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MINI GRANT PROJECT SUMMARY

Please complete the project summary and return the completed form to Alyssa Johnson, Administrative Assistant at the Institute on the Environment, at joh10074@umn.edu. Paper copies will not be accepted. Please also attach any photos, publications, brochures, event agendas or other materials that were a result of the mini grant summary.

Date of Report Submission:	April 11, 2016
Project PI & Dept/School	Katy Euliss Smith & Math, Science, and Technology/University of Minnesota Crookston
Project Title:	Greenhouse Gas Emissions on Phytoremediation Plots in France
Grant Amount \$:	\$3,000

Project Context & Purpose

Please include the original project purpose statement and revise for any changes that occurred in the project after the start date with a short explanation of the changes.

The University of Minnesota Crookston campus is currently working to set up an internship exchange program through which we will establish an international research collaboration and undergraduate research mentoring program. Currently, at the University of Lorraine in Nancy, France researchers with the Laboratory on Soils and the Environment are researching environmentally friendly ways to remediate contaminated brownfields sites through the use of phytoremediation. These researchers have not yet considered how the various treatments they are investigating will impact greenhouse gas emissions. As we move forward to a more sustainable society; everything including the way we clean-up our contaminated sites needs to be evaluated for its entire environmental footprint. Establishing this international collaboration would allow the research currently underway to be expanded to incorporate a broader view of the sustainability of the environmental while also allowing our students to be involved in this research through an international student exchange. Our students would travel to Nancy, France after having been training in the laboratory of Dr. Katy Smith in the area of greenhouse gas emissions and while in France will learn about the efficacy of phytoremediation while also taking greenhouse gas measurements on phytoremediation plots. After the first year of this relationship, students from the University of Lorraine would also travel to Crookston, MN to participate in research focused on greenhouse gas emissions and thus learn the trade of greenhouse gas measurements. This relationship will establish an international research and student exchange relationship. Funding is requested to send the PI to France in the Summer of 2015 to help the first student (Amber Suchy) who will be establishing this ongoing research relationship. Funding for the student is being provided through various avenues which is being coordinated through Kim Gillette, International Programs and an advisor to this project. In addition, Dr. Smith has recently been a part of the Internationalizing Teaching & Learning cohorts (run by Gayle Woodruff and Mary Katherine O'Brien in the Global Programs & Strategy Alliance) at the University level and will use this project as a way of incorporating remediation of contaminated sites across our borders into her classes. The University of Minnesota has a collaborative online international learning (COIL) initiative, based on the COIL model within the State University of New York system, that could be used to develop a disciplinary-specific and intercultural learning opportunity. She expects to have her class working directly with a class of Dr. Guillaume Echevarria in Nancy, France as the students

will work together on designing a remediation plan via technology-supported synchronous and asynchronous interaction. This interaction will bring international learning not only to the students involved in the internship exchange, but also to all of the students in Dr. Smith's classes.

Work Completed

Please provide a summary of the work that was completed for the mini grant project.

Dr. Smith traveled to the University of Lorraine in Nancy, France in the summer of 2015 with her student, Amber Suchy. Dr. Smith and her student provided training to the researchers at the University of Lorraine on how to measure greenhouse gases and began a collaborative research project. The researchers at the University of Lorraine are currently seeking funding for expanding the scope of these projects. In addition, Dr. Smith is planning to send another student Eui Young Kim in the summer of 2016; and has another student interested in traveling to France in the summer of 2017 to work on this ongoing project.

In addition, in the Spring of 2016, Dr. Smith has been connecting with a class in France taught by Dr. Guillaume Echevarria in which the students in France presented information to the students in Dr. Smith's class regarding the history and contamination of a site in France near the University of Lorraine. After this initial meeting, each class conducted a Risk Assessment on the contaminated site and presented the Risk Assessment to each other so that cultural differences in the approach to Risk Assessment could be assessed. In two weeks, the final presentation will be done in which students in Dr. Smith's class will present a high cost and a low cost remediation plan to the faculty at the University of Lorraine (the semester's don't end at the same time) and they will receive feedback on any cultural issues they need to take into consideration in their remediation plans. Thus, an international research/internship exchange program has been established and we have also been able to establish an interactive online mechanisms for our two classes to interact and work together on projects.

Partnerships & Collaborations

Please provide a summary of the project personnel, partnerships and collaborations that worked directly on the project or were started as a direct result of the mini grant project.

Personnel that worked directly on the project are Kim Gillette who worked on providing funding for the student interns to travel to the University of Lorraine; Gayle Woodruff and Mary Katherine O'Brien who provided support on how to establish a collaborative online international learning (COIL) initiative and Dr. Guillaume Echevarria at the University of Lorraine in Nancy, France who is the researcher and teacher with whom these activities are taking place.

Project Outcomes & Impacts

Please provide a summary of the outcomes and /or impacts of the mini grant project including future plans for the project.

The benefits of the research itself will allow a more holistic view of environmental remediation strategies to be acquired. Understanding how various remediation strategies impact other environmental factors is critical as our society moves towards sustainable solutions to the world's problems. In addition, this project will provide a pathway by which our students will have an internship abroad and not only learn the science, but also the culture of another part of the world. As not all students will have the desire to travel abroad, the direct interaction of the classes at the University of Lorraine and the University of Minnesota Crookston will enhance the cultural competence of all students taking the Environmental Science and Remediation Techniques course. This supports one of the missions of the University of Minnesota, which is to create globally competent graduates. Future plans for this project are to continue to send our students to the University of Lorraine in Nancy, France to work on this collaborative project and also to host French students in the laboratory of Dr. Katy Smith as interest and ability arise. In addition, the class Environmental Science and Remediation Techniques will finish the semester with the presentation to the faculty at the University of Lorraine and will be COILed again when the class is offered again (Spring 2018).