Problem Based Learning (PBL) for Global Sustainability
Impact Canvas Instructions

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Problem-based learning (PBL) impact canvas

Background

Problem-based learning (PBL) is a student-centred pedagogy in which students learn about phenomena through the experience of addressing them in the form of open-ended problems. The focus is not directly on problem solving with a defined solution but on the overall development of students' skills and competencies and their awareness related to the topic. When PBL is applied to global sustainable development contexts, the knowledge acquisition centers around the development of interdisciplinary perspectives, multi-level analyses and the application of normative lenses tracing social, economic and environmental impacts relevant to the concrete problem at hand. In addition to analytical skills, PBL pedagogy organises learning processes in a student-driven form, developing participants' self-awareness, self-directed learning, ownership and empowerment, effective communication and often teamwork and project management skills depending on the educational methods applied.

PBL South Asia is a collaborative capacity-building and curriculum development project of 10 Higher Education Institutions in Bhutan, India, Nepal, Finland, Lithuania and the Netherlands. The project developed PBL methods adapted to global sustainability and development topics, with education materials aimed especially at undergraduate or graduate students from various backgrounds.

The PBL for Global Sustainability - Impact Canvas was initially developed as a resource tool for PBL South Asia activities and online learning materials. It has been piloted with students of Aalto University, the Royal University of Bhutan and the Kaunas University of Technology. Learning goals, teaching methods, assignments and students' backgrounds differ widely across universities, but similar questions and processes arise, to varying degrees, across the courses. The PBL Canvas aims to capture core questions in a step-by-step format suitable for most student projects taking a more detailed look at the societal impacts of the actions, prototypes, or initiatives that students discuss or develop in their assignments.

It is our hope that the Impact Canvas continues to serve universities and other users in the future. For additional educational materials related to this theme, visit the online lessons from PBL Global Sustainability MOOC.

Purpose of the Impact Canvas

The canvas presents a simplified roadmap for fostering an understanding of "the bigger picture" - sustainability, systems perspective, human rights based approach, critical thinking, co-creation; in PBL (or similar) student cases, with or without active fieldwork components. It offers student teams, mentors, facilitators, teachers, course coordinators and other external stakeholders a shared framework to discuss, guide and evaluate impact considerations taken up by learners in their projects.

For Whom?

- Learners working in teams/groups (also across different courses or institutions) on the same problem/s (to learn and apply PBL methods in a global sustainability context). The canvas can be used by individual learners as well, but some of its contents are formulated specifically for teamwork.

- Mentors (to facilitate teams).

- Teachers/Course Coordinators/External stakeholders (to communicate, supervise, evaluate, and overall course coordination).

When? At the beginning/On the go

- Recommended for any Problem Based Learning (PBL) or similar course, case studies and projects.

- Can be used at the diploma, bachelor and master levels with elements of teamwork, multidisciplinarity, sustainability, wicked problems, co-creation, systems thinking and design thinking.

- Can also be used in project courses that involve fieldwork, and teamwork among the students and/or external stakeholders.

- The canvas is generally recommended for case studies that involve an external stakeholder(s) or beneficiary(ies) who can be defined as having an existing relation to the problem(s) addressed.

What?

- The canvas serves as an easy-to-follow tool for understanding the role of PBL approaches in ensuring practical actions towards societal impact and sustainable development. It draws attention to normative questions and applies a systems perspective, with questions related to Sustainable Development Goals, and human rights based approach (HRBA).

- It also addresses the process of a generic PBL project, encompassing teamwork, tools for analysis and co-creation-related steps.

- The canvas is arranged in a process of 10 steps, with guiding questions for each step.

PBL Impact Canvas - Steps

1. Learning objectives

Learning objectives

List all learning objectives as indicated by the course/project/assignment. Consult your mentor/teacher/course coordinator or problem "owner" if you need more information.

Your aspiration

Are the objectives consistent with what you need in terms of skills and competences for the future? Indicate your hopes and fears (personally and as a team) regarding achieving the objectives and the problem at hand.

2. Background

Team

Who is on your team? What capabilities do you have? Your individual role in the team? Team rules?

The problem

What is your case? What appears critical? What are the sustainability questions arising from the case? Why is this an important topic?

3. Mapping the current scenario

Actors

Who has a key role in this issue? And also, who is affected by it? Think from a holistic and broad perspective.

Drivers, Objectives and Expectations

Identify underlying expectations for this project: what is driving the initiative, whose agenda is central to it, who is supporting it, and what for?

Risks & Barriers

Why is the presented case a PBL "problem"? What needs or shortcomings does it reflect? Why has the "problem" not been solved before?

4. Initial systemic context

What is the common understanding of your case's broader systemic context? What research/other information is available on it? What kinds of causal effects and patterns can be identified across different criteria of sustainability?

Expand on the implications of the issue you are dealing with.

- Political, institutional (including HRBA)*
- Socio-cultural
- Economic
- Environmental

5. Action

Ideal approach

What would be the perfect solution to the problem? How/whom would it help? What would the perfect scenario look like? How could it be implemented?

ACTION

South Asia

5 Ideal approach
What would be the perfect solution to the problem? How/whom would it help?
What would the perfect scenario look like? How could it be implemented?

6. Revised analysis and limitations

Assess the potential impacts of your proposed solution from a long-term systemic perspective. Identify normative and practical questions and limitations. Reflect on the impact including causal effects and patterns of your ideal approach across different criteria of sustainability.

Expand on the implications of the issue you are dealing with.

- Political, institutional (including HRBA)*
- Socio-cultural
- Economic
- Environmental

REVISED ANALYSIS & LIMITATIONS

Assess the potential impacts of your proposed solution from a long-term systemic perspective. Identify normative and practical questions and limitations. Reflect on the impact including causal effects and patterns of your ideal approach across different criteria of sustainability.

South Asia

Expand on the implications of the issue you are dealing with.

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Political, institutional (including HRBA)*	Socio-cultural
Economic	Environmental

*HRBA= Human Rights Based Approach

7. Revised action

Feasible approach

Refine or change your initial proposal/ideal scenario. What do you choose to change and focus on? What would be the most feasible approach leading to a practical outcome?

REVISED ACTION

South Asia

7 Feasible approach
Refine or change your initial proposal/ideal scenario. What do you choose to focus on?
What would be the most feasible approach leading to a practical outcome?

8. Theory of change

Draw a picture/chart of the expected change/benefit at the community level (e.g in 5 years). What are the changes that need to happen? How will they be measured and reported? What risks and assumptions underlie the change?

Change process

Inputs, Benefits, milestones (outputs or outcomes), causal links

Participants

Roles, actions, learning, motivations

Requirements, assumptions

Resources and conditions needed, potential risks and their management & follow-up

9. Sustainable Impact

Impact

Reflect on impacts (potential changes) including causal effects and patterns of your selected/feasible approach across different criteria of sustainability.

Expand on the implications of the issue you are dealing with.

Political, institutional (including HRBA)*

Socio-cultural

Economic

Environmental

Participation & Ownership

Who will own your proposed approach? How will different actors collaborate in your proposed approach? How could the collaboration be improved or sustained in the future?

Long-term forecasting

What do you envision would be needed for your approach to be effective in the near (1-3 years) and far future (5 years and beyond)?

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Participation	Learning	Long-term
What is the value of the collaboration between different actors in the project?	What have you learned from yours and others' ways of dealing with local and pressing issues around the problem?	What do you envision would be needed for your approach to be effective in the near and long term future?

10. Learning objectives reflection

Learning

What have you learned from your teams' and others' ways of dealing with local and pressing issues around the problem? What skills and competencies do you think you learnt or developed further? Any new unanticipated learnings?

Reflection

How well do you think (individually and as a team) the learning objectives were achieved? What were important issues that facilitated or hindered your learning? How did your initial hopes and fears manifest during the project?

LEARNING OBJECTIVES REFLECTION

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Instructions for using the canvas
How and when to use the canvas? What to write on the canvas?

For convenience, the canvas is arranged in the form of a step-by-step process from one category to another. However, learners can decide and prioritise categories and sub-themes according to preferences or course requirements. Any of the categories and sub-themes can also be used independently as a stand-alone component.

The canvas is provided as a PowerPoint slide set and it can be copied and used in classroom settings, as documentation materials during field visits, or as an online tool to be populated with contents on a joint drawing board, available in various applications such as the Miro board.

The canvas can be populated with various types of content depending on whether it is used online. Materials can include text entries, post-its (actual or virtual), pictures, drawings, attachments and links to documents.

Learners working on a common PBL task are recommended to use the canvas from the beginning of the assignment and to use it collectively (when working as a team). Recommended starting categories are 'team' and 'learning objectives'. The mentor/facilitator/teacher or course coordinator is encouraged to participate actively in supporting students, especially when formulating the 'learning objectives'. At the end of the PBL journey, the learning objectives are to be evaluated and reflected upon together again with the whole group.

The canvas invites to record important processes, highlights, conflicts, and decisions of the team under thematic categories and sub-themes. Keywords and summary sentences (or any other form of a statement) capture discussions, decisions and insights achieved. These are clustered according to the thematic categories outlined in the canvas.

The canvas is helpful in complementing learning processes, which typically involve the application of data collection, design, prototyping, or project management tools. The canvas draws attention to recurrent impact themes, displaying how the teams' understanding of the problem and proposed ways to address it evolved through the journey. The completed canvas enables the student teams to identify the trajectory of their approach towards sustainable impact and their learning outcomes related to the initial sustainability problem.

How to capture/communicate the learnings of the students?

The exercise on sharing learning goals/objectives can be used to reaffirm overall course objectives together with the teacher or to define separate objectives for the use of the canvas itself. Students and teachers can choose an emphasis they want to focus on. Learners and teachers can reflect jointly or separately on learning and results after going through the whole canvas or at intervals related to categories.

Learning diaries and feedback forms can be incorporated to reflect the canvas steps and questions directly.

External stakeholders beyond the group of learners can be involved in the work around the canvas. In some cases project beneficiaries and partners may comment on the results at regular intervals. In other situations, partners may not be able to follow the learning process closely, in which case it is recommended to communicate core findings to the stakeholders at the end of the project.

How to capture the teacher's instructions or reflections to the learners?

Methods may include:

- Teacher's/ Mentor's learning diary, especially during initial, middle and final phases of canvas work (key areas would be: resources, tools, assessment, mentoring/facilitation during the period)
- Taking pictures (or screenshots if working on an online board) of the canvas at regular intervals as it is being gradually populated by learners

- Adding Teacher's comments sections to the canvas
- Incorporate feedback on the canvas itself into the course assessment materials

How to interpret the "results" of the canvas? How to evaluate the learners?

Typically, at the end of a PBL assignment learning objectives are evaluated and reflected upon again with all team members. This can include peer/self-evaluations, and can also differentiate the roles and outputs that each team member has contributed to distinct categories of the canvas.

Joint reflection on learning objectives (learners and teacher) enables teachers to assess the effectiveness and relevance of the tools applied as well as the scope and framing of the PBL case/problem for each category, providing insights on how a broader or narrower approach to the topic shifts the focus and learning results of any PBL assignment.

Resources

Teamwork First-Aid Kit, Aalto University:

https://www.aalto.fi/en/collaboration/teamwork-first-aid-kit

Introduction to the human rights-based approach: a guide for Finnish NGOs and their partners UNICEF Finland 2015

https://unicef.studio.crasman.fi/pub/public/pdf/HRBA_manuaali_FINAL_pdf_small2.pdf

Introduction to Theory of Change, Research To Action

https://www.youtube.com/watch?v=VtMRMKFmDm4&ab_channel=ResearchtoAction

Problem based Learning for Global Sustainability MOOC videos, PBL South Asia

https://www.youtube.com/watch?v=zvMm6BLyFzs&list=PLGnZ-mpKK58EGjWSU9qsgoEVEsFijPBUh&ab_channel=PBLSouthAsia

Problem based Learning for Global Sustainability MOOC modules' exercises in action videos, PBL South Asia

https://www.youtube.com/watch?v=h-1SSLsvyvs&list=PLGnZ-mpKK58FA5zc83u8oBPgKmrEOxFLE&ab_channel=PBLSouthAsia