ENGAGING WITH THE WORLD: COLLABORATIVE RESEARCH PROJECT

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Collaborative Research Project Example: Sustainability Leadership and Social Change ..... 6

GENERAL GUIDE

In this experience, students work in teams to design and conduct original research that addresses a sustainability problem and produces novel knowledge or other outputs, ideally in collaboration with community partners. This experience challenges students to take responsibility for self-directing their learning and managing work in a team. Furthermore, it helps students develop teamwork, project management, and stakeholder engagement skills. The group dimension allows students to take on bigger, more complex projects because of more human power and variety of interests and expertise; it also provides opportunities for peer learning. The experience can produce valuable outputs for a community partner as well as products and experiences that students can use to market themselves in job interviews and other application.

“Imagine what might happen if students were regularly assigned actual sustainability problems that were brought to higher education by cities, businesses, nonprofit organizations, and other institutions. If classroom exercises produced workable contributions to solutions, students would understand they can have a positive impact on the world through their academic learning.” - Debra Rowe, 2007

<table>
<thead>
<tr>
<th>Course</th>
<th>Level: 400; can accommodate group size: 3-7</th>
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<tbody>
<tr>
<td>Enjoyment</td>
<td>Allows students to explore a topic of their choice and produce a research product that is relevant to a community partner. Enjoyment is enhanced when instructors provide adequate resources and support for self-direction, research, and particularly student teamwork.</td>
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<tr>
<td>Learning</td>
<td>Leads students to engage in own learning process to fill knowledge gaps through formal and informal peer learning. Collaboration helps teach process</td>
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components of research (teamwork, project management, stakeholder engagement), broadens manageable scope and increases depth, enhances learning in both process and content areas.

Adjustments
Instructors adjust to coaching role. Amount of preparation and coaching depends on duration and scope of projects, i.e., is project a component or main focus of a class.

Benefits
Decreases the number of projects an instructor has to coordinate in a class. Can contribute to instructor’s own research or contribute product output to people, who the instructor wants to develop strong relationships with. Student ownership of project makes for deep and lively class discussion.

LEARNING OBJECTIVES

- Anticipate potential challenges or gaps in knowledge that need to be filled in order to complete the project. [FUTURE THINKING]
- Distinguish and apply basic steps of sustainability research (frame problem, develop research question, select and combine methods, collect and analyze data, draw conclusions and / or create a product, and test or otherwise vet conclusions or product). [STRATEGIC THINKING]
- Collaborate with student team and community partner to co-create knowledge or a product. [INTERPERSONAL COMPETENCIES]
- Adopt the role of project manager, data manager, or communications manager in your group and make valuable contributions to project work through the responsibilities of your unique role. [INTERPERSONAL COMPETENCIES]
- Contribute to peer learning by helping your team develop a skill that you possess, grasp concepts that you understand, or engage in a process or procedure that you are familiar with. [INTERPERSONAL COMPETENCIES]

ACTIVITIES
The purpose of this experience is to give students the opportunity to work in teams to apply what they have learned throughout their undergraduate program to produce novel research or another product with real-world value. Ideally, students also collaborate with a community partner to co-create knowledge. This activity consists of selecting and framing a sustainability problem, selecting theoretical and methodical frameworks, developing an actionable research question). A second set of activities relates to selecting (and possibly learning) appropriate research methods, gathering data (securing an IRB approval if appropriate), analyzing data and using data to draw conclusions and create a product with real-world value. Lastly, the project output should be tested or otherwise vetted through peer- and / or extended-peer review. A related key step concerns transferring the project on to others in the institution for continuation or facilitating transition of project to community partners for implementation, sharing results with a wider audience. The students’ role is to take leadership for the project.
The instructor’s and community partner’s role is to mentor, support, and provide constructive feedback from their respective perspectives (Brundiers & Wiek, 2013).

Supporting learning in collaborative projects. Collaborative projects can be overwhelming to students; the responsibility of owning and directing a project can be frustrating or even paralyzing especially if they are new to this kind of learning environment. Instructors can help make the experience successful by thoughtfully designing the experience. This relates to limiting group size to 3-5 students, providing resources on sustainability research frameworks and research process, problem- and project-based learning, teamwork, project management, and stakeholder engagement, (Moust, vanBerkel, and Schmidt, 2005). A key element is to hold students accountable by building in “check-ins” with students that promote reflection. Below are suggestions for supporting learning through design and coaching.

BEFORE

Identify the format for the collaborative research project: Options include a in-class project and a workshop project, which differ by degrees in terms of their centrality to a course, duration, instructor direction, and student responsibility. In-class projects are central to a course’s learning objectives but not the only teaching and learning activity used during the semester. Instructors generally take a greater role in establishing project parameters like topic, research methods, and timeline in a class project so that they align with the course’s learning objectives and schedule. Workshop projects are the primary teaching and learning activity of a semester or year-long class; other class components like readings and lectures are designed to support the workshop project. Instructors set less parameters and coach students to be self-directed in their project design and implementation.

Identify a community partner. For ideas, consider perusing the Sustainability Connect database and contact the Sustainability Connect coordinator for help.

Set the parameters for project and collaboration. Meet with the community partner well in advance of the semester. Discuss the practical objectives of the community partner and explore how these can be aligned with the desired learning objectives for students. Discuss other expectations such as how often students and community partners will interact, what kind of product will result, and what roles, tasks and time investments the community partner will assume. Frame the interaction as a collaboration, which potentially, can lay the foundation for developing a formal partnership between the organization and ASU.

Compile instructional materials and resources. Think about what knowledge, skills, and attitudes your students will need in order to complete their projects. Consider polling students prior or at the beginning of the course to get a sense of where they stand. This helps preparing mini-tutorials. In many cases, we recommend to have a mini-lecture on professionalism and ethics of collaborating with a community partner, and asking students to read accompanying literature.
DURING

Introduce the community partner and type of collaboration to students. Explain the role of collaboration in sustainability research and how stakeholder engagement spans from extractive approaches (e.g., interviewing, informing) to constructive approaches (e.g., developing novel knowledge together). Make sure to give as much information as possible about the community partner, their organization, and any parameters you have already set with them. Links to websites, bios, articles, and 1-2 page project proposals can be useful. You can invite community partners to come to class and discuss with students their expectations of working together.

Have students review the basics of research. Make sure that students are familiar with the basic steps of sustainability research and professional project work, which often include framing the sustainability problem and identifying research question and objectives; selecting appropriate methods; collecting and analyzing data; and using research to create an output, which is then subject to testing. The closing of a project is pivotal, as it can be the beginning of the next collaboration. Make sure students are aware of basic ideas of collaborative research, inherent challenges, and strategies for success.

Provide tools. Providing students with a teamwork and project management toolkit and ensuring that students know how to use these tools may increase the likelihood that students will use the tools throughout the semester. Prompt students to establish communication channels and rules as well as roles and mutually agreed upon responsibilities within the team early on. Help students own these roles by calling on them to provide updates, suggestions, or concerns from the perspective of that particular role throughout the semester.

Support interaction with community partners. Connect student teams with a community partner to help build working relationships and to shape the project so that it produces a useful output. Make sure that everyone’s roles and responsibilities, the desired output from the project, and a rough timeline for collaboration throughout the semester are defined. Identify three milestone meetings across the semester where community partners meet with the class to review the work in progress. Facilitate the first meeting, coaching students and community partners to review parameters for collaboration together. These discussions can lead to a Code of Collaboration between students and community partners. The milestone meetings are opportunities to require students to use professional, productive collaboration techniques and tools (e.g. meeting agenda and meeting notes, code of collaboration, work plan).

Require structured and iterative planning. Ask students to prepare a proposal, timeline, and work plan and then provide feedback to narrow the scope to create a manageable project. Ensure that students keep work plans and timeline documents up to date keeping track of progress and anticipating next steps. Make sure that enough time (at least 2-3 weeks) is left at the end revise draft reports.
Promote reflection. Some options include holding a “5 minute check-in” at the beginning of class, meeting with each team for a brief 15-30 minute meeting every few weeks, and have students conduct self-evaluations at midterm and end of the semester. The main purpose of check-ins is not for instructors to find out about students’ work, it is for students to identify and evaluate progress, ask questions, get feedback. Providing questions can help structure reflection and maximize the productiveness of check-ins. Questions include for instance: what progress have you made, what challenges are you dealing with right now, what can you do to deal with them, do you have any questions for instructors or peers that might help you?

AFTER

Present work to community partners. Schedule time for students to present their research to community partners as well as instructors. Make sure that evaluation guidelines are clear. Aalborg, University has several videos on procedures for a group presentation and examination (a general overview on problem-based project work at Aalborg University is here: [http://www.en.aau.dk/education/problem-based-learning/project-work/](http://www.en.aau.dk/education/problem-based-learning/project-work/); videos about group examination procedures are here: [http://www.pbl.aau.dk/resources/films-about-group-exams/](http://www.pbl.aau.dk/resources/films-about-group-exams/)).

Final debriefing. Meet with students in groups or as a class without community partners to reflect on the experience and drive home lessons learned.

Thank-you notes. Have students write thank-you notes to community partners.

Transfer relationships. Contact the Sustainability Connect coordinator to let us know who your students worked with to help transfer the relationship through institutional procedures. Make sure to let community partners know that you have done this and who to contact to continue their relationship with ASU.

Share results of collaboration and / or extend its life. Submit a summary on Sustainability Connect to share the work with the School of Sustainability.

Consider collaborating with community partner to continue work in a subsequent semester, or connecting them with a colleague interested in RWLEs.

ASSIGNMENTS AND ASSESSMENT

The assignments below can maximize learning outcomes of the experience and produce outputs that can be assessed to determine achievement of the learning objectives.

- Write a proposal framing the sustainability problem, the envisioned solution space, and determine the objective of the research project. Develop a sustainability research question and select appropriate research methods, and describe potential value of project output. Output: Proposal.
- Present work in progress with instructors throughout the semester to evaluate progress, clarify issues, and determine next steps. Output: Meeting agendas, pro-active participation, revised work plans entailing feedback from meeting.
- Write a report (or other create other form of output, e.g., documentary) presenting and discussing results from the analysis of the sustainability problem and proposed evidence-supported solution pathway. Output: report or other final product.
- Test sustainability strategy via a pilot or proxy (e.g., such as peer review and extended peer review (stakeholders)). Output: validity of proposed approach.
- Present final project to peers, instructors, and/or community partners in a compelling and useful format. Output: Performance.
- Evaluate own performance periodically (at least twice) throughout the process. Submit evaluations to instructor who will later meet with students to compare and discuss the students’ and instructor’s evaluation. Output: Evaluation.

Use a Likert-scale to determine if students achieved all, most, some, little, or none of the learning objective. Develop a rubric with examples of answers that demonstrate students have achieved all (5), most (4), some (3), little (2), or none (1) of the objective.

**TAKE THIS EXPERIENCE TO THE NEXT LEVEL!**

- **Engage the world:** Have students submit their project output to a Sustainability competition like 10,000 Solution ([http://10000solutions.org/](http://10000solutions.org/)).
- **Engage the world:** Encourage graduate students to design their thesis project as a collaborative project, working with representatives from regions, cities, public authorities, businesses or civil society to address sustainability issues

**BIBLIOGRAPHY & RESOURCES**


Resources

Terry Marris (2004) *Teamwork – A practical guide for students* ([URL](http://example.com))

Blog on Integration & Implementation Insights: Building research resources for action-oriented team science through syntheses of practices and theories; see contributions on Education: [https://i2insights.org/category/education/](https://i2insights.org/category/education/)

**COLLABORATIVE RESEARCH PROJECT EXAMPLE:**

**SUSTAINABILITY LEADERSHIP AND SOCIAL CHANGE**
**SUMMARY**

In this example, a team of students designed and conducted a collaborative research project as part of a workshop class on “Sustainability Leadership and Social Change.” The goal of the research project was to analyze, evaluate and communicate the potential of higher education institutions as “critical leverage points” of transformation to a sustainable society. This workshop course was offered through Dr. David Manuel-Navarrete.

**LEARNING OBJECTIVES**

- Compare sustainability leadership to other types of leadership and the role that leadership plays for social change towards sustainability. [Systems Thinking]
- Identify the many pathways through which sustainability is transforming the daily life and conditions of operation in organizations. [Systems Thinking]
- Critically analyze the likely obstacles and opportunities typically encountered in transitions and transformations towards sustainability. [Strategic Thinking]
- Apply social theories of change to a global context of increasing resource scarcity, ecosystem degradation, and systemic risk. [Strategic Thinking]
- Identify tools to initiate and galvanize successful efforts toward change in higher education and other institutional and social contexts. [Strategic Thinking]
- Design projects for sustainability change. [Strategic Thinking]

**ACTIVITIES**

The purpose of this experience was to introduce students to theories and practices of social change applicable to sustainability, explore the real-world case of ASU as a leader of institutional change, and help students develop knowledge, skills, and abilities for engaging in social change through sustainability project work. The course syllabus explains:

“We will investigate ASU’s leadership and internal transformation towards a culture of sustainability, and assess the means and obstacles to inspire other universities to embrace and promote sustainability science. We will build on: (1) our own knowledge as insiders, (2) lessons learnt by principals, and (3) outsiders’ perceptions about ASU’s deliberate process of institutional restructuring. Building on existing social theory we will design proposals for enhancing ASU’s broader role as a change agent for sustainability. Firsthand learning about ASU’s triumphs and tribulations will provide unique practical knowledge for designing and directing change elsewhere as sustainability professionals.”

The experience consisted of two parallel activities. The first activity was a general appraisal of theories of social transformation to develop a common language for theory-based discussions about the role of power and leadership in sustainability transitions and transformations. Theoretically informed understandings of social change are key to
revealing deeper dynamics underlying sustainability problems and articulating "grounded" transformational thinking/action.¹

The second activity drew on these theoretical insights to create a documentary exploring the case of ASU’s transformation towards becoming a change agent for sustainability, and its potential to inspire other institutions of higher education, embedded in different cultures and contexts, to undergo similar restructurings. Students worked in small teams, each exploring a particular aspect of sustainability transformation (“sustainability changes in practice”, “sustainability leadership”, and “universities as agents of sustainability change”). They investigated the case of ASU through the review of documents, interviews, and lectures from guest speakers. Through the interviewing process, students also engaged with leaders and members of the larger community, who have participated in the university’s outreach efforts.

Teams ultimately collaborated to create a documentary as the final output of their projects, which was screened at the School of Sustainability’s Spring 2013 Open House event and featured in this ASU news article. (link to documentary: http://sustainability.asu.edu/media/video/sustainability-transformation; link to ASU news article: https://asunews.asu.edu/20130424_openhouse).

**Timeline**

- Create guidelines for the project addressing required content and process components.
- Meet with students in first week to discuss the project, establish roles, and discuss guidelines. Make sure that students are aware of basic steps of research and what they entail.
- If the project has a community partner, facilitate an initial meeting with students and community partner to establish roles, work out objectives, and consider desired outputs.
- Help student pick a specific question within the broader topic that they are excited about and that affords producing valuable knowledge or other outputs.
- Ask students to prepare a proposal, timeline, and work plan.
- Meet with students in second week to discuss their proposal, help them narrow the scope if necessary to create a manageable project and press them to work towards.
- Create mini-deadlines for subsequent components of the research project (methods selection, data collection, analysis, testing, draft 1, final). Provide feedback to students within one week.

¹Theories of social transformation include: e.g., liberal-positivist, Marxist, or Post-structuralist and social science scholars such as David Harvey’s Co-revolutionary Theory, Erik Olin Wright’s concept of Real Utopias, or Ryan & Deci’s Self-determination Theory.
• Ensure that students keep work plans and timeline documents up to date so that you and they can keep track of progress and anticipate next steps.

• Make sure that enough time is left at the end to test / review / revise. At least 2-3 weeks.

• If the project has a community partner, help students think about how best to present their output and in what format so that it is useful to the partner.

• Facilitate discussion and / or distribute concluding assignment.

ASSIGNMENTS AND ASSESSMENT

The assignments maximized learning outcomes of this experience and produce outputs that can be used to determine student learning outcomes.

• Write three papers, individually, throughout the experience. In the first, draw on theories of social change presented in class to discuss one aspect of the global transition towards sustainability. In the second one you will discuss the outcome of your interviews with university stakeholders and your interaction with the members of your research team. In the third and final writing assignment you will develop a theory-based reflection and assessment of ASU’s sustainability transformation, including recommendations on how to continue and deepen the process.

• Create a documentary, collaborating in teams to explore the case of ASU’s transformation towards becoming a change agent for sustainability, and its potential to inspire other institutions of higher education, embedded in different cultures and contexts, to undergo similar restructurings, demonstrating achievement of the experience’s learning objectives.

• Complete Case Study Tests at the beginning and end of the semester to illustrate how students’ key competencies in sustainability (system thinking, anticipatory, normative, strategic, and interpersonal) develop throughout the semester and in how far they achieve learning objectives of the experience.

• Evaluate self- and peer- performance in this group project.

Use a Likert-scale to determine if students achieved all, most, some, little, or none of the learning objective. Develop a rubric with examples of answers that demonstrate students have achieved all (5), most (4), some (3), little (2), or none (1) of the objective.

RESOURCES DOCUMENTING SIMILAR APPROACHES AT THE SCHOOL OF SUSTAINABILITY

Videos:

Dr. Aaron Golub: “The Intersection Between Justice and Sustainability: Voices and Views from South Phoenix”: https://vimeo.com/22301501

Dr. David Manuel-Navarrete: The Sustainability Transformation in Education; 3 minute video; 13 minutes video; 33 minutes video.
*Additional videos can be found on the Resources page of this RWLE website.*

Articles:

