

Learning More about Student Success

The University of Manitoba's Centre for Research, Youth, Science Teaching and Learning (CRYSTAL) is focused on developing a more sophisticated understanding of the factors influencing student success.

This project involves researchers and partners from several universities and institutions from across the Prairie region and north of the 60th parallel, including Brian Lewthwaite, who is its co-director. Brian is involved in several science education research and development projects, including projects in New Zealand, and leads three of them.

One five-year project, which focuses on identifying community aspirations for science education, is based in the Beaufort-Delta Region of the Northwest

Territories and the Qikiqtani region of Nunavut, where all the communities involved are predominantly Aboriginal (i.e., Gwichin, Inuvialuit, Inuit, Métis). For many years in both regions, the policy for science education has been founded on the principles of place-based and culture-based education. The project seeks to establish a connection between school science and the experiential science beyond the classroom. There are hopes to more than echo the observations of the early 20th-century progressive educator John Dewey, who stated in 1907:

The great waste in schools, from a child's perspective, is his inability to use the experience he gets outside of the school in any complete or free way within the school itself; while on the other hand he is unable to apply what he is learning in daily life. That is the isolation of the school – its isolation from life. When the child gets into the schoolroom, he has to put outside of his mind a large part of the ideas, interests and activities that predominate in his home and neighborhood.

In place-based and culture-based education, the role of schooling is to provide a secure, nurturing environment that reflects the culture of the community and promotes the participation of educational staff, students, families, and the community in making decisions about learning. Teaching is grounded in what students are familiar with—actualities rather than abstractions. Although this might be a community's aspiration, the reality is that a variety of impeding factors often keep us a long way from those aspirations.

Essentially, the northern projects started with an attempt to assist communities in identifying their goals for science education. School communities were

very clear they wanted a science education for their students that honoured their local knowledge, language, values, and customs but also allowed students to develop an understanding of and appreciation for the opportunities provided through a “southern” science orientation. For this reason, the project focuses on “combining the views” of both worlds, and has now moved towards implementing the mechanisms to achieve these goals with the support of the local community.

A second five-year project involves over 40 Manitoba chemistry teachers. In the last decade there has been a gradual shift—at least theoretically—to promote a deeper conceptual understanding of chemistry as well as an awareness of its utilitarian and humanitarian importance. Manitoba's new Grade 11 curriculum has made some early progress in this area, and it is anticipated that the new Grade 12 curriculum will do so as well. As part of this curriculum development, teachers in rural Manitoba and Winnipeg have been involved in professional development opportunities to help them promote student learning and engagement in chemistry. The project is into its second year, and many teachers who have taken part have indicated they have made changes to their own practice as a result of the new curriculum's orientation and the support they are receiving. The project moves this year into identifying whether these changes in practice have a noticeable influence on students and their understanding and appreciation of chemistry.

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profile

Brian Lewthwaite is an Associate Professor in Science Education with the Faculty of Education at the University of Manitoba. Originally from a rural community in Saskatchewan, he has been a science teacher, consultant, and professor from the Northwest Territories to New Zealand. His Master of Education degree focused on teachers' perceptions of the value of culture-based science education in New Zealand Maori and Canadian Yukon and Northwest Territories First Nation and Inuvialuit schools. He also completed a Ed.D. in Science Learning Environment Research at Curtin University in Perth, Australia.

Over the past 15 years, Brian has worked in over 300 mainstream schools, mainly within New Zealand, fostering school science development and providing diagnostic evaluation to help schools understand the complex factors influencing science program delivery. Since his return to Canada in 2003, he has dedicated himself to helping school communities, especially those in the Yukon, Northwest Territories, and Nunavut, move towards place-based and culture-based education that honours their local culture, including their language.

