



Sources of Error

Whenever you conduct an experiment or take part in the engineering design process you will have potential sources of error. Sometimes it's difficult to understand what sources of error are, so this should help!

First of all, when we talk about "sources of error" we are not talking about mistakes that were made in your project. If you made a mistake the best thing to do would be to go back and fix it. Sometimes that's not an option, because a mistake was made that influenced everything else and you don't have time to go back and do it all again. If that's the case, then you definitely want to explain that in your Mission Folder.

But this kind of mistake is not considered a "source of error." Instead, sources of error are essentially sources of uncertainty that exist in your measurements. Every measurement, no matter how precise we might think it is, contains some uncertainty, simply based on the way we measure it. **In fact there are two main types of "error" or "uncertainty":**

1. Systematic
2. Random

Systematic errors affect the accuracy of a measurement. They cannot be corrected with repeated measurements because they will always exist. They can be caused by faulty calibration of an instrument, poorly maintained instruments, or even faulty reading of the instrument by a person.

Random errors are a bit different. They affect the precision of a measurement. Random errors are caused by problems like reading the measurement between two lines on a measuring device or if the reading fluctuates. These types of errors can be reduced by conducting multiple measurements.

This is a very basic description of the types of error and sources of error in general. Just remember, sources of error are not mistakes that were made in your project, so when you have to discuss "sources of error" don't respond with something like "We didn't do anything wrong. Everything worked." This should be a discussion about uncertainty and what uncertainties existed in your measurements.

Try an activity [here](#)!