Geography – a route to engineering

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Environment Agency Education to Profession Advisor outlines the value of geography in future careers.

We know that many students choose geography as an option at school because they just love it. They love walking by a river and considering how it has changed over time. They can't help explaining about longshore drift to whoever they visit a beach with. And as for maps – geographers can't get enough of them, and field trips are among the best memories from their time at school.

Then, all too soon, it is time to think about what's next, what job might suit you, maybe you are thinking about studying more? Are you still keen to pursue geography? You may have heard those helpful, well-meaning comments: 'But what can you actually do with geography?' and 'How about being a geography teacher?'

Aerial view of Cockermouth showing the river in flood. Source: Environment Agency Image Bank

One option is the environment and water sector. Employers in this sector include water companies, conservation organisations and the Environment Agency, which employs 11,000 people throughout England. Environment Agency teams work in a variety of roles including flood and coastal management, incident response, asset management, biodiversity, waste regulation and fisheries. Many Environment Agency employees studied geography at school and continue to use geographical ideas and skills in their everyday work.

Further information
https://www.ice.org.uk/careers-and-training/quest-scholarships

Martin Gibson will be giving a lecture on 'Practical challenges to reaching net zero carbon emissions' at the GA Conference in April 2022.

The Environment Agency supports a number of career entry schemes to introduce young people to its work. For example, the QUEST scheme provides scholarships to undergraduates studying for civil engineering degrees. This scheme benefits from a collaboration between the Environment Agency and the Institution of Civil Engineers (ICE), with each QUEST scholar joining the Environment Agency for 8-week work placements every summer whilst they study for their degree.

In conversation with the latest cohort of QUEST scholars, we discovered that the majority are keen geographers, having studied A level geography at school or college. It was clear that they loved rivers, landscape processes, maps and fieldwork, that they wanted to be able to make a difference for the environment in their future work and that they continue to use and develop their geographical knowledge and skills.

The scholars each worked on local projects with their own EA mentor and their team. They also contributed to a group work project. This year, because of the COVID-19 pandemic, the group project took place virtually. The group were given the challenge to investigate a culvert in disrepair and to make decisions about the best way to proceed. They made use of their geography background knowledge and geography skills (maps, relief, topography, geology, sustainability and considering options and stakeholders) and had opportunities to review photographs and reports about the culvert. They then worked together to understand the challenges involved and investigate potential solutions.

Sustainability was a major consideration in the project and the scholars had to consider solutions appropriate for now and in the future. Carbon calculations were completed for each option, with up to 80% of the carbon emissions for some options being 'embedded' in the materials that would be used. The scholars observed that geography underpinned their assessment of the options, which drew on understanding natural flood management (NFM), bypassing the culvert, looking at land use, considering endangered species and considering human and economic factors.

The QUEST scholars were keen to share their thoughts about the geographical perspectives and skills they used working on the project.

> *'We considered hard engineering solutions, but geography underpins everything. It is important to really have the background knowledge of 'what is sustainability' – not just a word we keep saying, but we understand what it means.'*

> *'Many hydrology terms are included in this type of engineering. You need a geography background for this work.'*

> *'Without geography, there would be no basis on which to move forward with many aspects of our work.'*

> *'Having a geography background gives you different perspectives to other people.'*

If finding out about the experiences of the Environment Agency QUEST scholars and the sheer amount of practical geography applications in this area of work has inspired your students, they may want to consider civil engineering courses and investigate the various Institution of Civil Engineering (ICE) QUEST scholarships for civil engineers.