

Math in Action

Agents of Change

- >> Students do better when they're doing something that they're interested in.
- >> [INAUDIBLE], microbeads, [INAUDIBLE], anything.
- >> What the government thinks is going to happen to poverty in the future –
- >> Mostly I specifically did homicides.
- >> Some countries might keep on running out of water.
- >> Most of our food is now genetically modified.
- >> To connect things to real-world issues is something that almost comes naturally. The students are interested in what's going on in the world. And if they weren't aware of something, they become really interested.
- >> And we were eating our snack when we saw -- there was a label on one of the snacks that said, "Non-GMO," and we were kind of wondering what that meant.
- >> We always think about poverty in other countries, like Africa and Asia, and all those other places. But we never think about poverty going on in our own city. Today we were discussing about the future of poverty in Toronto, and what we can do as a generation to prevent it from happening.
- >> From that provocation that the students started with enthusiasm, developing all kinds of questions. So that's how the process got started.
- >> Ten or twenty years in the future, what if they change the way bottled water is? Like maybe they put food colouring in now, and then –
- >> How much money do I have? Is it going to be enough? Do we have enough time?
- >> And then we had to make sure that we were really focusing not on these global issues, just in terms of media literacy, but focusing on them as mathematicians as well.
- >> As we continue to work on our project, as you as students, as agents of change -- so just a reminder that this is not idealism or science fiction. So your predictions have to be based on current data. So we took a look at data, what data was being presented to us. How do we know that we are receiving the correct information? We looked at how data is represented. We questioned it. We made inferences. We participated in collecting primary and secondary data.

>> We want to look at the primary and secondary, but we also want to make sure that it's -- like the survey questions that they're asking is also unbiased, right? Because if it was biased, then there's not really any point, right?

>> Students, if they Google something, they need to understand that not everything they read is valid necessarily, that they need to actually go through the process of determining what a reliable source is. And how do I take that data? How do I synthesize it?

>> Oh, that's not right. The most common crash, like, impaired driving crash was no drugs or alcohol.

>> The students, when it came to them collecting their own primary data, they had a lot to think about. How do I create a bias-free question? What does a circle graph represent?

>> So this graph talks about plastic waste disposal in the United States in 2008. Twenty-nine point two million tons of plastic water bottles have been landfilled.

>> It was really important during my conferencing to discuss what each member was bringing to the project. And it's important that all voices are heard and that all voices are honoured, and that understand that during the process, we're always refining ideas.

>> In my group, I really hoped to actually do something with our information, and how it could be worked together. I wish to take it into the world, or as simple as our school, or our community.

>> Math before, like as a kid, it was really boring. I'm, like, oh, I'm just staying in class, listening to a teacher, and I'm just writing down the answers and getting tested on it. Now I get more knowledge. I know about what's going on in the world. And I know the math to it.

>> By working on that certain project, we learn to do math while applying it to real-life situations.

>> Through the Agents of Change inquiry, students were able to really take a look at an issue mathematically, to think like mathematicians. But also to take a look at what they, as young people, could offer, in terms of moulding, creating change, changing behaviours, making predictions.

>> So I made a prediction, or, like, an inference off of that, and saying oh, well maybe it's not them themselves being in the crash. It's involved with a crash driver.

>> And I bring it all together with graphs and a lot of info about crime rates. Really very difficult to find graphs for 2004.

>> Working in a group usually leads to the whole group having different opinions. It's a better overall project, because it includes the view of all the different students inside the group.

>> Is this census or central?

>> We have to answer to open any questions, and not just ones that have a correct answer and ones that don't. We learn to do math while applying it to real-life situations. Students will actually have a connection to real life, and have a feeling that math actually does make sense.

>> It's understanding that mathematics is real life, that it's alive, that it's put math into action, to put math into practice. And to feel a sense of confidence about doing that. To be able to take a skill and apply it in a different situation. I think that shows that they've really made a deep connection, and they really truly understand the concept.