

WRITING RESEARCH ARTICLES: THE IMRaD MODEL

Note: Readers may first want to consider [Introduction to Research Writing: The CaRS Model](#).

What is a Research Article?

Research articles (RAs), like all texts, can be understood **rhetorically**, which means in terms of their persuasive strategies and goals. In the rhetorical approach, one inquires after the **author**, intended **audience**, and **purpose** of every **genre** or type of text.

- RAs are typically **authored** by researchers, many of whom are university professors.
- The **audience** for an RA varies depending on the **discipline** and the publication, but typically the intended audience is a small readership of highly specialized researchers.
- The **purpose** of RAs is to contribute “new knowledge or new perspectives”; moreover, in many disciplines, it is also necessary that the claims in RAs are “based on empirical evidence or argued warrants” (Van Enk and Power, 2017, p. 5). In other words, RAs are one way of representing the **scientific method** in action.
- One final feature common to almost all RAs is that they are **peer-reviewed**, which means that they have been examined by experts for accuracy, validity, and relevance.

Unlike professional academics, undergraduates are not expected to produce new knowledge. Still, they are often expected to read and write RAs as one means of familiarizing themselves with the subject knowledge, methodological approaches, and theoretical/critical orientations of their chosen area of study.

The IMRaD Model: Introduction, Method, Results, and Discussion

Anyone who has encountered even a few published RAs is likely to recognize the **IMRaD Model**. This template for structuring RAs begins with the **Introduction** and processes through **Methods**, **Results**, and **Discussion** sections. Day (1989) locates early traces of IMRaD in the writings of the 19th-century scientist Louis Pasteur, but it is difficult to attribute the model in its current form to any definitive source. Instead, it seems likely that IMRaD was standardized alongside the scientific method itself, such that the model “began to be adopted by scientific journals around the 1940s, and quickly became the dominant format for research papers in a majority of leading scientific journals by the late 1970s” (Wu, 2011, p. 1346).

Not all RAs follow the IMRaD model, but it is a common format in STEM fields (science, technology, engineering, and math) and some social sciences. IMRaD’s popularity is a testament to its persuasive power. It enables writers to represent the scientific process and to mimic its aspirational objectivity by imposing maximal accuracy and impartiality on the slippery medium of the written word. Many peer-reviewed journals require authors to conform to IMRaD, sometimes even mandating the use of **headings** and **subheadings** to identify the sections.

Critics of IMRaD say that it constrains the imaginative possibilities of research writing, while advocates argue that it leaves room for creativity within the constraints. All authors, from students to professors, must make their own decisions about whether and how to use the model.

Introduction

The introduction answers the question, “**Why was this study done?**” As Swales (1990) demonstrates, introductions fulfill three key objectives: (1) they provide context by identifying the existing state of knowledge in the field, typically through a **literature review**; (2) they identify a gap in the literature or a need for new research which justifies the study; and

(3) they indicate how the study will fill the gap or meet the need. Introductions often explicitly feature a **research question, hypothesis, or—in humanities verbiage—thesis statement.**

Method

The method section answers the question, “**How was this study done?**” Smagorinsky (2008) calls the methods section the “conceptual epicentre” of the RA, which “serve[s] as the nexus for other sections of the paper’s organization and alignment” (p. 390). A comprehensive methods section describes the study as it was carried out, ideally with a level of detail which allows for replicability. It also accounts for the **data** (or object of study) and explains the interpretive framework and/or analytical approach which will be applied.

Results and Discussion

The results section answers the question, “**What did you find by doing your study?**” The results are the outcome of the study as described in the Methods section.

The discussion answers the question, “**What conclusions did you draw based on the results?**” The discussion offers an interpretation of the results, explaining their significance in relation to the research question. It points to strengths and limitations of the study, potential implications or consequences of the findings, and possible directions for further research.

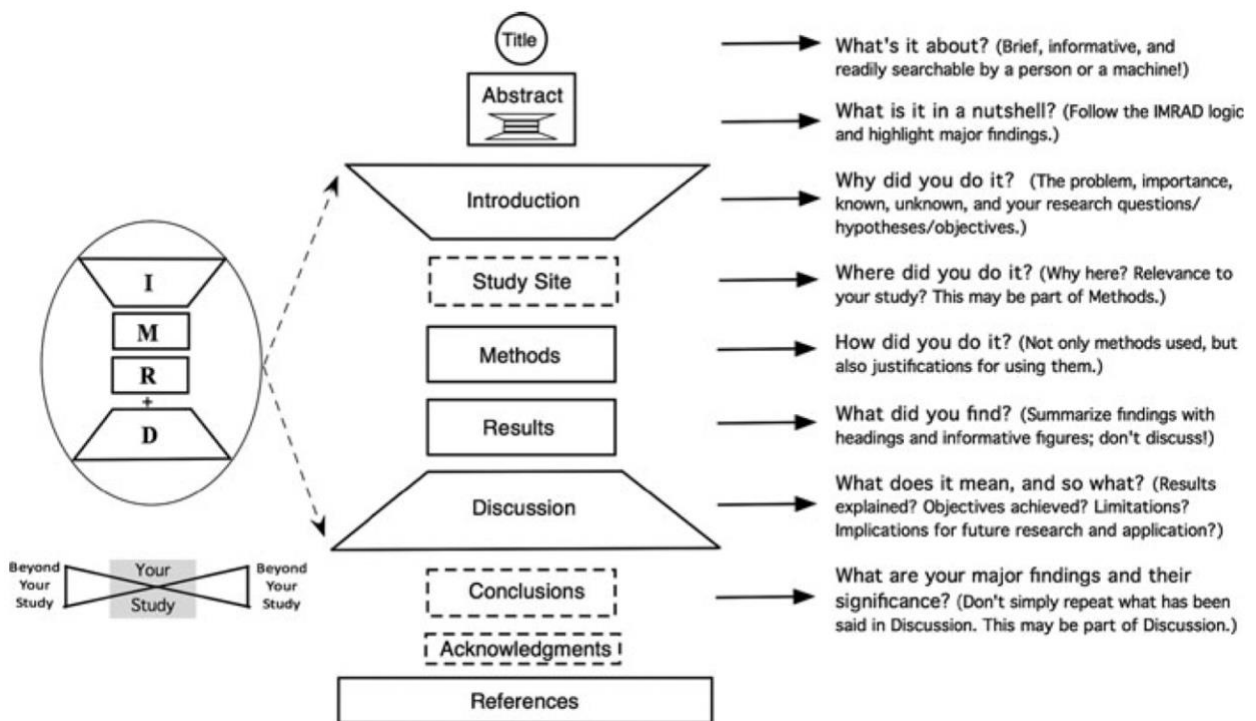


Figure 1: The IMRAD Model. Reproduced from Wu, J. (2011).

References

Day, R.A. (1989). The origins of the scientific paper: The IMRAD format. *AMWA Journal*, 4, 16-18.

Smagorinsky, P. (2008). The method section as conceptual epicenter in constructing social science research reports. *Written Communication*, 25(3), 389-411. <https://doi.org/10.1177/0741088308317815>

Swales, J. (1990). *Genre Analysis: English in Academic and Research Settings*. Cambridge UP.

Van Enk, A. and Power, K. (2017). What is a research article?: Genre variability and data selection in genre research. *Journal of English for academic purposes*, 29, 1-11. <https://doi.org/10.1016/j.jeap.2017.07.002>

Wu, J. (2011). Improving the writing of research papers: IMRAD and beyond. *Landscape ecology*, 26, pp. 1345-1349. <https://doi.org/10.1007/s10980-011-9674-3>.