What’s a theoretical framework for? How do effectively present your data in a figure? What’s the secret to a good presentation?

As an interdisciplinary student, you delve into theories and research methods from a whole range of disciplines. Academic skills are the tools that you can use to take in, develop, integrate and question knowledge. This guide provides specific instructions, tips and examples to help students develop these skills, both during and after their studies.

As academic education focuses on research, the empirical cycle forms a key theme of the book, including when discussing the following skills:

- Searching for, critically reading and analysing scholarly texts
- Formulating research questions
- Making concepts measurable, qualitatively and quantitatively
- Organizing literature and data
- Analysing and formulating an argument
- Academic writing
- Collaborating
- Reflecting
- Presenting

Koen van der Gaast spent three years working as a lecturer for the Institute for Interdisciplinary Studies’ Bachelor’s programme in Future Planet Studies, where he lectured on academic skills, among other things. He is now a PhD candidate at Wageningen University & Research and Aeres University of Applied Sciences, Almere.

Dr. Laura Koenders, has been working for the University of Amsterdam’s Bachelor’s programme in Psychobiology for more than three years. She teaches academic skills and various courses in the fields of psychology, neuropsychology, neuroanatomy and research skills.

Ger Post spent five years working at the Institute for Interdisciplinary Studies, including as a lecturer in academic skills for the Bachelor’s programme in Natural and Social Sciences. He now works as an educational specialist at the School of Biomedical Sciences at the University of Melbourne.
Academic Skills for Interdisciplinary Studies
# Table of Contents

Acknowledgements 10  
Introduction 11  
About this book 11  
Central theme: research practice and the empirical cycle 11  

## Part 1 Orientation and reading 14  
1 Preparatory reading and searching 15  
**Familiarizing yourself with a topic** 15  
- Finding your bearings outside the university 16  
- Finding your bearings at university 16  
- Finding your bearings between university and society 17  
**An initial literature search** 17  
- Concepts and theories 17  
- Scholarly literature 19  
  - Grey literature 20  
  - Academic literature and ‘ordinary’ search engines 21  
- Scholarly search engines 21  
  - Availability 21  
  - The library 22  
  - Digital search engines and databases 22  
  - Search methods 22  
  - Ordering your search results 24  
  - Continuous search 24  
**Exploratory reading** 25  
- Speed reading 25  
**Sources** 28  
**Other useful sources** 28  
2 Gathering and organizing key information 29  
**Optimizing your study environment** 29  
**Learning objectives** 30  
**Reading strategies** 31  
  - Reading textbooks 31  
  - Reading academic articles and books 32  
  - Systematic reading 33  
**Organizing information** 35  
**Sources** 37  
**Other useful sources** 37
3 Studying thoroughly and critically
   Sentence-level analysis 38
   Types of argumentation 40
      Simple argumentation 40
      Plural argumentation 41
      Coordinating argumentation 42
      Subordinate argumentation 42
      Implicit motivation 44
   Critically evaluating texts 45
   Sources 47
   Other useful sources 47

Part 2 Making your research measurable 48
4 From your topic to your question 49
   Theoretical framework 50
      From theories to concepts and dimensions 50
      The theoretical framework and interdisciplinary research 52
      The problem statement 53
   Sources 54
5 Formulating a good question 55
   Characteristics of a research question 55
   Types of questions 56
   Sources 58
6 A testable concept 59
   Why operationalize? 59
   From dimensions to indicators and variables 60
   Operationalization and validity 61
   Other forms of operationalization 62
   Sources 63
7 Making a research instrument 64
   Qualitative versus quantitative 64
   When qualitative and when quantitative? 65
      Operationalization 67
      Structure of the instrument 68
      Determining your sample 68
   Making a qualitative research instrument 69
      Formulating interview questions 70
         From indicators to topic lists or questionnaires 70
         Order of the questionnaire 70
         Phrasing interview questions 71
   Validity and reliability of your instrument 72
   Assessment by an ethics committee 73
   Sources 74
   Other useful sources 74
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part 3  Doing and writing up research</td>
<td>76</td>
</tr>
<tr>
<td>8  Research practice</td>
<td>77</td>
</tr>
<tr>
<td>8.1 Research practice: quantitative research</td>
<td>77</td>
</tr>
<tr>
<td>Safeguarding the validity of quantitative research</td>
<td>77</td>
</tr>
<tr>
<td>Keeping a log</td>
<td>79</td>
</tr>
<tr>
<td>Organizing your data</td>
<td>80</td>
</tr>
<tr>
<td>Getting familiar with your data</td>
<td>80</td>
</tr>
<tr>
<td>8.2 Research practice for qualitative research: conducting interviews</td>
<td>81</td>
</tr>
<tr>
<td>Before the interview</td>
<td>81</td>
</tr>
<tr>
<td>During the interview</td>
<td>81</td>
</tr>
<tr>
<td>After the interview</td>
<td>83</td>
</tr>
<tr>
<td>Analysing the interview</td>
<td>84</td>
</tr>
<tr>
<td>After coding</td>
<td>86</td>
</tr>
<tr>
<td>Sources</td>
<td>87</td>
</tr>
<tr>
<td>Other useful sources</td>
<td>87</td>
</tr>
<tr>
<td>9  The structure of your article</td>
<td>88</td>
</tr>
<tr>
<td>9.1 Argumentation structure</td>
<td>88</td>
</tr>
<tr>
<td>Objections</td>
<td>89</td>
</tr>
<tr>
<td>Framing an argument: pitfalls</td>
<td>92</td>
</tr>
<tr>
<td>9.2 The structure of a scholarly article</td>
<td>93</td>
</tr>
<tr>
<td>The introduction</td>
<td>96</td>
</tr>
<tr>
<td>The middle section</td>
<td>97</td>
</tr>
<tr>
<td>The literature review</td>
<td>97</td>
</tr>
<tr>
<td>The research article</td>
<td>98</td>
</tr>
<tr>
<td>Methodology</td>
<td>98</td>
</tr>
<tr>
<td>Results</td>
<td>99</td>
</tr>
<tr>
<td>Presenting data</td>
<td>100</td>
</tr>
<tr>
<td>Figures</td>
<td>100</td>
</tr>
<tr>
<td>Table</td>
<td>101</td>
</tr>
<tr>
<td>The discussion and the conclusion</td>
<td>101</td>
</tr>
<tr>
<td>Valorization</td>
<td>103</td>
</tr>
<tr>
<td>Sources</td>
<td>103</td>
</tr>
<tr>
<td>10 Finishing your article: academic writing, titles, and abstracts</td>
<td>104</td>
</tr>
<tr>
<td>The title and the abstract</td>
<td>104</td>
</tr>
<tr>
<td>Writing clearly</td>
<td>104</td>
</tr>
<tr>
<td>Academic language use</td>
<td>106</td>
</tr>
<tr>
<td>Sources</td>
<td>108</td>
</tr>
<tr>
<td>Other useful sources</td>
<td>108</td>
</tr>
</tbody>
</table>
11 Citing sources and the bibliography
  Reference management software 110
  In-text citations 112
    Quotes 112
    Paraphrasing 113
  Citations in the bibliography 114
    Journals 115
    Books 116
    Research reports 117
    Internet resources 117
    Personal communication and interviews 117
Sources 118
Other useful sources 118

Part 4 Reflecting and communicating 120
12 Preventing fraud and plagiarism 121
  Plagiarism of written work 121
  Plagiarism of fellow students 121
  Working responsibly in a team 122
  Fraud: falsifying data 122
13 Collaboration, feedback, and peer review 124
  Collaborating: drawing up a team charter 124
    Evaluating teamwork 127
  Giving and receiving feedback 127
    Feedback on behaviour 127
    Feedback on content 129
  Peer review 130
    Reflecting on assumptions 131
Sources 132
Other useful sources 132
14 Presenting 133
  Defining the theme of your presentation 133
  Structure and coherence 134
  Visual aids 135
    Using figures, tables, images, or film clips 136
  Presentation skills 138
  Practising your presentation 140
  Leading a discussion 140
    Ask good questions 140
    Creating a safe atmosphere 142
  Giving poster presentations 143
    Points to bear in mind when designing a poster 143
    Your elevator pitch 144
Sources 145
Other useful sources 145
## Appendices

<table>
<thead>
<tr>
<th>Appendix</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appendix A</td>
<td>Sample literature review</td>
<td>148</td>
</tr>
<tr>
<td>Appendix B</td>
<td>Sample research article</td>
<td>158</td>
</tr>
<tr>
<td>Index</td>
<td></td>
<td>169</td>
</tr>
</tbody>
</table>
Introduction

About this book

This book is intended for university students, especially students taking interdisciplinary courses, as well as anyone who wants to add depth to their academic research or learn how to analyse scholarly texts. As an interdisciplinary student, you’re rather like a parachutist: in the years to come, you’ll be landing in many different academic landscapes. Not only will you be expected to get to grips with the material quickly and familiarize yourself with different disciplines’ specialized terms and mentalities (the scholarly jargon), but you will also be encouraged to add your own knowledge to these disciplines, describe it clearly, and share it in articles and/or presentations. What’s more, certain aspects of this will often have to be done in a team. In other words, it is quite an undertaking.

Academic skills are the tools you can use, both during and after your course, to assimilate, develop, share, and question new knowledge. This book was therefore written with the following question in mind: As an interdisciplinary student, what skills should you have developed by the end of your degree course? But that’s not to say that only one road leads to Rome. Over the years, you will develop all of these skills in your own way. At the beginning of your studies, you can use this book to find your footing. In the later stages of your studies, you might reach for it from time to time when you think: How did that work again...? We hope that this book proves to be a good and, above all, useful starting point for your academic and interdisciplinary development.

The book can be read in two ways: ab ovo – in other words, from beginning to end, as one usually reads a book; or as a reference guide, depending on where you’ve got to in your university education or research.

Central theme: research practice and the empirical cycle

Although academic skills are multifaceted, they share one common denominator: research. A scholar has an inquiring mind, extracts knowledge from other research, and adds his or her own knowledge by doing research. Scholars also have their own methodology for doing research, which distinguishes scholarly research from, say, journalistic research.
What’s more, as an interdisciplinary student, you’ll find that research is an excellent opportunity to draw connections between the many disciplines you’ll encounter during your degree course. From day one, students – and interdisciplinary students in particular – are confronted with insights from research in multiple disciplines. Although we do not have the space here to go into research practice in detail (something we’ll leave to more specialized books on research skills), having read this book, you’ll have a better understanding of the particular skills a scholar needs. You’ll also have a better understanding of the similarities and differences between the humanities, the natural sciences, and the social sciences and the knowledge they produce.

In the nineteenth century, universities were divided into three more-or-less distinct clusters of academic disciplines: the natural sciences, which investigate natural phenomena (in the broadest sense of the term); the social sciences, which are concerned with knowledge about human behaviour and human society; and the humanities, which study knowledge originating from the human mind. These three clusters were then subdivided into a wide range of academic disciplines, such as physics (natural science), sociology (social science), and history (the humanities). In the past, these branched off into specializations and subspecializations such as quantum mechanics, educational sociology, and maritime history. At most universities, this division is reflected in the degree programmes on offer.

All of these disciplines have their own research traditions. They all use their own methods and approaches, of course, but these methods have one thing in common: they are systematic and grounded in empiricism. Empiricism means ‘based on observation.’ One example of this structured approach to doing and describing research is the inductive-deductive cycle. In this cycle, a scientist formulates a theory based on an observation; this is known as the inductive phase. Then the scientist has to consider whether this theory is correct. This is done by devising a method and formulating a testable hypothesis, which is known as deduction. Then the scientist tests whether the hypothesis is correct, by gathering data. Finally, the results and the conclusion are evaluated, whereby the scientist reflects on whether the conclusion is consistent with the initial observation. If the conclusion is not consistent with the observation (which is in itself a new observation), the theory is adjusted and the whole cycle begins again.

In scholarly practice, the empirical cycle is not only used to design research, but also to describe the process of doing research. The structure of this book is roughly based on the research phases described above — not because this is the best or only way of doing science, but because it is an accessible way of describing research practice and forms a useful core theme. Moreover, it shows how academic thinking and working is an iterative process, regardless of whether you’re a natural scientist, a social scientist, or a humanities scholar (or a mix of all of three), or whether you’re doing research or revising for an exam. It consists of a number of connected steps that are often repeated a number of times.
For this reason, in the first part of this book we discuss the orientation phase, in which you learn how to read scholarly literature and formulate the theory that you’re going to investigate. In the second part, we discuss the academic skills that will help you draft a good research question, and we explain how to operationalize your question; that is, how to devise a testable method and how to record this process. In the third part of the book, on carrying out and writing up research, you’ll learn how to write the main body of a scholarly article.

The fourth part of the book is about reflecting and communicating. These skills, which you will always need, come up during the scientific process in various ways. Although these skills might appear less obvious, they are essential for academia. Without these skills, it would be impossible to do effective research or even to make it as a scholar at all. These skills are especially important for interdisciplinary researchers, because communication between disciplinary perspectives is a key first step in the direction of integration, and because critical self-reflection can reveal and help you overcome the assumptions – often implicit – that hinder integration (Menken & Keestra, 2016). Even if you don’t stay in academia, these skills will remain important to you in your career.

*Figure 1 The structure of this book is based on the empirical cycle*