Engaging non-science students

ASTC 2017
The Challenges
Science for non-academic students

- low engagement in school
- mandatory course (i.e. not valued)
- "science"

What's a teacher to do?
"Let's get the students to make science centre exhibits"

- Initial leadership was 2 individual educators:
  - keen, inquiry-based
- Contacted TELUS Spark in 2014
- 3 schools, 500 students

- "... figure it out as we go."
The Program
Community Collaboration

Key components of an Exhibit:

- science concept/phenomenon to illustrate
- communication goals
- design concepts
- technical capabilities
- logistics

Program design

- 350 students per semester (i.e. 2 times per calendar year)
- 3 schools - a total of 12 classes
- Grades 8 - 11
Collaboration

• Classroom teachers
  • curriculum connections
  • student relationship and team management

• TELUS Spark
  • logistics
  • exhibit communication and design
  • celebration

• Volunteers
  • technical skills and mentoring (science, engineering, electrical, communications, shop support) - 100 hours per semester

• University of Calgary
  • Professors and Graduate students as mentors
Process

Field Trip to TELUS Spark

Idea Generation: Brainstorming, RIGs, Research

Choose 2-3 exhibit ideas & write a proposal

Exhibit Proposals Submitted

Prototyping: Build, test, build, test

Content Expert & TELUS Spark staff visits

Facilitation Training

Facial tests TELUS Spark staff attend

Celebration of Learning!

Final iterations & preparation for event
The Results
Celebration: their exhibits on display
Collaboration
Community

Science, engineering mentors help high school students bring ideas to life

Results of collaboration with TELUS Spark go on display Dec. 9

By Erin Guillenane

The Celebration of Learning at TELUS Spark showcases the scientific ingenuity of students taking part in the Prototype Project. Photo courtesy of TELUS Spark
Feedback - Students

- I didn't just learn about mechanical systems, I also learned about teamwork and how to be a good leader and how to persuade people to visit your exhibit.

- This has definitely has made my interest for science a lot bigger and I want to get more involved with things like mechanics and robotics.

- *No, as the project was quite stressful. We were quite successful, but the amount of time that we had to devote to completing the project was a bit unnecessary, as no awards were given, and the project was not worth many marks.*
Feedback - Teachers

• [Students] being able to walk away saying that they created something (working or not) and look at the failures they encountered as a chance for improvement instead of a dead end.

• Increased engagement, attendance, and student success in school

• It was an innovative way to have the students think about something other than the end results.
"...look at the failures they encountered..."