Ethics in STEM Projects

If you are thinking of working with humans or animals, it is important to understand how to do ethical STEM. **Before starting any work**, check to see what you need to do.

Working with Humans

If you are planning to observe, survey or test anyone – including students, family, friends – or even yourself – here's what you need to know…

All projects involving human participants must:
- Have an adult supervisor to provide advice on STEM ethics
- Get consent from participants (parents, if under 18) by using an Informed Consent form

Projects involving human participants are either low risk or significant risk:

Low Risk – the risk of harm to participants is not greater or more likely than everyday life. Your project would *probably* be low risk if you are planning to do:

- surveys
- exercise experiments
- food and drink experiments
- caffeinated beverage experiments
- absorption through the skin experiments

Confirm that your project would be low risk by reviewing the detailed description at mySTEMspace.ca, where you'll also find the necessary forms and templates. (Your regional fair may have their own.)

Significant Risk – any project that isn't low risk is considered significant risk and must follow stricter rules. Check out the detailed information available at mySTEMspace.ca

Improve your plan!
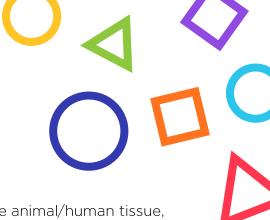### Ethics vs. Numbers

When developing your idea, think about how many tests or trials you will need to do to get a meaningful result. This will help you determine the necessary number of people or animals.

Imagine you were interested in finding out which colour food bowl dogs prefer. If you only had your family dog and neighbour's dog to test, could you be confident in your results? Now imagine you wanted to find out which type of music students found more energizing. Rather than surveying an entire school of 1200 students, could you survey a smaller number and use those data to represent everyone?

Talk to your adult supervisor to design testing that is ethical, practical, appropriate, and will give you enough data to be confident in your conclusions.

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Working with Animals

If you are planning to observe or test any kind of animal, or use animal/human tissue, here's what you need to know...

All projects involving animals must:
- Have an adult supervisor to provide advice on STEM ethics
- Create a Use of Animals Research Plan with your supervisor
- Comply with applicable federal legislation such as the Health of Animals Act; the Criminal Code of Canada (section 446, Cruelty to Animals) and provincial legislation

Invertebrates – animals without a backbone, including worms, insects, molluscs, crustaceans and protists
- Most experiments involving invertebrates (except cephalopods) are allowed; however, there must be clear educational or scientific value, and the animals must be treated with care and respect.

Vertebrates – animals with backbones, including mammals, birds, reptiles, amphibians and fishes; includes cephalopods
- Observation of animals in zoological parks, farm animals, and pets is allowed
- Observation of wild animals, except those at risk, is allowed
- Behavioural experiments with positive rewards are allowed, as long as the animal is not placed in a stressful situation
- Experiments that may negatively affect the health, comfort or physical wellbeing of an animal are **not** allowed
- Projects that require or lead directly to the death of an animal are **not** allowed

Animal/human tissues – including cells, organs, blood and animal parts
- These may be used *only* if they are: obtained from a biological supply company; a research facility at a laboratory licensed to do animal/human studies; or salvaged from the food industry.

Check out more detailed information on animal use at mySTEMspace.ca, where you'll also find the necessary forms and templates. (Your regional fair may have their own.)

Remember: If something about your project feels unethical, it probably is! Do not continue until you can do so in an ethical manner.