Method Sections in Scientific Research Reports (IMRaD)

IMRaD refers to reports with the structure Introduction-Method-Results-Discussion used in empirical research in natural and social sciences. Please refer to the Writing Center quick guide "Writing an IMRaD Report" for more explanations.

The purpose of the method section in an IMRaD report is to provide a step-by-step description of how you conducted your empirical research to make it **transparent** and **replicable**. The idea is to provide enough relevant information so that other scholars could understand your research process, compare your findings to similar studies, and replicate your research if necessary. In method sections, writers typically introduce the nature of their data as well as explain how the data were collected and analyzed, justifying their choices.

In terms of linguistic features, method sections commonly contain verbs in the **past tense** because data collection and analysis are typically completed by the time researchers start working on their manuscript. Also, **passive voice** is often appropriate in method sections to show the emphasis on the procedure itself rather than on the researcher who conducted it.

Common Moves in Method Sections

Below are some moves that commonly appear in method sections as identified by Cotos, Huffman, and Link (2017), who examined IMRaD reports across 30 disciplines. The moves below are intended to show possible information that can be included in method sections, but not all of these moves appear in every paper and in the same order. Also, moves and sub-moves are not structured in a sequential order; for example, writers can switch from move 1 to move 2 in a cyclical manner.

Depending on the discipline, sub-discipline, and nature of a study, these moves may vary greatly. For example, qualitative studies that rely on data from interviews have longer sections describing participants and coding schemes, while papers in Chemistry may focus on describing equipment used in the experiment.

Part	Includes One or More Sub-Moves
Part 1: Contextualizing Study Methods Provides background information about the study	- Situate your choice of methodology in relation to previous studies by referencing them *X was prepared according to the procedure used by Jones et al. (1957).* 1 - Provide relevant theoretical or empirical information to show connections to the field *Traditionally, X has been assessed by measuring ...* - Restate research purpose, hypothesis or gaps in research *To test our primary hypothesis that ..., we conducted...* - Name the methodological approach *The design was a mixed-method study...* - Describe the physical setting of the study *Observations were conducted at X hospital...* - Introduce the subjects/ participants *Criteria for selecting the subjects were as follows:* - Justify pre-experiment choices *A major advantage of X is that ...*
Part 2: Describing the Study Describes in detail what was done and how it was done. This move typically comprises 55-85% of the method section. Two sub-moves in bold are often the main focus of method sections.	- Explain how the data were collected, sampled, or selected *A random sample of patients with ... was recruited from ...* - Describe the characteristics of the data *Data consists of 12 interviews (50,000 words) ...* - Identify dependent and independent variables *Our independent variable is X .* **Describe study procedures in a step-by-step way** *The first step in this process was to...* *The soil was then weighed again, and this weight was recorded as ...* *The resulting solution was gently mixed at room temperature for ten minutes and ...* - Justify study decisions and provide purposes for specific steps *Minimum frequency was set to 10 because ...* **Describe tools used to in the study** *Data management and analysis were performed using SPSS 16.0 (2010).* - Share observations or incremental measurements related to the study, but not crucial for the results

| Part 3: Analyzing Data

Explicitly shows data analysis steps to persuade the readers that the results can be trusted.	• Explain how data were prepared for the analysis
	    ■ *The data were normalized per 100 units.*
	• Describe how data were analyzed, including coding schemes or tools (there may be an overlap with tools in Move 2)
	    ■ *The numbers were entered into …, and then …*
	• Justify data processing/ analysis
	    ■ *This framework was chosen because it accounts for …*

Based on Cotos, E., Huffman, S. and Link, S. (2017) A move/step model for methods sections: Demonstrating rigour and credibility. *English for Specific Purposes, 46*, 90–106.

This sample language is taken directly from the University of Manchester's Academic Phrasebank: http://www.phrasebank.manchester.ac.uk/introducing-work/.

Activity to help you prepare for writing an IMRaD method section

Choose a journal in your discipline and read the method section of a few IMRaD reports. Analyze these method sections addressing the following questions:

- Which moves and sub-moves are present in the method sections of these reports?
- What language or contextual clues helped you identify these moves?
- How detailed are these method sections?
- How often are citations used? When or for which purposes do authors use each citation?
- How often is passive voice used? Which tense(s) do the authors predominantly rely on? How can you explain this use?