

■ Graham Jones

A project called SkypeRead is taking an unusual approach to improving cross-border communication and teamwork within STEM.

Copernicus was Polish; Gilbert, English; Kepler, German; Galileo, Italian; Descartes, French; Huygens, Dutch. There is not much that connects these giants, upon whose shoulders Newton famously stood. One of the few things that do, however, is that most of their key works were written in Latin, the language of science in the 16th and 17th centuries.

Fast forward to the 21st century, and the language that connects scientists across the world is English. But English plays an even more important role today than Latin did 400 years ago, because science has become significantly more collaborative.

A 2011 report¹ by the Royal Society describes '*an increasingly multipolar scientific world*'. The same report highlights the growing importance of 'informal connections' between scientists: '*Motivated by the bottom-up exchange of scientific insight, knowledge and skills, they are changing the focus of science from the national to the global level.*'

We recently launched an initiative to give students experience of working in remote, multinational teams, using English as a common language. It is a three-way collaboration between Alma College in Michigan, USA; Omi Brotherhood High School in Shiga, Japan; and SkypeRead, an online programme that uses movie read-throughs as a way to develop language, communication and remote teamwork skills².

Alma College has received a \$5 million grant from The Herbert H. and Grace A. Dow Foundation for improving education within STEM. As part of this, the College is running a four-week

Helping STEM students thrive in a multipolar world

summer camp for high-school students, called the Co-operative Research Experience (CORE). Our project will add an international dimension to CORE by connecting the American students at the camp with Japanese students located 6,500 miles – and 13 time zones – away.

The first phase of the project will be a team-building exercise. Small, cross-border groups of students will do read-throughs, via Skype, of the script for *Europa Report*, an intelligent and exciting science-fiction film about an international mission to search for evidence of life on Europa. This builds on research I have done into how movie read-throughs can bring remote, multicultural teams closer together. (This research has been supported by Start Motion Pictures, a film-production company, who provided the final draft of the *Europa Report* script.)

In the second phase, the cross-border groups will formulate a question related to the movie, and then devise ways of working together remotely to prepare a response. Potential questions could be along the lines of '*How would a crew be selected and trained for a deep-space mission?*' or '*What, in theory, might life on Europa look like?*'

English will be used as the working language throughout both phases of the project – something that will create challenges for all the students. '*The most important part of this is the opportunity it gives both sides,*' says Takeshi Taniguchi, who teaches in the English department at Omi Brotherhood High School, near Kyoto. '*We're bringing native and non-native speakers together, not only to think about how the universe works, but to understand more about working with each other.*'

John Davis, principal investigator and the Charles A. Dana Professor of Integrative Physiology and Health Science at Alma College, thinks that focusing on 'real-world' collaboration



and research can help attract students into the academic disciplines of science, technology, engineering and mathematics. '*For many reasons, schools and colleges haven't been able to prepare students in STEM fields at the rate of need, and the need is tremendous,*' he notes. '*Here in the US, it has been predicted that an additional one million STEM graduates will be needed over the next decade.*'

Looking ahead, the potential for using movie read-throughs as a way to improve cross-border teamwork within STEM is not limited to science fiction films. For example, the acclaimed director, writer and producer Wes Anderson has given SkypeRead the script of *Fantastic Mr. Fox* for a project based on 'the Hero's Journey', a model for narratives that can also be applied to the challenges of working across cultures.

'Communication challenges are part and parcel of working in STEM,' says Martin Stack, an Alma alumnus now at the University of Shiga Prefecture, who set up the three-way collaboration. '*Teaching STEM without enhancing students' communication skills produces very capable people who are missing out on the opportunities available through international co-operation. For me, that is what this project is all about: communication, collaboration and co-operation.*'

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¹ Knowledge, networks and nations: Global scientific collaboration in the 21st century. The Royal Society, 2011 <https://royalsociety.org/policy/projects/knowledge-networks-nations/report/>

² SkypeRead: <http://tentsentences.com/>