SOCIO-BEE
Community for Change

measuring in campaigns

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Precision in measurements

Imagine you're in a fantastic cooking contest, like a young chef's baking competition! You're making your famous chocolate chip cookies that everyone loves. To win this contest, your cookies need to taste exactly right.

Why Recipes Matter:

When you bake, you follow a recipe. The recipe tells you to use exact amounts of sugar, flour, butter, and chocolate chips. What would happen if you didn't use a measuring cup or spoons and just guessed how much of everything to put in? Maybe you put in a whole lot of sugar but not enough flour.

Well, your cookies might come out way too sweet, super flat, or they don't even look like cookies at all! Because you weren't precise with your ingredients, the cookies didn't turn out consistent and predictably delicious. This is a bit like what scientists worry about with "precision."

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Why Being Precise is Super Important:

1.Trustworthy Results:
Just like you want your cookies to be reliably yummy, scientists want their experiments to be reliable. If someone else does the same experiment — like using your cookie recipe — they should get very similar results. If not, it's hard to know if the original measurements were accurate!

2. Making Sense of What We Learn: If your cookies are different each time, you won't know what's making them good or bad. Scientists feel the same way. If their measurements are precise, they can be more confident about what's affecting their experiments and make better discoveries!

3. Safety: Imagine if you were measuring something more important than cookies, like air pollution! If that isn't measured precisely, it could inform someone wrongly about pollution. So, in science, being precise can also be about keeping people safe or taking decisions on the right data.

So, precision is like the secret ingredient in both science and baking! It makes sure everything works as expected and allows everyone to enjoy and trust the results. Whether they're eating your delicious cookies or benefitting from new scientific discoveries, precision helps make it just right!

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Our sensor a scientific piece of equipment

Alright, junior scientist! You've got a super cool tool with you: a special (expensive) sensor that can sniff out things in the air way better than a dog's nose! But, guess what? It's also super delicate, just like a tiny, young puppy. Let's learn how to take care of it, so it gives us the most accurate ninja-like readings of the invisible stuff around us!

Why So Special?

This sensor is a champion at detecting invisible tiny things floating around, like dust so small you need a microscope to see it (that's the PM2.5 and PM10), as well as sneaky gases like NO2 and O3. Plus, it's smart enough to tell us the temperature and how damp or dry the air is!

Our sensor treat it like a puppy

Taking Care of Your Sensor-‘Puppy’:

Just like following a cookie recipe or taking care of a pet, there are steps to make sure your sensor works perfectly:

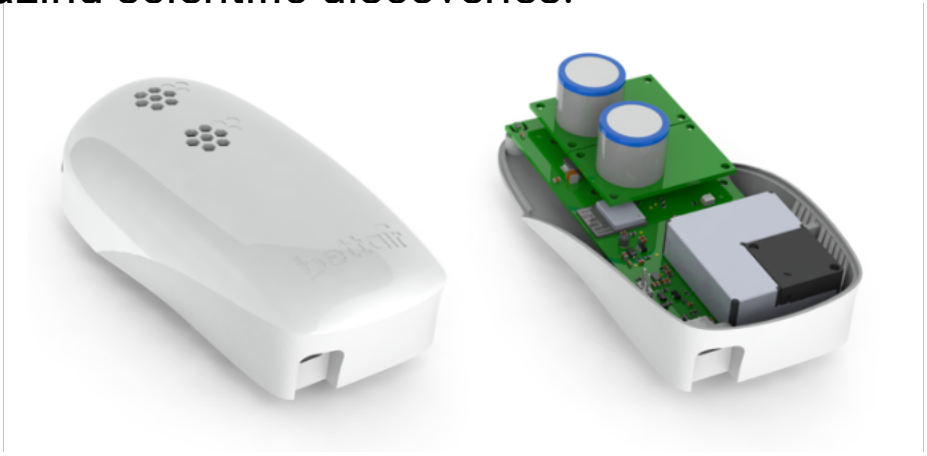
1. Wake-Up Call: If your sensor's been sleeping (turned off), you need to wake it up gently. Turn it on, then off, then on again. It's like when you wake up slowly in the morning - you're getting it ready for the day!
2. Stretch Time: Just like you might stretch in the morning, the sensor needs two hours to ‘stretch out’ and get ready after a long nap. This means it's preparing to take super precise measurements.
3. Ready, Set, Go!: Power up your sensor two hours before you start your a work. Keep it powered with the power bank like you're keeping it fed with a snack, and expose it to outdoor air (away from pollution sources) .
4. Solo Mission: When it's time to actually take a measurement, unplug the power bank. Your sensor likes to work alone for this part and can do so for 2 hours. If you need to measure for longer, plug the power bank in between measurements and unplug it at the moment of the measurement.
5. Rain, Rain, Go Away: Your sensor-‘puppy’ does not like baths! Keep it out of the rain because water can sneak inside and cause trouble. It’s like keeping a real puppy dry and comfy.

Our sensor treat it like a puppy

6. Handle with Care: This isn't a toy you can open or play rough with. Treat it like you would a baby bird: super gently. Don't try to poke anything inside or drop it.
7. Cozy House: When you're not using it, keep your sensor snug in its see-through home (the case). It’s like its protective puppy house!
8. Avoid the Stink: Strong smells can bother your sensor's super-sensitive sniffing ability, kind of like how perfume can make you sneeze. Avoid any strong smells to keep it sniffing correctly. Be especially watchful for paint and cleaning products smells.
9. Be Patient: When you’re going to measure, it’s better if you find the right sitting or standing position for the sensor with little movement for about 30 seconds before you actually start the measurement. Make sure you don’t move it while it’s measuring!

At the measurement point, let your sensor sniff for at least 1 minute! Position it free and clear of obstacles.

Remember, your sensor is like a sensitive puppy with superhero sniffing powers. Take good care of it, and it'll help you make some amazing scientific discoveries!



4. The Experiment: Testing Your Ideas

Next, you'll do the experiment. In our project we call this a campaign.

In a campaign, your Queen Bee will define an area in your city to do measurements.

Using the Socio-Bee app and the Socio-Bee sensor, you can now do an experiment! You login into the app, walk to the recommended measurement spot and take a measurement! The more measurements you do as a Hive, the better the results. This part of science is super important because it's like gathering the clues for your mystery and helping to solve it.

But this is really important. Science is very, very precise. Take some time to read the measurement manual! Your sensor is a scientific instrument. It’s very sensitive and easy to confuse. So, getting a good measurement requires skill and patience.

5. Conclusion: Was Your Hypothesis Right?

After your Campaign is finished, you have now to look at all the results.
Was the pollution higher near the road than in the park? If you see that result in your measurements, your prediction was right and it looks like your hypothesis was too! But if there's no difference or the park was more polluted than near the road. then your prediction wasn't correct, and you might need a new hypothesis. And that's OK! Science detectives often have to try many different ideas before they solve the mystery!

So, remember, your research hypothesis is your big idea or main guess about the science mystery, and your prediction is the specific clues you expect to find that will help you figure out if your big idea is right. And no matter what, you're learning and solving mysteries, which is what being a science detective is all about!