CHAPTER 2

The Research Process

Opening Vignette: Great Writers' Habits

Source: ©iStockphoto.com/gpointstudio.

What habits should you adopt to be a great researcher? Oliver Burkeman, who writes for a living from his home in New York, recommends these six:

1. Get up early: Great writers get up early and start work early, no later than 7 a.m., when the mind is fresh and disturbances are low.
2. Keep the day job: William Faulkner worked at a power plant, T. S. Eliot at a bank, William Carlos Williams as a pediatrician. Day jobs give you structure and teach self-discipline and focus.
3. Take walks: A walk is a way to literally step away from focused work and rest and consider for a while.
4. Stick to a schedule: Do not accept the conventional wisdom that you should wait for inspiration to strike. Hard work is just another form of creativity.
5. Abuse coffee.
6. Learn to work anywhere: Do not pretend that you need special conditions. Agatha Christie used to say that all she needed was a table that would hold her typewriter.

Source: Campbell & Porzucki, 2013.

Learning Objectives and Outcomes

At the end of this chapter, you should be able to:

1. Explain what research is
2. Understand the purposes of research
3. Understand the objectives and products of research
4. Compare different approaches to research
5. Foresee a project's life cycle
6. Foresee the process of research
7. Manage the steps of research
8. Manage your skills
9. Manage your motivations
10. Manage your effort
11. Manage change

What Is Research?

Research is a word with two main meanings: (a) the process of acquiring knowledge, and (b) the product of the research process. This chapter is about research in the first sense—the process. The final chapter explains how to write the product of this process.

The aim of research can be described on three main dimensions, as described in the next three sections: (a) its purpose or utility, (b) its objectives or products, and (c) its approaches.

What Are the Purposes of Research?

Research has three main purposes:

1. **Basic research**, or **pure research**, improves knowledge about something, such as how organizations have been managed in the past. Basic/pure research overlaps analysis. *Analysis* is the examination of something without any other necessary agenda. Indeed, basic/pure research may be known as **analytical research**. As Chapter 6 explains, all research must involve some form of analysis, even though many researchers remain unaware of analysis.

2. **Applied research**, or **practice research**, improves practical solutions to a problem, such as how an organization should be managed.

3. **Action research** improves understanding of how to implement change, such as how to change the leadership or the culture of an organization.

What Are the Objectives and Products of Research?

Research can be described by its objectives and products, of which this section introduces eight:

Exploratory research aims to find a new research project. You will engage in some exploratory research before choosing your research project. Any research is exploratory if:

- A final project has been chosen but not yet fully defined, or
- Several options remain for a final project.

Conclusive research aims at something conclusive, such as an answer to a question, a proof, a recommended policy, or a recommended practice. Just because someone aims to be conclusive does not mean that his or her research will be conclusive. Some researchers honestly report that they failed to find the conclusion they had aimed for. Some researchers might claim to offer something conclusive but be criticized by others for inconclusive research. In fact, research is rarely absolutely conclusive, due to imperfect information or contested interpretations. Scientists tend to regard all research as inconclusive—a contribution to knowledge, but not the final word (see Practical Advice Box 4.2).

Prescriptive research aims to conclude with a prescription. A **prescription** is advice, guidance, or even an obligation regarding how something should be done. For instance, prescriptive research could start with concerns about how to import goods legally or ethically.

Descriptive research aims to produce a description of something, such as the material composition of ancient pottery or the process by which a plant reproduces.

A **case study** aims to explain one case in particular. The case could be an event (such as a crime as experienced by the victim), an action or activity (such as the crime as perpetrated by the criminal), or an actor (such as the criminal).

Survey research aims to assess many things, such as the behaviors exhibited by a particular species of animal, the attributes of a building, or the attitudes of a group of people.

Historical research aims to produce knowledge about things from the past, typically past events (such as elections), past persons (such as former presidents), or past organizations (such as the now defunct Pan Am airline company).

Ex post facto is a Latin phrase that means "after the fact." **Ex post facto research** literally means research into something after it has happened, but it is conventionally used to mean research into the variables within experiments that have already occurred, without repeating the experiments. The *variables* are those factors that can change. Ex post facto research would be necessary if an experiment produced data with unexpected variance, without collecting other data that could explain this variance. For instance, we might have tested the reactions of people to crime by showing each of them in turn some photographs

of crimes being perpetrated. Our data might show an anomalous peak in the subjects' self-reported sensitivity to these photographs on one particular day. Ex post facto research into events outside the experimental setting could test whether their increased sensitivity was due to a news report the previous night about a particularly horrific crime.

What Are the Approaches to Research?

An approach is a way of reaching something. An approach to knowledge is a way of achieving that knowledge. Many approaches exist. Some might not be accessible to you, perhaps because they do not apply to your particular project or just because you do not yet understand them well enough. Some people have preferred approaches because they are ignorant of superior alternatives.

Ideally, every researcher would learn the alternatives and understand and describe the approaches that other people use.

The subsections below describe these different approaches. Some of these approaches have been categorized over millennia of philosophical and scientific investigation, so some of the terms below might seem parochial or intimidating. I find that the best way to understand these different categories is as a series of opposing pairs. Think of each pair as poles at opposite ends of a spectrum.

The contrast between dissimilar things should help you understand their boundaries. In practice, much research does not perfectly fit any one of these things, but partially fits lots of these things at the same time, so you might find that you could describe research as a bit of several approaches. For instance, research that is experimental is inherently empirical too; a positivist approach is inherently observational.

The pairs that are compared in the subsections below are:

- Experimental versus field
- Empirical versus theoretical
- Deductive versus inductive
- Subjective versus objective
- Philosophical versus positivist
- Relativist versus replicable

- Metaphysical versus physical
- Traditional versus behavioral
- Phenomenological versus observational
- Ontological versus epistemological

Experimental Versus Field Approaches

In Chapter 9, you will learn more about methods, but methods are so defining of many approaches to research that some of those methods need to be introduced here. **Experimental research** is performed under controlled conditions (often termed "laboratory conditions"), while **field research** is performed in less-controlled, more natural conditions (often termed "field conditions"). For instance, in order to study human competitiveness, we could ask people to compete in a game of our own design—the game is an example of controlled conditions. If we asked them to do so in a controlled space, like a room, we might describe the space as a laboratory. Alternatively, we could observe people going about their natural behaviors, perhaps at home, which would count as research in the field.

Empirical Versus Theoretical Approaches

Empirical research focuses on replicable observations of the real world in order to gain knowledge, while **theoretical research** focuses on explaining facts. For instance, if you pick up a book that describes observations of food consumption and obesity in a city, you have picked up the product of **empirical** research. A theoretical book could attempt to explain why obesity is increasing. Theoretical research is entirely theoretical until it refers to observations of the real world. Many academic works are both theoretical and empirical; they might theorize about why something occurs, then present data as part of a test of their theory.

Deductive Versus Inductive Approaches

Inductive approaches start from observations of the real world. Deductive approaches start from other premises, such as unreal assumptions. For instance, a book that proposes to explain why humans consume foods that are bad for them could start with observation of people consuming food—the resulting argument would be inductive. An argument that starts with an assumption about human needs would be a deductive argument. Chapter 7 has more to say about deductive and inductive arguments. Here we need to note a choice between deductive and inductive research—a choice that would affect other approaches to research. Purely **deductive research** would be purely theoretical research,

because deductions are made from premises for the purposes of developing theory. By contrast, **inductive research** would be both theoretical and observational, because inductions are based on real observations. For instance, a book that observes a high rate of obesity in a particular city might compare it to the obesity rate in a different city and find differences in behavior to explain the differences in obesity; this explanation is now an inductive theory.

Subjective Versus Objective Approaches

Subjective research is based on personal experiences and judgments, while **objective research** is not. Subjective approaches are usually easier and may offer more detailed observations. Objective approaches are usually more replicable. If someone were to write a recommendation for reforming a police force based entirely on his or her experiences in the police, then the project would be entirely subjective. Someone else might write a recommendation for reforming the police force based on independent data on police activities and crime; this would be a more objective approach. The subjective approach might be considered superior because of the author's credibility. The objective approach might be considered superior because of its independence. Chapter 9 will explain more about subjective and objective methods.

Philosophical Versus Positivist Approaches

In the past, the term *philosophy* meant almost the same as research, because philosophy was understood as an approach to all knowledge. The modern word comes from the Ancient Greek *philosophia*, which means "love of wisdom." Indeed, some of the early philosophers founded science. Today, *philosophy* is closer in meaning to reasoning about fundamental issues, such as ethics, rights, aesthetics, and reasoning itself. Modern philosophical reasoning is usually not empirical, although some of the reasoning may be based on inductions.

Modern philosophy developed a schism between traditional philosophizing as reasoning and an early modern alternative known as positivism. **Positivism** denied that anything could be known unless it could be observed in a replicable way. Absolute positivism is dissatisfying because it does not allow for things that cannot be observed replicably, such as possibilities, past experiences, future trends, and subjective experiences (see Research in the Real World Box 2.1). **Antipositivists** criticized absolute positivism and allowed for knowledge derived from largely subjective or other similarly unreplicable observations. The social sciences include research that spans the full spectrum from absolute positivism to traditional philosophizing.

Relativist Versus Replicable Approaches

Scientists insist on replicable observations. For instance, some researchers refuse to present any data other than data collected by automated instruments that anybody could use—this is a positivist position. By contrast, others (known as **relativists**) criticize any claim that any person's or culture's observation could be replicated by another; thus, they offer their own observations or intuition as personal and unreplicable (see Research in the Real World Box 2.1).

Metaphysical Versus Physical Approaches

Another schism in philosophy is between metaphysical and physical approaches. **Metaphysics** is a late ancient branch of philosophy examining the physical world—in this sense, metaphysics includes much of early science. However, science later separated from metaphysics, leaving metaphysicists to reason about the physical world in largely nonempirical ways. Thus, **metaphysical approaches** are largely nonempirical claims to understand the physical world, while **physical approaches** are based on observations of physical things. For instance, as shown in Chapter 7, a common metaphysical approach is to imagine each thing as a clash of two opposing things (the dialectic approach). This is usually purely conceptual or theoretical, without any attempt to observe the two opposing things. A physical approach would be to examine something as a system of material parts and physical processes.

Many theorists conceptualize more abstract things, without admitting or realizing that they are being metaphysical. For instance, traditional sociologists, political theorists, and historians conceptualize human groups as exercising "power" or seeking "power," but critics reject the concept of power as too abstract, and instead focus on observations, particularly of tangible behaviors, such as trade. In turn, traditionalists complain that their critics engage with only tangible things and neglect other things just because they are more difficult to measure.

Traditional Versus Behavioral Approaches

Traditional research and philosophical **instrumentalism** view theory as useful in itself, without needing to explain anything real. This is justifiable if the aim is to be prescriptive but becomes confusing when traditional research claims to be theoretical, descriptive, or normative. A prescription does not need to be descriptive—one could prescribe an ideal society without observing anything like it. For research to be theoretical, it must explain some facts; in other words, it must be descriptive. Traditional research is described inaccurately as **normative** research because it often aims to explain what people normally should do or would do. However, prescriptive research does not need to be normative; we could prescribe an ideal society without expecting any such society to materialize.

Traditionalists are opposed by anyone who focuses on observational approaches, such as experimenters, empiricists, positivists, and physical researchers. A new category of researcher to introduce here is the **behavioralist**, who focuses on behaviors as the most tangible things to study. **Behaviors** are activities or actions, such as enforcement of the law, mechanical movement, biolocomotive travel, production, feeding, reproducing, and so forth.

You should realize that this contest overlaps many of the other pairs already described above. Both traditionalists and their critics could be attempting to understand the same activity, but the traditional approach is likely to be more theoretical, deductive, subjective, prescriptive, and philosophical, while the nontraditional approach is likely to be more empirical, inductive, objective, descriptive, and scientific.

Phenomenological Versus Observational Approaches

Phenomena are things that are observable. **Phenomenology** is a branch of philosophy focused on how observations are interpreted by humans. **Phenomenological approaches** attempt to explain how something is interpreted by humans. For instance, a phenomenological approach to crime would investigate how people think about crime in general or how they think about crimes that they have experienced.

Observational approaches attempt to understand something as it is without interpretation. In this sense, observational approaches are trying to achieve objective observations, while phenomenological approaches study how observations are interpreted.

Ontological Versus Epistemological Approaches

Ontology is a branch of philosophy dealing with existence. Traditionally, it developed ways to classify things; thus, modern **ontological approaches** develop ways to classify the objects of the research—that is, to decide in which class each object should be placed. In this sense, ontological approaches are analytical. For instance, an ontological approach to a transport system would classify the vehicles, loads, routes, delivery times, and so forth.

Epistemology is a branch of philosophy dealing with how knowledge is understood. **Epistemological approaches** aim to understand what is understood. For instance, an epistemological approach to a transport system would explain how we came to know what we know about that transport system. In this sense, epistemological approaches are knowledge reviews.

Research in the Real World Box 2.1

"Bad Philosophy" Versus Quantum Physics

Source: Cprmstock/iStock/Thinkstock.

"The culprits were doctrines such as logical positivism ('If it's not verifiable by experiment, it's meaningless'), instrumentalism ('If the predictions work, why worry about what brings them about?'), and philosophical relativism ('Statements can't be objectively true or false, only legitimized or delegitimized by a particular culture'). The damage was done by what they had in common: denial of realism, the commonsense philosophical position that the physical world exists and that the methods of science can glean knowledge about it. . . . Things have been gradually improving for a couple of decades, and it has been physics that is dragging philosophy back on track. People want to understand reality, no matter how loudly they may deny that. We are finally sailing past the supposed limits on knowledge that bad philosophy once taught us to resign ourselves to." (Deutsch & Ekert, 2013)

The Life Cycle of a Project

The Project

A **project** is a particular process for achieving something. Your research project starts on its journey when you scope out your topic, as described in Chapter 4, but first you should appreciate the project as a whole, so that your expectations are more realistic and you are better prepared to manage the project (see Practical Advice Box 2.1).

Any project has a *life* from beginning to end. Projects have a **life cycle** in the sense that as one project ends, you are free to start another project. In practice, we may be involved in many projects at the same time, each at different stages of the life cycle.

Managing your project's life cycle is an important part of your skill set as a researcher. You should be prepared to manage:

- The steps
- Your skills
- Your motivations

- Your effort
- Your productivity
- Unplanned changes

What Is the Process of Research?

A **process** is a series of activities or steps by which something occurs or is produced. For instance, the first step in your research is realizing your topic. As Chapter 4 will show, you should realize your interests, find something important within your interests, and so forth, until you find a justifiable topic for your research.

In this book, you will learn practical social scientific skills that can be applied to any project. These skills include the following, as ordered in a suggested process:

1. Realizing the topic
2. Designing the project
3. Finding sources
4. Evaluating sources
5. Reviewing literature
6. Reviewing knowledge
7. Analyzing phenomena, situations, and issues
8. Reviewing arguments
9. Evaluating and building theories
10. Modeling causal and other processes
11. Generating hypotheses
12. Designing a methodology
13. Choosing methods
14. Conducting tests
15. Gathering data
16. Evaluating evidence
17. Drawing conclusions
18. Structuring your report
19. Writing your report with clarity and style

Practical Advice Box 2.1

Important Things to Keep in Mind During Research

Source: Anna Berkut/iStock/Thinkstock.

"Whether you are preparing to write about current events, interpret a newly collected set of data, explore emerging trends, or look into the future, your plan for research and production showcases what you are learning and the quality of your analytic skills and tradecraft. Here are some important things to keep in mind:

- Write down your plan and change it as needed rather than researching without a strategy, plan, or structure. Your plan and your products are the yardstick by which your analysis will be measured. An explicit strategy becomes particularly critical when you are engaged in a lengthy, high profile, or multi-organization project.
- Plan for multiple products to highlight your progress. Research aids can provide valuable waystations as part of the process for producing a longer analytic product. Short pieces on new developments help you develop the expertise needed to produce long papers on difficult, evolving, or more complex issues.
- Keep a list of your key assumptions, intelligence questions, and multiple hypotheses to be explored. Keep in mind that you are looking for evidence to disprove or eliminate a hypothesis. Review these lists as you complete the final draft of your paper or presentation.
- Search for the best information in the time you have available. Keep the ratio of time spent in research and production in balance. This is particularly useful if you can contact experts in government, academia, or private industry, or levy requirements on field collectors rather than being a prisoner of your inbox.

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- Beware of the most common analytic pitfalls:
  - Not defining the problem or issue correctly.
  - Jumping to a solution before analyzing the problem.
  - Not involving people who know most about the problem.
  - Not having an open mind.
  - Using the wrong criteria.
  - Mirror imaging or assuming others think or act as you would.
  - Assuming actors have more control or power than they do." (Pherson & Pherson, 2013, pp. 54–55)

Two alternative types of research processes will be considered in the subsections below: (a) critical thinking and (b) intelligence.

The "Critical Thinking" Process

Critical thinking is a process of clarifying knowledge by critical consideration of the arguments and evidence. Critical thinking is really another term for a scientific process or a commitment not to accept whatever we are told. "Much of the literature on critical thinking processes and models focuses on the logic and argumentation thinkers use to make their points. But successful analysis is part of the larger process of inquiry, research, reasoning, and communication" (Pherson & Pherson, 2013, p. 43).

Some people would conceptualize the critical thinking process as limited to how we think about arguments. Others think of the critical thinking process as a complete process of research, which would follow at least the following seven steps:

1. Identify your research question
2. Identify your assumptions
3. Review potential answers to your research question
4. Derive hypotheses

5. Test the hypotheses with data
6. Analyze the results and derive findings
7. Deliver your findings (cf. Pherson & Pherson, 2013, p. 45)

The "Intelligence Process"

Intelligence is analyzed information. It is widely demanded in commerce and government; in these domains, much research aims to produce intelligence. In the productive sense, it is "processed information" (Volkman, 2007, p. 7). In more nuanced use, it "is knowledge acquired through collection, evaluation, and interpretation of all available information concerning a possible or actual competition operation. It is information that has been processed by the intelligence section, it is a finished product" (White, 2005, p. 4). In official use, intelligence is the "product resulting from the collection, processing, integration, evaluation, analysis, and interpretation of available information concerning foreign nations, hostile or potentially hostile forces or elements, or areas of actual or potential operations. The term is also applied to the activity which results in the product" (United States Department of Defense, 2012, p. 152).

In official circles, the *intelligence process* or *intelligence cycle* "refers to the steps or stages in intelligence, from policy makers perceiving a need for information to the community's delivery of an analytical intelligence product to them" (Lowenthal, 2011, p. 57).

The U.S. Central Intelligence Agency's (CIA's) official "intelligence cycle" has the following five steps, where the last returns to the first (Lowenthal, 2011):

1. Planning and direction
2. Collection
3. Processing
4. Analysis and production
5. Dissemination

Mark Lowenthal is a former CIA employee who has offered this critique:

> Although meant to be little more than a quick schematic presentation, the CIA diagram misrepresents some aspects and

> misses many others. First, it is overly simple. Its end-to-end completeness misses many of the vagaries in the process. It is also oddly unidimensional. A policy maker asks questions and, after a few steps, gets an answer. There is no feedback, and the diagram does not convey the possibility that the process might not be completed in one cycle. (Lowenthal, 2011, p. 68)

The Federal Bureau of Investigation's official intelligence cycle adds "requirements" at the start (Lowenthal, 2014):

1. Requirements
2. Planning and direction
3. Collection
4. Processing
5. Analysis and production
6. Dissemination

The U.S. Department of Defense (2012, p. 152) defines the intelligence process with "evaluation and feedback" at the end:

1. Planning and direction
2. Collection
3. Processing and exploitation
4. Analysis and production
5. Dissemination and integration
6. Evaluation and feedback

Mark Lowenthal recommends the following process:

1. Identifying requirements (priorities)
2. Collection
3. Processing and exploitation

4. Analysis and production
5. Dissemination
6. Consumption
7. Feedback

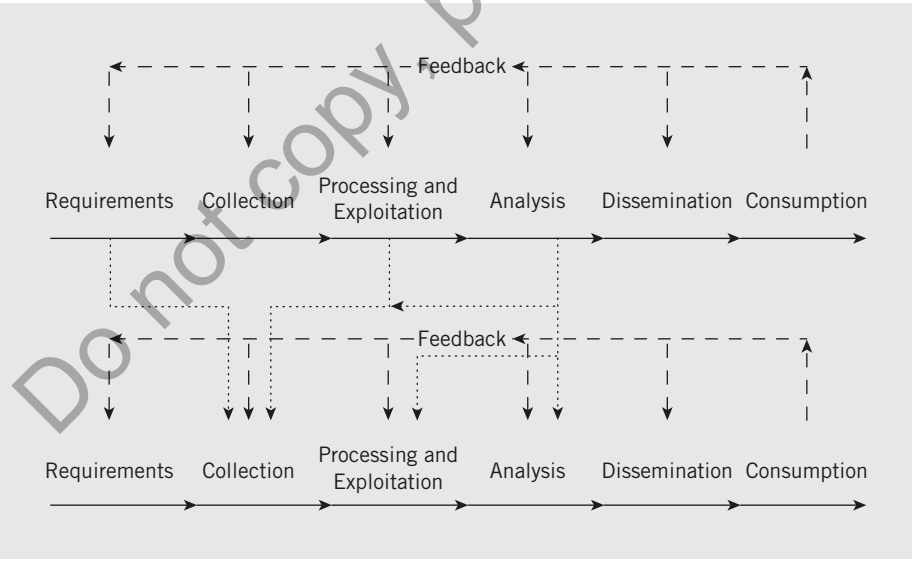
However, Lowenthal wants users to visualize the process not as a linear series of steps but as a "multilayered process," as shown in Figure 2.1.

Managing the Steps

Nominally, a project proceeds step by step in a linear order, where each step builds on the last. For instance, we should review all the theories before we decide which theory we prefer. In practice, we are likely to work on some steps out of order or at the same time (see Figure 2.2).

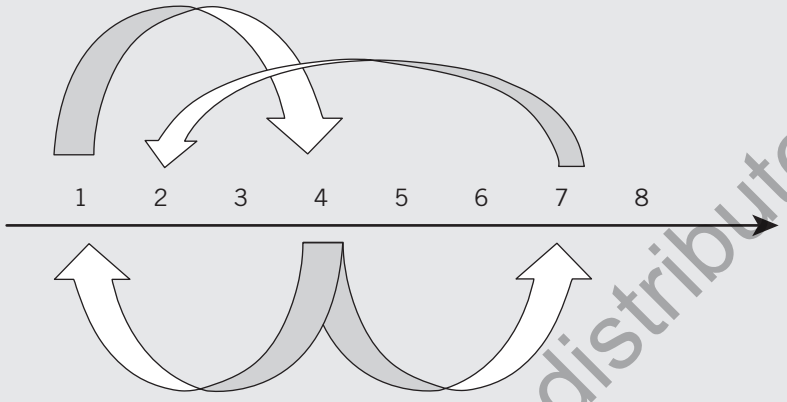
This is likely because of, first, imperfections in our own execution of a plan. Even if we set out to proceed through our plan linearly, we are likely to return to

Figure 2.1 The "multilayered" intelligence process



Source: Lowenthal, 2011, p. 69.

Figure 2.2 Linear and nonlinear progress through eight steps of a notional project



an earlier step as we remember what we missed. For instance, we may think we have reviewed all the theories and are ready to move on to the next step, only to discover a new theory later.

Second, we work nonlinearly because of the imperfect availability of resources, such as books. We are likely to work on several steps at once as we wait for the resources needed to finish any step. For instance, we might simultaneously review the theories and review the methods by which we could test the theory, without finishing any of these steps, while we wait to receive books on the rarer theories or methods.

Third, in working on one step, we will from time to time discover things relevant to another step. For instance, when reviewing theories, you should be thinking mostly about the section of your product where you would describe the competing theories to the reader. Evaluating these theories includes evaluating how well they were proven—this evaluation will influence the methodology that you would choose to test your theory. In turn, when you review different methodological options, you are likely to discover a new way to evaluate the evidence for the theories that you reviewed earlier.

Managing Your Skills

Skills are learned abilities. **Knowledge** is acquired awareness and understanding. Knowledge may help you acquire skills, but knowledge is

insufficient. You may be able to declare how something is done (a knowledge), but you need to be able to do it (a skill).

In the subsections below, you will think about your basic skills, advanced skills, and strengths and weaknesses.

Basic Skills

Any research project requires basic skills. Your acquisition of this book is one step toward improving your skills, yet you must also read it, understand it, apply it, and stay committed to what you have learned. You would help yourself further by seeking an instructor or a mentor in the skills. You would help yourself too by allocating enough time and resources for the acquisition of the skills and by adopting a learning attitude.

Advanced Skills

Beyond the basic skills, you face some choices about the more advanced skills. The more advanced the skills, the fewer the people who have the capacity to learn them. This is not necessarily a competitive situation—you could excel in one part of the skill set while someone else excels in another part. Both of you could contribute to knowledge in different ways. Indeed, research, analysis, and writing are increasingly performed in teams—one member might lead the building of the theory, another the development of the test, another the gathering of the data, and another the analysis of the data.

If you are working alone or are at the start of your career, you will likely need to acquire a wide set of skills at a basic level without having the right or opportunity to work in a team. Most student research must be performed alone as a test of personal skills.

Beyond basic skills, you still face some choices about advanced skills. For instance, if you are confident in your mathematical capacity, you could promise to acquire an advanced statistical skill to test a theory in a new way. If you are uncomfortable mathematically, you should aim to excel in other methodological skills.

Weaknesses and Strengths

When thinking about your capacity, you should be mindful also of your own weaknesses and how you must respond. For instance, most researchers early in their careers realize that their writing could improve. If you are least confident about your writing skills, you should prepare to improve your writing skills and seek a tutor, reviewer, or editor.

A common mistake would be to focus all your attention on something that you are good at because you enjoy it or find it easy, while neglecting an essential skill, without which the whole project will fail. On the other hand, do not forget your most enjoyable or admirable skill—when other things are going wrong, going back to that skill will remind you of your strengths, motivations, and rewards.

Managing Your Motivations

Motivation is the conscious or unconscious stimulus for action toward a desired goal.

You may be the most skilled person, but without motivation you will not achieve anything.

The subsections below will consider your planning, self-discipline, navigation of technical flaws, ambition, and self-efficacy.

Planning

Your motivation is open to management. A realistic awareness of what to expect during the forthcoming process of research will help you to prepare your motivations. For instance, be aware that your motivations are likely to be high at the start, when you are fresh and excited, but may fall toward the middle of your project, when the tasks become more difficult and outputs are low.

Planning is a structured way to prepare yourself. If you plan for what you want to achieve, you are more likely to achieve it. Setting goals is critical—if you plan to achieve some part of the research in a certain way and by a certain date, you are more likely to direct yourself toward that goal. You should plan to curb your bias for action at the start, stoke your motivations in the middle, and sustain the same level of effort to the end. A good way to manage the midway trough in your motivations is to set a midway goal, such as delivery of the literature review.

Self-Discipline

Planning is one thing; holding yourself accountable for delivering on your plan is another. Thus, a critical factor in motivation is self-discipline. *Self-discipline* means making yourself do what you should be doing. Some parts of the research are less enjoyable, feel more tedious, demand more difficult skills, last longer, or were imposed by some stakeholder with whom you disagree. You will be less motivated to work on these parts, so practice self-discipline.

Some of the best researchers do nothing more insightful or advanced than the average researcher—they are just methodical, reliable, careful, and self-disciplined enough to deliver what was expected. Stakeholders often prefer the reliable researcher to the brilliant researcher.

Think about your role as you study this book. The skills in this book are not magic or dependent on faith. They are tangible and within the capacity of most people. The more self-disciplined you are, the easier the skills will be to acquire.

You should plan to give yourself breaks from intense self-discipline. This is not an excuse to avoid work—you need to have worked intensively to deserve a break from work. Breaks give you time to rest and to reflect on the project and to catch up with other needs in your life.

Navigating Technical Flaws

You need to finish the difficult as well as the easy parts, with one caveat: The difficult part may reflect some technical flaw in the research. Dogmatic self-discipline is admirable, but it can force people to finish the wrong task, so always search for the best way to do something; otherwise, you will waste your self-discipline on unnecessary difficulties.

For instance, your plan may include an unnecessarily difficult test, when an easier and equally valid test is available. If you are experiencing difficulties motivating yourself to complete the difficult task, consider whether the task is flawed. This realization may be subconscious; you may be uncomfortable with the task and feel undermotivated—until you realize consciously what the flaw is, or someone points it out to you. The solution is technical, not motivational.

As you may imagine, this caveat is easy to abuse. You may be struggling with a task because you are feeling lazy at the moment, not because the task is flawed. Many researchers abandon a task because they decide it is too difficult or does not work, even though with a little persistence they would have finished something valuable.

Ambition

Your motivations make up part of your capacity and thus influence your ambition. Ambition is the desire to achieve something valuable or difficult. If you are interested in your research, or are naturally a self-disciplined person, you can promise more than the disinterested or lazy person. Feasibly you can gather more data, review more literature, and write more than someone who is less motivated or self-disciplined. This will make you valuable: A risk-averse stakeholder will sponsor the reliable researcher and reject the flighty researcher.

You can use ambition to motivate yourself. You could choose an easy project without being pressed to raise your ambition. By raising your ambition, however, you are effectively setting yourself a higher goal. Remember that goals are effectively motivating in themselves; also, ambition offers the chance of improved rewards, such as promotion or payment, which in themselves should motivate you.

Self-Efficacy

The concept of **self-efficacy** captures the belief that the self controls destiny and thus that the self can achieve something. In general, the higher your self-efficacy, the higher the likelihood that you will achieve what you have in mind. Self-efficacy helps you to pursue something without doubting yourself. Lack of self-efficacy tends to undermine your motivations. Self-efficacy improves your moods and emotions—confidence is a good feeling, while self-doubt is a bad feeling. Someone could be brilliant and her project well within her capacity, but a lack of self-efficacy could persuade her that it is not within her capacity; this would be a tragic waste of her abilities.

In everyday speech, self-efficacy is partly captured by terms such as *optimistic*, *positive*, and *hopeful*. **Optimistic**, or positive, people expect the best. Optimistic people use situational factors to account for failure rather than blaming an enduring dispositional trait. **Hopeful** people think they can improve. They show less depression and anxiety. They are more likely to reassure themselves, find new approaches, and break down their goals into manageable steps.

Unfortunately, most people do not consider themselves particularly high in self-efficacy, optimism, positivity, or hope, although they would like to be. Yet self-efficacy is sticky—by adulthood it does not change much, but largely reflects the temperament with which you were born and your formative experiences in childhood.

One solution is **stoicism**—a philosophy of accepting the way things are. This is useful for diverting yourself from self-blame, but could err into fatalism—the belief that everything is beyond your self-control (this belief is the opposite of self-efficacy). Another solution is **mood purism**—the decision not to challenge your moods. This is useful because at least you will not suffer the stress of challenging your moods—but most people want to improve their moods.

Most people struggle to realize their own moods, so they cannot intercept them, but you could practice self-efficacy by staying alert to self-doubt and replacing it with self-efficacy. You should try to surround yourself with people who improve your mood and self-efficacy, because moods and attitudes are contagious.

In the long run, you will gain self-efficacy from learning, experience, and achievement. Learned competencies add to self-efficacy, because competency helps to make achievement more feasible. In turn, self-efficacy helps you make the best use of your skills. Experience helps you to apply your declarative knowledge and to practice your skills. Achievements are evidence of your own capacity:

Once you have achieved something, repeating it will seem less intimidating. By completing this book, you will improve your skills and thus your self-efficacy too.

Like most things, the prescription for self-efficacy has a caveat: Unbounded self-efficacy, which typically arises when outsiders praise you without warrant or without reminding you of humility and responsibility, leads to arrogance and unrealistic expectations.

Managing Your Effort

Effort is the strain of doing something. You may naturally visualize the process of your research as a ladder, stairway, or road that you climb steadily from beginning to end, until you reach your goal. If you see it this way, you are likely to view your effort as consistent, as if you make the same effort at all times.

Rather than visualizing a steady effort along an unbroken and consistent path, you should visualize a path with some cracks, or a stairway with some broken steps, but do not let them intimidate you. Part of being realistic in your expectations is being prepared to fix those obstacles along the way—to invest more effort when the going gets tough, so that you can return to easier going.

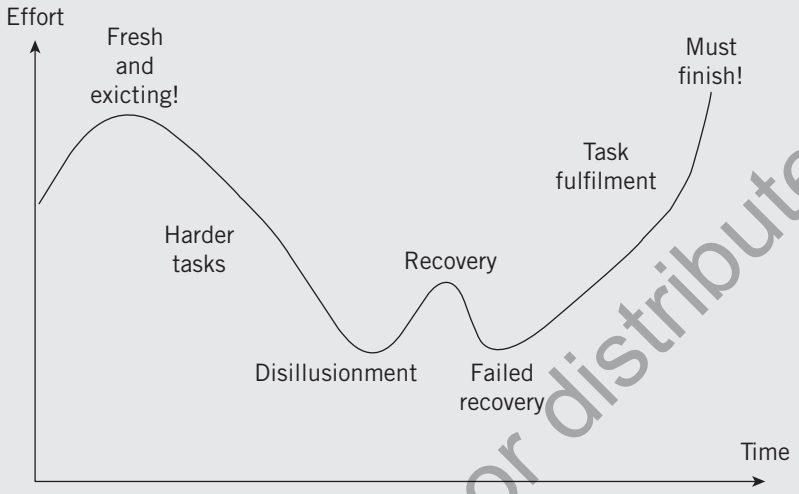
Your effort is likely to vary with your own internal motivations and the availability of external resources. Sometimes you will be distracted, disillusioned, lost, or just plain lazy. Such difficulties are normal in any project, so you should be realistic enough to expect these difficulties and to be mindful of them throughout your project. Such mindfulness will help you realize the difficulties and manage them, rather than deny them and let them ruin your project.

In practice, your effort is likely to cycle between peaks and troughs. In the peaks of effort, you may need to save energy for the long haul. In the troughs, you may need to kick yourself into more effort. At all times, you should try to be aware of your own effort and hold yourself responsible.

We know enough about normal effort during projects to make some forecasts of typical effort over time (see Figure 2.3). At the start of the project, everything may seem intimidating, so you may experience difficulty getting going, but after some investigation the project should seem fresh, exciting, and full of opportunities. Frankly, you also may be fairly naive about the challenges. Your effort in the early part of the project is likely to rise healthily.

However, at some point, having made the easy choices and fulfilled the easy tasks, you must move on to the more difficult or less pleasant tasks, such as

Figure 2.3 A typical person's level of effort during a project



reading badly written theories or learning a difficult methodology. Here your intrinsic motivation will fall. At some point, difficult tasks, frustrations, and obstacles may overwhelm you, at which point you may stop work entirely.

Extreme difficulties of motivation are typical about midway through the project—midway between the first excitement and the final deadline. Consequently, one principle of project management is to schedule delivery of some part of the final product by midway through the project, so that the researcher is accountable for delivering something when his or her self-motivation is likely to be weakest.

Whether forced by a midpoint deadline or reinvigorated by a new approach, your effort is likely to recover after the first trial, but be prepared for some false recoveries too. Your new approach may not work or you may be distracted by something else. Yet eventually you should find your final approach.

As you make progress, your effort would be stoked by the pleasures of achieving and fulfilling your tasks. Toward the end of the project, you will be more conscious of the final deadline. The exciting prospect of finishing or anxieties about finishing in time should motivate you to make a final enhanced effort.

Most humans are procrastinators, so almost all projects end with a final gallop to the finish line. Some people find the final part of the project exhilarating because of the focus that it brings, but others find it sickening. Some people know the final part of a project as the "final crunch"—when you are squeezed between the final deadline and your own tardiness. A final crunch is somewhat unavoidable, given that some obstacles are unexpected, but most final crunches would be avoidable if only people would be self-disciplined enough to make a constant effort throughout.

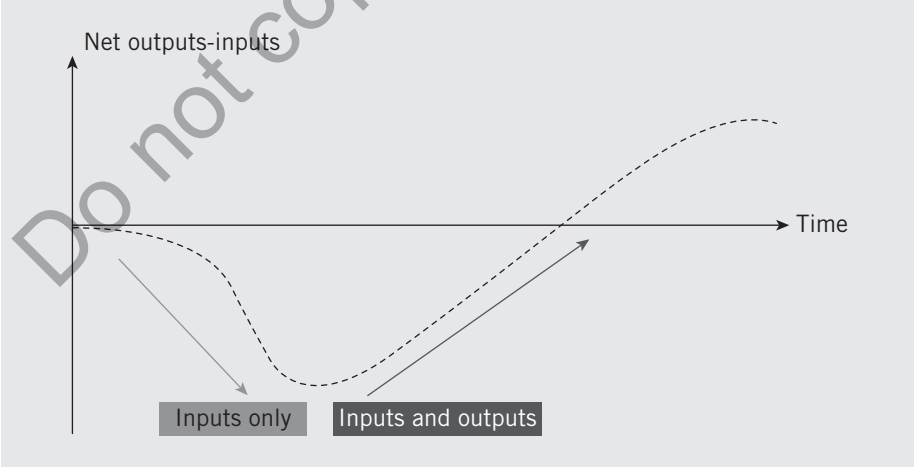
Managing Productivity

Productivity, too, is likely to peak and trough. **Productivity** is a measure of how much you are producing; it is related to effort, but it is not the same. You should prepare for times when your effort is high but your productivity is not. You may invest a lot of time in reading different theories but struggle to work out which theory you prefer. You may design the perfect test of your theory but be denied access to your intended subjects.

The product is the final **output**—the result of productivity. Outputs imply **inputs**—the things you must invest in order to be productive. You must invest your effort, skills, other resources, and time as inputs; outputs do not appear out of nowhere.

The imbalance between effort or inputs and productivity or outputs has a somewhat predictable profile within project time (see Figure 2.4). Generally,

Figure 2.4 A typical person's productivity during a project



Source: ©Stockphoto.com/AngiePhotos.

your effort in the first half of the project produces less of the final product than in the second half, because at the start you expend more effort working out what to do, while toward the end you expend more effort delivering on your plans. The early imbalance between inputs and outputs can be alarming for the uninitiated, as they pass project time working hard but delivering little of the final product. This early imbalance is something you need to accept, although you should not use it as an excuse for procrastinating on delivery of the final product.

Managing Change

A naturally optimistic vision of your journey through the project is of a clear straight path from your start to your goal, with nothing unforeseen or unexpected, everything within view, and one clearly superior way to get there.

A more realistic vision of your project is of an uncertain way to your goal. Imagine that you are standing on top of one hill and you can see the top of the hill that is your destination, but you must cross a valley in between that is hidden by fog. Alternatively, imagine a set of roads ahead, all of which lead in the general direction, but whose going becomes vaguer with distance—some may lead into dead ends, some may lead you back to where you started, some offer a straighter route or better going, some offer less efficient going.

You can be certain that you are starting a journey, you may be certain of what you want to produce, and you may be certain of a deadline by which the project must be finished, but the way is always uncertain. The going will become more difficult or time-consuming at some points; you may get lost; you may even need to scrap the route you have chosen, retrace your steps, and find another way. You may even need to redefine your destination.

Again, do not be intimidated by these realistic visions; your feelings should be realistic but not defeatist. Realistic expectations help you prepare, and preparations help you toward fulfillment of your project. An obstacle could leave the unprepared person shocked, so that he or she gives up. You cannot foresee all obstacles, but at least you should accept that you will encounter some.

Uncertainty implies change. Change is an alteration, and you must expect change in your knowledge, skills, motivations, effort, and plan; you must expect too that something in the situation or environment could change, beyond your control,

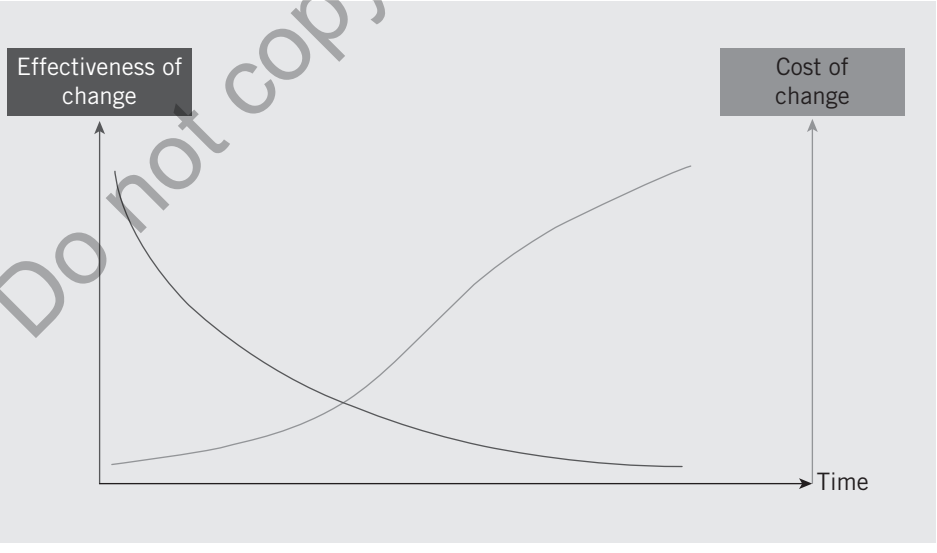
perhaps in very dramatic and consequential forms, such as a war in the country that you had intended to visit, or a sponsor who withdraws funds.

Change is entirely normal in a project, so you should be realistic enough to expect change. People are normally averse to change, particularly when they feel personally invested in their own project.

Be mindful of the dilemma of choosing between the effort of trying to fix the current way and the effort of searching for a better way. Truly you should not scrap your project at the first obstacle if you could pass that obstacle on the most effective way to your goal. Since all situations are unique, you must learn how to evaluate each situation as a trade-off between potentially wasting more effort on a hopeless cause or potentially scrapping past effort on a salvageable cause. When you start your project, you should expect change and prepare yourself for some tough choices, such as abandoning work or struggling on with a chosen path.

You should realize the different implications of change at the start of the project versus change toward the end. At the start, change is most effective, because you still have plenty of time to adapt and you have little to lose, but later in the project you will be on a path that is increasingly difficult and costly to change, with less and less time available to implement change (see Figure 2.5).

Figure 2.5 The effectiveness of change and the cost of change to a project over time



CHAPTER SUMMARY

This chapter explained:

- What research is: the purposes of research, the objectives and products of research, and different approaches to research
- The life cycle of a project
- The different processes of research, such as the critical thinking process and the intelligence process
- How to manage the steps of the process efficiently but also realistically, given the availability of resources and unforeseen discoveries along the way
- How to manage your skills, from the basic to the advanced, and from your weaknesses to your strengths
- How to manage your motivations—by planning, self-discipline, technical corrections, ambition, and self-efficacy
- How to manage your effort through the project, given what we know about when your effort will rise and fall
- How to manage your productivity throughout the process, given what we know about the lag between effort and productivity
- How to manage change so that you do not make changes unnecessarily, but also so that you *do* change things that are not working, and so that you make the changes as early as you can to increase their effectiveness while minimizing their cost

KEY TERMS

Action research 14
Analytical research 14
Antipositivists 18
Applied research 14
Basic research 14
Behavioralist 20
Behaviors 20
Case study 15
Conclusive research 15
Critical thinking 24
Deductive research 17
Descriptive research 15
Empirical 17
Empirical research 17
Epistemological approaches 20
Epistemology 20
Ex post facto 15
Ex post facto research 15
Experimental research 17
Exploratory research 14
Field research 17
Historical research 15
Hopeful 32
Inductive research 18
Input 35
Instrumentalism 19
Intelligence 25
Knowledge 28
Life cycle 21
Metaphysical approaches 19
Metaphysics 19
Mood purism 32
Motivation 30
Normative 19

QUESTIONS AND EXERCISES

Select a book or article that you have read already.

1. Summarize its purposes and objectives.
2. Is its research best described as exploratory or conclusive?
3. Is its research best described as prescriptive or descriptive?
4. Does it contain a case study or a survey?
5. Can you separate any historical research from nonhistorical research?
6. Can you separate any experimental research from field research?
7. Which parts are more empirical or theoretical?
8. Can you identify any deductions or inductions?
9. Can you identify any parts that are more subjective or more objective?
10. Describe an imaginary approach that would be more:
    - philosophical
    - positivist
    - metaphysical
    - physical
    - traditional
    - behavioral
    - phenomenological
    - observational
    - ontological
    - epistemological