Part 4
Writing the Methods Section

1. What is Methods

Warm-up:

Activity 1. Think about the following questions:

1. Have you ever had an experience writing about your methodology for a research project?
2. What would be your expectations with regard to how the Methods sections in peer-reviewed English publications in your field are structured?
3. What do you think would be the key concepts to introduce and discuss in Methods sections to research proposals?

Activity 2. Decide whether you agree (A) or disagree (D) with the following statements. Write a question mark if you are not sure about the answer. You will be able to answer the questions as you read this part's units.

1. The Methods section should be highly elaborate.	
2. A justification for the choice of methods is a necessary part of the Methods section.	
3. My choice of methods should be informed by a good understanding of how other scholars in my research area have approached the issue.	
4. My Methods section should include a description of the procedures taken to obtain the data.	
5. My Methods section should explain how the data will be collected and analyzed.	
6. I should start thinking about collecting my own data rather than using readily available data.	

7. Most Methods sections include information on the study's scope and limitations.	
8. In contrast to the Methods sections of research proposals, the Methods sections in research articles report on what was done and how, and thus Past tenses dominate.	
9. Mostly passive voice should be used in the Methods section.	

What is Methods?

Read the text and complete follow-up activities.

The Methods (Methodology) section is often referred to as the most important section or the 'heart' of a scientific work (Swales & Feak, 2012). It not only describes but also **justifies** the author's overall conceptual approach to achieving the proposed purpose with the help of appropriate research methods and procedures. The choice of the methods is strongly determined by the author's knowledge of prior approaches to tackling the issue as gleaned from the review of previous literature, personal experiences and observations, etc. When planned carefully and presented in a compelling way, the approach outlined in the Methods section makes it easier for the reader to believe that the author has a clear vision of how to achieve the study's aims effectively and structure the research process at subsequent stages.

Methods sections in research articles and proposals tend to vary in length and level of detail, which depends on the discipline, the type of study, the topic, and institutional requirements. Some sections may be quite elaborate and include subsections that will detail the following:

- the research setting
- equipment
- sampling techniques (e.g., criteria for selecting human subjects)
- the rationale behind the design or selection of materials
- data collection and analysis methods and procedures
- the study's variables.

The more detailed and accurate the information in the Methods is, the easier it will be for other scholars to conduct a similar study under similar conditions (= replicate it) and see if they will obtain similar results.

Example:

To illustrate, here is an outline of the Methods section in a journal article from **the field of business and international management** (***Peltokorpi, 2015***). The study examines factors that affect language policies in multinational corporations (MNCs) and hypothesizes that MNC subsidiary's age and size as well as MNC subsidiary top managers' nationality (expatriate or local) have an effect on language policies. Survey data from 547 subsidiaries in Japan collected through an online research company are used to support the author's hypothesis.

Subsidiary Top Manager Nationality and Language Policy: The Moderating Effects of Subsidiary Age and Size

...

4. **Method**

4.1. Setting and research design

4.2. Data and procedures

4.3. Survey design and measures

4.3.1. Language policy

4.3.2. Subsidiary age

4.3.3. Subsidiary size

4.3.4. Control variables

The recommended **framework for structuring the Methods section** in research proposals is as follows (partly based on Khamkhien's study (2015)):

Move 4	**Presenting an overview of the study's methodology**
Step 1	Restating the study's purpose, research questions or hypothesis (optional)
Step 2	Presenting research design (optional)
Move 5	**Presenting data collection methods and procedures**
Step 1	Describing the setting (optional)
Step 2	Introducing the sample and selection criteria
Step 3	Describing materials and special equipment (optional)
Step 4	Discussing/ justifying data collection methods
Step 5	Discussing/ justifying data collection procedures

Move 6	**Presenting data analysis methods and procedures**
Step 1	Introducing key variables
Step 2	Discussing/ justifying data analysis methods
Step 3	Discussing/ justifying data analysis procedures
Move 7	**Outlining scope and limitations**
Step 1	Discussing the study's scope
Step 2	Discussing the study's limitations

While most of the steps in the framework appear in a wide range of research studies, steps such as "Restating the study's purpose, research questions, or hypothesis" tend to be less frequent and are thus presented here as optional. Moreover, the order of the Methods steps can vary across disciplines and is never fixed. Some Methods sections may include detailed information on the procedures for collecting and analyzing data, design or adaptation of materials, the use of special equipment, yet others may be less elaborate. It is advisable to consult with your **scientific advisor** to discuss the suggestions on how to plan and conduct your study and write up the Methods section.

Follow-up activities

Activity 1. Answer these questions:

1. What are the aims of writing the Methods section?
2. What moves and steps are commonly identified in Methods sections? Which are optional? Do they follow a fixed order?
3. How elaborate should the Methods sections be in your field?

Activity 2. Analyzing a sample Methods extract

Read an adapted Methods extract from a research proposal in **the field of education** and answer the questions that follow. The project is an experimental study that aims to explore what issues underlie calculus students' problems with solving differential equations.

First-Year Undergraduate Calculus Students: Understanding Their Difficulties With Modeling With Differential Equations

Materials and their justification

[1]The whole student cohort will be given diagnostic quizzes consisting of a mixture of multiple choice and short answer questions. [2]The multiple choice questions will include a number of problems typical of the ones seen in class with distractors chosen to reflect the hypotheses given above and other likely student errors (e.g., making a sign error). [3]The reasons for choosing to use diagnostic multiple choice questions are as follows. [4]First, while the differential equations which describe a scenario will have been developed in class, students cannot be expected to be able to develop their own DEs [*differential equations*] as the focus of the course will be on providing a motivation for doing integrals. [5]Consequently, what is of interest is whether they can read and understand a DE. [6]This could be assessed by asking students to describe in words what they understand a DE to be saying, but as students may not be able to articulate clearly what they are thinking this might not be a very successful approach for a written quiz (we might get a lot of blank responses for example) and so this approach will be left to individual interviews as described below ...[7]As stated above, in questions asking students to identify which of a range of possibilities is the correct DE describing a given scenario, distractors which reflect various hypotheses about the likely bugs in student thinking will be provided. [8]It is hoped that the prevalence of such bugs will then provide insights into common issues with student thinking.

Participants

[9]This research will use a convenience sample of first-year officer cadets studying introductory calculus in both the Bachelor of Science and Bachelor of Engineering programs at the Australian Defense Force Academy (ADFA). [10]An issue raised by such a sample is whether the findings with such a particular group are generalizable to students studying mathematics at regular universities. [11]That is, will the findings have external validity? [12]It is believed that this group does not in fact pose any significant problems for external validity for the following reasons. [13]First, although the students are officer cadets, the degree programs they are studying are offered through the University of New South Wales and hence they are studying the same sorts of maths that students studying introductory calculus at any Australian university would be studying. [14]In addition, because ADFA is in fact more selective than the average Australian university, it can be expected that the officer cadets will not be any weaker, on average, in mathematics than their peers at regular universities. [15]Finally, there is in fact an advantage to doing this study at ADFA. [16]As the officer cadets studying there come from all over Australia, the possible influence of different State-based education systems can potentially be investigated. [17]This would not be possible at regular universities where almost all domestic students could be expected to have had the same state-influenced school curriculum.

Adapted from:

Rowland, D. R. (2016). Annotated sample research proposal: Process and product. Retrieved May 20, 2016, from http://uq.edu.au/student-services/pdf/learning/research-proposal-sample-v2.pdf

1. What moves and steps can you identify?
2. Does the author justify the criteria used to select the participants (first-year undergraduate officer cadets)?
3. Is the rationale behind the choice and design of data collection instruments (diagnostic quizzes, written tests, and individual interviews) explained effectively?
4. What tenses are used to convey the following intentions:
   - justifying the choice of data collection instruments
   - explaining what specific issues that calculus students tend to have will be addressed
   - discussing procedures for designing the data collection instruments and collecting data?
5. In your view, does breaking this piece down into subsections make it easier to follow the text?

2. Planning Data Collection and Analysis

To address the research gap and questions posed and to test a hypothesis (where applicable), any empirical research can be broken down into **two main stages** regardless of the field:

1. **Data collection**: the process of gathering and measuring information on desired variables
2. **Data analysis**: the process of analyzing and interpreting the data to be able to explain what it means in the context of the present study.

Writing the Methods section implies that both data collection and analysis procedures have already been undertaken (as in the case of research articles and reports) or are yet to be carried out by the author (as in the case of research proposals). This unit will introduce you to the basic concepts in planning data collection and analysis.

2.1. Planning data collection

Before any data collection begins, there are some **key questions** to ask oneself:

1. Will I employ **quantitative** or **qualitative** methods (or both—**mixed methods design**) to collect the data?
2. What will be my rationale for using these methods? What will be my **data sources**: primary or secondary? In case my project requires that I collect primary data, what will my data collection instruments be? How will I access the data that I need? Are these data easily obtained? What are the procedures for obtaining the data?
3. If I am planning to use **human subjects as the source of primary data** (e.g., customers of a certain brand in market research, language learners using online tools to practice speaking, etc.), what will be the basis for their selection from the whole population? Where will I find the subjects for my study and how will I find and recruit them? What ethically acceptable strategies and procedures will I employ to motivate them to participate in my study?

Primary and secondary data

Data for a study can be obtained either by:

- the researcher collecting original or **primary data** to meet one's individual research objectives—this is called **primary research**, OR
- the researcher using the data collected or obtained by another researcher, institution or organization for a different purpose—this is called **secondary research**.

Primary data comes from the researcher's own observations and experiments or "raw" evidence obtained at the time period being studied. This type of data is valuable in the sense that it provides "firsthand" evidence from those participating in scholarly activity or event.

Examples of primary data include:

- data from surveys and interviews (e.g., public opinion polls)
- statistical data (e.g., census data)
- fieldwork, records of organizations, government agencies, and public bodies
- archaeological and biological evidence
- findings from original empirical studies
- historical and legal documents
- art works
- speeches
- personal memoirs and diaries
- audio and video recordings (e.g., political speeches, learners' online interactions), etc.

To collect primary data, the following types of **data collection tools** or **instruments** are often employed: scientific experiments, surveys, interviews (in person and by means of technology), focus group interviews, direct participant observations, etc. These instruments are widely applied in the social sciences and can be described as:

- **newly designed** (developed by the researcher to address his or her study's specific research purpose—one's own survey items, interview questions, tests, checklists, etc.)

- **adapted** (designed by another scholar but slightly or heavily adapted for the purposes of the present study)
- **readily available** (designed by another scholar and suitable for use in the present study without any adaptation—e.g., a ready-made survey employed in a similar study—the scholar is acknowledged as the "author" of the instrument).

However, obtaining primary data may not always be possible due to financial constraints, lack of time or limited access to the necessary resources (e.g., human subjects or equipment), which is why the researcher will often have to resort to **secondary data**. Secondary data are data that are either collected by an individual or an institution for purposes different from those of the current study.

Examples of secondary data include:

- administrative records and statistical data (international trade statistics, tax reports, financial forecasts, census data)
- records of public and private organizations or institutions (sales activity and consumer feedback reports, business correspondence, administrative reports, etc.), which are made publicly available through official company and government websites and statistical agencies.

Some types of secondary sources may use data coming from a primary source, for instance, historical records, memoirs, etc. The aim of these sources is to offer new interpretations of the original data and present it in "digested" form. Therefore it is believed that there is a certain element of subjectivity to this kind of information. Examples of this type of secondary data include reviews and commentaries, encyclopedias and dictionaries, bibliographies, etc. These are mostly published data types available in library archives, books or magazines, and scientific journals. On the other hand, information coming from these sources can provide a comprehensive picture of the various interpretations and opinions on a subject.

In some cases, the boundary between primary and secondary data is not always clear. Both types of data can be employed in a study depending on the researcher's needs, preferences, and resources.

Quantitative and qualitative data

There are in fact two major types of data often viewed in opposition to each other: **quantitative** and **qualitative**. **Quantitative data** are any data obtained and presented in numerical form (e.g., results of statistical tests, percentages). Tests, rubrics, checklists, which elicit precise data in numerical form, are often used as sources of quantitative data. Quantitative data are most often used to test some relationships in a formal, objective way detached from subjective evaluations and individual perceptions, and is associated with a measurement scale, namely **nominal**, **ordinal**, **interval**, and **ratio** scale. Quantitative data are typically processed and analyzed with the help of statistical tools.

Qualitative data are data that cannot be measured in numerical form. This type of data allow researchers to understand and explain subjective meanings, experiences, values, attitudes, opinions, feelings, etc. Open-ended answers to surveys, transcripts of interviews, field notes from direct observations, administrative records (e.g., voting records), documents, letters, speeches and political manifestos, media reports, etc. can all serve as qualitative data sources. The data are then analyzed and interpreted with the help of **qualitative analysis methods**, such as comparative historical analysis, document analysis, content analysis, narrative analysis, event analysis, discourse analysis, framework analysis, etc. For example, manifestos of a certain political party can be examined to determine whether the tone of these manifestos is pro-American.

One of the major challenges with using qualitative methods is the problem of **researcher bias** when analyzing and interpreting data. This is especially true of borderline cases in which a researcher may interpret some findings in a way that will allow him or her to confirm the desired results (Peoples & Bailey, 2009, p. 106). The bias challenge is often unavoidable and difficult to overcome, however, the researcher should do their best to minimize the bias or at least acknowledge that it exists.

Follow-up activity

Discuss these questions with a partner:

1. How does primary research differ from secondary research?
2. What is a data collection instrument? Can you give examples of these? Which are frequently used in your field?

3. What is the difference between quantitative and qualitative methods of data collection? What methods are commonly applied in your field of study? What methods did you use when doing your previous research projects?

2.2. Planning data analysis

Selecting data analysis methods

An important aim of the Methods section is to present and discuss data analysis methods and procedures. Subheadings such as "Data Analysis," "Statistical Analysis," "Measures," and "Procedures" can be used to label this part in more extensive Methods sections. Yet, when deciding which data analysis methods to employ in line with the study's research design and the available data, the author should be able to provide the rationale for choosing these methods using widely established research terminology, which is briefly explained below.

There is a wide range of data analysis methods at the researcher's disposal which build on the use of analytical, statistical, and mathematical techniques. Each of these methods serves various purposes depending on the type of the study, its focus, and the data.

Quantitative data analysis involves using numerical data to explain a particular phenomenon or to establish a cause-effect relationship between some variables. Linear regression analysis, analysis of variance (ANOVA), multivariate analysis of variance (MANOVA), time-series analysis, cluster analysis, network analysis, structural equation modeling, etc. are all examples of quantitative data analysis methods widely used in the social sciences research.

Qualitative data analysis is conducted to explore and identify patterns and themes in textual data (text- or oral-based) and often starts from the early stages of the data collection process. Some widely used qualitative data analysis methods include content analysis, comparative analysis, document analysis, thematic analysis, narrative analysis, grounded analysis, conversation analysis, etc.

Quantitative and qualitative data analysis methods are often used in combination when various types of data are employed. For example, a data collection instrument, such as a survey with Likert-scale items and open-ended questions, may generate both quantitative data (e.g., numbers on a scale of 1 to 5 assigned to given statements by participants) and qualitative data (e.g., participants' opinions about the value of using a certain product), which will be analyzed differently.

Preparing data for analysis

Data coding and tabulation

Data coding and **tabulation** are an essential part of preparing data for analysis in both quantitative and qualitative research. **Data coding** allows the researcher to process and organize **raw data** in such a way that distinct characteristics, categories, and patterns (e.g., similarities and differences, common themes across the data) can be identified more easily. **Raw data** can come in the form of field notes, photographs, audio recordings (e.g., recordings of interviews with participants), researcher notes from classroom observations, test scores, manual responses to open-ended questions in tests and surveys, historical records, etc. For these data to be more comprehensible and easier to handle, they are usually transformed into an appropriate format—indexed, transcribed, typed into the computer if handwriting was used, presented in numerical or graphical form, grouped in clusters, etc. This process can be quite time consuming and can take more time than it took collecting the data (Nanda & Warms, 2012).

To get an overview of the data and make meaningful comparisons across **data classes**, data can be arranged in tabular form, which is known as **data tabulation**. For example, participants can be grouped according to such variables as age, marital status, gender, income level, etc. In both quantitative and qualitative research, different types of **frequency tables** (e.g., discrete, continuous, relative, cumulative tables, etc.) can be constructed for grouped data to indicate the frequency at which the values of key variables tend to occur. These values can be arranged and displayed in order of magnitude.

To sort and make sense of qualitative data, labels, symbols, and colors can be assigned to different pieces of data such as words, phrases, passages of

text, images or their parts. The assigned "**codes**" are used to represent a concept and are helpful in labeling and identifying specific patterns and/or themes within and across coded data. These codes can be developed by the researcher or identified from previous research on the topic. Nowadays the coding of qualitative data and its visual representation can be done with the help of software tools, such as Atlas.ti.

Data cleaning

In many cases, during the coding process, data which are most relevant to the study's purpose will be identified and selected from the whole data pool, as not all collected data may be equally meaningful and important. Some erroneous data, including data that were originally "flawed" (e.g., meaningless responses from students on a test), or data that were typed or coded incorrectly, can also emerge at this stage. Since such data can affect the interpretation of the results, during the coding stage the data are checked for consistency and accuracy. This process is known as **data cleaning** or **cleansing**. As a result of data cleaning, data entry errors can be fixed and erroneous bits of data can be removed before the actual data analysis begins.

Follow-up activity

Discuss these questions in pairs or groups:

1. What is quantitative data analysis? How is it different from qualitative data analysis?
2. Can you give some examples of both quantitative and qualitative data analysis methods which are commonly applied in your field? Select 1–3 personally relevant data analysis methods to explore further while keeping in mind your study's purpose and available data.
3. Why is it important to clean data before the actual data coding and analysis begin?
4. What data analysis methods do you think will enable you to analyze the data that you plan to obtain or have already obtained?
5. What prior experiences do you have with coding data for your previous research projects?
6. How will you prepare your data for analysis?

3. The Mechanics of Writing the Methods Section

Move 4: Presenting an Overview of the Study's Methodology

3.1. Restating the study's purpose, research questions or hypothesis (optional)

Some authors prefer to begin their Methods section by restating the study's purpose, research questions or hypothesis (if applicable), although these may have already been introduced in the previous sections (Introduction and Literature Review, if these are separate sections). Others may prefer to move straight to discussing the context, data collection and analysis methods specific to the study. Most studies that are **exploratory**, **descriptive** and **observational** in nature may introduce research questions but may not have a hypothesis to be tested (although they may develop one over the course of the study).

Example:

This study investigates the writing section of an in-house, general proficiency test given annually at a foreign languages university in Japan (***Fritz & Ruegg, 2013***) (**Linguistics**).

See the "Language Guide" (p. 175) for more detailed information on the language for stating the study's purpose in Methods sections.

3.2. Presenting the study's research design (optional)

As their next step, some authors will explain what their overall plan or "research strategy" (Paltridge & Starfield, 2007, p. 118) to meeting the purpose is. This approach is known as **research design**. The chosen research design will drive the selection of appropriate data collection and analysis methods.

There are a wide variety of research designs in social sciences research. The choice of a research design is determined by the study's nature or type (for example, descriptive or explanatory, experimental or non-experimental,

case study, etc.), research questions and hypothesis (if there is one). A study which sets out to explore a phenomenon, situation, or setting at some point or over a period of time without the researcher's control over the environment (mainly through observation and review of relevant literature) is unlikely to have a hypothesis and will follow a **non-experimental research design**. If a study seeks to identify the cause-and-effect relationship(s) between key variables, this study will have a hypothesis and will follow an **experimental research design** (DeVaus, 2001).

Existing research designs can be identified as:

- **experimental, quasi-experimental, correlational, descriptive, evaluative**, etc.
- **comparative, ethnographic, historical, phenomenological, reflective**, etc.

A research design may build on either **quantitative** or **qualitative** methods of data collection and analysis, or a combination of both types. In the latter case, this kind of design is often referred to as a "**mixed-methods**" design. Both types of methods are believed to complement each other in mixed methods studies.

Example:

Here is an adapted extract from a journal article in **the field of marketing**. Bolded is the description of the research design adopted for the study.

To test these hypotheses, we will conduct **a randomized, between-subjects experiment**, in which a national sample of young adults will be exposed to a brief magazine story (intended to manipulate mood), followed by a message for a prescription drug for the early detection of skin cancer. The experiment will vary the frequency and severity of the side effects described in the product message and independently vary the mood evoked by the news story.

Adapted from:

Cox, A. D., Cox, D., & Mantel, S. P. (2010). Consumer response to drug risk information: The role of positive affect. *Journal of Marketing, 74*(4), 31–44. doi:10.1509/jmkg.74.4.31

Move 5: Presenting Data Collection Methods and Procedures

3.3. Discussing/ justifying data collection methods

In this part of the Methods section, explicit information needs to be provided about the context of the study and how the data for the study will be collected or obtained. As stated earlier, the author may collect their own data through data collection instruments (e.g., surveys, interviews, tests, notes from participant observations, etc.) or use readily available data.

The information in this part may be introduced in separate subsections with subheadings, such as "Context," "Data Sources," "Participants," "Sample" (or "Sample Description"), "Materials," "Instruments," etc. In some fields (e.g., applied linguistics, education, psychology, etc.), this section can detail the following:

the target population or participants	e.g., the sample size, criteria for selecting participants, participants' characteristics, such as age, social class, educational background, etc.
the setting in which data collection will take place	e.g., geographical location, type of institution, other people who will assist the researcher with collecting data, etc.
data collection instruments	newly designed or existing ones, together with sample questions where applicable): e.g., tests, surveys, interviews, etc. aimed to elicit certain types of data, for example, learners' personal beliefs regarding best study practices, or to measure something—learner performance under certain conditions, subjects' psychological characteristics, etc.
any available or specially designed materials to be used in the proposed study	e.g., consent forms, experimental educational materials, computer software, etc.

the necessary equipment	e.g., laboratory equipment, audio- and video recording equipment, etc.
any experimental activities where applicable	e.g., pedagogical intervention to improve participants' reading performance in a foreign language
the role of the researcher in the study	unobtrusive observer, participant, etc.
step-by-step procedures for collecting and using data	procedures for accessing participants and seeking their permission to use their data; the protocol for administering any type of measurement; the medium for obtaining the data (for example, via online tools or through direct contact in a physical setting); any rewards for voluntary participation; procedures for handling personal data after they were collected, etc.
any additional resources	e.g., assistance from staff, the necessary expertise at performing certain tasks, etc.

What is important is that the presentation of the data collection methods and procedures in Methods sections should not be just a description of the planned approach but for the most part a **justification** of why and how specific types of data will be accessed, collected, and protected. Any illustrative material, including sample items from data collection instruments, informed consent forms, permissions to reproduce copyrighted material, etc. can be provided at the end of the proposal in the Appendices section.

Examples:

Extract 1

Here is an adapted Methods extract that details data collection methods from the earlier study on language policies in MNCs. Note how the author uses literature sources to support his rationale for choosing an online survey company to collect the data.

Read the example and answer the questions that follow.

Foreign Subsidiary Top Manager Nationality and Language Policy: The Moderating Effects of Subsidiary Age and Size

[1]The survey data will be collected through a large Japanese research company. [2]The company will be used because it will allow us to access a diverse sample of respondents and to prescreen potential respondents on a variety of characteristics to ensure the sample is representative of the population of interest (Ng & Feldman, 2013). [3]The diverse sample, in turn, should strengthen the generalizability of findings. [4]Moreover, accessing a diverse sample without a local research company may be difficult in Japan because successful data collection there is argued to be based on personal contacts (Takeuchi, Lepak, Wang, & Takeuchi, 2007). [5]Another important advantage of using online survey companies is that, unlike cases where researchers make entry through senior management, participants in online surveys know that without their input their data cannot be linked to their organizations, departments, teams, and supervisors (Ng & Feldman, 2013). [6]This, in turn, should lower response biases. [7]Because of the related benefits, scholars in various scholarly areas, ranging from international business (Peltokorpi & Vaara, 2014) to organizational behavior (Ng & Feldman, 2013), are increasingly using research companies to collect data.

Adapted from:

Peltokorpi, V. (2015). Foreign subsidiary top manager nationality and language policy: The moderating effects of subsidiary age and size International relations. *International Business Review*, *24*(5), 739–748.

1. What reasons does the author give for choosing to obtain the data through an online research agency?
2. What "justification" expressions does the author use to convince the reader of the benefits of using a research agency?

Extract 2

Below is another adapted Methods extract from a journal article in **the field of business**. The study explores labor relations in Kazakhstan's oil and gas transnational corporations (TNCs) and the attempts of Global Union Federations' (GUFs) to organize dialogue with and within TNCs through national (Kazakh) unions.

Read the extract and answer the questions that follow.

National and International Labor Relations in Oil and Gas Trans National Corporations in Kazakhstan

[1]English and Russian language literature and government, company and NGO websites, will be used, supplemented by notes on interviews which will be conducted by the author. [2]Fifteen semi-structured interviews will be carried out to deepen our data on the Central Asian unions. [3]Respondents will be selected to offer a wider view of the Kazakh unions and the context in which they operate. [4]Three interviews will be held with Kazakh government officials, four with company representatives from major extractive companies and the remainder with national trade union officers and officials of all of the Global Union Federations (GUFs) involved in the Six GUFs project. [5]Interviews will be conducted in English and Russian (the latter with the assistance of an experienced Russian trade union interpreter who is very familiar with the national, union and GUF contexts) and recorded exclusively by written notes at respondent request.

Adapted from:

Croucher, R. (2015). National and international labour relations in oil and gas Trans National Corporations in Kazakhstan. *International Business Review, 24*(6), 948–954.

1. What data sources does the author discuss?
2. Which sentences explain the author's rationale for collecting this kind of data?
3. Does active or passive voice dominate? Why do you think this is the case?

Using readily available data

In some social sciences research in which no human subjects are involved or in which collecting primary data from human subjects may be difficult and even impossible, ready-made data available through other organizations and public sources can be used. These include institutions that offer respective services (e.g., research agencies), administrative websites, official statistical databases (e.g., census data, tax data, voting data, trade statistics, business and legal documents, household censuses, corporate reports, media reports, etc.), and media platforms. In these cases, it is often necessary to elaborate on particular types of data sources that will be employed in the study and how they will be accessed. This section is also often the space for the author to identify key variables (i.e., what will be measured, such as macroeconomic indicators) and operationalize them (explain how they will be measured).

Example:

Below is an unadapted Methods extract from a journal article in **the field of institutional economics**. The authors explore whether (and how) press freedom may be influenced by foreign aid. Panel data from 1994 to 2010 are used to establish that foreign aid may increase press freedom in democratic regimes while it has a relatively small effect on press freedom in autocratic states. Note the authors' use of the Present tense as they introduce the dependent (manipulated) and independent variables, explain how these were measured, and provide support for their decisions.

Read the extract and answer the questions that follow.

Can Foreign Aid Free the Press?

Data description

[1]All variables and data sources are described in Appendix 1. [2]The **dependent variable** is a measure of press freedom capturing independence of the media sector. [3]It is collected from Freedom House (2012) and is the most widely utilized measure given its extensive coverage. [4]The index categorizes the media sector as either 'free', 'partly free', or 'not free', depending on the extent to which the country allows free flow of news and information and the extent of government restrictions on the media sector. [5]It ranges from 0 to 100 with 100 indicating most free. [6]As shown in Table 1, for our sample, the mean level of press freedom is approximately 44.26 with a standard deviation of 19.3, ranging from 'not free' to 'free' with scores between 4.2 and 84.4 ...

[7]Our main **independent variable** of interest is foreign aid. [8]We measure foreign aid with net disbursed official development assistance received

by a country as a fraction of gross domestic national income (GNI) (World bank, 2012). [9]We use this version of aid since it is the broadest measure and captures any potential impact that aid may have on the media sector. [10]OECD's Credit Reporting System collects sector specific aid, including communication aid; however, it only includes a portion of total commitments. [11]In addition, the quality of aid data is questionable. [12]For example, aid earmarked for the communications sector may end up funding education and vice versa (Khilji & Zampelli, 1991; McGillivray & Morrissey, 2000; Pettersson, 2007). [13]Therefore, we use an overall measure of aid to account for possible measurement error and biases.

Source: Dutta, N., & Williamson, C. R. (2016). Can foreign aid free the press? *Journal of Institutional Economics, FirstView*, 1–19. doi: 10.1017/S1744137415000557

1. How were the data obtained?
2. What key variables do the author introduce? Is it clear how these variables were operationalized?
3. Which sentences explain the author's rationale for choosing a specific measure of foreign aid?

See the "Language Guide" (p. 176) for more detailed information on the language for justifying the choice of methods.

3.4. Discussing/ justifying data collection procedures

Many authors will detail the procedures or steps taken to collect data, with indication of the order in which they will be carried out. A justification will be provided to explain the design of the procedures and any measures used to ensure their successful implementation. The procedures will be described in a sequence.

Example:

This example comes from an earlier journal article in **the field of marketing** which examines consumer reactions to medical product risk

warnings and the effect that media contexts in which the warnings are placed can have on these reactions. Note the use of past tenses in descriptions of procedures that already took place (which is the case with journal articles).

Read the example and answer the questions that follow.

Procedure. [1]For each person who responded to the survey invitation, the first screen on the Web survey presented an introduction to the study. [2]Participants were thanked for their participation and were told the following:

> [3]*In a moment, you will be asked to view a short newspaper article and an advertisement for a proposed new product.* [4]*Please view these as you would normally view articles and advertisements in a newspaper ...* [5]*After you have read the article and the advertisement, please ... begin the questionnaire.* [6]*You will be asked to answer some questions about what you have read and your feelings about the product.*

[7]After respondents read the introduction and agreed to participate, they were randomly assigned to one of four versions of a human interest story (2 story type x 2 mood level), followed by one of five versions of the target product message (which varied in the frequency and severity of stated side effects [plus control] as developed in the pretests).

[8]Because the experiment included a manipulation of mood in the form of a human interest story, we wanted to ensure that the respondents did not guess the purpose of the study and respond to demand effects. [9]Thus, as a check for potential demand effects, we conducted a post-experimental inquiry with a sample of 51 adult respondents ages 20–39 (recruited from the survey sampling online panel) who did not participate in the main experiment ...

Source: Cox, A. D., Cox, D., & Mantel, S. P. (2010). Consumer response to drug risk information: The role of positive affect. *Journal of Marketing, 74*(4), 31–44. doi:10.1509/jmkg.74.4.31

1. Is the design of the procedures in this study well explained?
2. What is the aim of reproducing the exact message that was given to participants during the experiment?
3. Which sentences illustrate the authors' rationale for inviting another 51 respondents?

Move 6: Presenting Data Analysis Methods and Procedures

3.5. Discussing/ justifying data analysis methods and procedures

Data analysis is often discussed alongside data collection methods. The choice of data analysis methods is usually supported with references to authoritative studies that have established these methods' reliability and validity.

In **quantitative** and **mixed methods research**, data analysis involves the use of mathematical and statistical tools to establish and explain correlations between variables and/ or identify the patterns of association between these variables. Since statistical analysis of data is typically done with the help of **statistical packages** and other analytical tools (e.g., STATA, SPSS, SAS, etc.), these will often be mentioned, and information on procedures for measuring the values assigned to given variables will be provided. Statistical significance of the results will also be explained. This information will help the reader judge whether or not the results are valid and reliable. The level of detail at which this is done depends on the field and the method(s) used. In some disciplines (e.g., psychology, education, sociology, etc.), detailed descriptions of data analysis methods and procedures are critical to helping other researchers replicate the study and confirm or put under question the validity of its results.

In **qualitative research**, procedures for analyzing data may have to be explained at greater length, often with references to published studies that guide the author's approach to data analysis. Rationale will be provided with regard to how confidential data from participants will be handled and how the validity of interpreting the data can be ensured. In some cases, the units of data for coding will be identified (for example, an artifact, a word,

a group of words, such as a participant's quote; the test scores of an individual student or a whole class of students, etc.). There can in fact be several units of analysis depending on the type of analyses employed in a single study, with their choice justified with reference to other studies.

Here are two extracts from data analysis sections in journal articles in **the field of marketing** and **applied linguistics**. Again, note the use of past tenses in these extracts, which is not applicable to Methods descriptions in planned research. Read the extracts and answer the questions that follow.

Examples:

Extract 1

Towards an Understanding of Frugal Consumers

... [1]Analysis was initially undertaken to test the reliability of each of the scales used. [2]For Lavstovicka et al.'s 8 item measure of frugality, a Cronbach alpha of 0.76 was obtained, while alphas for the 13 dimensions of the modified Schwartz value scale ranged from 0.61 through to 0.78, with an overall alpha of 0.91. [3]These were considered acceptable for further analysis to be undertaken on the data obtained with those measures ...

[4]Actual scores on the frugality index ranged from 9 to 40, with a median value of 29. [5]The 10% of the sample scoring 29 were removed to enable comparisons to be made between those with lower (42%) and higher (48%) levels of frugality. [6]This method of performing a median split to examine contrasting groups is an accepted method that has been employed in many pieces of consumer research (e.g., Feick & Price, 1987; Lawson, Todd, & Boshoff, 2001) and also has an advantage in that it avoids assuming potential linearity in relationships that is implicit in other tests such as ordinary correlation and regression. [7]Differences in the means between the two groups were tested using the General Linear Model (GLM) procedure in SPSS.

Source: Todd, S., & Lawson, R. (2003). Towards an understanding of frugal consumers. *Australasian Marketing Journal, 11*(3), 9–18.

Extract 2

Pre-Service Foreign Language Teachers' Perspectives on Learning With Technology

... [1]At the end of the course, students' opinions about the technology-mediated course activities in which they participated were gathered from a final course reflection and an anonymous online questionnaire with Likert-scale and open-ended items (see Appendix). [2]Questionnaire respondents were assigned a letter code for analysis (e.g., Student A), and a pseudonym was used for all other data sources. [3]All participants completed all of the data-gathering instruments. [4]Descriptive statistics were computed for the Likert-scale items. [5]A general inductive approach (Thomas, 2006) was used to analyze participants' responses to the open-ended questions as well as the lesson plan and end-of-course reflections. [6]Two researchers read participants' responses several times and independently identified commonalities across the student teachers' reflections. [7]On the basis of those generalizations, a set of categories was developed and then the categories were conceptualized into broad themes.

Source: Sardegna, V. G., & Dugartsyrenova, V. A. (2014). Pre-service foreign language teachers' perspectives on learning with technology. *Foreign Language Annals, 47*, 147–167.

1. In the first extract, which sentences illustrate the author's justification for their data analysis decisions? What kind of support do they provide for their use of a "median split"? What is the name of the measure that they employ? Are any statistical packages to help them measure their variables mentioned?
2. In the second extract, which sentences explain the authors' approach to analyzing the specific types of data, such as participants' open-ended questions and reflections? Is their motivation to use the approach supported by references to other (published) research?

See the "Language Guide" (p. 178) for more detailed information on the language for describing data collection and analysis procedures.

Follow-up activities

Activity 1. Access a research database (see subsection 2.1 of Part 3) to search for international peer-reviewed papers on the topic of your future study. Use the search field to enter your key words. Once the results have been displayed, browse through the potentially closest matches by reading their key words and abstracts. Identify 3–5 articles that you find most relevant.

Activity 2. Read the Methods section of the articles you have selected (or at least, the Introduction and Methods sections). Fill out this table to structure your knowledge about the studies' methodologies and to get yourself thinking about your own study's methodology:

#	Studies	Study's purpose	Type of data	Data analysis methods	Rationale for using chosen method(s)
1	e.g., Smirnov, 2014		e.g., 50 manifestos of Russian presidents	e.g., content and thematic analyses	
2	...				

Move 7: Outlining Scope and Limitations

3.6. Discussing the study's scope and limitations

When planning and presenting research, one should be able to critically evaluate the scope (also known as "delimitations") of one's research and its limitations. The **scope** refers to the limits to carrying out the study as determined and explained by the researcher. For instance, these boundaries can relate to the timeframes for conducting the study, the types of data to be collected, the time period to which specific data sources (e.g., historical documents) may be limited, the sample size, etc. In other words, the scope usually defines the boundaries of what the proposed research does or does not promise to achieve.

Unlike limitations in the Literature review section, **limitations in Methods sections** explain what potential barriers or problems one might face in the course of the research which are **beyond** the researcher's control. For example, one may be limited in terms of:

- financial constraints
- the timeframes for conducting an extensive study if one is only given a semester
- access to specific facilities that one may wish to use (e.g., premises, equipment or software)
- access to data sources (e.g., primary or secondary sources which are only available in a foreign language; human subjects who may be difficult to find and recruit)
- availability of previous research on the topic
- availability of published data collection instruments (the lack of which creates a need for designing one's own instruments).

The scope and limitations have to be explicitly stated to communicate to the reader how the quality of the results can be affected, and whether they can be applied ("generalized") to other, broader, contexts. If no mention is made of their study's scope and limitations, one may assume that the author has set no boundaries to their research quest.

Examples:

To illustrate, below are adapted Methods extracts from studies in **the fields of healthcare** and **political science**. As you read each extract, identify the sentences that explain each study's scope and limitations.

Extract 1

Health and Healing the Ute way: Perceptions of Diabetes among the Unitah-Ouray

[1]Participant observation over an eight-week period will be used as a primary method of data collection. [2]Semi-structured interviews will be scheduled and conducted with each team member individually to provide more insight into their personal perspectives on... [3]Group interviews will not be employed in this study due to a mismatch in some students' academic calendars.

[4]Time constraints of one semester require less time than may be ideal for an ethnographic study. [5]With only 5 hours a week spent on this project, there are bound to be aspects of leadership practice, organizational culture, and team communication that will not be revealed during my observations. [6]Being an outsider may also limit what is revealed to me as my subjects may be guarded in their conversations around me.

Adapted from:

Utah State University. (2016). Health and healing the Ute way: Perceptions of diabetes among the Unitah-Ouray. Retrieved May 20, 2016, from http://rgs.usu.edu/undergraduateresearch/wp-content/uploads/sites/4/2015/08/Proposal-Model1.pdf

Extract 2

All Policies are Glocal: International Environmental Policy Making With Strategic Subnational Governments

[1]We will examine the national and international effects of strategic policy formation at the subnational level. [2]We will analyze games of complete information, with no uncertainty about preferences and ideal points. [3]To simplify, we assume that there are only two national governments. [4]We do not attempt to construct a multilateral negotiation game, because the dynamics of coalition formation would greatly complicate the solution of the game. [5]This limitation notwithstanding, we believe a simple two-player game can offer insights into how subnational policy makers strategically shape their national policy makers' negotiation positions and the ultimate outcome.

Adapted from:

Bechtel, M., & Urpelainen, J. (2015). All policies are glocal: International environmental policy making with strategic subnational governments. *British Journal of Political Science*, *43*(3), 559–582.

Extract 3

Places and Preferences: A Longitudinal Analysis of Self-Selection and Contextual Effects

[1]Our analysis will use eighteen waves of data from [*time period*] inclusive, with almost 10,000 individuals clustered within over 5,000 households in the first wave. [2]We will restrict our focus to England only, excluding households in Wales, Scotland and Northern Ireland because the party systems in these countries are sufficiently different from England to make combined analyses difficult to interpret. [3]We will also exclude observations of those aged under 18 in order to match our analysis sample with the voting age population in England. [4]We will include 'new sample members' who join the BHPS [*British Household Panel Survey*] through the formation of new households with 'original sample members' as well as 're-entrants' (i.e. those who had been non-respondents in the previous wave). [5]These inclusion criteria will yield an analysis sample of 17,373 individuals, who will provide a combined total of 158,000 unique observations over the eighteen waves.

Adapted from:

Gallego, A., Buscha, F., Sturgis, P., & Oberski, D. (2016). Places and preferences: A longitudinal analysis of self-selection and contextual effect. *British Journal of Political Science, 46*, 529–550. doi:10.1017/S0007123414000337

See the "Language Guide" (p. 180) for more detailed information on the language for outlining the study's scope and limitations.

Follow-up activities

Activity 1. Read an adapted Methods extract from a journal article in the **field of economics**. The extract mainly focuses on presenting data collection and analysis methods and procedures. Tick the specific steps that can be identified in the extract:

A. restating the study's purpose
B. presenting the study's research design

C. presenting the study's hypothesis
D. clarifying definitions
E. discussing/ justifying data collection instruments
F. discussing/ justifying data collection procedures
G. identifying key variables
H. discussing/ justifying data analysis methods
I. discussing data analysis procedures
J. outlining the study's scope
K. outlining the study's limitations

Model-Based Professional Forecasts: Implications for Models With Nominal Rigidities

[1]We will be analyzing five macroeconomic indicators from the SPF [*the Survey of Professional Forecasters*], namely, nominal GNP/GDP, real GNP/GDP, industrial production index—total, real personal consumption expenditures—total, Consumer Price Index, and unemployment. [2]We look only at point forecasts and define these as the median forecasts in every release of the survey (results with the mean forecast are very similar and will not be reported). [3]Our sample for SPF forecasts will span ...q1–...q2. [4]All data will first be aggregated quarterly when necessary (to be consistent with the variables forecast in the SPF). [5]The data will be in growth rates.

[6]We will assess the predictive power of SPF forecasts by measuring their performance relative to an estimate of the unconditional means of the variables analyzed. [7]More specifically, we will compute the average of each variable from ...q4 through to ...q1 – h quarters, for h = 1, ..., 5. [8]We will then compute the average from ...q4 through to ...q2 – h, h = 1, ...,5, to forecast ...q2, and so forth until ...q2, i.e., with an expanding window of observations ...

Adapted from:

Azevedo, J. V., & Jalles, J. (2016). Model-based vs. professional forecasts: Implications for models with nominal rigidities. *Macroeconomic Dynamics, FirstView*, 1–30.

Activity 2. Match each sentence to the steps that you have ticked.

4. Further Practice

Activity 1. Take a look at an adapted Methods extract from a journal article in the **field of political science**. Break it down into moves and steps.

Who's Afraid of Conflict? The Mobilizing Effect of Conflict Framing in Campaign News

[1]To study the conditional impact of conflict news framing on mobilization, we will employ a multi-method research design including content analysis and a two-wave panel survey. [2]The content analysis will be used to investigate how the news media in the different EU member states have covered the campaign, and the panel survey will be used to assess the impact of such coverage on voter turnout. [3]We will analyze the content of the media outlets that will be included in our panel study design and for which respondents will report their individual exposure.[4]This design will enable us to assess the effect of campaign news more specifically by including the results of our media content analysis in our measure of individual news exposure with the same news outlets that are in our panel survey analysis. [5]Our design is also unique in that it will include an in-depth content analysis of campaign coverage in twenty-one of the then twenty-seven EU member states and will combine this analysis with panel survey data in these twenty-one countries. [6]Thus we will be able to conduct a multilevel analysis that will assess the impact of both individual- and country-level variables as well as their cross-level interaction on the mobilization of citizens in the 2009 EP elections across Europe in a single study.

Media Content Analysis. [7]To empirically test our expectations and collect information to build into our measure of news exposure in the analysis of our panel data, we will rely on a large-scale media content analysis. [8]This content analysis will be carried out within the framework of Providing an Infrastructure for Research on Electoral Democracy in the European Union (PIREDEU), which is funded by the European Union's FP 7 programme.

Sample. [9]**The content analysis will be conducted** on a sample of national news media coverage in all twenty-seven EU member states. [10]**We will focus on** news items dealing with the EU and the EP election campaign specifically. [11]In each country **we will include** the main national evening news broadcasts of the most widely watched public and commercial television stations. [12]**We will also include** two 'quality' (broadsheet) and one tabloid newspaper from each country. [13]**Our overall television sample will consist** of fifty-eight TV networks and our overall newspaper sample will contain eighty-four different newspapers.

Period of study. [14]The **content analysis will be conducted** for news items published or broadcast within the three weeks running up to the election. [15]Since election days varies across countries, the **coding period will also vary** from, for example, 14 May–4 June for some countries up to 17 May –7 June for others.

...

Adapted from:

Schuck, A., Vliegenthart, R., & De Vreese, C. (2016). Who's afraid of conflict? The mobilizing effect of conflict framing in campaign news. *British Journal of Political Science*, *46*(1), 177–194.

Activity 2. Look back at the extract and answer these questions:

1. What research design is proposed in the study? How do the authors explain the choice of this type of research design?
2. Is the purpose of the study clear from the first paragraph? What methods do the authors claim will help them achieve this purpose?
3. Is the rationale for using media content analysis stated explicitly?
4. How elaborate is the author's description of the sample (e.g., news items covering the election campaign)? Is this amount of detail justified in the context of the study?
5. Is the scope of the study clearly defined (time period, data collection and analysis procedures, etc.)?

Activity 3. Go back to the extract and complete this table. The table has been partially filled for you:

Study's purpose	Type of data	Methods of data collection	Methods of data analysis	Rationale for using chosen method(s)	Scope of analysis
			media content analysis		

Activity 4. Find or use examples (2–3) of Methods sections in authentic research proposals and journal articles related to your study's topic. Answer these questions:

1. How is the Methods section labeled? Is it elaborate or brief?
2. What moves and steps can you identify? Can they be identified easily? Are there any other steps present?
3. What types of data are employed? Is the author's rationale for collecting (obtaining) and analyzing the data presented effectively? Does he or she provide evidence from previous research to support his or her decisions?
4. Are the specific procedures for collecting and analyzing the data described in detail or mentioned briefly?
5. What do you notice about the language conventions used to write the Methods sections in research proposals and journal articles?

Activity 5. Review the various language structures that convey the author's communicative intentions in the Methods section (see the Methods topics in the "Language Guide"). Select 15–20 expressions to include in your personal academic glossary.

Activity 6. Provided that you have already obtained and analyzed some data, try your hand at writing a tentative version of the Methods section (300–500 words at maximum). Note that if you choose to write about your previous research project, pretend that it is your planned research and adjust the language accordingly (e.g., use Future tenses instead of Past tenses). Use the move-step framework to guide yourself. Consult the Methods checklist in Appendix E to check if all the essential elements are present.

Part 5
Writing the Expected Outcomes Section

1. What is Expected Outcomes

Warm-up:

Reflect on the following:

1. Is there a Conclusion section in research proposals?
2. What would be the purpose of writing the Expected Outcomes section?
3. What kind of information would you include in a section entitled "Expected Outcomes"?

What is Expected Outcomes?

Read the text to check your answers to the warm-up questions.

This section (also known as "Expected Results," "Anticipated Results" and simply "Outcomes") often features as the **final part** of a proposal (in place of the Conclusion section in research articles). Since no results have been obtained yet, the decision on whether to include this part as a separate section will depend on the requirements for specific types of research proposals provided by the institution or grant giving organization to which a proposal is submitted.

In line with the requirements for some types of research proposals (e.g., undergraduate level proposals at some institutions), a research proposal may end with the Methods section, often followed by an explication of the requested budget (see, for example, sample proposals from the Honors College of the University of Southern Mississippi—https://www.usm.edu/honors/example-prospectus). Alternatively, a key requirement may be to include the Expected Outcomes section as the concluding part to a proposal.