



UNIVERSITY OF
SASKATCHEWAN

Sustainability In Teaching and Learning

February 2022

BE WHAT THE WORLD NEEDS

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Introduction

The University Plan 2025 The University of Saskatchewan’s strategic plan calls for it to be The University the World Needs. A university whose graduates have the drive, the curiosity, and the humility to work with others in addressing the greatest challenges and opportunities the world faces.

USask’s Sustainability Plan: Critical Path to Sustainability, guides the institution’s approach to sustainability. It identifies the United Nations Sustainable Development Goals (SDGs) as an organizing framework for guiding our understanding of sustainability. The plan calls for USask to support a generation of learners to shift mindset, expand skillset and accelerate action to achieve the SDGs.

To this end, the purpose of this report is to guide the advancement of the teaching and teaching portion of the University Saskatchewan sustainability strategy by:

1. Defining how sustainability is understood at the University of Saskatchewan for the purpose of teaching and learning.
2. Identify instructor and student competencies required to take action on sustainability and to facilitate solutions with diverse stakeholders
3. Providing descriptions of and outcomes for each of the teaching and learning actions within USask’s sustainability strategy
4. Identifying the supporting actions that will advance sustainability within teaching and learning at the University of Saskatchewan based on stated outcomes.

This report complements and aligns with other institutional goals and strategies including those related Indigenization, internationalization, the Learning Charter, and student wellness. Appendix B outlines USask’s sustainability focused and related mandates.



Defining Sustainability in Teaching and Learning

Proposed USask Definition of Sustainability

At USask, through nakaatayihthaamoowin, we understand sustainability to mean protecting and honouring the wellness of all humanity and creation by taking care of the relationship with which we've been entrusted — with the land, with the air and water, with our students, colleagues, and neighbours — guided by mindfulness, respect, and reverence.

Externally, the United Nations defines “sustainable development” in the World Commission on Environment and Development’s 1987 Brundtland report as ‘development that meets the needs of the present without compromising the ability of future generations to meet their own needs’. The United Nations 17 Sustainable Development Goals (SDGs) and 169 targets provide an organizing framework for further guiding our understanding of sustainability.

All USask graduates will meaningfully participate in social, environmental, and economic development that meets the needs of the present while mindfully and respectfully protecting the ability of future generations to meet their own needs.

Together, nakaatayihthaamoowin and the 17 SDGs form our understanding of sustainability. We acknowledge that development of the specific competencies will be required for all USask graduates to meaningfully participate in social, environmental, and economic development that meets the needs of the present while mindfully and respectfully protecting the ability of future generations to meet their own needs.

Definition of Sustainability in Teaching and Learning

Sustainability in teaching and learning (STL) is the deliberate construction of learning experiences, across disciplines, so that graduates can demonstrate proficiency in competencies for sustainable development. STL should include:

- 1) Course outcomes that focus on the development of such competencies
- 2) Instructional strategies that provide opportunity for students to practice and get feedback
- 3) Assessment that directly measures student skill level in the competencies.

All are required to support students in reliably developing these competencies by the completion of an undergraduate degree at USask.



Sustainability in Teaching and Learning at USask

Universities are uniquely positioned to understand and address sustainability challenges. They play a vital role in equipping students, future leaders, to build a more sustainable future. USask's greatest contribution will be to prepare our students with competencies to lead transformative sustainability. UNESCO describes the key skills and attributes students will need (see Appendix A), and a comparison to these skills to the USask undergraduate competencies completed in the summer of 2021 indicates they are well aligned. However, knowing they have much in common is not enough. We must commit to empowering faculty to deliberately design courses and programs which explicitly help students build these skills. We can achieve this by focusing on our instructional design and assessment practices. This section clarifies what designing, instructing, and assessing for sustainability competencies looks like through criteria and examples.

We must commit to deliberately designing courses and programs to systematically build sustainability competencies in our students.

Process of developing the competencies

There were two rounds of engagement with faculty to inform the development of the proposed competencies. In Fall 2021, individual faculty were identified because of leadership in campus in sustainability and approached for an interview. They met one on one with an educational developer to describe their experiences with students who are developing sustainability competencies and were asked to identify other faculty members who should be consulted. Over 30 faculty members contributed to the initial themes found in Appendix C. Next, a set of proposed sustainability competencies was developed to align with a paralleled set proposed of undergraduate competencies, then compared to the Key Competencies for Sustainable Development (Appendix A) for further alignment and refinement. The complete set of proposed competencies were then returned to the faculty for further comments, and the draft was refined again. Student consultations are being planned for 2022-2023, as pandemic related pressures decrease, and students have more interest in engagement.

Proposed competencies

For our students to be the sustainability leaders the world needs, we will need to do more than just expose them to concepts around sustainability issues. *With a toolkit of theoretical frameworks, technical abilities, and critical perspectives, our students will understand the urgency of action for the 5Ps and have the skills they need to facilitate solutions with diverse stakeholders.* To that end, undergraduate students need to be able to:

Competency	What students know, do, believe for sustainability	Related sustainability imperative
Communicating Meaningfully	USask students engage in meaningful communication about sustainability when they exchange ideas, facts, and perspectives about sustainability with others. They are effective when they purposefully select and use strategies for communicating in response to context and audience, making dialogue about sustainability more inclusive and persuasive, and more likely to result in sustainable actions.	Solutions to sustainability issues must be negotiated. The best solutions will fail if they are not communicated successfully in different ways to different audiences.
Engaging in our intercultural society	Students who thrive as members of a sustainable society handle diversity in perspective, position, and approach adeptly. They communicate and collaborate effectively within diverse groups and an increasingly global society and have intercultural competence to generate and achieve solutions that generate inclusive, sustainable development.	Sustainable development is both global and local. A diversity of needs at all levels necessitates a diversity of perspectives and approaches to solutions.
Nurturing Successful Relationships	Students who nurture successful relationships describe who they are and can embrace diversity of interpersonal strengths and weaknesses to support sustainable outcomes with others. They are accountable for their own sustainability actions, manage the conflicts inherent in sustainability effectively, successfully prioritize with other sustainability stakeholders, and negotiate for sustainable results.	Generation of sustainable practices and their adoption requires successful multidisciplinary relationships that can be collectively leveraged.
Leveraging Technology	Students who can leverage technology are able to use digital/technological tools and systems ethically, appropriately, and effectively to accomplish sustainable goals.	Technology is essential for dialogue about sustainability. Selecting, designing, leveraging, and recognizing the limitations of technologies are essential to resolving sustainability challenges.
Adaptive Design and Problem Solving	Students who can successfully employ adaptive design and solve problems in sustainability need to be creative thinkers who see interdisciplinary possibilities where others may not. They can use their own disciplinary expertise to contribute to the design, implementation, and evaluation of an interdisciplinary approach to achieve a sustainability goal. They can work in interdisciplinary contexts to achieve complex, collective goals.	Innovation and systems thinking are at the heart of sustainable solutions. Adaptive design, problem, solving, and critical thinking are required to envision and develop behavioral, structural, and technical changes.
Cultivating Resilience	Students effectively engage in cultivating resilience when they reflect on what they are doing, how it is working, and make appropriate adjustments to be successful. They engage in thoughtful decision-making and are self-aware and reflective. Students can purposefully navigate adversity and respond appropriately to the negative impacts of unsustainable activities and climate change. Students respect personal limits and boundaries, and they deliberately engage in healthy persistence in the face of change, including our changing world.	Rapid or unprecedented change presents risks, threats, and opportunities. The impact is felt by both individuals and systems. Being resilient and successful will be a challenge and healthy persistence in the face of issues will be essential.

Course outcomes help students improve their sustainability competencies

USask courses can help students improve their sustainability competencies by developing course outcomes that align with the undergraduate competencies and describe ways students will actively demonstrate those competencies in the course. For example, students might:

- Describe the role of discipline in a sustainable system (Communicate Meaningfully)
- Model and encourage perspective taking on sustainability issues in a group (Nurture Effective Relationships)
- Choose the most effective technologies to exchange ideas, facts, and perspectives about sustainability with others in and beyond the course (Leveraging Technology)
- Communicate and collaborate effectively within diverse groups on approaches to sustainability (Engaging in our intercultural society)
- Employ adaptive design, systems thinking, and problem solving to sustainability problems (Adaptive Design and Problem Solving)
- Reflect on sustainability issues by considering impacts on the 5Ps (People, Planet, Prosperity, Peace, and Partnerships) and personal resilience. (Cultivating Resilience)

Courses can support student in developing specific disciplinary knowledge, communicating about sustainability, and working through sustainability problems collectively. Many courses will need to develop these types of competencies to ensure that most students can practice and learn them. However, individual course approaches are less impactful than a program-wide approach because it is unclear what students have learned in prior courses when each individual course is planned, resulting in reteaching basic information and pre-requisite skills. The repetition of the basics makes individual courses less successful in generating deeper sustainability competencies.

Program outcomes help students improve their sustainability competencies

USask courses can help students improve their sustainability competencies by developing program outcomes about sustainability that are taught in a sequence over time. For example, all first-year courses could introduce students to sustainability issues and the role that the discipline plays in them and give students opportunities to reflect on how unsustainable practices impact them and others. Knowing students understand basic impacts and the role of the discipline, second year courses could focus on groups of students generating solutions to current sustainability problems and sharing them. This type of progression allows students to develop more sophisticated applications of skills over time, building to the genuine competencies that support immediate successful action on sustainability issues.

Instruction and assessment help students improve their sustainability competencies

Disciplinary content and knowledge are not enough to shift sustainability goals. Many sustainability solutions are as much about communication, working together, and negotiating diversity as they are about technologies, political implications, or facts.

Consider the key competency, “Communicating Meaningfully”. To achieve this, USask students must:

1. Exchange ideas, facts, and perspectives about sustainability with others. As with many acquired skills, students are unlikely to intuitively do it well on the first try.
2. Thus, students need to practice shifting communication depending on the audience and purpose.
3. For practice to be effective, students then need feedback about their attempts so that they can improve how they mobilize their knowledge.
4. Finally, their grades, or any assessment, should reflect how competently they can communicate about sustainability.

In this manner, they will know that they can be the graduates the world needs in response to current global realities.



Sustainability in Teaching and Learning Action Plan

USask’s sustainability strategy describes the general intent towards sustainability on campus. However, the four main categories of curriculum, student learning, champions, and diversity of programming each require systematic actions to ensure graduates have sustainability competencies.

Aligned Systems

It is foundational that the various USask structures which contribute to sustainability are aligned to achieve our cross-functional institutional goals and objectives. This happens across the breadth of programs and is scaffolded to help students progressively develop the behaviours of sustainability over the duration of their program.

Actions	Sustainability Strategy
<ul style="list-style-type: none">Clarify what competencies faculty, staff, and students need to lead transformative action on sustainability at USask and beyond. These should connect to the Educator Commitments and Undergraduate Competencies.Prioritize learning experiences within and beyond the curriculum that give all students the opportunity to practice their sustainability competencies early and often. Ensure the experiences are responsive and flexible based on needIncentivize program and structural changes and monitor their relationship to the competencies (outcomes), the SDGs, wellness, Indigenization, and internationalization.	Engage Sustainability in Curricula describes an institutional approach for <i>infusing sustainability within formal curricula across the institution</i> to support the competencies for sustainability.

Curriculum and Educational Development

Curriculum and educational development are essential areas for action because they helps ensure educators understand how to design learning experiences that will lead to the sustainability competencies and that they are built in individual courses and whole programs, even those that are not overtly focused on sustainability.

Actions	Sustainability Strategy
<ul style="list-style-type: none">Describe how our formal curriculum will infuse opportunities to practice the competencies, to make it likely that most graduates will acquire them.Create educational development that supports educators in identifying outcomes aligned with competencies, planning for learning experiences, ensuring feedback, and assessing identified competenciesDevelopment and embedding of curriculum to support students in self-assessing, goal setting, and growing competencies as related to the SDGs and 5Ps, in addition to opportunities in course work.	<p>Demonstrate and Experience Learning describes active, anti-oppressive, and experiential learning strategies that are necessary to build many of the identified competencies for sustainability.</p> <p>Enable Diverse Learning responsive to the needs of students and the 5Ps.</p>

Sustainability Teaching Fellows

Faculty fellows help establish culture and practice in their academic units over a specific timeframe. These fellows are selected based on their demonstrated ability to contribute to change, disciplinary and teaching expertise, and willingness to support conversations with peers.

Actions	Sustainability Strategy
<ul style="list-style-type: none">• Identify fellows who embody teaching for sustainability in various disciplines, and support them in describing how they develop the competencies in their students• Develop faculty-lead resources, communication, and educational development opportunities to articulate how to embed the competencies and the SDGs in teaching practice• Reflect on the impact of instruction, practice, feedback, and assessment on student competencies• Share findings on impact of instructional practices with other educators, including advancing the SDGs.	Equip Champions describes the teaching and learning outcomes in the form of competencies that all students and faculty should gain through learning experiences at USask to support sustainability.

Responsive innovation

Sustainability problems, including changing educational practices to make it likely that most students develop sustainability competencies, require iterative design process. The responsive innovation actions are focused on responding to gaps through intentional and ongoing design, including data collection and revision.

Actions	Sustainability Strategy
<ul style="list-style-type: none">• Identify gaps in programming and needs in the community• Generate criteria for a successful response• Propose possible solutions, and pilot solutions that best meet criteria• Collect data about success of solutions in meeting needs and gaps and building student competencies• Iterate and expand programming opportunities that are the most successful	Diverse Learning describes how USask will build programming that is responsive to community needs to ensure USask is growing our community's capacity for sustainable development.

Appendix A: Key competencies for sustainable development

Key competencies for sustainable development	
Systems thinking competency	The abilities to recognize and understand relationships; to analyze complex systems; to think of how systems are embedded within different domains and different scales; and to deal with uncertainty.
Anticipatory competency	The abilities to understand and evaluate multiple futures – possible, probable and desirable; to create one’s own visions for the future; to apply the precautionary principle; to assess the consequences of actions; and to deal with risks and changes.
Normative competency	The abilities to understand and reflect on the norms and values that underlie one’s actions; and to negotiate sustainability values, principles, goals, and targets, in a context of conflicts of interests and trade-offs, uncertain knowledge and contradictions.
Strategic competency	The abilities to collectively develop and implement innovative actions that further sustainability at the local level and further afield.
Collaboration competency	The abilities to learn from others; to understand and respect the needs, perspectives and actions of others (empathy); to understand, relate to and be sensitive to others (empathic leadership); to deal with conflicts in a group; and to facilitate collaborative and participatory problem solving.
Critical thinking competency	The ability to question norms, practices and opinions; to reflect on own one’s values, perceptions and actions; and to take a position in the sustainability discourse.
Self-awareness competency	The ability to reflect on one’s own role in the local community and (global) society; to continually evaluate and further motivate one’s actions; and to deal with one’s feelings and desires.
Integrated problem-solving competency	The overarching ability to apply different problem-solving frameworks to complex sustainability problems and develop viable, inclusive and equitable solution options that promote sustainable development, integrating the abovementioned competences.

Rieckmann, M. (2018). Learning to transform the world: key competencies in education for sustainable development. In A. Leicht (Ed.), *Issues and trends in education for sustainable development* (pp. 44–45). essay, UNESCO.

Appendix B: USask Planning Context

Sustainability Planning at USask

USask's Institutional Plan: Plan 2025

Sustainability makes up 1 of 4 pillars of the plan.



USask's Sustainability Plan: Critical Path to Sustainability

The Critical Path to Sustainability strategy lays out an institution-wide approach for sustainability. It identifies the United Nations Sustainable Development Goals (SDGs) as an organizing framework for guiding our understanding of sustainability. The Critical Path to Sustainability identifies 5 commitments and supporting actions to guide our work. Commitment 3 in the plan, guides how sustainability will inform teaching and learning at USask:

Commitment 3: Empower action: Support a generation of learner and achiever to shift mindset and expand skillsets to accelerate action to achieve the SDGs.

Our goal is to ensure all faculty, staff and students have a holistic understanding of sustainability by promoting, enabling, and engaging them to explore, discover, and find ways to implement new ideas with the support of the entire institution. We plan to achieve this goal through the following actions:

- Equip Champions. Equip all faculty, staff and students in all disciplines to be sustainability champions throughout their lives by ensuring they have access to sustainability educational experiences.

- Engage Sustainability in Curricula. Develop mechanisms to engage faculty and academic units in changing or modifying curricula in their courses and programs to include sustainability principles and the SDGs..
- Enable Diverse Learning. Enable access to sustainability curricula for diverse learners, including the ability to select the optimal mode of learning (in-person, synchronous or asynchronous online), being mindful that all trainees will need access to the appropriate equipment.
- Demonstrate & Experience Learning. Enable students to work with local community leaders to explore how failure to achieve the SDGs is impacting their communities and to create sustainability solutions through experiential learning programs involving projects, placements, and practicums, both within the institution and with the community.

Related Institutional Priorities

USask's Learning Charter and Learning Pursuits

The University of Saskatchewan's Learning Charter provides a shared set of learning pursuits, which are competencies knowledge, skills, and attributes to be integrated through learning experiences and to inform program outcomes.

USask wellness strategy – Confronting humanities greatest challenges are difficult emotionally and students must be supported emotionally as they navigate grief or anger and build skills for coping and resilience. A healthy mind provides the emotional energy and clarity to approach and manage life with optimism and resilience.

Indigenization – The institutional commitment to indigenize academia has been integrated into the University's Institutional plan as a strategic pillar. To support this goal, the integration of indigenous perspectives, worldviews, and knowledges into curricula is needed.

Indigenous knowledge and values provide important perspectives and approaches to sustainability. Indigenous perspectives view people as part of nature and demonstrate a deep respect for all creation, not just community. These perspectives also incorporate a connection to past generations and a responsibility to future generations.

International Blueprint – Sustainability presents global challenges that cannot be solved by only thinking and acting locally. Through this plan, USask aspires to internationalize learning experiences and use our expertise to address global challenges and support the well-being of communities around the world.

The United Nations 17 Sustainable Development Goals are “global goals” and an important means to guide teaching and learning for sustainability in an international context.

Appendix C: Conversations with USask Faculty

Sustainability in Teaching & Learning Fall 2021 - Winter 2022

To help meet [USask Sustainability Strategy](#) (2021-2030) commitments to empower action and capitalize on strengths, and to better understand the current landscape, we used a snowball strategy to connect with USask educators experienced in embedding sustainability in teaching and learning. They were asked two questions:

- 1) How do students reflect, share, act on sustainability in your course?
- 2) How do you know students have the competencies needed to be sustainability-minded practitioners?

To summarize the richness of these conversations is an immense challenge but we will do our best to help inform future USask teaching and learning practices.

Student choice and self-selection – students feel more connected to their learning when they get to choose its focus. Allowing students choice to pick their projects is a motivator for meaningful engagement and the basis of lifelong engagement in sustainability. Heutagogy, in some form, was repeated by majority of the educators interviewed.

Changing mind, heart, and skill sets – The way we each relate to the land and position ourselves helps students develop their own ideologies, which impacts their practices. Embedding reciprocity and kinship in our teaching is important for wāhkōhtowin and good relations. Transformative teaching requires educators to create conditions for students to experience a large magnitude of change within the short timeframe of an academic term. Opportunities for students to remove themselves from their ordinary, such as through Indigenous land-based education, experiential learning, group work, case studies, authentic assessment and other immersive exercises have the most impact to shift students' mind and heart sets while developing the necessary technical skill sets.

Reflective practices – educators described a variety of ways in which they encouraged students to practice metacognition. They used journals, peer conversations, pre/post surveys, and questions such as, “what would you do differently knowing what you know now?” to help students continuously reframe and contextualize themselves within their learning.

Interdisciplinary – few of these educators considered themselves to be experts in sustainability. However, they each see their own discipline as part of the solution to meet global goals. Embedding sustainability helps students see how their local lived reality fits within a global context.

Community connections – the reality of practicums, placements, or other community-based learning is that it requires community connections. These partnerships are often informal and built on the social capital of individual faculty. The effort of building relationships requires time and energy that is not recognized in the assignment of duties and are not established for long-term success. Embedding principles of sustainability into teaching also requires it to be infused into the structures it upholds.

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