



STEM Ambassador Profile:

Name:

Roma Agrawal

Job title:

Associate Structural Engineer
at WSP

Location:

London

Education:

- ICSEs (in India): Maths, Biology, Chemistry, Physics, Technical Drawing (option), History, Geography, English Language and Literature, Hindi Language and Literature
- A levels: Maths, further Maths, Physics and Design & Technology
- Degree: BA Physics (Oxford)
MSc Structural Engineering (Imperial College London)



My job

Day-to-day role: I'm responsible for making buildings and bridges stand up. My day at work varies depending on what stage my project is at. We start with conceptual design - meeting architects and clients to turn ideas into something that will stand up once built. During the design phase we do calculations, running computer models to test our design. Finally, during construction, I visit site regularly to solve problems that occur as a building takes its physical form. There is a lot of team work involved which I really enjoy.

Favourite part of my job: My job is always challenging and creative, requiring quick thinking, communication and problem solving, and I find it extremely rewarding. The most exciting part is seeing your ideas turn into a real, usable object, something that people point to and admire every day.

Most challenging part of my job: I normally love going to site, but with my fear of heights and the cold, I don't always enjoy being high up in the winter!

Motivation: I love maths and physics and wanted to use those subjects in my job. Engineers can create and build anything they want, which I find inspirational.



My career so far

Most exciting career moment so far: Being featured in a documentary about The Shard talking about the engineering behind it.

Project I wish I could have played a part in: The pyramids. I am amazed at how such a tall and heavy structure was built in times when there were no machines available.





“ Maths is critical to my job. The safety of buildings and bridges depends on engineers calculating the loads and sizes correctly. ”



Maths in action

How I use maths in my job:

- To calculate how heavy things in the building will be (the load of people, furniture, the concrete floors, glass around the building and wind).
- Use the loads to calculate how big columns and floor beams should be. This depends on how strong the materials we are using are.
- We create computer models and use these calculations to test how much the building or bridge moves when wind is blowing onto it - we need to make sure that it doesn't move too fast otherwise people can feel this and it would be uncomfortable.

How maths makes a difference in what I do, or how it helps me to make a difference for others:

Maths is critical to my job. The safety of buildings and bridges depends on engineers calculating the loads and sizes correctly. We use maths to create beautiful structures that people live and work in. In disaster struck areas, engineers use maths to design tents and temporary housing to make sure people are safe. Every building and bridge you use is safe because of maths.



Being a STEM Ambassador

I became a STEM Ambassador because: I wanted to show students how exciting engineering is, and hopefully convince them that studying maths and science will lead them to successful and rewarding careers in the future.

What has been your experience in schools as a STEM Ambassador?

I have participated in Big Bang Fairs where I enjoyed telling students about my job and how I use what I learnt in school to design The Shard.

Words of wisdom to STEM students: Maths and science can lead you to any career you want. You can solve the world's problems with these subjects. If you love and enjoy them, keep at it!





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ROMA AGRAWAL
STEM AMBASSADOR

“ Maths and Science
can lead you to
any career you want.
You can solve the
world’s problems
with these subjects.”

? If I didn't do this...

If I didn't work in work in engineering I would... own a cupcake shop.

When I'm not at work I... practice Indian classical dance, Latin and ballroom dancing, do yoga, bake, read and travel! And that's apart from all my school and university visits, presentations and media work.

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