

It's Not Rocket Science: Writing in the Field of Engineering

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Engineering is the field of innovation and invention, the monstrous application of maths and sciences in one discipline. As it is a discipline in which works will be shared and collaborated on by others, it is logical that writing in engineering is an incredibly important aspect of the discipline. Without proper writing, the hard work of engineers will mean nothing if what they are trying to convey, whether it is a new process or an improvement on a past design, is incomprehensible. Writing in engineering is structured much like writing in any scientific field: writing comes in the forms of lab reports and scientific journals, with the writing being very structured and bluntly opaque in its meaning. Scientific writing across all fields also has similar uses for language, structure, and reference that form the trademarks of their writing.

Before delving into the conversation of the finer points of writing in engineering, language, structure, and reference must first be defined. Language refers to both any jargon that is used within a field and the stylistic choices in their writing. For instance, historical writing has less technical jargon, but the writing is very stylized to the point of being difficult to comprehend. In fields like science or nursing, the writing relies very heavily on technical jargon but the style of writing is meant to be straightforward. Structure refers to the organization of writing. This can be the format, such as thesis-first or IMRAD, or it can be the citation style, as that can affect the way a paper is structured, such as the inclusion of footnotes in Chicago style. Lastly, reference is largely meant as the citation style used to reference material in writing.

Just as historic writing has the reputation for being long winded and hard to understand, scientific writing has the reputation for using very specialized language in their writing. As noted by some individuals outside of the discipline, scientists write for scientists rather than the greater

public.¹ While many scientists would love for their research findings to be shared by all, writing by those in the field of engineering are less likely to be widely consumed as it is more technical writing than can be understood by those outside of the field. The reason for this is that many times, articles in engineering are about advancements that can be utilized by other engineers in their work, therefore it would be of little use to people who would not be practically utilizing the information. Besides the writing being very technical, the language is also less stylized than other forms of writing. Engineers write very straightforward and to the point with little embellishments added. This makes their writing easy to understand by other engineers but rather dull for anyone else.² Writing in engineering is not meant to entertain, but rather to educate so there is no need for stylistic flair.

Engineering is not a field in which one may write however they please, but one wherein a fairly set structure is required of its works. Much of their writings, for instance, are written in an IMRAD, or Introduction, Methods, Results, Analysis, Discussion, type of format. IMRAD is used when writing something that is usually research based. In the “Introduction,” the author details the background to the lab (or experiment, or research) and why it was necessary to carry out. It will detail what was wished to be accomplished by the lab. In “Methods,” the author details how the lab was carried out. In “Results,” the author details the results of the lab. In “Analysis,” the author analyzes the results and what the results mean to the point of the experiment. In “Discussion,” the author details what the results of the experiment mean for the future and what can be done by others to further the research and discussion.

¹ Anonymous personal communication to the author, September 22, 2017.

² Edward Wheeler and Robert L. McDonald, “Writing in Engineering Courses.” *Journal of Engineering Education* 89, no. 4: 481-486. (EBSCOhost, 2000).

IMRAD is used because it provides all the information necessary to understand the lab in its entirety. By using this format, engineers are able to explain the background to the experiment, the experiment itself, and what may come of the experiment's results in the future.³ This allows for other engineers to understand the merit of the experiment and to have the ability to continue and expand upon the work of others.

Reference in their writing is marked by the trademark collaboration between fellow engineers. Of the four written sources used for this assignment, only one has a sole author; the rest have multiple authors. It is reflective of the scientific community as it is common for scientists to refer to one another as support for their research. Engineers will do this because by collaboration, they have another person to corroborate their findings and they also have another person that has years of engineering experience so they also bring further knowledge to the table.

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A trademark of writing in engineering is the use of graphics, a writing element that is reflective of its unique language, structure, and reference. Graphics take the place of written results from a lab or may help provide an explanation. In John Zhang's "Linear Moving Detector Photometer: A New Design Concept" in the *Journal of Illuminating Engineering Society*, there are thirteen graphics utilized within the eleven page article. The graphics used include tables, graphs, illustrations, and photographs, which help to guide the reader through Zhang's explanation of the design.⁵ Graphics such as tables or graphs are widely used to illustrate results

³ Hans F. Ebel et al., *The Art of Scientific Writing: From Student Reports to Professional Publications in Chemistry and Related Fields*. (New York: VHC), 16-22

⁴ Hans F. Ebel et al., 57-64

⁵ John Zhang, "Linear Moving Detector Photometer: A New Design Concept," *Journal of Illuminating Engineering Society* 33, : 75-86 (2004), EBSCOhost

gathered in an experiment in a way that shows the impact of the results better than can be explained in words. Graphics such as illustrations are extremely vital to engineers as they provide a way for engineers to showcase an idea or thought in a clearer way.⁶

An article like this helps to demonstrate the effect that graphics has on structure via the referencing used: Peppered throughout the article are the notes (Figure X) or (Table X) which guide the reader to the appropriate graphic to further the reader's understanding of the sentence that preceded it.⁷ Graphics shape structure because the structure is radically different once graphics are introduced, creating a structure that is characteristic of their writing.

Writing in engineering is writing that serves it's purpose, and little more. The language is opaque and straightforward, owing to the nature of the sciences and mathematics of engineering. It's structure is rigid and plainly informative, often choosing the best format for other engineers to best understand the material. Reference relies on the work of others in the field, reflective of the constant collaboration and sharing of information in engineering. Overall, engineers write simply in order to innovate complexly.

⁶ David Hutto, "Graphics and Invention in Engineering Writing," *Technical Communication* 54, no. 1 (2007), http://www.jstor.org/stable/43089470?seq=1#page_scan_tab_contents

⁷ Zhang, 75-86

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