A1. Terminology

- **Experimental Unit**
  - Basic objects upon which the study or experiment is carried out.
  - e.g. process, product, role, or group, which is actually studied by a researcher.
- **Population**
  - Entire group we are interested in, which we wish to describe or draw conclusions about.
- **Sample**
  - Group of units selected from a larger group (i.e. population).
  - By studying the sample it is expected to draw valid conclusions about the population.
- **(Experimental) Subject**
  - Individual who is or becomes a participant in research.
  - Individual from the sample who applies the method, or on which the treatment is applied.
  - Could also be a group of people, e.g. development team.

http://www.stats.gla.ac.uk/steps/glossary/alphabet.html

A1. Terminology

- **Treatment**
  - Something that researchers administer to experimental units in the interest of observing a response.
  - Treatments are administered to experimental units by level, where level implies amount or magnitude.
- **Factors**
  - Independent variable(s), whose levels are set (varied) by the experimenter to measure the effect on the dependent variable.
  - e.g. type of verification reading technique
- **Levels**
  - Alternatives of a factor
  - e.g. different methods, techniques or tools to be evaluated
  - e.g. PBR, CBR or Ad-hoc are levels of verification reading techniques

A1. Terminology

- **Independent variable**
  - Potential causal variable. It is systematically manipulated by the researcher to determine changes.
- **Dependent variable**
  - Outcome or response variable of interest (i.e. quality focus). It presumed to be caused by the independent variable.
- **Confounding variable**
  - One or more variables not under the control of the experimenter.
  - It varies systematically with the independent variable, decreasing the experimenter's ability to isolate cause and effect.
  - e.g. subjects' experience, program complexity, document length, noise, time and weather.
- **Control variable**
  - Potentially confounding variable, which is measured during the experiment.
  - It may be systematically controlled by the experimenter, e.g. by keeping it constant or manipulating its distribution among experimental groups.
  - e.g. experience defined as number of years working in the domain

A1. Terminology

- **Experimental group**
  - Group of subjects that is exposed to the treatment(s) of interest.
- **Control group**
  - A group of subjects or conditions that is matched as closely as possible with an experimental group, but is not exposed to any treatment or it exposed to the standard treatment.
  - It supports the analysis w.r.t. the “net effect” (baseline).
- **Instrument**
  - It used to elicit, collect, record and store data.
  - e.g. questionnaire, observation templates, log file, …
- **Material**
  - What the method, technique, tools, documents, guidelines, etc., is applied to
  - e.g. tutorial, prepared documents, code with injected defects, …

A1. Terminology

- **Interaction**
  - A and B are said to interact if the effect of one depends on the value of the other.
  - The individual influence of A and B on the dependent variable needs to be investigated.
- **Blocking**
  - Procedure by which experimental units are grouped into homogeneous clusters.
  - It attempts to improve the comparison of treatments by randomly allocating the treatments within each cluster or 'block'.
- **Randomization**
  - It is the process by which experimental units are randomly allocated to treatments

A1. Terminology

- **Parameter**
  - Value, usually unknown, used to represent a certain population characteristic.
  - It is usually estimated by using information regarding a representative sample
  - e.g. the population mean is a parameter that is often used to indicate the average value of a quantity.

- **Statistic Test**
  - Quantity calculated from our sample of data.
  - Its value is used to decide whether or not the null hypothesis should be rejected in our hypothesis test.
  - The choice of a test statistic depends on the assumed probability model and the hypotheses under question.

In different text books, you may find different terms for the same concepts or different definitions.

Steps