

6 Weeks of Learning About Socio-Economic Disadvantages that Lead to Unequal Access to Education

Introduction and Motivation

In this report, I will describe my motivations and detail the work I undertook during six weeks in Newfoundland and Labrador, Canada, to help me learn more about and combat some of the socio-economic disadvantages faced by young people with respect to equal access to education.

The organisation I chose to work with was Let's Talk Science, based at Memorial University of Newfoundland in St John's. Let's Talk Science is a Canadian charitable organisation which aims to engage children and young people with science, technology, engineering and mathematics through interactive activities and workshops [1]. I chose the organisation partly because of the scale and reputation of its work, but more importantly because its aims closely aligned with what I wanted to investigate through my Leadership-in-Action project.

There was also a clear connection between Canada and Scotland. Both countries face challenges in encouraging young people to continue studying STEM subjects into the later stages of secondary education. In Canada, just **12% of students complete Grade 12 Physics** [2]. In Scotland, there were **8,064 resulted entries for Higher Physics in 2024, with 75.7% of candidates receiving an A–C grade** [3].

What interested me about these statistics was not simply the pass rate. Once a student has chosen Higher or Grade 12 Physics, they have already made the decision to continue studying the subject. The question I became more interested in was what happened before this point.

Why did one pupil decide that physics was for them while another did not? Had they been encouraged to study it? Had they ever experienced science outside of a normal classroom lesson? Were opportunities available where they lived? Most importantly, had they ever been made to feel that STEM was something in which they could belong?

These questions became central to my project.

I did not want to spend six weeks simply reading about unequal access to education. I wanted to experience educational outreach directly, understand how an established organisation attempted to overcome some of these barriers and learn what aspects of its approach could eventually be brought back to Scotland.

Over the course of the placement, this meant working directly with young people, delivering STEM activities, travelling to different communities, adapting activities for different audiences and speaking to people who had considerably more experience in educational outreach than I did.

The project ultimately became about more than investigating unequal access to education. It also became an opportunity to understand what could actually be done about it.

Chapter 1: The Why

After introducing some of the issues surrounding access to education, there is still one fairly obvious question left unanswered.

Why does this happen?

It might sound ridiculously ambitious to ask such a small question about such a massive problem. If I could provide a complete answer to why inequality exists, I would probably be collecting a Nobel Peace Prize rather than writing this report.

The reality is that there is no single cause of unequal access to education.

Where someone is born, their family's financial circumstances, conflict, geography, disability, access to transport, the availability of teachers and resources, and countless other factors can influence the education that becomes available to them.

At the most extreme end of the problem, Education Cannot Wait estimated in 2026 that **258 million school-aged children and adolescents across 87 countries have their education affected by crises**, of whom **93 million are completely out of school** [4].

Surely something as fundamental as education should be a birthright, right?

Unfortunately, being born in one part of the world rather than another can still dramatically alter the opportunities available to a child. Those statistics are so enormous that they can almost become difficult to comprehend. Saying "258 million" does not properly communicate what it means for an individual child to want an education and simply not have access to one.

However, one of the things my project taught me is that unequal access to education does not begin and end with whether a child physically attends school.

A pupil can attend school every day and still have very different educational opportunities from another pupil.

Where they live may determine whether they can attend extracurricular programmes. Their school may have fewer resources. Their family may not have the money required for tutoring or additional materials. They may never meet somebody working in science or be exposed to particular careers. Sometimes a young person may simply grow up believing that subjects such as physics are "not for people like me."

That last point became particularly important during my placement.

An outreach organisation cannot fix poverty, international conflict or every structural inequality within an education system. Six weeks in Canada certainly was not going to allow me to do that either.

What outreach **can** do is intervene somewhere much smaller.

It can give a young person an opportunity they might otherwise not have had. It can take an experiment to a community rather than expecting that community to come to a university. It can allow someone to ask questions without worrying about an exam at the end. It can introduce them to a scientist, university student or volunteer whom they might never otherwise have met.

Perhaps most importantly, it can make science feel like something they are allowed to be curious about.

My question therefore changed during the project.

Rather than attempting to answer the enormous question of *why does educational inequality exist?*, I became much more interested in something practical:

What can we actually do about the parts of it that are within our reach?

Chapter 2: The Who

Choosing where to go for my placement was not easy. Through the Laidlaw Programme, I had the opportunity to travel just about anywhere in the world.

For me, Canada felt like a good in-between.

There were academic reasons for that choice. As discussed previously, there are similarities between the challenges faced by Scotland and Canada when encouraging young people to continue studying STEM. Newfoundland and Labrador was particularly interesting because its communities are spread across a very large geographical area, meaning that access to opportunities can look very different depending on where someone lives.

There were also much more personal reasons behind the decision.

I don't travel particularly well, and this was going to be my first time crossing the Atlantic. It would also be the longest I had ever spent so far away from home. Going somewhere completely unfamiliar on the other side of the world would have been possible, but Canada provided enough familiarity that I felt I could actually focus on the purpose of the project while still putting myself considerably outside of my comfort zone.

Even then, I expected the experience to feel far more uncomfortable than it eventually did.

There were certainly ups and downs, but the people I met in Newfoundland made an enormous difference. By the end of the six weeks, two native Newfoundlanders I had met had managed to show me more of Newfoundland than I ever expected to see.

At the centre of the actual placement was Let's Talk Science at Memorial University. The Memorial programme has existed since the 1990s and uses university volunteers to deliver interactive STEM activities through classroom visits, community groups and events [1]. Its

outreach has also historically extended beyond St John's into rural and remote communities throughout Newfoundland and Labrador [5].

This was particularly important to me. If opportunities are concentrated around universities and major cities, then the young people who might benefit most from outreach can also be the least able to access it. The idea of **taking the opportunity to the pupil**, rather than expecting the pupil to find their way to the opportunity, became something I would think about repeatedly throughout the six weeks.

Over the course of my placement, I participated in more than **20 STEM outreach sessions**.

Initially, much of my learning came from observing other coordinators and volunteers. During my first Chemistry Magic Show, for example, I worked alongside Evan, Emma and Jacob and watched how activities such as the *Greedy Candle*, *Cloud in a Bottle* and *Elephant's Toothpaste* could be used not simply to demonstrate science, but to encourage young people to predict what would happen, ask questions and become involved.

It did not take long before I moved from observing activities to delivering parts of them myself.

I worked on sessions including *Magnet Madness* and *Animals & Ecosystems* and later became involved with activities such as *Exploration Mars* and *Rube Goldberg*. Different activities required completely different styles of communication, and even the same activity could change depending on the group standing in front of me.

This was a great lesson for me in general, as it taught me that knowing the audience can be equally as important as knowing the science.

I could understand the physics behind an experiment perfectly, but that did not automatically mean I could explain it to a seven-year-old. An explanation that worked brilliantly with one group could result in completely blank faces from another. Sometimes I had to make an explanation shorter. Sometimes I needed an analogy. Sometimes the best thing I could do was stop explaining altogether and let the young people experiment for themselves.

One interaction in particular has stayed with me. After taking part in one of our activities, a child asked me:

"How do I get your job?"

It was only one sentence, probably forgotten by the person who asked it five minutes later, but to me it captured a large part of what I had travelled to Canada to understand.

The purpose of STEM outreach does not have to be convincing every child in the room to become a physicist, mathematician or engineer. It can simply mean that for an hour, science became exciting rather than intimidating. It can mean that somebody asked a question they had never thought about before. It can mean meeting someone involved in science and suddenly realising that there are people and careers behind the subjects written on a school timetable.

Most importantly, it can allow a young person to imagine themselves doing something that previously did not seem possible.

The "who" behind my project therefore became much broader than simply Let's Talk Science.

It was the coordinators and volunteers who taught me how outreach worked. It was the communities that welcomed us. It was the children who were willing to ask questions, get things wrong, try again and occasionally ask questions that none of us were expecting.

Those interactions made the problem I had travelled to Canada to investigate feel considerably less abstract.

I arrived thinking about statistics, socio-economic disadvantage and access to education. Instead, I found myself thinking about the individuals hidden behind those statistics, which ultimately changed the way I approached the remainder of the project.

Chapter 3: Personal Struggles and Development

Although the placement itself was incredibly positive, the six weeks were not without challenges.

The first couple of weeks actually started extremely well. Two Newfoundlanders I met were incredibly welcoming and, for the first two weeks, drove me around and showed me different parts of Newfoundland. Having people around me who were willing to include me in their plans made arriving somewhere completely unfamiliar feel considerably easier than I had expected.

Unfortunately, the living situation became much more difficult.

One of my flatmates was extremely unhygienic, and after asking him several times to be more considerate of the shared space, the situation eventually escalated. He became aggressive, attempted to fight me and, during one confrontation, threw a glass at me. He was also regularly keeping me awake at night.

I definitely wasn't expecting to have to deal with a situation like this.

Eventually, I had to remove myself from the situation and relocate. Looking back, this became an unexpected lesson in leadership in itself. Leadership is very easy to talk about when everything is going well. It becomes considerably harder when you are tired, uncomfortable and dealing with a situation you did not anticipate.

I had to recognise that simply tolerating a bad situation was not the same thing as handling it well. There are moments where the sensible decision is to step away and ask for support rather than endure it.

Later in the placement, another challenge became more apparent: homesickness.

I had assumed that homesickness would gradually disappear the longer I stayed in Canada. Strangely, almost the opposite happened. As the later weeks approached, it became more

noticeable. The novelty of being somewhere new had begun to wear off, and there were periods where the experience became quite lonely. I had this constant feeling of being overwhelmed, realising that I was half way across the world from my home.

What helped more than anything was continuing to make plans with friends and colleagues. Rather than allowing myself to become isolated, I made an effort to spend time with Jacob and other colleagues. Even relatively ordinary things — going somewhere after work, seeing more of Newfoundland or simply having people to speak to — made a significant difference.

Independence is usually one of those things that's seen as a skill, but rarely it's mentioned in a negative light. For example, '*strong*', '*independent*' are words we typically group together, but, it's rather ironic, because it can sting you being independent. Suddenly independence starts to warp into isolation.

Before travelling, I probably thought being independent meant being completely comfortable doing everything alone. I no longer think that is true. Independence can also mean recognising when you need other people, making the effort to create relationships and being willing to ask for help.

I also suffer from sciatica, which is a type of chronic pain that I got from becoming injured from powerlifting training 3 years ago. Before leaving for Canada, I had an appointment with the neurosurgeon, who gave me the green light for surgery if I wanted it. I've never had surgery (or really been at the hospital for much – knock on wood), so this became rather stressful to think about (independent of the location), and getting to work was that bit extra difficult sometimes for me as it involved a lot of walking. Even going out with friends proved difficult for similar reasons.

On the contrary, sometimes walking can actually help reduce the pain so I started getting into walking (when I had prepared for it appropriately the morning of!). There's some beautiful scenery in Newfoundland! So it made it easy to get some of those steps. I also started back the gym which I had been putting off for a while, and even the interactions in the gym lifted me from time to time.

Overall, I had a *new-found* passion for my old hobbies, and a clear goal in mind for when I get back home.

Alongside these personal challenges, I could also see my confidence developing professionally.

At the beginning of the placement, I was often watching other people deliver activities and trying to understand how they communicated with young audiences. As the weeks progressed, I became increasingly comfortable delivering sessions myself, answering unexpected questions and changing my explanations when something was not working.

By the end of the six weeks, I was considerably more comfortable standing in front of a room and trusting myself to respond to what was happening rather than relying entirely on something I had prepared beforehand. That ended up being one of the most important lessons for me.

Chapter 4: Adaptations and Outlooks

Before going to Canada, I probably thought about educational outreach too much from the perspective of somebody who enjoys education, which sounds obvious in hindsight.

I study mathematics and theoretical physics at university. I have chosen to spend years learning subjects that many people find intimidating, and I am surrounded by other people who have made similar decisions. It is very easy from within that environment to forget that not everybody begins with the same relationship with education.

One of the biggest lessons I learned through Let's Talk Science was that **knowing something and teaching something are completely different skills**. I could understand the physics behind an activity perfectly and still give a terrible explanation of it. When working with younger groups that became somewhat obvious.

Technical accuracy still matters, but explaining every detail is not always the best way to make somebody understand. Sometimes an analogy is more useful. Sometimes a demonstration is more useful. Sometimes asking a young person what *they think* is going to happen is far more effective than immediately telling them the answer.

There were occasions where an explanation worked immediately with one group and then completely failed with another, forcing you to adapt on the spot. Instead of thinking, "They don't understand this," I started trying to ask, "How else can I explain this, what is it that *I don't* understand about this?"

That change sounds small, but I think it represents a much larger shift in how I now think about education. If somebody struggles to understand something, the responsibility should not automatically be placed entirely on the learner. Sometimes the explanation, environment or method needs to change. This also applies in a broader context, like with accessibility features in education.

If an educational opportunity exists, but someone cannot realistically access it, then simply saying that the opportunity exists is not enough. This became particularly apparent when thinking about Newfoundland and Labrador itself. The province is geographically huge, and many communities are far removed from St John's and from institutions such as Memorial University. For somebody living close to a university, attending a science event might seem simple. For somebody living several hours away, it may not be.

That was one reason I became so interested in the outreach model used by Let's Talk Science. Instead of expecting young people to find their way to the university, volunteers can take activities into schools and communities.

The opportunity moves. This knowledge stayed with me because it can be applied to much more than geography. If **cost** is the barrier, how can the opportunity be made **free**? If **transport** is the barrier, can the opportunity be **brought closer**? If **confidence** is the barrier, can the environment be made **less intimidating**? If somebody struggles with **long explanations**, can the resource become **more visual or interactive**? If a young person does not see themselves **represented** in a subject, can we introduce them to a **wider range of people working within it**?

I began the placement thinking largely about socio-economic disadvantage as something that could be described through statistics. I left thinking a lot more about design. Not design in the sense of making something look nice, but designing educational opportunities around the people who are actually supposed to use them.

That means accepting that one approach will not work for everyone, in other words you have to be listening. One of the most useful things about spending six weeks delivering outreach was seeing young people's reactions in real time. If they were engaged, you knew very quickly. If they were confused, you also knew very quickly.

No hiding behind a PowerPoint presentation - you *had* to respond.

This has changed the way I think about accessible education. I no longer think the goal should simply be to make more opportunities available. The goal should be to make opportunities that people can realistically **reach, understand and feel comfortable participating in.**

Chapter 5: The Future

An important part of my project was always going to be what happened after the six weeks.

I did not want the experience to end when I boarded the flight back to Scotland.

Throughout the placement, I was constantly thinking about what I could take from Newfoundland and Labrador and apply to my own work in Scotland. However, I also became increasingly aware that simply copying Let's Talk Science would completely miss the point.

The Canadian system exists within a particular environment. It has its own history, university partnerships, volunteers, funding structures, schools, communities and geography. Scotland is different. My aim therefore is not to recreate what I experienced in Canada.

It is to ask a different question:

How can I take what I have learned, adapt it to my own situation and flip it on its side?

One of the people who influenced that thinking was Dr Bonnie Schmidt, the founder of Let's Talk Science.

One of the main things I took away from speaking with Bonnie was the importance of being open-minded about where an idea can go. She encouraged me not to place all of my focus into a single path and, perhaps most importantly, to aim considerably higher than I initially might have.

She asked me to think seriously about the next ten years, where would I want to be? It's a difficult thing to think about.

It is much easier to think about the next semester, the next academic year or the next project than it is to genuinely imagine where something could be in a decade.

However, that conversation forced me to think about my ambitions differently.

If an idea has the potential to grow, then planning only for what feels immediately achievable may limit it before it has even begun.

My conversations with T. M. Skinner gave me a different perspective. Their discussions provided much more insight into how an organisation such as Let's Talk Science actually functions behind the activities themselves. I learned more about the importance of the relationships and connections that allow an organisation to operate across such a large area.

That was particularly useful because it reminded me that outreach is not simply about creating a good workshop.

Someone has to build relationships with schools.

Someone has to recruit and support volunteers.

Someone has to organise resources.

Someone has to create partnerships.

Someone has to make sure that the work can continue after one enthusiastic person has moved on.

This is particularly relevant to my own plans for **Let's Ask Why**, the educational initiative I am developing in Scotland.

Before Canada, much of my thinking was focused on what Let's Ask Why could *provide*: educational resources, STEM activities, tutoring, workshops and support for pupils.

I still think those things matter. However, I now think much more carefully about how those opportunities actually reach people. There is little value in building an excellent resource if the pupils who would benefit most from it never discover it. There is little value in creating a workshop if only schools with existing connections know how to access it. And there is little value in designing something around assumptions about what young people need without speaking to the people it is intended to support. The challenge therefore is not simply to reproduce what I saw in Canada. It's more about translating the principles behind it.

For Scotland, that could mean working directly with schools and communities rather than expecting pupils to approach the organisation themselves. It could mean creating resources that can be accessed freely online while also maintaining face-to-face opportunities. It could mean designing activities that do not require expensive equipment. It could mean making explanations visual, accessible and suitable for different ages.

Most importantly, it means remaining willing to change the model.

I do not want Let's Ask Why to become an organisation which decides what people need and then refuses to change course. If something does not work, it should be adapted. If a school tells us that a different approach would be more useful, we should listen.

Chapter 6: Concluding Remarks

At the beginning of my Leadership-in-Action project, I wanted to understand more about unequal access to education and explore how educational outreach could help address some of the barriers faced by young people. Six weeks later, I do not pretend to have solved that problem. If anything, I now understand much more clearly just how complicated it is. However, I have also learned that complexity is not an excuse for doing nothing.

Over the course of the placement, I participated in more than 20 outreach sessions, worked with young people from a range of backgrounds and age groups, and experienced outreach in several different environments. Through this, I developed my ability to communicate STEM in a way that was more accessible and adaptable, while also gaining a better understanding of the people, planning and structures required behind the scenes to make educational outreach sustainable.

The experience also challenged me personally. I travelled across the Atlantic for the first time, lived away from home, dealt with a difficult and ultimately unsafe accommodation situation, and experienced periods of homesickness and loneliness. These challenges taught me a great deal about independence, particularly that being independent does not mean refusing support from other people when you need it.

My understanding of leadership has changed as well. Before the placement, I probably associated leadership too heavily with being the person who had the answers. I now think that good leadership is often about asking better questions: Who is missing from this opportunity, and why? What is stopping them from taking part? What can we change? And, perhaps most importantly, are we actually listening when people tell us what they need?

Those are the questions I intend to take forward.

The end of my six weeks in Newfoundland and Labrador does not really feel like the end of the project. Instead, it feels like the beginning of the next stage: taking what I have learned and adapting it to Scotland through my own educational work. I will not be returning home with a Canadian model that I intend to copy directly. I will be returning with experiences, ideas, mistakes, conversations and questions that can help me build something better suited to the communities I want to work with. I have already spoken with teachers from my old school and pupils about how they are directly impacted by the closure of the advanced higher hub hosted by Caledonian University (This was the place where I done my advanced higher classes as our school didn't have the funding), and many more serious concerns regarding equal access to education.

This year I will also be working with STARMAS^T during semester 1 to create accessible mathematics and statistics resources. These resources are available for free to anyone. I will be developing my skills on creating content so that it will directly overlap into my Let's Ask Why work.

At the beginning of the project, I travelled to Canada wanting to understand why access to education could be so unequal. I am returning with a slightly different question:

What am I going to do about the part of it that I can change?

References

[1] **Memorial University of Newfoundland.** *Let's Talk Science*. Memorial University's description of its Let's Talk Science programme, including interactive STEM programming, classroom visits, community outreach and public events.

[2] **McMaster University (2025).** *Grad students put the fun in physics with new outreach event for teens*. Published 23 May 2025. Reports that 12% of Canadian students complete Grade 12 Physics.

[3] **Scottish Qualifications Authority (2024).** *Higher Physics Course Report 2024*. Records 8,064 resulted entries for Higher Physics in 2024 and an A–C attainment rate of 75.7%.

[4] **Education Cannot Wait (2026).** *Global Estimates Update 2026: Breaking Barriers – Understanding Educational Exclusion in Crises*. Reports that 258 million school-aged children and adolescents across 87 countries are affected by crises, including 93 million who are out of school.

[5] **Memorial University of Newfoundland (2014).** *Memorial University student wins prestigious Prime Minister's Volunteer Award for Let's Talk Science outreach*. Describes Let's Talk Science outreach to urban, rural and remote communities in Newfoundland and Labrador.