PBL4SDGs Guide: Designing projects to develop the key competencies for sustainability

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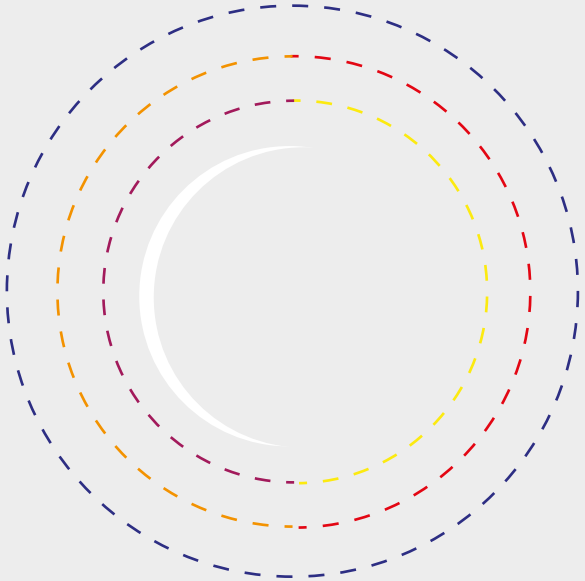
CATALONIA FOR EDUCATION, SCIENCE AND CULTURE ORGANIZATION

upf. Universitat Pompeu Fabra Barcelona



Contents

Introduction

The aim of this document is to help educational centres to create and specify useful tools and materials for designing, implementing and assessing activities that promote the development of the *competencies for sustainability* proposed by UNESCO, on the basis of project-based learning (PBL) methodology.

Who is it for?

This material is aimed at schools and teachers of different educational stages interested in creating classroom activities or projects that deal with topics related to global justice, the climate emergency, planetary welfare or sustainable development with a clear competency-based approach. It can be useful both for teachers who want to start working on these project types or those already working on them, yet who wish to introduce a focus on the key competencies for sustainability.

Who created this guide?

This guide is the result of work undertaken by the working group Competencies for Sustainability promoted by the Pompeu Fabra University (UPF) and CATESCO. The group was formed from the PBL4SDGs initiative with the aim of mobilising, in upcoming years, a large number of schools towards planning **educational practices for global citizenship, with a competency-based approach, through the globalised, meaningful learning provided by PBL.**

The working group is made up of teachers from different educational stages and people linked to the world of education. Throughout the working sessions, the group has focused on three aspects: defining how the ideas of global citizenship and sustainable development proposed by UNESCO are understood in education; specifying which are the transversal competencies that allow us to get there; and how they can be worked on in educational centres.

To carry out this task, the working group has been supported by a group of international experts. This advice took the form of a seminar, consisting of five one-off sessions, on aspects related to defining competencies for sustainability and their assessment.

The Guide's Aims

1. **Specify** how to develop and assess the competencies for sustainability, especially through project-based learning.

2. **Connect** the development of competencies for sustainability with the learning objectives of the Sustainable Development Goals (SDG).

3. **Provide** resources for designing projects that enable the development of the various competencies.

The 2030 Agenda: context and theoretical framework

In 2015, the United Nations drew up the 2030 Agenda for Sustainable Development, **the first global agenda shared by the whole world** that establishes a consensus of minimums to be achieved by 2030. The agenda offers a number of interconnected goals, known as Sustainable Development Goals (SDGs). These are milestones towards which each person **or entity can progress locally so as to achieve them, thus adding their weight to the required global impact.**

We take the content of this first agenda as both a starting point and shared framework because we believe in its potential and also because one of its main purposes is education. Within the 2030 Agenda's framework, education is both an aim and a goal that makes the other goals possible.

The 2030 Agenda and SDGs are an ideal framework for addressing today's complex, global challenges along with their interconnectedness. In order to develop competencies in global citizenship and sustainable development, education for the SDGs therefore becomes a relevant approach, which is only successful if it is tackled through active, transformational pedagogies, **such as project-based learning** (PBL).

On the educational purpose: key competencies for sustainability

The document Education for SDGs: Learning Objectives (UNESCO, 2017) presents the so called **competencies for sustainability**, a number of capabilities that students can develop throughout various educational stages that are linked to the different SDGs.

This UNESCO document, produced by UNESCO's Education for Sustainable Development and Global Citizenship Section, proposes eight broad competencies, the development of which should enable people to take actions that will transform the planet.

It should be noted that the eight competencies, which are described below, do not form separate, independent compartments, but are interconnected during decision-making on sustainability – each helps in developing the others – so that they provide an effective pedagogical framework for structuring education on the SDGs (Brundiers *et al.*, 2021).

2 Theoretical Framework and Context

Systems thinking competency
The abilities to recognise and understand relationships; to analyse 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 assess 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.

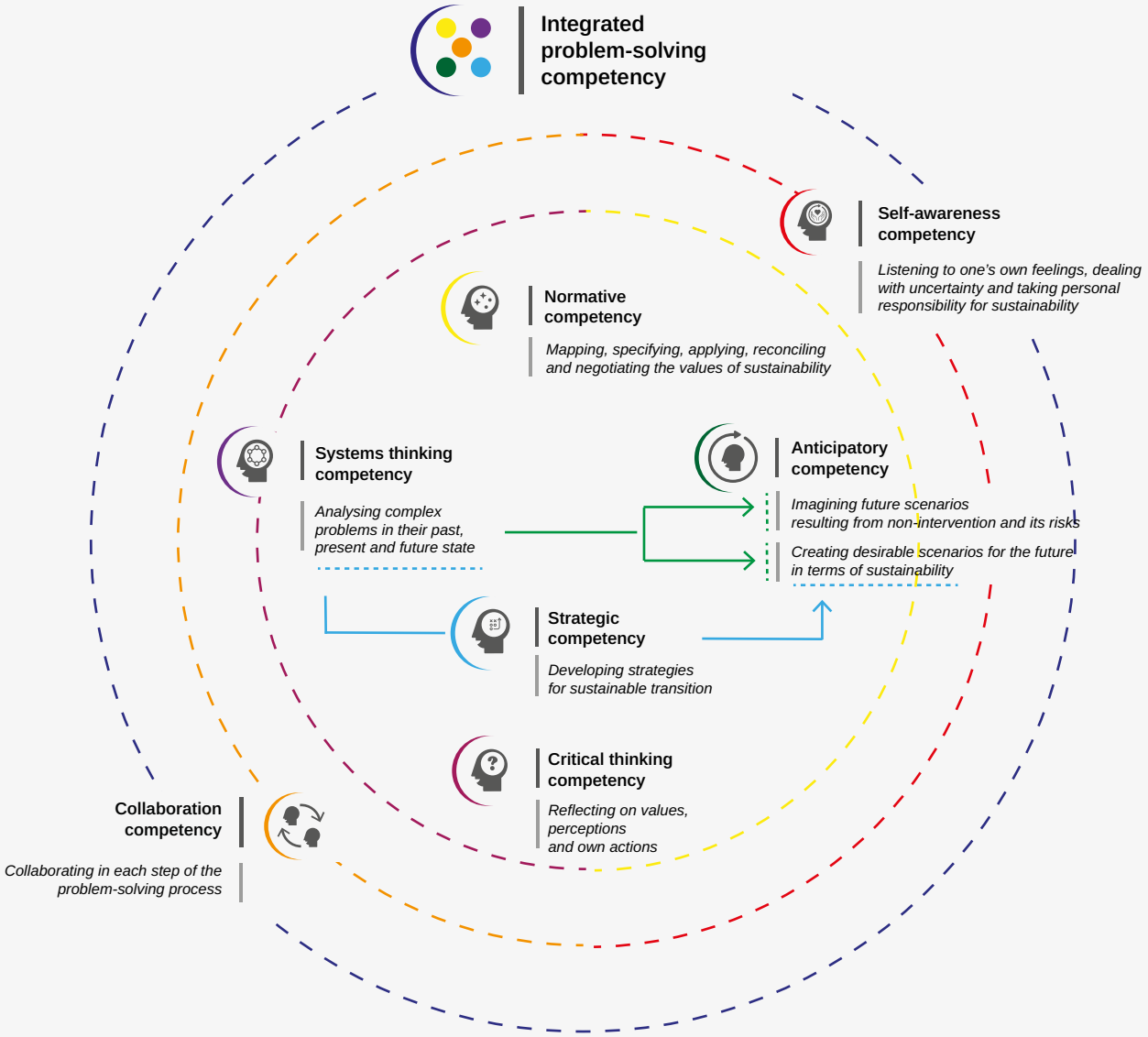
Critical thinking competency
The ability to question norms, practices and opinions; to reflect on one's own values, perceptions and actions; and to take a position in the sustainability discourse.

Self-awareness competency
The ability to reflect on one's own role in the local community and (global) society; to continually assess 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 above-mentioned competencies.

The key competencies for sustainability

Link to printable material **"Infographic: The Key Competencies for Sustainability"**



Education 2030

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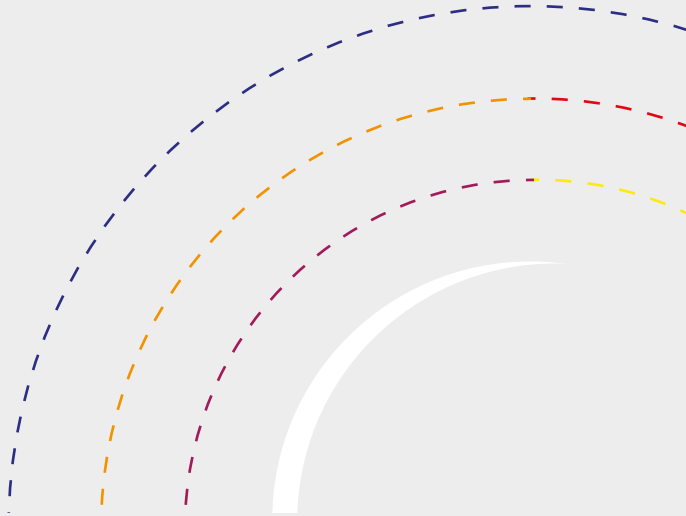
Resources: Wiek *et al.* 2011, Wiek *et al.*, 2016
Design: Cristina Font, March 2022

2 Theoretical Framework and Context

As we have seen, the graphic shows the interconnection between the eight competencies when responding to the complex problems posed by the SDGs. Thus we find that the first competency that people need to resolve these problems is to understand this complexity; to be able to analyse such problems from contrasting perspectives in order to understand them in the present, furthermore knowing how they have evolved throughout history. In this process, the **systems thinking competency** is activated, displayed centrally in the image.

This analysis then leads us to imagine, firstly, how these problems will continue to evolve in the future and secondly, the various possible future scenarios. From this it can be observed that some will be more sustainable than others and some more likely. On this point one should bear in mind that our future will depend on us and on our actions. This whole process is guided by the **anticipatory competency** which, as we have seen, is the ability to imagine possible, probable, sustainable and desirable futures.

At this point, so that we can reflectively and proactively define which future scenario is the most sustainable and desirable, **the normative competency** comes into play, leading us to choose while likewise taking into account our own and others' values. We must negotiate with these others on the common goals to be achieved. Likewise of crucial importance is the **critical thinking competency** for questioning one's own actions and values, thus achieving a position on the scenario's sustainability through well-founded arguments. From here, the **strategic competency** is needed to deploy skills and tactics to move towards the desired, more sustainable future scenario. When undertaking actions for change, it is also vital to work on **self-awareness competency**, which refers to managing emotions in the face of challenges, uncertainties, motivations and frustrations. Since strategies for change should be collective, it is also of crucial importance that during the whole process described above, work is undertaken collaboratively with different agents and people so as to develop the **collaborative competency**. Lastly, the graph shows the **integrated problem-solving competency**, which becomes a meta-competency since it integrates all other competencies so as to respond to the major challenges the SDGs pose.



Regarding the pedagogical model: project-based learning

Education for sustainability requires a teaching approach that is transformative, participatory, oriented towards action and solving complex problems, one that fosters autonomous learning, promotes collaboration and establishes links between formal and informal learning. For this reason, project-based learning (PBL) is an ideal pedagogical strategy. Students learn by developing projects that are significant and relevant to their culture, their lives and their future. These projects consist of in-depth investigation of a complex problem, question or conflict with multiple solutions, over an extended time period (from a week to a semester) and usually take an interdisciplinary or transdisciplinary approach.

During the project's development, the students – with their teacher acting as guide and facilitator in the learning process – work collaboratively and make decisions related to the tasks they must carry out. Collaboration with students from other schools, with experts or with members of the educational community or other organisations is also a characteristic feature of PBL. Therefore, a good project should have an impact outside the school. This means that, whenever possible, it should be made public and shared with people beyond the classroom.

Another characteristic of these projects is the incorporation of activities that promote reflection and self-regulation of the learning process by the students. Stimulating their reflective capacity helps them to progressively and significantly develop the competencies they must put into practice, in this case, competencies for sustainability.

The following diagram shows the phases to be followed in planning and developing a learning project of this type.

Project Itinerary

What do the students think?

1 Proposing the Project: General approach and guiding question

- What does the project ask me to do?
- What do I need to know?
- Why is it important?
- With whom should I share my task?

2 Building knowledge and skills to respond to the guiding question

- What resources can/should I use?
- Can I rely on the information I find?
- What is my role in the process?
- How can I apply what I have learnt in the project?

3 Developing and reviewing products and responses to the guiding question

- Do I need more information?
- Is my work on the right track?

4 Presenting the products and responses to the guiding question

- What should I explain about what I have done?
- How can I share it with others?
- What have I learnt and what should I keep in mind for the next project?

REVIEW

How should teachers guide the inquiry?

- Pose the problem and present how to construct the guiding question.
- Facilitate the process so that students formulate their doubts.

- Facilitate the use and assessment of resources.
- Provide students with the necessary explanations, scaffolding and guidance to respond to their needs.

- Help students apply what they have learnt to their tasks.
- Provide students with added experiences so as to generate new questions.
- Facilitate feedback processes.

- Support students in assessing their task.
- Facilitate students' reflection on their learning during the process.

Figure 1. Project Development Phases (Buck Institute for Education, 2019).

Regarding the assessment model

Assessing competencies for sustainability must be aligned with the didactic model that we have presented. It must therefore be empowering, participative and dynamic throughout the learning process and must go beyond the school environment, helping students to make decisions about their own actions.

The following are some guidelines to help in designing empowerment assessment tasks, tools and strategies.

Firstly, it should be stressed that the key initial question teachers must ask themselves when faced with the task of designing empowerment assessment tools is always *What should my students be able to do?* The answer inevitably directs us to the **learning outcomes**. In other words, what do we expect students to learn and know how to do in relation to the various competencies?

Secondly, it is useful to ask **How do we assess?** **What do we need to do so?** The answer to these questions offers us three types of tools to take into account when designing an empowerment assessment for a sustainability project.

How do we assess? To assess we need:

Assessment means: These are the students' products or actions, the multiple ways they have of communicating their learning. They provide the proof or evidence that informs on the object of assessment.

Assessment techniques: These are the strategies that allow information to be collected systematically (observations, interviews or questions, analysis of productions).

Assessment tools: These are real, physical tools used to analyse and assess the learning evidenced through the assessment means that explicitly reflect the assessment criteria and indicators (rubrics, checklists, etc.).

In relation to this last aspect, it should be said that in order to bring out the assessment criteria, it is useful to ask oneself: ***What should my students' production be like in order for me to grade it with an A?*** In answering this question, we are making the assessment **criteria explicit**. However, these criteria cannot be used by students operationally because the value judgement associated with each criterion, usually expressed in terms of qualifying adjectives, is not specified. To specify the value judgement accurately, it is useful to answer the question: *How can this criterion be observed tangibly?*
The answers to this question provide more detailed, accurate information, providing us with the assessment or achievement **indicators**. When we share the achievement criteria and indicators with students, they can exercise operational control over the proposed task; in other words, make decisions about their own learning (Esteve & Fernández, 2013).

The following outline shows the structure needed for planning effective assessment and learning tasks.

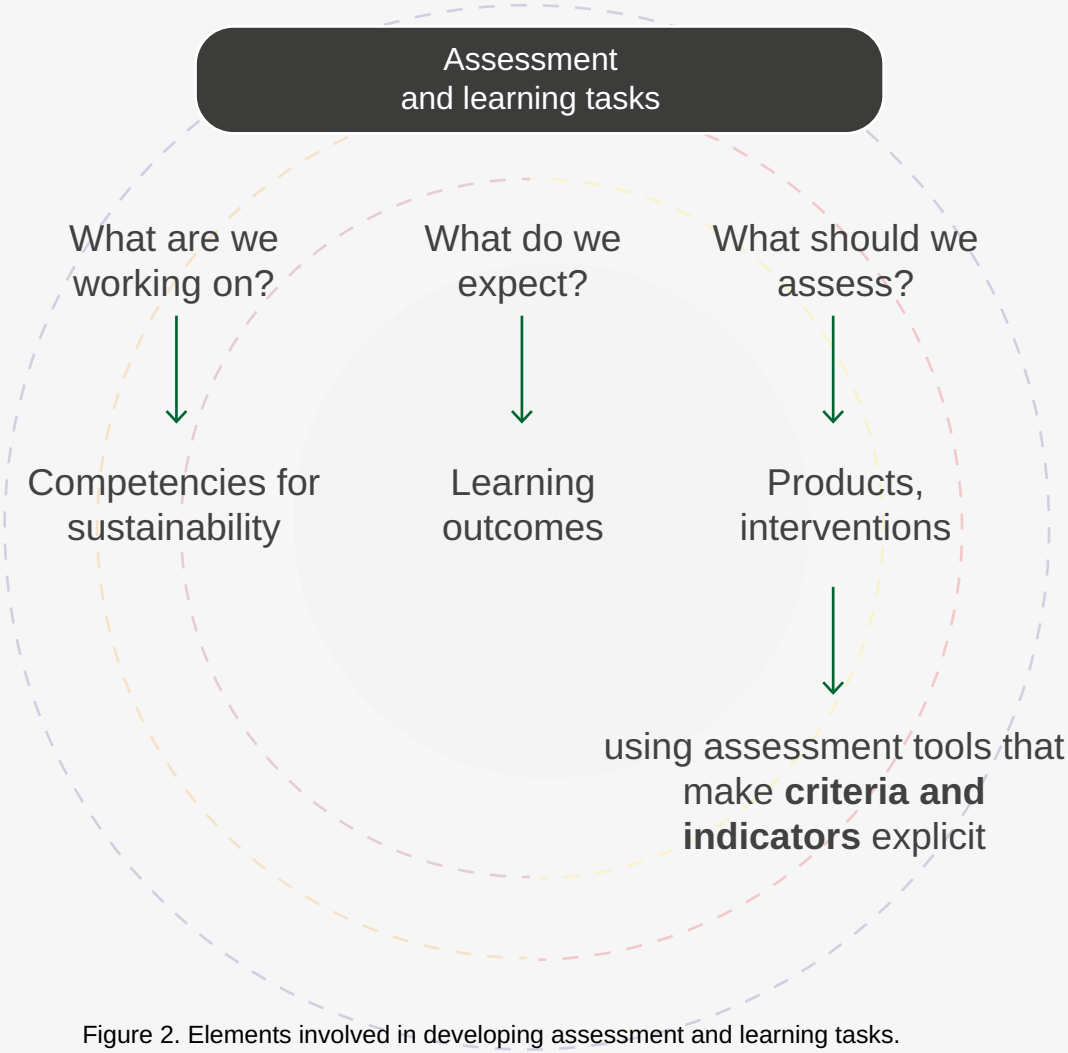


Figure 2. Elements involved in developing assessment and learning tasks.

Another key aspect to bear in mind is that assessment must be ongoing throughout the process.
So it is absolutely necessary to include assessment in each PBL phase, not just at the end. Sometimes the means of assessment in certain phases (especially the initial ones) may, for example, mean compiling oral interventions from students during the classroom conversation, which the teacher systematises and uses to provide effective feedback. In other words, this feedback should provide students with effective help to enable them to progress in the learning process. These aids generally tend to become more explicit as the PBL phases progress. Thus, they progress from the initial conversation to more specific rubrics or checklists, including indicators, in the later phases.

Lastly, one should remember how vitally important assessment is for learning. This means that assessment must be used to enable students to make judgements, taking decisions now and throughout their lives. For this to happen, three elements are necessary: student participation in assessment (self-assessment and co-assessment), effective feedback and designing good-quality activities. The following diagram graphically shows these elements and their importance in the teaching and learning process.

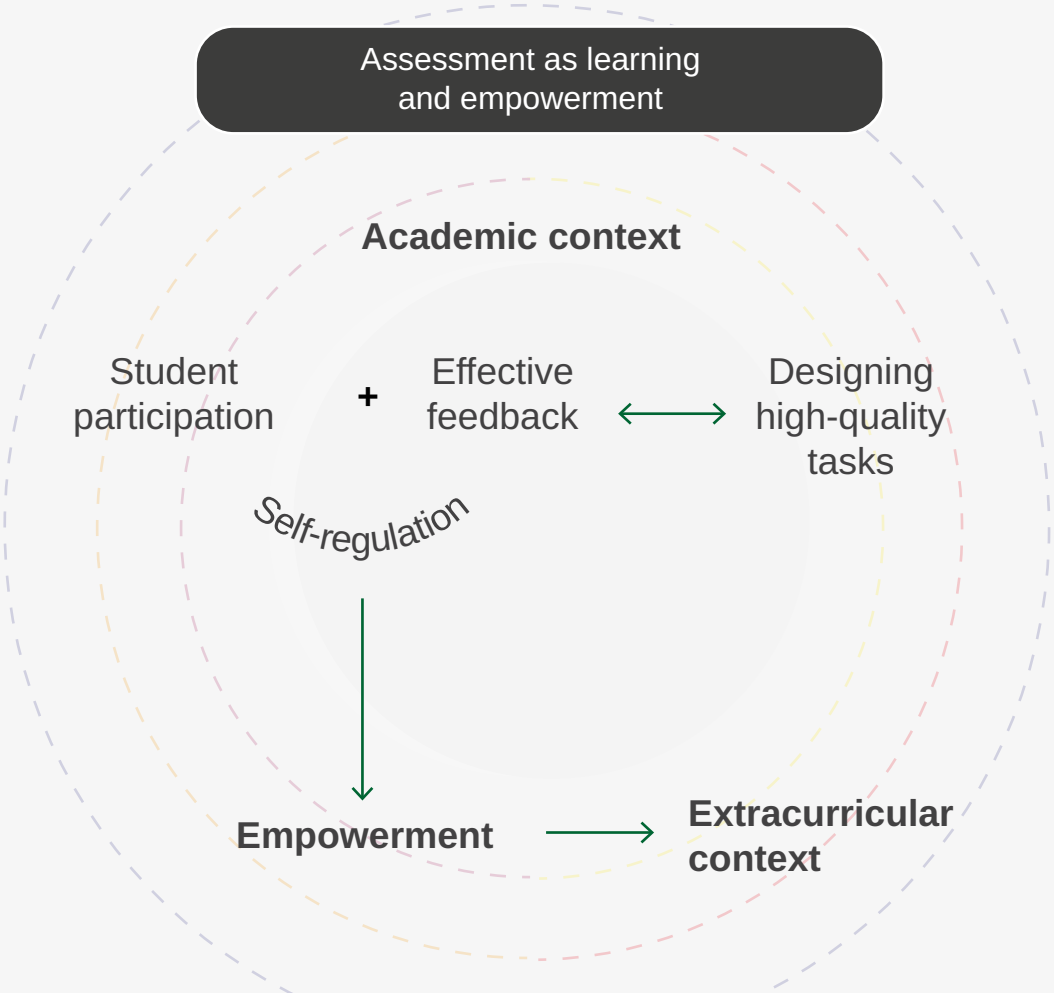
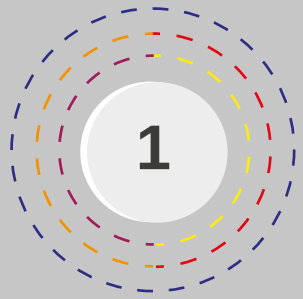


Figure 3. *Assessment as learning and empowerment* (Rodríguez-Gómez, Ibarra-Sáiz, 2015)

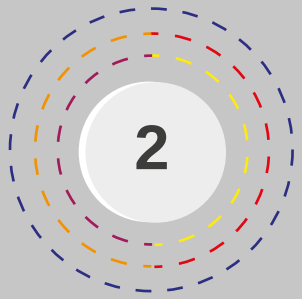
PBL4SDGs Guide

This guide includes three resources to support the design of sustainability projects.



Guidelines on designing projects for sustainability

A table is presented including the competencies that can be worked on in each PBL phase. Within each competency, three aspects are specified: expected learning outcomes; suggestions for facilitating the development of the competency and; lastly, possible means of assessing the competency.



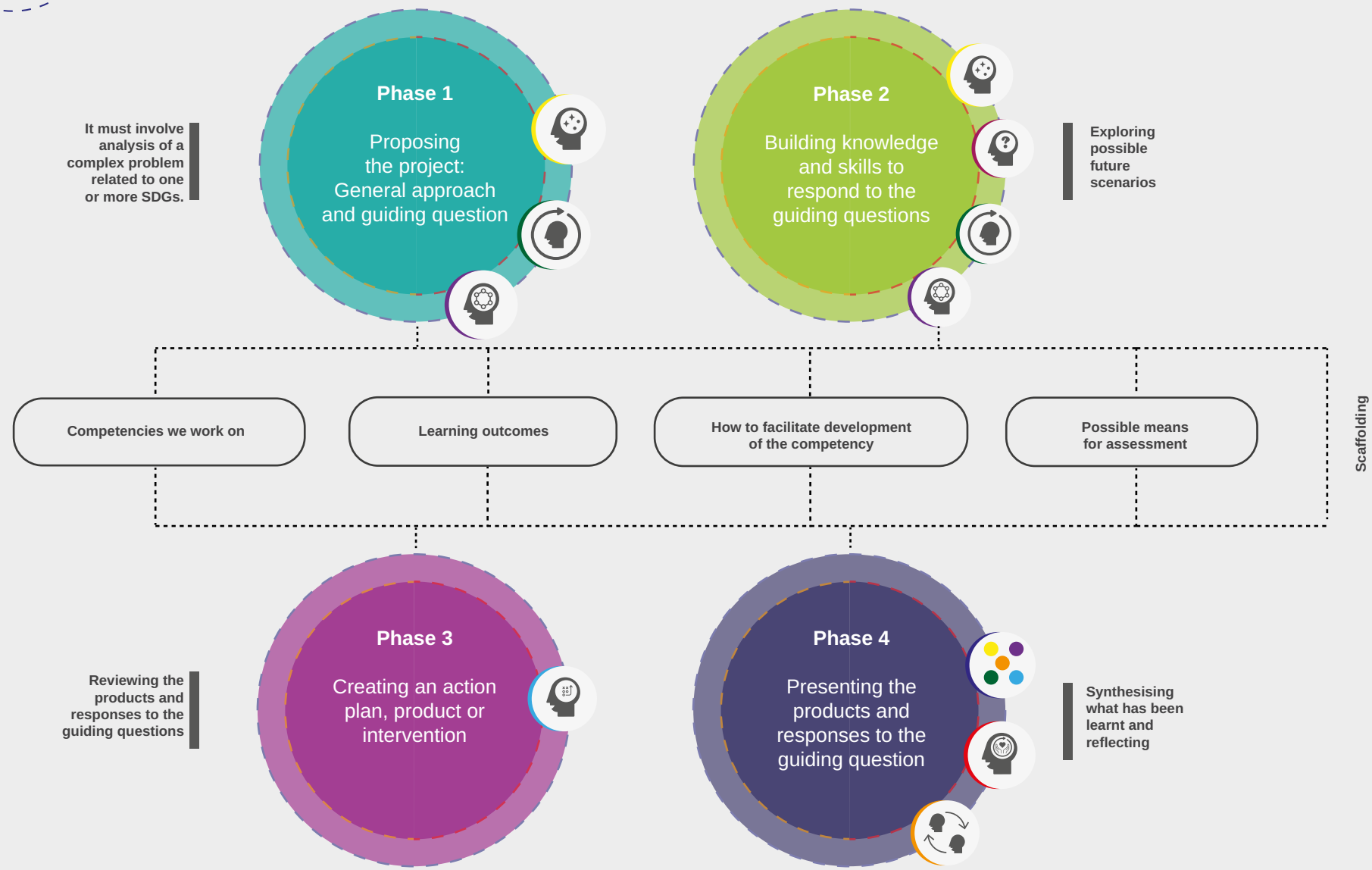
Assessing competencies for sustainability

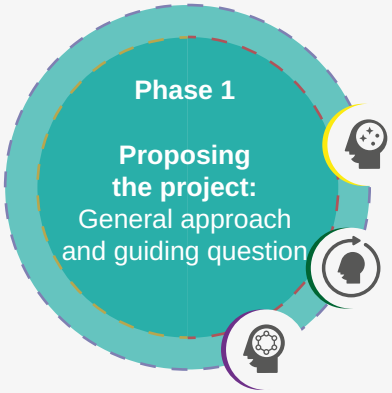
It includes a table containing achievement indicators for sustainability competencies to help design assessment tools.

Canvas for designing PBL4SDGs projects

This is a tool to facilitate the design of projects, taking into account the two previous resources.

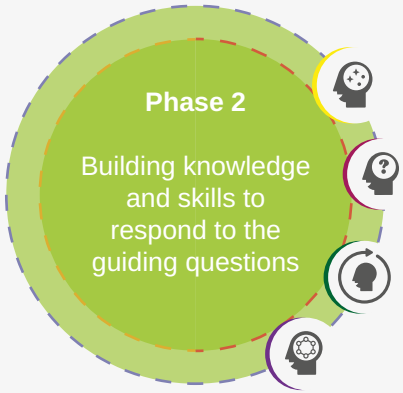
1 Guidelines on designing projects for sustainability





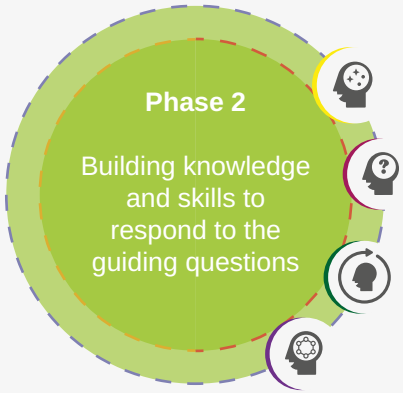
It must involve analysing a complex problem related to one or more SDG

Competencies being developped	Learning outcomes	How to facilitate development of the competency	Possible means for assessment
Systems thinking What is our problem? What must we know to understand the problem's complexity?	Understanding the characteristics of complex systems, such as environments, human communities and economic systems. Recognising contrasting contexts or viewpoints to analyse complex problems (local/global dimension, different disciplines, cultural perspectives, etc.).	Using concept maps, systems analysis, games or research activities that allow us to understand the complexity of the systems or contexts being studied.	The story of the problem identified. Brainstorming, concept mapping. List of the elements on which information must be sought.
Anticipatory What different future scenarios can we imagine? What are we basing this on? What else must we know?	Imagining possible and desirable future scenarios from a current situation.	Encouraging them to creatively imagine different scenarios for the future from different viewpoints, and making them analyse whether they are sustainable.	Description, narration (drawing or staging) of future scenarios (local and elsewhere on the planet).
Normative Why are they important? To what values and beliefs is the problem related?	Identifying the values and beliefs involved in the problem, related to: human dignity, global justice, the environment, transparency and democratic participation. Recognising and mapping the values of a group, an educational community, a neighbourhood, etc.	Holding debates, organising role-playing games, having them express themselves through drawing or other artistic production, etc. Activities that will be accompanied by individual and group reflection and analysis.	Observation guidelines with indicators.



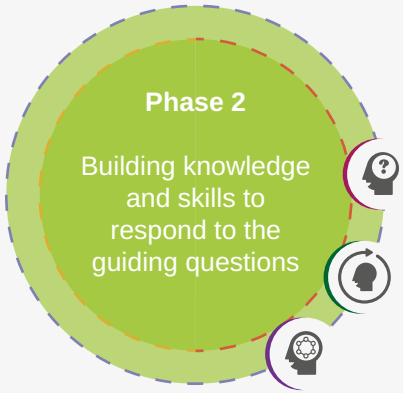
Exploring possible future scenarios

Competencies being developped	Learning outcomes	How to facilitate development of the competency	Possible means for assessment
Systems thinking What factors are involved? How can we deal with uncertainties?	Understanding the basic concepts related to sustainable development (interdependence, emergency, etc.) Understanding that sustainable development is an evolving concept. Identifying and discussing the causes of *unsustainability,* whether environmental, social, cultural, political or economic. Understanding the differences between circular and linear economies. Analysing different sustainability models.	Using concept maps, systems analysis, games or research activities that allow us to understand the complexity of the systems or contexts being studied. Analysing situations and contexts from different angles, levels of detail, etc. Seeking connections and feedback between elements within the contexts or systems studied. Recognising what is foreseeable and what is not in the systems studied. Making analyses from different approaches; for example, scientific method vs artistic interpretation.	Concept mapping on sustainability. Diagrams on the cause/effect relationship between the elements within a system. Debates on the uncertainties created by the context and systems studied, and how each person experiences these. Learning journals.
Anticipatory What different future scenarios can we imagine? What are we basing this on? What impact will our actions have in the short, medium and long term? What else must we know?	Analysing the impacts of possible future scenarios (risks and benefits). Identifying and analysing the actions that should be taken to attain desirable and possible future scenarios. Identifying relationships and possible developments between the past, present, near and distant future.	Using simulation games, future diaries, scenario analysis and retrospective calculation.	Issuing hypotheses relating cause and effect in the imagined scenario.



Exploring possible future scenarios

Competencies being developped	Learning outcomes	How to facilitate development of the competency	Possible means for assessment
Normative Which of these scenarios do we want to achieve and what are we willing to do?	Recognising that values underpin commitment and action. Shouldering a social commitment oriented towards action and impact on a local environment. Promoting participatory decision-making and understanding how power relations are involved in it. Knowing how to identify, listen to and understand the values and beliefs of others in relation to sustainability, and knowing how to reflect on them. Being capable of consensual group agreements.	Developing a shared vision through cooperative and horizontal dynamics, seeking common goals, negotiating meanings and building new proposals together. Reflecting on power dynamics between equals. Participating in Socratic debates, Fishbowl, Theatre of the Oppressed, etc. Mediating debates on controversial topics: **Discrepància benvinguda ("Welcome Discrepancy" ECP-UAB, 2018)** Using techniques to work on empathy: sharing the meaning of images, dramatisation, peer simulation, debate and role-playing.	Observation guidelines with indicators, for example: Display, recognise and accept difference, treating everyone with respect and equality; Recognise the values and beliefs that lie behind the actions and behaviour of others; Actively listen.



Exploring possible future scenarios

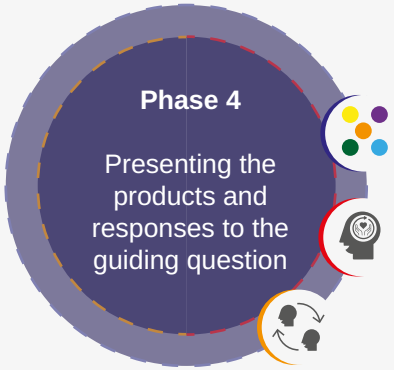
Competencies being developped	Learning outcomes	How to facilitate development of the competency	Possible means for assessment
Critical thought How do I assess the reliability of the information I find? What is my position? What are my arguments and on what do I base them?	Knowing how to distinguish – in communicative situations interacting with others – facts and evidence from assumptions and opinions, both those expressed by others and one's own. Being able to find solutions, or take decisions regarding a problem through a process of reasoning and analysis based on evidence, considering different options. Recognising that knowledge is temporary, contextualised and therefore limited; and from this perspective, being aware that decision-making and the position adopted must be rational, reliable and transparent, accepting the plurality of scientific contributions and, at the same time, their temporary provisional nature. Knowing how to use critical thinking to recognise power structures and knowing how to identify their hidden interests.	Proposing situations that challenge students, such as participating in social and scientific controversies, analysing dilemmas or case studies. Resources: **playdecide**, **engaging science**, **balancing arguments**, **scale of certainties**, **conversation cards** or **other resources for working on critical thinking in the classroom** Promoting the use of a rational process structured in different phases: Identify – Analyse: evidence is gathered from different sources. Question – Reason: observe the interests behind the contrasting positions, observe the impacts and risks of the approaches and results. Question oneself – Learn to be aware: identifying one's own contribution and position, and the reasons or motives (including emotional ones) that cause or motivate them. Act: act coherently with what is being proposed. Sharing with students criteria for assessing the quality of a source of information, such as accuracy, authority, objectivity, currency, etc.	Use and handling of information, data, ideas, etc., to contrast with own or other people's approaches and experiences, with the aim of arriving at a reasoned position. Effective communication of one's own ideas (through written texts, oral productions, drawings, posters, etc.). Writing texts, oral productions, comics, graphics, posters that show coherent, effective communication of one's own ideas. Justification of the validity of the sources used.

Phase 3

Creating an action plan, product or intervention

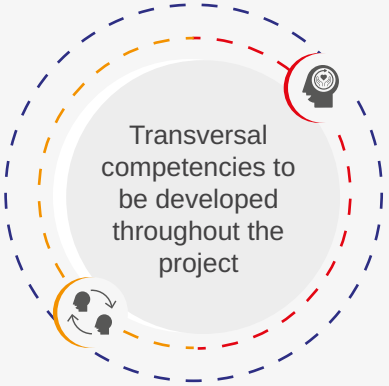
Reviewing the products and responses to the guiding questions

Competencies being developped	Learning outcomes	How to facilitate development of the competency	Possible means for assessment
Strategic What concrete actions can we take now? What new actions do we propose, in the near future, to go further? How can we know if they work?	Propose, provide and participate in actions that trigger transformations towards sustainable practices. Apply creativity to provide answers to questions related to sustainability, taking advantage of existing experience and knowledge.	Using techniques and pedagogies that encourage student participation inside and outside the classroom. Analysing the strengths and weaknesses of the various participatory models (top-down/ bottom-up). Making use of the reflective learning cycle (plan, act, reflect, adjust or the anticipation-action-reflection cycle). Conclude the class debates by asking: What can we do in terms of our attitudes and actions to improve the situation we are discussing? Inviting organisations or people involved in improving the neighbourhood, town, city or even the world, to explain what they are doing to change the situation discussed in class, and how they could collaborate. Promoting experiences of service/learning.	Decisions and actions proposed and their justifications and arguments.



Synthesising what has been learnt and reflecting

Competencies being developped	Learning outcomes	How to facilitate development of the competency	Possible means for assessment
Resolving integrated problems How have we finally solved the problem? What have we learned in the project's development? What were we expecting to happen? What happened? And what could we have done better?	To make decisions to solve complex problems linked to sustainability – in accordance with personal values and also those agreed upon as a group – overcoming the dilemmas, contradictions and uncertainties that arise in this process. Gather information, taking into account contrasting opinions and options, thus remaining open to different alternatives and perspectives.	Proposing, when faced with a problem, solid, well-documented solutions based on already existing or previously studied options and alternatives. Assess priorities in the face of a problem or conflict and make effective decisions.	Presentation of final products that provide a response to the guiding questions.



Competencies being developped	Learning outcomes	How to facilitate development of the competency	Possible means for assessment
Self-awareness How is this affecting my life? How do I feel about this problem and possible future scenarios? What positive attitude do I adopt? How do I manage discouragement or frustration? What do I want to do to tackle the problem? How do I feel after providing a response to the problem?	Identifying and expressing one's own values and perspectives, as well as one's strengths and limitations in situations related to sustainability issues. Listening to one's own emotions. Knowing how to understand and apply strategies to deal with fear, conflict or discouragement. Distinguishing between unfounded hope and the sources of realistic hope. Recognising needs and connections, considering not only the human species but also the planet's other organisms and the environment. Developing response and resilience mechanisms to deal with potentially overwhelming issues related to sustainability aspects. Taking responsibility for one's own actions and decisions, while employing the reflective capacity to seek opportunities for improvement and personal development. Considering the possibility of contributing personally to social transformations.	Discrepància benvinguda ("Welcome Discrepancy", ECP-UAB, 2018)	Self-assessment and co-assessment using categories or checklists incorporating comprehensible, guiding assessment indicators.

Competencies being developped	Learning outcomes	How to facilitate development of the competency	Possible means for assessment
Collaboration	Cooperating to build new knowledge and new ideas in multidisciplinary, interdisciplinary and transdisciplinary contexts. Cooperating to build new knowledge and new ideas in intercultural and intergenerational contexts. Participating actively and openly sharing ideas and experiences. Participating in democratic decision-making processes in contexts related to aspects of sustainability.	Encouraging the creation of an atmosphere of mutual trust, using shared language and active listening. Co-constructing with students the rules for a constructive conversation between equals (Thinking together). Using role-play, simulations, field work, case studies, projects and interviews to help students work in heterogeneous groups and integrate knowledge from different disciplines and backgrounds (e.g. academic, community and business). Using techniques to help develop empathy (using images, theatre, debates). Encouraging them to use their imagination to put themselves in another's shoes. Involving people from different disciplines and other interested parties to deal with issues related to sustainability. Managing the co-creation of collaborative processes: defining problems, recognising values, consensus building and integrating knowledge from different disciplines and stakeholders. Identifying those situations in which they themselves have used defence mechanisms, relating them to sustainability issues. Understanding the concept of resilience and promoting the identification of sources of risk and protection.	Self and peer-assessment of teamwork See PBL works rubrics

2

Assessment of competencies for sustainability

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The achievement indicators for sustainability competencies are then presented; their aim is to facilitate and guide the design of tools to assess them, such as categories, observation tables, checklists, etc.

The quality criteria shown below are useful for determining the differing levels of achievement of the competencies to be learnt.

Link to printable **"Achievement indicators for sustainability competencies to help design assessment tools"**

Quality criteria

Applicable to all indicators

Rel — **Relevance**
This refers to the level of adaptation to the situation or problem posed.

Com — **Complexity**
This measures one's ability to relate different concepts, the amount of knowledge and information used.

Acc — **Accuracy and exactitude**
This assesses one's ability to appropriately, accurately and correctly use the terms and concepts related to the meanings to be presented.

Coh — **Coherence**
This rates one's ability to produce coherent, cohesive oral and written texts in which appropriate use of connectors shows the logical relationship between the ideas, with coherent linking of the topics presented.

Aut — **Autonomy**
This refers to the level of help needed to achieve an indicator;
e.g.: Can the student do so without help, can they help others, or do they need support from other more expert people, etc.

Crea — **Creativity**
This considers the generation of original, imaginative and potentially useful ideas.

Degr — **Degree of transfer**
This measures one's ability to transfer acquired knowledge to another situation distinct from that of the initial learning context.

Systems thinking

- Identify the elements of a problem, describe its characteristics and the connection between them.
- Relate the different elements of a problem and their interdependencies.
- Use different points of view and representations to analyse a problem: the historical context; the different perspectives to be taken into account according to the fields of knowledge, cultures, human rights, economic contexts, etc.; and the scales of local and global spaces.
- Identify the causes and consequences of environmental, social, cultural, political and economic *unsustainability*, and the short-, medium- and long-term emergency they represent.
- Know how to differentiate between linear and systemic approaches.

Anticipatory

- Communicate and clearly set out possible imagined future scenarios.
- Know how to construct arguments on the sustainability of the possible scenarios in the imagined future.
- Assess the risks and benefits of possible future scenarios.
- Define the desired future scenarios in terms of sustainability.
- Propose measures to arrive at possible and desirable future scenarios by contemplating individual and collective actions.
- Recognise relationships and possible developments between the past, present, near and distant future.

Normative

- Identify and express the norms and values involved in a problem, and know how to relate them to human dignity, global justice, the environment, transparency and democratic participation.
- Identify, analyse and express one's own norms and values on sustainability and recognise how they underpin commitment and action.
- Be able to show empathy for the environment and be responsible in using and conserving environmental resources.
- Recognise and respect diversity: individual differences, ethnic and religious diversity, socio-economic differences, diversity of political options, and regional and global diversity.
- Identify, listen to and reflect on the norms and values of others in the area of sustainability.
- Recognise the values of a group, an educational community, or a neighbourhood.
- Be able to participate in constructing collective norms.
- Participate in and promote group decision-making, accepting diversity.

Strategic

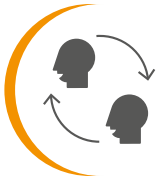
- Develop ideas and innovations based on the SDGs to respond to real problems.
- Suggest creative answers to questions related to sustainability, based on previous knowledge and experience.
- Participate in actions for change to carry out sustainable practices.
- Make decisions on any issue in accordance with the values of sustainability.
- Analyse the information and various options for flexible resolution, while remaining open to other alternatives.

Critical thinking

- Differentiate facts from assumptions and opinions, including one's own.
- Make decisions using a process of reasoning based on evidence and analysis of different options.
- Be able to assess the quality and reliability of different sources of knowledge.
- Recognise that knowledge is limited, temporary and contextualised.
- Be capable of identifying and questioning the interests of power structures or other collective interests.

Self-awareness

- Be able to identify and express one's own values, as well as one's strengths and limitations in a given context.
- Express one's own opinions in a reasoned way.
- Freely express one's own opinions and be open to enriching them by actively listening to others' opinions.
- Recognise that one's own needs depend on other people and the environment.
- Apply strategies to deal with fear, conflict or discouragement.
- Develop one's own response and resilience mechanisms when faced with potentially worrying issues linked to sustainability.
- Take personal responsibility for one's own actions and decisions, and reflect to seek opportunities for improvement and personal development.
- Recognise one's own possible contribution to social transformations.
- Recognise and accept one's own vulnerability, limits and contradictions.



Collaboration

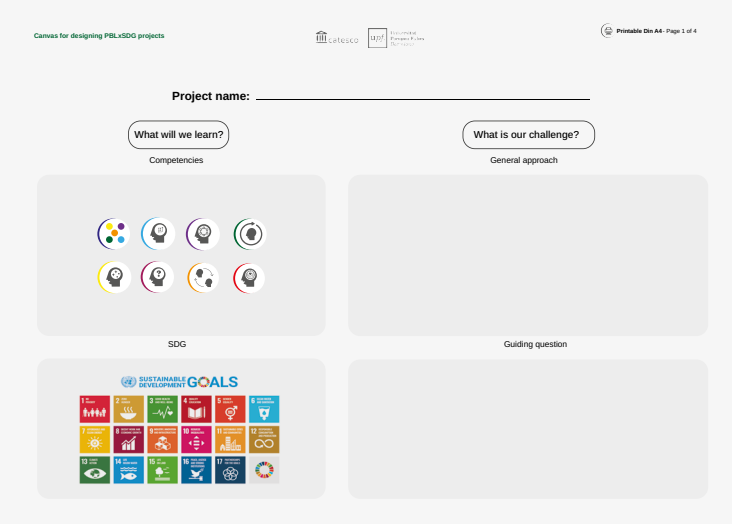
- Cooperate to build new knowledge and new ideas in multidisciplinary, interdisciplinary and transdisciplinary contexts.
- Participate in building new knowledge and new ideas in intercultural and intergenerational contexts.
- Openly share ideas and experiences in a group.
- Participate in collective decision-making and suggest ways for the group to overcome disagreements.
- Recognise and value the ideas of the group members and use them to help the group move forward.
- Ask for other perspectives and views from the group members.
- Contribute relevant ideas to the group project.
- Propose ways to improve the project's quality and the group's functioning.
- Help others and give feedback to others.

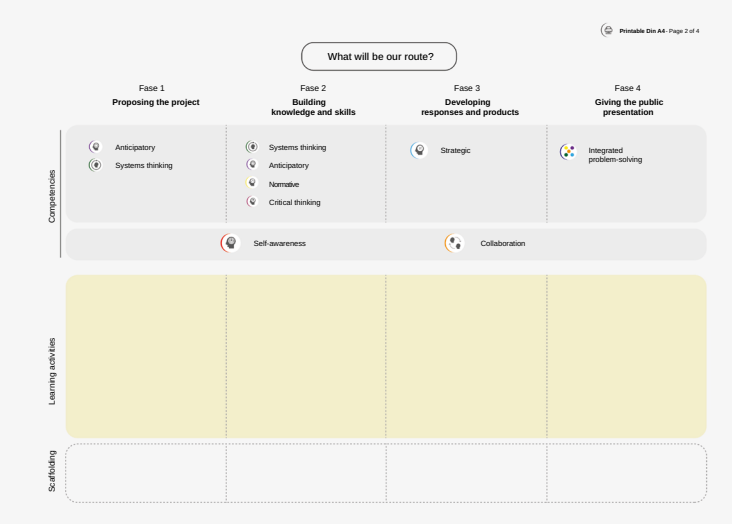
Integrated problem-solving

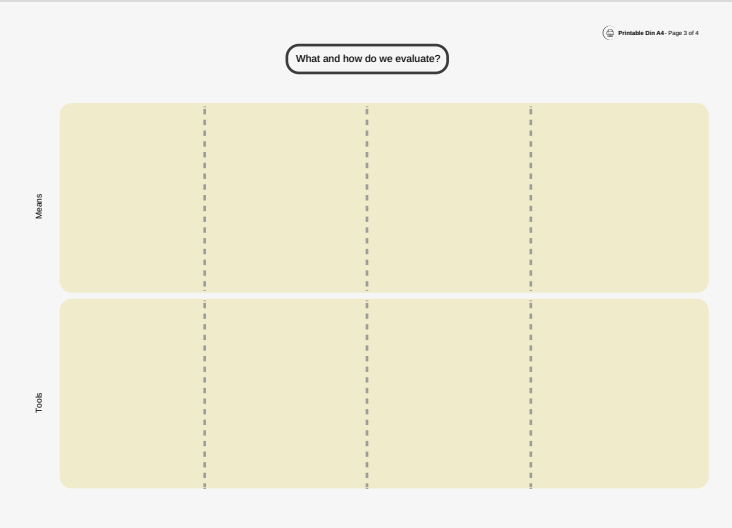
- Make explicit potential decisions to be taken in relation to the problem posed, even in a context of uncertainties, contradictions and complex problems.
- Remain open to other possible alternatives.
- Identify and know how to communicate the learning outcomes attained during the process.
- Identify areas for improvement and propose actions.

3

Canvas for designing PBL4SDGs projects







Link to printable
[“Canvas for designing PBL4SDGs projects”]

PBL4SDGs resources

Example of an PBL4SDGs project using the canvas:

- **L'autòpsia de l'objecte del desig** ("Autopsy of an Object of Desire", EduglobalSTEM)
  https://catesco.org/wp-content/uploads/2023/03/Canva_ABPxODS_autopsia.pdf

Other helpful resources for your PBL4SDGs project

- **Platform Educar x Transformar.cat**
  https://www.educarpertransformar.cat
  https://ildeplus.upf.edu/PBL-SDG
- ***Education for SDGs: Learning Objectives*** (UNESCO, 2017)
  https://unesdoc.unesco.org/ark:/48223/pf0000247444
- **Marc per l'ABP d'alta qualitat (Framework for High-Quality PBL)**
  https://catesco.org/en/2019/07/25/framework-high-quality-project-based-learning-hqpbl/
- **PBL Works**
  https://www.pblworks.org/
- **A Rounder Sense of Purpose: Educational competencies for sustainable development**
  https://aroundersenseofpurpose.eu/

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Coordinators:
Mar Carrió Llach, Marina Gay Faura, Mireia Kun Masvidal and Sílvia Lope Pastor

Group members:
Alba Galofré Robles, Anabel Barragán Cabezas, Carol Giralt Colomé, Felip Lorenzo Moreno, Francesc X. Torrell Cantero, Jordi Moner Roma, Juanma Sánchez Salado, Leslie Mahe Collazo Expósito, Marta Prats Aliaga, Mireia Peiró Giribets, Mireia Sastre Echevarria, Oriol Guinart Berrueco, Pilar Calçada i Balcells, Sandra Entrena Ortega and Vicky Santolaria Malo

Pedagogical and style review (Catalan): **Laura Farró Gracia**

Graphic design: **Cristina Font Alaminos**

Translation and layout (English): **K. Booth, F. Massana (velocipede.cat)**

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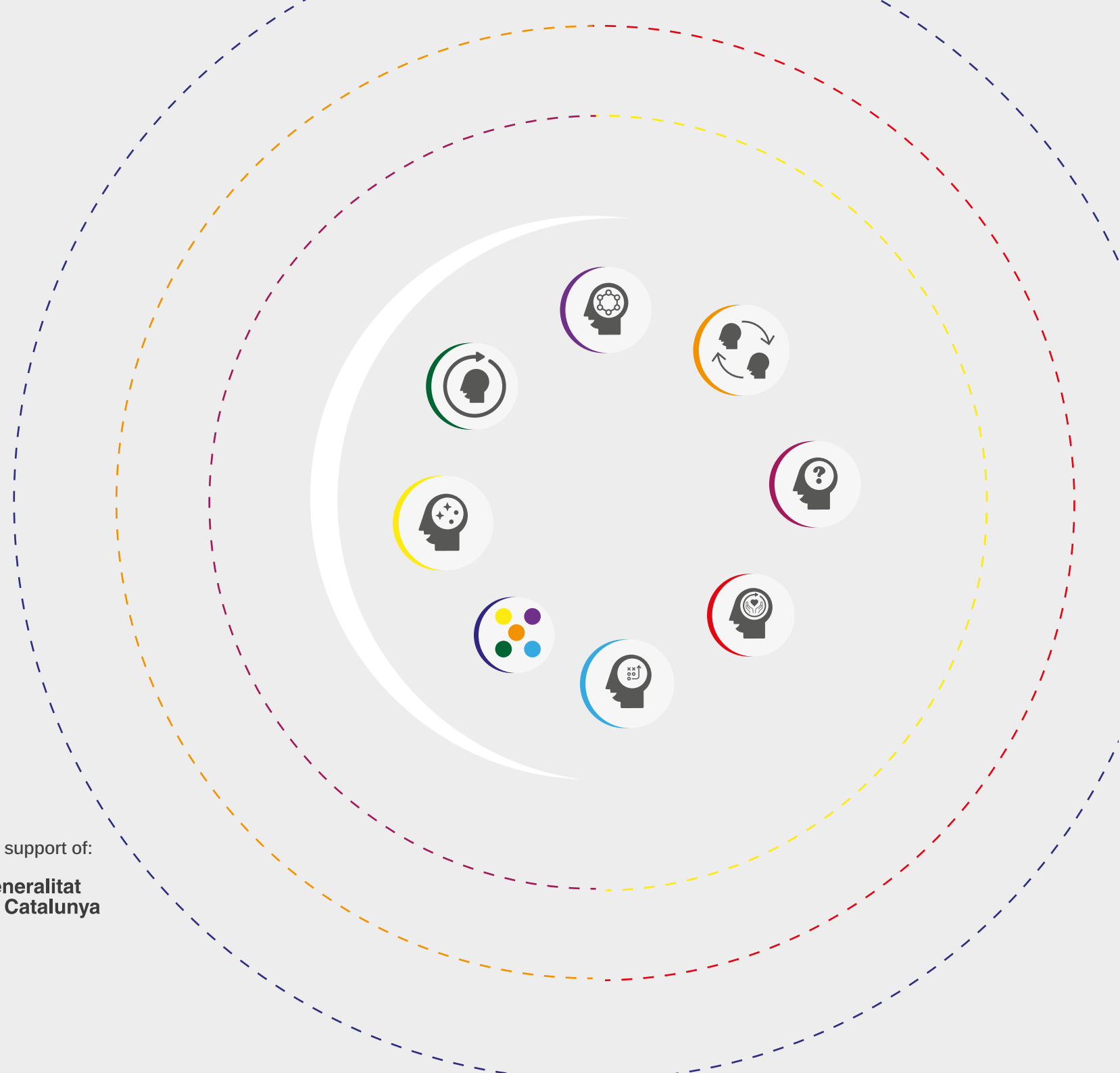

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