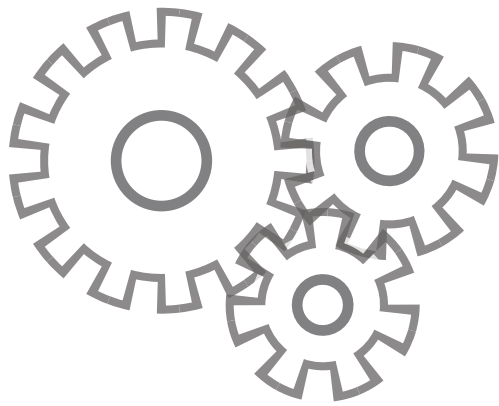




TECHNICAL
WRITING SKILLS



CHAPTER 4

Describing
Process and Procedures



Introduction

The words “procedure” and “process” are always confusing in their meanings. Some say there is no difference, some say there is a slight difference and some say they are different altogether. Is there an important difference between a procedure and a process?

In American English, the word procedure is most often used to designate a unique type of undertaking like a medical procedure or a nomination procedure. **A procedure, then, is a single activity, consisting of multiple steps, performed to accomplish a specific outcome.** It says a **process is a series of actions that bring about a result or lead to an expected outcome.**

In most cases, that result is a completed procedure. The distinction holds up in general usage in a number of fields. For example in Law, process is defined as the whole judicial proceeding (procedure). In Engineering, the steps in changing iron into steel is a process. In Computer Science, it means performing operations on data, which is done by a processor.

Based on general usage, we can say that a procedure is a **total operation or a complete set of actions that results in some desired outcome.** While a process is a **series of individual steps within the procedure that is followed to achieve the outcome.** The difference is that you must follow a process in order to complete a procedure. That would mean that saying, “The process of developing new engineering equipment is complicated” doesn’t mean the same as saying, “The procedure of developing new engineering equipment is complicated.” It depends on whether you’re saying that the individual steps are complicated or the whole operation is complicated. Whatever it is, both terms mean a **way to get something done.**

(In this chapter the words process and procedure will be interchangeably used.)



Why Describing a Process or a Procedure is Important

(Particularly in engineering, science and technology)

Procedures play a vital role in safeguarding against quality, environment health and safety problems in an organisation. They are written especially to ensure quality and continuity of an organisation. Quality here means, irrespective of who executes a certain process, the result of work is still good or the same with the presence of procedures. Whereas continuity means that even if the audience or the users are not experts, they can still continue doing a reasonably good job by referring to the written procedure available.

People are often reminded how to perform a task through procedures. Since our memory span is short, we tend to forget how to perform a task that is not repeated with great frequency, hence the need for procedures. Procedures often include checklists that provide extra control to assure that work is performed properly and successfully. Procedures also provide detailed information about instrument setting (for example, how to set an instrument to be used).

All these make writing of procedures very important. Other benefits of writing procedures and processes are as follows:

Describing is communicating

Describing a process or procedure needs technical writing skills. As in other types of writing, the main purpose of writing the description of processes or procedures is to communicate ideas. It is like a conversation between the audience and the writer, in the sense that the writer must anticipate the questions the audience would ask about the product or the process. It can be for the same type of audience (say, for example, engineers writing a description of a process for their colleagues, or other engineers) or audience of the general public. The description can be written for product brochures, websites, manuals, and step-by-step task lists that guide new users learning the software or equipment.

The Burden of Responsibility

Engineers may not have direct life-or-death consequences for their contribution (unlike practitioners in medicine). The real truth however is engineers who create flawed design could kill people. This is the ultimate burden of responsibility of the engineer. As such, their creations must stand the scientific scrutiny proofs and tests or meet the strict regulations of the safety board if they are to be used by other humans. It is this burden of responsibility that has contributed to the importance of procedures in the working lives of engineers.

Work Guide

Engineers rely a lot on procedures to guide them in their work. There is general expectation among engineers that procedures ought to account for most eventualities that may occur in their everyday work.

Writing a work procedure in the engineering profession has important purposes which are:

- (a) to ensure standardised working practice, and
- (b) to ensure maintenance of quality.

Benefits

The expectation is that engineers would operate within a process or procedure. If everyone follows procedures, life would be easier, and safer for everyone. Ineffective or wrong procedures will cause major problems. For example, inaccurate instruction, steps or information in the procedure will lead to an inability to fulfill the terms of a contract or failure in work accomplishment. This in turn would cause loss in business opportunity, customer dissatisfaction and financial losses which will eventually tarnish the reputation of a company and the profession. In short, the main reason for writing a procedure or a process is to ensure things are done without mistakes and omissions.

Just as in product specification writing, procedure writing is also a way of life for many engineers. Some examples of published procedures are varied in nature – guidelines on working with lasers, guidelines on dealing with slope development, processes of erecting transmission towers, procedures of handling machinery and so forth. In short, there is no doubt about engineers' reliance on procedures in their working lives or profession.



Types of Procedures and Processes in Engineering

Generally, there are two types of process or procedure:

1. A process or procedure that instructs or directs
2. A process that explains or analyses

Instruct / Direct (Instructional / Directional Process)

- This is a directional process that explains “how to do something”.

For example, how to change a flat tyre, how to reduce electricity, how to handle or operate a machine, how to make paper and so forth. Procedure writing is more like an instruction or a work guide to tell people how to perform a process or accomplish a task.

- The purpose of this type of process or procedure is to clarify the steps in the procedure so that the reader can recreate the steps and get the results or outcome planned. It means that readers need to religiously obey the step-by-step instruction without fail. Otherwise, they will never accomplish anything. Referring to the examples above, if we follow the instruction or step-by-step process strictly, the outcomes will be: a flat tyre is expected to turn normal again, electricity is expected to be reduced, a machine can function and paper is produced.

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In engineering, this type of procedure is very common and it is sometimes called operating procedure. Because processes or procedures are so common in engineering, engineers often write them. For example, you may have to write instructions to technicians on how to machine a drive shaft, or you may have to write a software manual for computer users on how to run a contour-plotting program. You may also need to operate artifacts, from a simple equipment like a pump to more complex equipment like reservoir or wastewater treatment. You may even have to instruct the public on the safety precautions for using a high-voltage dust blower that your company manufactures.

In accomplishing the tasks above, one needs to follow the instruction step-by-step. All the examples above point to the importance of well-written instructions in engineering so that they can be understood by users, other engineers, technicians or equipment operators and others. If the specifications for the drive shaft are unclear, the company may have to resubmit the job (at the company's expense). If the software manual is disorganised, users of the program may waste valuable time searching for a command. If the instructions on how to operate the artifacts are unclear, they may fail to function or, worse still, get damaged. If the safety precautions for your company's high-voltage dust blower are ambiguous, someone could get injured. The consequences are so great that procedures and processes must be written well so that money, time, and health will not be jeopardised.

Explain / Analyse (Informational Process)

- This only refers to processes and not procedures as they only offer information on "how something works or happens". For example, how an earthquake happens, how a tsunami starts, how a watch works, how paper is made, and so on.
- The purpose of this type of process is to inform or explain or analyse a process or for readers to understand and know. There is no need for the reader to recreate the process. In other words, these processes might tell readers that there are step-by-step actions for these events to take place but they do not have to recreate them. For example, there are step-by-step processes that take place for a tsunami to happen but unlike a directional process, readers do not have to recreate it to get the outcome. Rather, they simply want to know how it happens for their knowledge.

*(In this chapter however, the focus will be on instructional procedure, but some explanation on process will also be highlighted in order to differentiate process and procedure. It will examine a method for **planning**, **writing** and **testing** processes or procedures.)*



Factors to Consider in Procedure Writing

Writing a procedure or process needs careful planning because it serves as a very important guideline that helps the recipients (engineers or technicians, for example) to do their work. The writer must make clear to the audience a rationale for doing the procedure. Doing so will make the readers realise that you have them in mind and have considered what they are up against in their day-to-day activities. This will also save time trying to figure out what you want them to do. This consideration contributes to a glaring positive effect, that is, the readers or audience are more likely to follow the procedure accurately.

This, therefore, tells us that there are two major factors to be considered, namely **audience** and **purpose** when writing a procedure or a process. Other factors worth considering will also be explained in this section.

Audience

Be aware of the audience. Always ask questions like “Who will read my process explanation?”, “What do my equipment operators or users know about my equipment?” It is important to know the audience as they have different needs and require different information from a procedure. In fact, it is said that “*nowhere is the difference between personality-based preferences for information more important than in the writing of procedures*” (Sides, 1999). Knowing the audience well will prevent writers from including irrelevant information in the procedure they are writing. In other words, it will help us to decide what to include and what to omit in the process or procedure.

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For instance, you decided to explain how to change a flat tyre. The steps of the process need to be explained differently, depending on the types of audience. If the audience is inexperienced, you need to explain the process in detail or be very specific. In other words, we assume the audience knows very little or nothing about the process, perhaps he or she is a new driver. You must explain the process in a detailed step-by-step chronology without missing any of the procedures, even something you consider not important. You too may explain certain items, or terms etc. to this type of audience. However, if the audience is experienced, your explanation of the process might be simple and precise because this kind of intuitive audience need only an overview and a general sense of what they are going to do. Sometimes though, it is good to include something very special that this audience might not be aware of. For example, the latest equipment that can save time and energy.

For operating procedures, the typical audience are the technicians who operate equipment. This audience varies, depending on the type of equipment and how detailed the procedures need to be. For example, some technicians are high school graduates who have been through training programmes, while others have college degrees or various levels of technical knowledge. It is, therefore, very important to know what types of audience we are writing or describing the process or procedure for. This is because it is the audience that determines how engineers write the procedures and the language they use.

Knowing the audience who will later read or use a procedure is the key to effective technical writing. It is of paramount importance to know the audience when planning to write a procedure. You need to know exactly who you are writing for, what their aspirations are, what their goals are, and in what environment they will be using the procedure that you produce. It is important not only to research the product/process you are writing but also the person you are writing for. Knowledge about the target audience thus allows the writer to stay firmly "on message".