you think this. In doing so try and provide some details on the practicalities of undertaking the research proposed, sample size and procedures (methods) you would use to get evidence with which to answer your research question.

- 1 Does more frequent use of textbooks increase student achievement?
- 2 How are texts used by teachers and students in the classroom?
- 3 How do students and teachers view the instructional value and context of specific texts?
- 4 Are textbooks more effective than other instructional resources in promoting on-task behaviour of students?

Note: On the website the file **Identifying Research Paradigms** provides a template for completing your answers and the file **Research Paradigms – Discussion** offers personal thoughts on the solutions to the exercise. Try not to look at the latter until you have carried out the exercise and, if you are able to, discussed your views with others.

Summary

This chapter has set out to just get you started on your research journey and the website file **A Potential Process for Research** aims to offer you further guidance on the key points to consider when embarking upon it. The points raised warrant, and will get, further discussion in chapters already noted. In addition, there are further important aspects of research such as: how to frame your research questions (Chapter 3); consideration of ethics (Chapter 5); guidelines on writing up and disseminating your research (Chapter 7); presenting data (Chapter 10); and using technology to support qualitative and quantitative data analysis (Chapters 12 and 14) still to be explored.

We have stressed that typically you will be undertaking your research over 3–6 months. It would be remiss, though, not to highlight that even so it will require hard work; need careful planning and organisation if it is to be completed successfully within expected timescales; be time consuming; and entail commitment and sacrifice from yourself and, more than likely, others. Problems will invariably arise, but this is where regular contact with your tutor is so important so you can benefit from their expertise and advice.

Whilst we have introduced various points, such as paradigms, in terms of 'extremes', we have qualified this by saying research often ends up becoming

(Continued)

(Continued)

a continuum between both paradigms as appropriate to, and achievable within, the research proposed. So, whilst positivist research focuses on statistical analysis of quantitative data, such analysis, using appropriate procedures, is equally possible on more qualitative data from interpretivist research e.g. measuring attitudes using Likert scales (see Chapter 13). We presented similar 'extremes' when we discussed the criteria used to judge the output of any research and concluded that in the final analysis, irrespective of the type of research undertaken, it is the degree of integrity and honesty that we attribute to the researcher over the whole process of their research which is critical. You might like to look at the website <https://researched.org.uk>, which has some interesting articles about research integrity.

In conclusion, what we have tried to show in this introductory chapter is that educational research is 'doable', by all interested in making, as Bassey notes:

... a systematic, critical and self-critical enquiry which aims to contribute to the advancement of knowledge.

(1990: 36)

In short, you can do educational research and the rest of this book sets out to provide the additional information needed to help you to do so.

As a final point we noted earlier that there is a website which accompanies this book, <https://study.sagepub.com/opie>. In the materials on this website for Chapter 1 you will find the file **Research Flowchart**, which is offered as an *aide-mémoire* for you to link the key points on your research journey to the chapters within this book.

CHECKLIST

Having completed reading this chapter, and undertaken the exercises provided, use this checklist to tick off your present understanding of your introduction to educational research:

I am more confident that I ...	No – what more do I need to do on this?	Yes
understand the key sections of a research project and how important it is that they are included in any report		
know the key questions I need to address to help me achieve a successful project		
appreciate the reason why starting with a hypothesis is perfectly sound but that any evidence found will not allow me to categorically prove or disprove it		
am aware of the main paradigms of educational research and the key terminology associated with them		

I am more confident that I ...	No – what more do I need to do on this?	Yes
have a basic understanding of ontology and epistemology and how these two philosophical standpoints influence the type of research undertaken		
understand the difference between descriptive and inferential statistics and that only the former is likely to be needed for my own research		
appreciate that educational research is not just the prerogative of a chosen few who make it the focus of their working life – I can do it		

Don't forget to visit the companion website at <https://study.sagepub.com/opie> for the resources to support this chapter.



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