

Sustainability Projects Fund Application

Project Title: Training Teachers for Sustainability Education at McGill—Enforcing the Importance of Sustainability with Student Teachers Education

Project theme(s): Community and Academics

Budget Requested: \$29,000

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Applicant/Project Leader:

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I. Project Summary

One of the major goals of the Office of Sustainability at McGill University is to contribute towards a “creating a future where both people and the planet can flourish” (*Vision 2020: A sustainability strategy for McGill University*, 2010, p.4). We believe that one of the best ways for McGill to lead the efforts to develop a sustainable culture is to educate teachers who will, in turn, educate the next generation of community members and leaders. Thus, the proposed project aims to enhance McGill Education students’ understanding and competencies related to Education for Sustainable Development (ESD).

The purpose is to deepen teachers’ knowledge, skills, and pedagogical competencies in relation to sustainability. To this end, a set of benchmarks focusing on teachers’ competencies related to education for sustainable development will be developed. Drawing on these benchmarks, we will design and implement a set of professional development workshops for pre-service and in-service teachers in the Faculty of Education. These workshops will engage them in actively exploring complex sustainability issues in local communities. In addition, they will develop teaching and learning materials for K-12 students about sustainability. According to the Canadian Council of Education Ministers (Conseil des ministres de l’Éducation du Canada [CMEC], 2012), it is important to prepare teachers to respond to the global discourses on education for sustainable development because they are at the forefront of shaping the knowledge, skills, attitudes, and behaviours of our future generations through education. The United Nations Educational, Scientific and Cultural Organization’s report (UNESCO, 2005) on teacher education emphasizes a meaningful transformation in teachers’ own behaviours and professional practices in regards to sustainability.

Throughout this decade of Education for Sustainable Development (2005-2014), Canadian policies for sustainability education have emphasized key sustainability issues, including climate change, biodiversity, poverty reduction, social inclusion/exclusion, civic participation, and sustainable consumption in K-12 science curricula. To implement this curriculum, teachers are expected to draw on participatory pedagogical approaches to help their students understand sustainability issues, as well as make informed choices in their everyday lives to promote sustainable development at local and global levels (Government of Canada, 2008). The goal is to address global issues while seeking local solutions via community-based initiatives. According to this perspective, living in a sustainable future requires

fundamental shifts in human attitudes and behaviours to prepare them to balance the complex social, economic, and environmental demands.

Given the increased awareness of the importance of learning for a sustainable future, governments worldwide have made earnest efforts to reorienting teacher education to address teachers' concepts and their teaching practices related to sustainability (Little, & Green, 2009). Nationally, the Council of Canadian Ministers of Education (CMEC, 2012) has produced several documents in response to the global discourses on education for sustainable development (CMEC, 1999; 2006; 2010; 2012; 2014). However, the aforementioned cross-national reports provide very little information about the initiatives around Education for Sustainable Development (ESD) in Quebec.

As we are particularly interested in teacher education at the university level, we looked at various streams of literature on teacher education in relation to sustainability education. However, studies on teachers' understanding and practices in relation to sustainability education in Quebec are sparse to non-existent. Only a recent international survey on sustainable lifestyle conducted by the United Nations Environment Programme (UNEP) (2011) shows that undergraduate students in Montreal tend to care more about "space and a better quality of life" to create a sustainable future. Particularly, the 178 participants who represented undergraduate students from Montreal area in this report were primarily from Université du Québec à Montréal (UQAM) and Concordia University; there were no participants from McGill University. As members of McGill community, we propose to carry out this research project in order to understand McGill students' perceptions of sustainability and its role in education. This study would be the first to examine education students' knowledge, attitudes, values, and choices concerning sustainability.

The proposed project will be conducted at McGill University from 2015 to 2017. Specific project details are described as follow:

In phase 1, a critical review of the relevant literature will be conducted to identify the requisite concepts, skills, and competencies that teachers need to develop in order to create effective learning environments for teaching and learning sustainability. For example, we intend to examine the content knowledge and pedagogical competencies that enable teachers to develop appropriate teaching and learning situations to facilitate their students' understanding of the complexity of interdisciplinary sustainability issues. Furthermore, what resources and strategies can they use to promote students' engagement in sustainability initiatives in their schools and communities.

In Phase 2, a survey will be developed by adapting existing instruments to explore pre-service and in-service teachers' initial understandings of sustainability. For example, the sustainability assessment instruments developed by other universities, such as McGill University, University of Toronto, the Ohio State University, etc. will be adapted to develop a comprehensive questionnaire for teachers focusing on various aspects of sustainability literacy (e.g., knowledge, attitudes, values, and practices) to gain a deeper understanding of prospective teachers' sustainability concepts, pedagogical competencies, as well as their decisions and practices concerning sustainability.

In Phase 3, the survey will be piloted, refined, and administrated to all Bachelor of Education (B.Ed.) students at the Education Faculty.

In Phase 4, a set of professional development workshops (approximately 3-4 workshops) will be developed based on the survey findings. Students enrolling in the Bachelor of Education (B.Ed.) and Master of Arts in Teaching and Learning (MATL) programs in the Faculty of Education will be invited to these workshops. In these workshops, the students will be exposed to a range of ideas and activities related to multiple aspects of sustainability. They will learn about the different dimensions of sustainability, such as environmental and social and economic sustainability. I plan to invite community activists working on issues of economic sustainability, social justice, and ecological balance as well as experts from the McGill Office of Sustainability to discuss McGill's vision and initiatives around sustainability. In addition, academics from different departments (e.g., Faculty of Education, Department

of Geography, and Faculty of Agricultural and Environmental Sciences) will be invited to share their research and related projects with prospective and in-service teachers.

Workshop participants (Education students) will be invited to engage in project-based activities to identify issues around sustainability in their local neighborhoods and communities. For example, participants will work in small groups in a participatory activity using videos or –Cellphils (Mitchell, 2011)—in order to explore some local sustainability issues, such as, sustainable consumption, urban development, social equity, and gender relations. This project which would involve making a 2-3 minute cell phone video or audio in which they would be invited to talk about a particular issue that they explored in their groups and bring it to the larger group at the workshop to collaboratively think about ways to use this knowledge and experience to inform their teaching practice. For instance, how would they teach their own students in schools about these issues? What kinds of problem-based activities could they develop to engage their students in these sustainability issues? A public screening will be held at the end of this process and the participants will be invited to showcase their cellphils. Based on these discussions, teacher participants will also be invited to create integrative lesson plans that incorporate the idea of sustainability for their classrooms. Participants will also be invited to share their lesson plans in this phase. More details will be further developed during the project.

In Phase 5, all the workshop materials and collaborative work (e.g., presentations and lesson plans, etc.) will be shared through an online blog *SusED@McGill: Sustainability Education at McGill* (<http://sus-ed-mcgill.blogspot.ca>) developed by Professor Anila Asghar and her team for other educators. The blog will be shared with Education faculty members so that they can invite their students to visit the blog, use the resources, and contribute their ideas to ongoing discussions on teaching sustainability. Thus, the *SusED@McGill: Sustainability Education at McGill* would offer a wealth of resources on Education for Sustainable Development in teacher education at McGill University.

A final project report will be prepared based on the survey findings, workshops, and other activities for the McGill Office of Sustainability.

Implications

This work will help to advance prospective and current teachers' understanding of sustainability issues at both local and global levels and enhance their professional practice to promote education for sustainable development in Canadian schools. It would encourage teachers to take leadership roles to advance sustainability education in local schools and community settings. Furthermore, it would engage faculty members and students in relevant research initiatives and strategies, connect with key stakeholders, and create a platform for raising awareness and developing programs to support teachers and educators at McGill.

Through my collaboration with the Teaching and Learning Services at McGill, this project would play an important role in infusing sustainability concepts and practices in teacher education courses at McGill. I am a member of the Learning Community—a collaborative project between the Faculty of Education and the McGill Office of Sustainability and I hope that the proposed project would be carried out while working closely with this community. For example, this work may involve identifying the professional competencies for preparing teachers to teach sustainability. Importantly, the goals of this project resonate with McGill's *Vision 2020* for sustainability.

Project eligibility

We hope that the materials and resources developed through this project would enrich the existing teacher education courses at McGill. For example, faculty members can draw on the benchmarks and survey findings to inform their syllabi. Further, my supervisor for this project, Prof. Asghar, will use the materials, such as cellphils and other resources on the sustainability blog in her courses on science education. Similarly, I will present the materials to other instructors in the Education faculty to invite

them to embed sustainability issues (e.g., social justice or gender equity) in their course content. The workshops proposed for this project would also bring together Education faculty members and students to explore future sustainability-related research and education projects at McGill. Through these initiatives, we hope to help develop a network of teachers who would act as leaders in sustainability education in their respective communities—on and off campus.

II. Project Implementation

Tentative timeframe/Output indicators

This proposed project will be conducted by the project leader over a period of 12 - 17 months. I will also collaborate with the Teaching and Learning Services as well as Faculty of Education at McGill to develop the workshops and help implement the benchmarks for teacher education courses at McGill.

Type of Activity -- Task	Output indicators	Estimated time frame
Phase 1 Survey development	<ul style="list-style-type: none"> Developing a survey for students by adapting existing surveys/instruments developed by other researchers and institutions as well as examining the literature on pedagogical competencies for teachers concerning ESD 	10 - 12 weeks
Phase 2 Ethics approval	<ul style="list-style-type: none"> Prepare and submit ethics approval application to the Research Ethics Board (REB) at McGill for this research project (e.g., survey and cellphilm projects). 	4 - 8 weeks
Phase 3 Administer the survey	<ul style="list-style-type: none"> The survey will be administrated to B.Ed. at the Education Faculty through students' list-serves and online announcement boards. 	~ 4 weeks
Phase 4 Analyze survey results	<ul style="list-style-type: none"> Prepare a summary of the survey results. Plan for professional development workshops on sustainability. Further develop and refine their goals and objectives in light of the survey findings. 	8 - 10 weeks
Develop and conduct professional development workshops	<ul style="list-style-type: none"> 3 - 4 workshops during the summer and fall terms. Participants' feedback forms on invited speakers' presentations, list of inquiry-based projects for making cellphils, and their lesson plans. We are hoping to have 3-4 cellphils and 5-7 lesson plans developed by the workshop participants. A public screening to showcase participants' cellphils projects. Some of these cellphils might be posted on the sustainability blog, if 	20 - 24 weeks

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- possible and depending on ethics approval.
- Lesson plans will be shared on the blog.

Phase 5	Share workshop materials (lesson plans) on the <u>SusED@McGill blog</u>	• Prepare a final project report including the survey findings, workshops, and other activities.	~ 2 weeks
	Project report for the McGill Office of Sustainability (MOOS)		4 - 8 weeks

Proposed budget

Please find the expense description and details as **Appendix B**.

Expense Description	Estimated Cost
Salary—for one Doctoral student (Ying Syuan Huang) (\$25 x 12 hours per week x 68 weeks x 4% x 3.2%)	\$21,890
Salary –for one research assistant (\$20 x 5 hours per week x 34 weeks x 4% x 3.2%))	\$3,650
Printing costs	\$600
Workshops: Materials (books, research reports, etc.) Refreshments (\$200 – \$250 per workshop) Keynote speakers' honorarium and travel expenses (\$332 per person x 5 people)	\$200 \$1,000 \$1,660
Amount Requested	\$29,000

III. Additional Information

Letter of support

Support letters from the members of Learning Community are available upon request. For an oral reference, please contact Dr. Anila Asghar, Associate Professor at Faculty of Education at (514) 398-5327.

Others documents

In the appendix, there are documents that explain my current level of graduate study (See Appendix A) and proposed expense description and details as the Appendix B.

Appendix A

Current level of graduate study

I am a second year Ph.D. student in the Department of Integrated Studies (DISE) at McGill University, with a particular research focus on science and sustainability education. Graduating this summer in DISE, I have been working with my Master's supervisor is Prof. Asghar on several research projects that aim to examine the discourses around science education and professional development of teachers. Particularly, Prof. Asghar, who is a member of the Learning Community and I are also very interested in critical issues related to Education for Sustainable Development (ESD), and how it shapes teachers' epistemological beliefs and professional practice. Over the past two years, we have developed a framework and educational strategies for ESD. We have presented our work focusing on socio-cognitive and ecological approaches to teacher education and sustainable development at various international conferences in Canada and the UK.

I plan to complete my Ph.D. program in June 2018. My doctoral research will be an empirical study focusing on how different cultural values and identities might shape teaching philosophies and practices. Specifically, my doctoral research will investigate East Asian and Canadian science teachers' perceptions of sustainable development. My doctoral study would be the first to examine the following research questions: How do East Asian science teachers in Taiwan and Canada engage in ESD in their classroom practices? What challenges are encountered by East Asian science teachers in participating in ESD practices in Taiwanese and Canadian contexts?

My passion about science teaching practice, coupled with my research focus on ESD, has motivated me to apply for the Sustainability Project Fund at McGill University. With a support of the Sustainability Project Fund, I would be more committed to carrying out this project and contribute my knowledge and experience for our proposed endeavor. More importantly, my plan is to disseminate findings of this research project through professional conferences and peer-reviewed publications. A support from the McGill Office of Sustainability (MOOS) would be greatly important in realizing the outcome of the *Vision 2020*—A sustainability strategy for McGill University.

Appendix B

Proposed Expense Description and Details

	Expense Description	Expense Details	Estimated Cost	Proposed Budget per Phase
Phase 1	Salary—for one Doctoral student <i>Note: 12 hours per week, rate of pay \$25 per hour with the 4% vacation indemnity and 3.2% for payment of statutory holidays paid with each paycheck.</i>	\$ 25 (Cas Res Assist Pymt) × 144 hr + \$ 144 (4% Vacation Pay) + \$ 115.2 (Legal Holiday Comp)	≈ 3,860.00	\$ 3,860.00
Phase 2	Salary—for one Doctoral student	\$ 25 (Cas Res Assist Pymt) × 96 hr + \$ 96 (4% Vacation Pay) + \$ 76.8 (Legal Holiday Comp)	≈ 2,580.00	
	Printing	\$ 50 (permission letters and postage)	= 50.00	\$ 2,630.00
Phase 3	Salary—for one Doctoral student	\$ 25 (Cas Res Assist Pymt) × 48 hr + \$ 48 (4% Vacation Pay) + \$ 38.4 (Legal Holiday Comp)	≈ 1290.00	
	Printing	\$ 100 (survey and consent forms) + \$ 100 (meeting materials and reports) +	= 200.00	\$ 1,490.00

Phase 4	Salary—for one Doctoral student	\$ 25 (Cas Res Assist Pymt) × 408 hr + \$ 408 (4% Vacation Pay) + \$ 326.4 (Legal Holiday Comp)	$\approx 10,940.00$
	Salary—for one research assistant <i>Note: 5 hours per week, rate of pay \$20 per hour with the 4% vacation indemnity and 3.2% for payment of statutory holidays paid with each paycheck.</i>	\$ 20 (Cas Res Assist Pymt) × 170 hr + \$ 136 (4% Vacation Pay) + \$ 108.8 (Legal Holiday Comp)	$\approx 3,650.00$
	Keynote speakers (honorarium and travel expenses such as mileage and parking)	\$ 300 (per person) × 5 persons (Honorarium) \$ 32 (per person) × 5 persons (Travel expenses)	= 1,660.00
	Materials (books, research reports, etc.)		= 200.00
	Refreshments	\$ 200 – \$250 (per workshop) × 4 workshops	= 1,000.00
	Printing	\$ 100 (invitation posters) + \$ 50 (consent and feedback forms) + \$ 100 (programs and handouts) + \$ 50 (participation certifications) + \$ 50 (thank-you note and postage) +	= 350.00 \$ 17,800.00
Phase 5	Salary—for one Doctoral student	\$ 25 (Cas Res Assist Pymt) × 120 hr + \$ 120 (4% Vacation Pay) + \$ 96 (Legal Holiday Comp)	$\approx 3,220.00$ \$ 3,220.00 \$ 29,000.00

Appendix C

References

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