

# LOOPS

Tackling world complexity

**Cameron Guthrie**  
**Elisabeth Bertrand-Dousset**

Visit the [LOOPS website](#)

Contact the authors: [c.guthrie@tbs-education.fr](mailto:c.guthrie@tbs-education.fr)



## Introduction

The UN's 17 Sustainable Development Goals (SDGs) are a universal call to action to end poverty, protect the planet and improve the lives of people everywhere. We all share the responsibility of preparing our students for these major societal challenges of the 21st century.

LOOPS was developed to provide instructors with the tools to work in the classroom on sustainable development issues. It is a complete set of content (online courses, guides, templates) and administrative instruments (planning, evaluation grids) that allows business schools to train students to understand and act on SDGs. The program develops systems thinking skills, an essential complement to the training of business school students<sup>1</sup>.

LOOPS is a two-week learning activity that trains students in systems thinking to identify complex societal problems, model them, and seek solutions by acting on their root causes. Teams of students use the online news to find and research an issue of their choice within one of the 17 UN SDGs. Based on a choice of problem by learners, an inquiry-based pedagogy and the use of experts, LOOPS contributes to the evolution from teaching *about* sustainability to teaching *for* sustainability<sup>2</sup>.

LOOPS is aimed at business school students but can be extended to other disciplines, such as engineering, journalism or political science.

## About LOOPS

The **goal** of LOOPS is to train students in the systems thinking and modelling skills that are today considered essential to work effectively on complex, systemic issues of sustainable development<sup>3</sup>. By the end of the two-week activity, students can describe, explain and identify leverage points to act on complex societal problems, and notably those within the scope of the UN's 17 Sustainable SDGs. As a small group activity, LOOPS encourages collective problem framing and modeling, a key skill for "collective impact"<sup>4</sup> on complex problems of sustainability.

LOOPS follows an **inquiry-based learning design** that enables learning by doing. For instructors, LOOPS is a complete and coherent teaching package, including a 20-hour online course, tutor training, methodological guides, deliverable templates, and an evaluation system.

## The learning journey

Students begin their learning journey by taking an **online class on systems thinking**. The "Thinking Complexity" MOOC is a practical, hands-on course to understand how to tackle everyday complexity. Students learn to take a news story about a sustainable development issue, describe what makes the situation complex and identify opportunities for effective action or change.

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<sup>1</sup> See for example, Bansal, P., Grewatsch, S., & Sharma, G. (2021). How COVID-19 Informs Business Sustainability Research: It's Time for a Systems Perspective. *Journal of Management Studies*, 58(2), 602–606 and Kearins, K., & Springett, D. (2003). Educating for sustainability: Developing critical skills. *Journal of Management Education*, 27(2), 188–204

<sup>2</sup> Springett, D. (2005). 'Education for Sustainability' in the Business Studies Curriculum: a Call for a Critical Agenda. *Business Strategy and the Environment*, 14, 146–159.

<sup>3</sup> Springett, D., & Kearins, K. (2001). Gaining legitimacy? Sustainable development in business school curricula. *Sustainable Development*, 9(4), 213–221.

<sup>4</sup> Kania, J., & Kramer, M. (2011). Collective Impact. *Stanford Social Innovation Review*, 9(1), 36–41.

Each chapter of the MOOC uses the online news to illustrate and practice working with complex situations. The MOOC is publicly available on the iversity.org platform<sup>5</sup>

Groups then produce five graded tasks as they move through each stage of the complex problem-solving process. The first four tasks are related to modeling and corrective actions to be taken to address the problem, and the last deliverable is the final report and model sharing.

1. **What's the problem?** Identify an issue within the scope of an SDG from the online news and write a problem statement to describe how behavior has evolved over time.
2. **Tell the story:** Write two or three paragraphs to tell the story of the problem and create a richer picture of the issue and stakeholders involved.
3. **Model the problem:** Draw a systems model that explains the dynamics of the behavior under study. Use high-quality sources and consult domain experts to validate the model.
4. **Look for levers:** Identify the system's leverage points and suggest actions to minimize or eliminate the undesirable behavior.
5. **The final report:** Write a final report that describes the problem under study, explains the behavior, and formulates a coherent, multi-stakeholder strategy to address and impact the issue. Groups also share their story through a free modelling and storytelling website<sup>6</sup>.

Groups are encouraged to research and document their work with quality sources and interviews with experts.

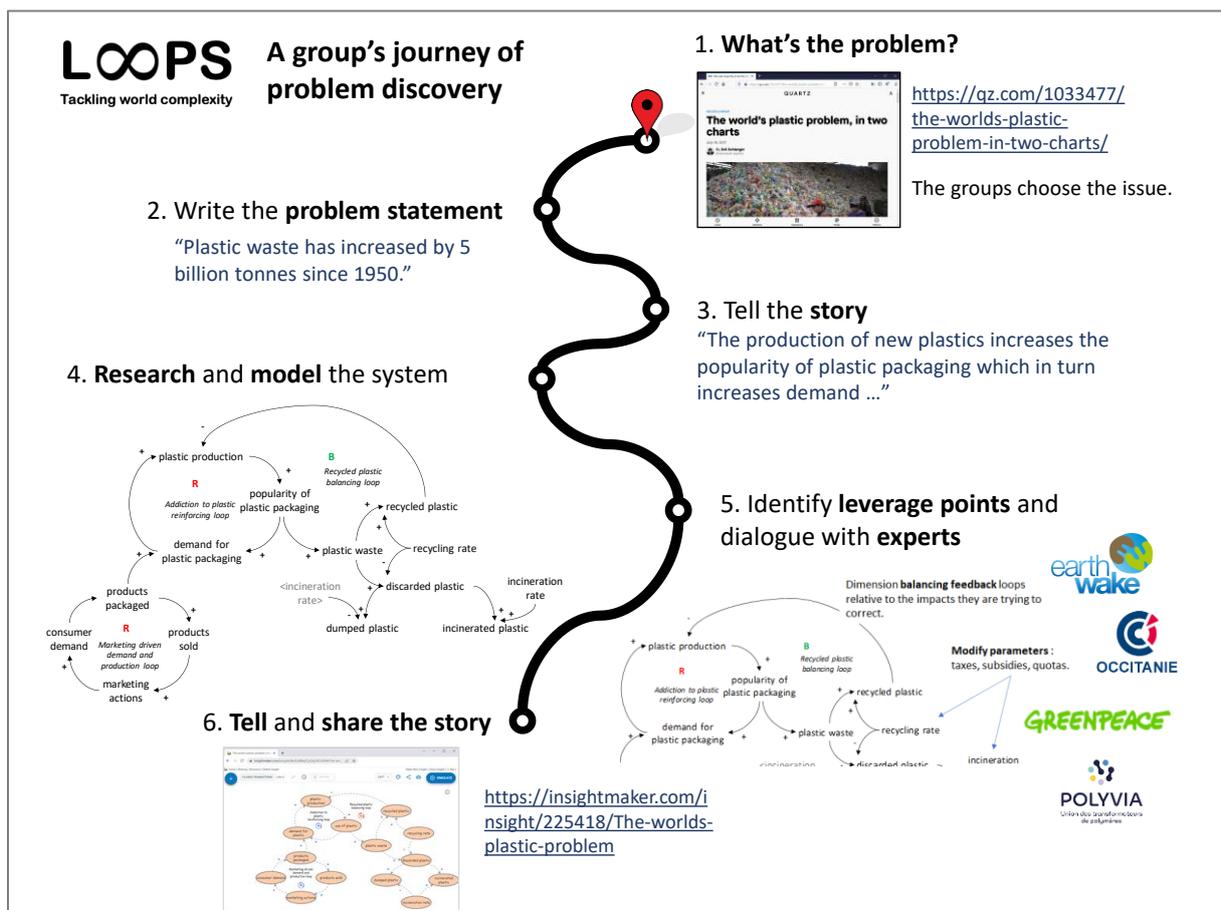


Figure 1: An illustration of a group's journey: from problem identification to storytelling

<sup>5</sup> <https://iversity.org/en/courses/thinking-complexity>

<sup>6</sup> [www.insightmaker.com](http://www.insightmaker.com)

## Evaluation

Students are graded using both individual and group assessments. Firstly, each student sits a graded test at the end of the MOOC. Secondly, group work is evaluated based on the (standardized) quality of the five deliverables. It is both a formative and summative evaluation, as recommended in the inquiry-based learning literature<sup>7</sup>. According to a formative approach, each deliverable is appraised, commented and scored by the tutors on a three-point scale (excellent/perfectible/to be reworked). Groups then use this feedback to improve their work. A summative evaluation is used to evaluate the final report using an evaluation grid with a five-point scale.

Groups must also validate their model and their proposed actions with one or more domain experts, such as scientists, academics, authors, lawyers, entrepreneurs, consultants or elected officials.

## Resources for instructors

The LOOPS program includes **the following content** :

- MOOC "Thinking Complexity" to learn how to use a systemic approach to complex problems;
- 7 methodological guides that serve as references for teams and tutors to work on deliverables;
- Software for modeling and sharing complex systems: [www.insightmaker.com/](http://www.insightmaker.com/);
- Planning and evaluation tools: work schedule, online questionnaire, self-assessment report guide.

## An example of a student cohort

In April 2020, a total of 294 masters' students spread across six countries participated in the project. All students were pursuing their studies as part of an apprenticeship program with a corporate sponsor. The average student age was 24.5 years old and the majority were working in logistics, (26%), marketing (28%), banking (17%) and business development (14%).

<b>Gender</b>	
Female	48%
Male	52%
<b>Academic major</b>	
Marketing	28%
Logistics, purchasing and technology management	26%
Banking and finance	17%
Strategy and business development	14%
Service industry management	8%
Accounting and management control	6%
Human resource management	2%

**Table 1: Descriptive statistics of the student cohort**

<sup>7</sup> Harlen, W. (1999). Assessment in the Inquiry Classroom. In and I. E. National Science Foundation (US). Division of Elementary (Ed.), Inquiry: Thoughts, Views, and Strategies for the K-5 Classroom (Vol. 2). National Science Foundation.

At the start of the project, students were randomly assigned to one of forty-nine six-person virtual teams. The teams chose to work on 13 of the UN's 17 SDGs, including:

- Goal 2. Zero hunger (5%)
- Goal 3. Good health and well-being (13%)
- Goal 4. Quality education (10%)
- Goal 5. Gender equality (6%)
- Goal 7. Affordable and clean energy (2%)
- Goal 8. Decent work and economic growth (2%)
- Goal 10. Reduced inequality (2%)
- Goal 11. Sustainable cities and communities (8%)
- Goal 12. Responsible consumption and production (18%)
- Goal 13. Climate action (4%)
- Goal 14. Life below water (12%)
- Goal 15. Life on land (14%)
- Goal 16. Peace and justice strong institutions (4%)

Here are some examples of topics chosen by the groups:

- **SDG 2: World hunger.** *"Over the past 4 years, the number of acutely malnourished people in Haiti, the most affected country in the world, has increased by 50%, from 4% to 6% of the country's population."*
- **SDG 5: Gender equality.** *"Between 2009 and 2018, the number of female victims of domestic violence remained stable In France at 219,000 cases/year despite actions taken to address the issue"*
- **SDG 11: Sustainable cities and communities.** *"In France, the number of poorly housed people has increased by 50% in 10 years."*
- **SDG 12: Sustainable production and consumption.** *"Between 1999 and 2014, the amount of microplastic debris in the oceans increased 60-fold."*
- **SDG 13: Climate action.** *"Despite various international commitments, global CO<sub>2</sub> emissions have increased by 55% over the past 20 years."*
- **SDG 14: Life below water.** *"After steadily declining since the 1980s, the ecosystem of the Great Barrier Reef decreased in surface area by 50% between 2016 and 2019."*

Student evaluations were very positive: More than 90% of the students found that the project enabled them to identify, understand and act on a complex problem of sustainability.

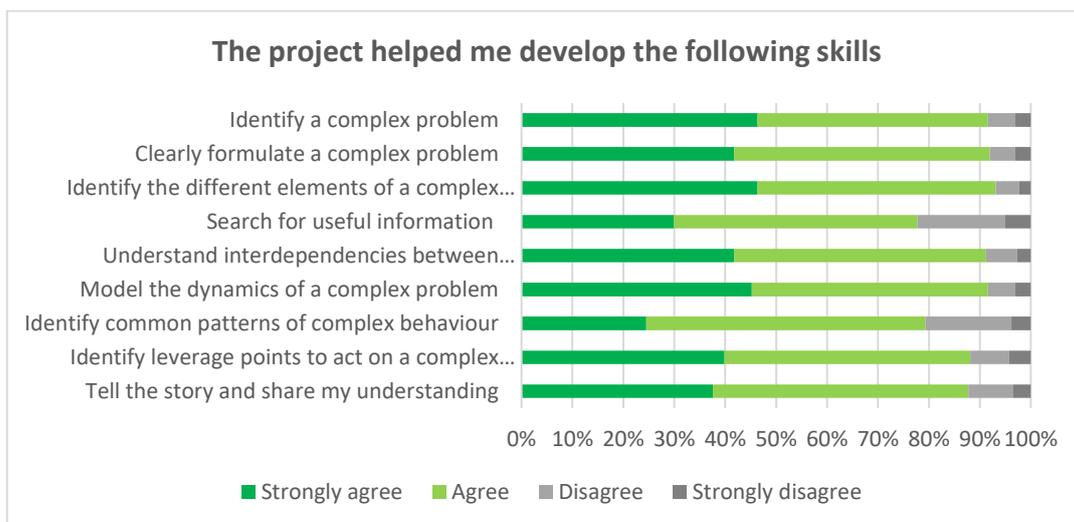


Figure 2 : Student perception of systems thinking skill acquisition

Students appreciated working on UN SDGs and learning a new way of thinking to address them.

*"The theme of the SDGs as well as the MOOC on complex systems are an interesting group exercise and change from the issues usually addressed in business school."*

*"I thought I was still facing yet another group project, but I must admit that systems thinking and the reflection required behind it were a pleasant surprise. In addition, the choice of the SDGs was very stimulating and allows us to work on concrete things, not without meaning."*

*"The proposed method of reflection seems important to be able to address any complex problem in the future."*

*"I realize that my way of thinking has already evolved after these two weeks of reflection!"*

*"Working on complex systems is really topical and complements the skills I acquired during my studies at TBS."*

*"LOOPS allowed us to learn to think differently. In business school and in business, our thinking is often far too analytical, which prevents us from thinking holistically. I strongly feel that LOOPS was a real opportunity for me, both for my professional and personal life. It has already allowed me to enrich my thinking on many problems and has changed the way I think and discuss the crisis we are currently going through for example."*

**Figure 3 : Sample feedback from students (anonymous)**

Tutors also appreciated the use of systems thinking tools, the opportunity to work on UN SDGs, the inquiry-based learning approach and the challenge of tutoring virtual teams.

*"Cameron's MOOC and the decision to apply it to sustainable development issues constituted the most virtuous educational combination possible, 100% in line with TBS's CSR commitment! LOOPS provided students with a methodology allowing them to tackle the problems in all their dimensions and to carry out an in-depth reflection on the links between cause and effect. Better understanding complexity, working remotely in an imposed team, taking ownership of sustainable development issues are three of the program's major contributions."*

Rebecca, Professor of Marketing

*"LOOPS was a very rewarding exercise for me as a tutor. What I really appreciated was that the activity allowed me to learn at several levels: learning to think about complex problems and the tools that help model them (via the MOOC), learning about and around the UN SDGs, learning through interaction with other tutors, learning in an inquiry mode with students, and learning from experts! It's rare that you can learn in this way about different things and with different people through a teaching activity!"*

Helen, Adjunct professor of Management

**Figure 4 : Sample feedback from tutors**

The vast majority of experts interviewed by the students also showed that they also appreciated the systemic approach, and that the models allowed them to enter into a constructive dialogue.

A team working on SDG 14 a marine biologist to better understand their chosen issue: *After steadily declining since the 1980s, the ecosystem of the Great Barrier Reef decreased in surface area by 50% between 2016 and 2019.*

“Dr X graduated from the University of Technology of Compiègne in marine biology. Today she is working on the restoration of coral reefs around the Gili Islands in Indonesia.

During our discussion, we presented the sustainable development issue that we had chosen to work on. Dr X explained how coral works in symbiosis with its environment, which allowed us to better understand the ecosystem of the Great Barrier Reef and identify other factors involved in this complex problem. For example, we discussed the disastrous consequences of human activity on reefs. Following these discussions, we were able to improve our systemic structure and more precisely connect each element. Dr X also explained that few things were put in place to protect the reef: apart from some protected areas where fishing is prohibited, there are almost no regulations concerning the use of pesticides, fertilizers or mass tourism.

Dr X then validated our model and all of the leverage points that we planned to activate. She insisted that the most important thing to work on was a profound change in the systemic structure and our vision of nature.”

**Figure 5 : Sample feedback from a domain expert**

## Quality label

Loops was certified in June 2021 by the French national foundation for business management education (FNEGE) as a quality "learning activity for the digital age".

The jury awarded the FNEGE label based on the following quality criteria:

- Innovative character, compared to existing practices.
- Rigor and quality of content, corresponding to the most advanced state of knowledge in the domain.
- Relevance of the use of the technologies and media mobilized to achieve the educational objectives.
- Ability to be deployed on a large scale, and to be transferred to other contexts and to other audiences.
- Participation of one or more permanent teachers in management sciences.
- Impact already achieved, or potential.