SCABEE Teaching Case Study Impact Assessment Schemes

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Project partners
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Dissemination level

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About the SCABEE project

Climate Change is one of the most crucial challenges humanity must confront in an urgent manner. Therefore, the SCABEE project aims at strengthening sustainability skills & critical thinking of engineering and business students. This helps planting sustainability in future engineers' and managers' mindsets on partner level and beyond.

The project SCABEE introduces sustainability teaching and thinking in business and engineering study degrees as a persistent leitmotif. Students will discover sustainable products and solutions through Sustainability Teaching Case Studies and develop a more sustainable behaviour in their personnel and future professional life. They will also transport their knowledge and behaviour to their companies and thereby contribute to the green transition of the European industry and help saving our planet for future generations.

SCABEE partners will produce a total of 16 Teaching Case Studies with a focus on sustainability that can be used in higher education institutions as well as vocational education training courses.

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List of abbreviations

EPD	Environmental Product Declaration
ESTA	ESTA Belfort, www.esta-groupe.fr/en
FHV	Fachhochschule Vorarlberg, Austria, www.fhv.at/en
JICA	Japan International Cooperation Agency
LCA	Life Cycle Analysis or Assessment
OECD-DAC	Organization for Economic Co-operation and Development – Development Assistance Committee
OEF	Organizational Environmental Footprint
PDCA	Plan – Do – Check – Act
PEF	Product Environmental Footprint
PSS	Product Service System
SDG	Sustainability Development Goal (see sdgs.un.org/fr/goals)
SUT	Silesia University of Technology, www.polsl.pl/en/
TCS	Teaching Case Study
UCN	University College Northern Denmark, www.ucn.dk
UN	United Nations
WP	Work Package

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1 Introduction

The main objective of the document is to prepare a proposal for a methodology for assessing the impact of the Teaching Case Study (TCS) on increasing the level of awareness of sustainable development.

The report presents a framework of indicators and parameters to measure the increase in sustainability awareness with regard to the expected results, the type of TCS and the study level of participants.

A proposal for a methodology for assessing the impact of TCS on increasing awareness of sustainable development among students of target groups was prepared.

The developed schemes constitute a complete set of TCS assessment that allow for obtaining answers to questions about the level of effectiveness of the applied innovative and active learning process, through the use of TCS in shaping the desired attitudes (allowing to push the green transformation in the industries in which the participants intend to work, verifying the attitude to respecting the sustainable development goals and attaching importance to reducing the environmental impact of the products and processes designed).

The indirect objectives are also:

- Identification of the best and worst practices and factors determining failures and successes that can inspire improvement of TCS in form of a toolkit to secure the contribution of TCS regarding to sustainable development.
- Validation of the level of awareness of UN SDGs, such as, e.g. (non-exhaustive list), Goal 4: Quality education, 8: Decent Work & Economic Growth, 9: Industry, Innovation & Infrastructure, or 12: Responsible Consumption and Production.

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2 Good practices of assessment and sustainable development from literature

Evaluation is a type of assessment of an activity, e.g. a project, programme, strategy, policy, etc. It is a process that must be carried out as systematically and impartially as possible. A well-conducted evaluation should provide reliable, useful evidence-based information that allows its findings, recommendations and conclusions to be incorporated into the decision-making processes of organisations and stakeholders in a timely manner [1]. Evaluation is therefore an attempt to find answers to the question of whether the planned activities have had an effect (or will have an effect in the case of an ex-ante evaluation). Through evaluation, the level of achievement of both expected and unexpected results of a process can be analysed using appropriate criteria. OECD-DAC (Organization for Economic Co-operation and Development, Development Assistance Committee) defines evaluation as "*the systematic and objective assessment of an on-going or completed project, programme or policy, its design, implementation and results*." Thus, the term 'evaluation' should be understood as a comprehensive and detailed assessment, which is usually carried out through the identification of specific issues (evaluation questions) before the evaluation is undertaken. In addition, the OECD definition refers to long-term effects and may include long-term changes in areas such as organisational capacity and policy. An important feature of evaluating is that it's utilitarian.

Impact assessment measures the effectiveness of project activities and assesses the significance of the difference they make. In other words, impact assessments examine whether there is a need for action and analyse the possible impacts of available solutions. Each aims to examine how a particular policy issue is being, or should be, addressed to achieve the objectives set. Evaluations and impact assessments follow an integrated approach – policymakers examine the impacts across environmental, social and economic pillars of sustainable development. Thus, both processes successfully contribute to the mainstreaming of sustainability in policymaking at the Union level [5].

There is no single, standardised methodology for the evaluation process in the literature. The OECD-DAC defined six evaluation criteria, i.e. relevance, coherence, effectiveness, efficiency, impact and sustainability, and two principles for their application [2]. The criteria are a normative framework for the determination of the merit or value of an intervention (policy, strategy, programme, project or activity). They form the basis on which evaluative judgements are made. What is important, these criteria can be used selectively, not necessary as a set, depending on the goal of evaluation.

Table 2.1: The six evaluation criteria [2]

Relevance	The extent to which the intervention objectives and design respond to beneficiaries, global, country, and partner/institution needs, policies, and priorities, and continue to do so if circumstances change.
Coherence	The compatibility of the intervention with other interventions in a country, sector, or institution.
Effectiveness	The extent to which the intervention achieved, or is expected to achieve, its objectives, and its results, including any differential results across groups.
Efficiency	The extent to which the intervention delivers, or is likely to deliver, results in an economic and timely way.
Impact	The extent to which the intervention has generated or is expected to generate significant positive or negative, intended or unintended, higher-level effects.
Sustainability	The extent to which the net benefits of the intervention continue or are likely to continue.

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Table 2.2: The evaluation principles [2]

Principle one	Criteria should be used thoughtfully to support high quality, useful evaluation. Furthermore, criteria should be contextualised, i.e. understood in the context of the individual evaluation, the intervention being evaluated and the stakeholders involved. The evaluation questions (what you are trying to find out) and what you intend to do with the answers should inform how the criteria are specifically interpreted and analysed.
Principle two	The application of criteria depends on the purpose of the evaluation. Criteria should not be applied mechanically. Instead, they should be considered according to the needs of the relevant stakeholders and the context of the evaluation. Depending on the purpose of the evaluation, more or less time and resources may be spent on the evaluative analysis for each criterion. Data availability, resource constraints, timing and methodological considerations may also influence how (and whether) a criterion is addressed.

Closely linked to the evaluation criteria are the evaluation questions. Each question should relate to at least one evaluation criterion, so that an evaluation can be formulated. This is because evaluation is not a simple assessment using a scale or a statement that something is working well or badly. The application of different criteria can lead to radically different evaluations. For example: a project may be considered effective because it has achieved its objectives, but ineffective, because excessive resources were involved, or unusable because it does not meet the needs of the beneficiaries [3].

In fact, the main purpose of an evaluation study is not only to increase the stock of theoretical knowledge, but above all to improve the quality of the interventions implemented in a given area [3].

According to the Japan International Cooperation Agency (JICA), the evaluation framework reflects [4]:

- PDCA-based monitoring and evaluation [Figure 2.1] - Planning stage (ex-ante evaluation), Implementation stage (monitoring (on-going)), post-implementation stage (ex-post evaluation), Feedback stage.
- Evaluation in accordance with the OECD-DAC's five criteria for the evaluation of development assistance, which are internationally accepted as the methodology for the evaluation of ODA - JICA adopts the five criteria (relevance, effectiveness, efficiency, impact, sustainability) for evaluation.
- Publication of the results of the evaluation in a consistent style.

Figure 2.1: The impact assessment based on the PDCA cycle

Evaluation and Impact assessment are therefore analytical processes to support decision-making, carried out in as systematic and impartial a manner as possible. The aim of these processes is to provide decision-makers with as much information as possible on the potential impacts of proposed actions. However, evaluation

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cannot be limited to measuring the effects of an action/activity but should also attempt to establish causal relationships between the actions taken and the effects achieved. Such an approach makes it possible to correctly determine whether the logic of a project or activity is correct. Measuring the effects of an activity, together with an explanation of how the actions taken contributed to their achievement, allows the accumulation of knowledge useful for the implementation of future actions/strategies. This knowledge makes it possible to formulate recommendations and, based on these, to make decisions that serve to improve the quality of the activities carried out.

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3 Evaluation strategy

3.1 Definition

The specific objectives of SCABEE WP5 are to develop an evaluation scheme for the overall TCS assessment and to confirm that TCS are a good way to improve students' sustainability awareness through lecturers' and students' assessments.

The preparation of the proposed evaluation methodology was preceded by a pilot project among the partner universities implementing the SCABEE project. This allowed the initial assumptions to be verified and clarified. This type of approach proved to be correct, as the methodological approach finally proposed differs from the initial assumptions. The key stage in the verification of the evaluation assumptions was the comments made by the project implementers, after which the structure of the research problems and the general approach to the evaluation were modified, and the emphasis in the study was distributed differently. Thanks to the use of a multi-stage approach, the proposed detailed methodology is adapted to the actual conditions and limitations related to the process of assessing the impact of TCS on sustainable development awareness.

Three types of evaluations were prepared: peer review, teacher's evaluation, and student's evaluation. Finally, a quantitative-qualitative approach was used in the evaluations.

The respondents' rating of the impact of a factor was made by means of a Likert scale and the average of the results obtained.

The Likert scale with 5 possible answers in order to rate each question:

1 - „strongly disagree", 2 - „disagree", 3 - „neutral", 4 - „agree", 5 - „strongly agree".

The impact of a given factor is determined by calculating the average according to formula (1):

$$P = \frac{\sum_i w_i n_i}{\sum_i n_i},$$

where:

$i = 1 \ldots 5$ is an integer,
w_i is the weight assigned to an answer on a Likert scale, where $w_i = i$ and respectively:
$i = 1$ for the answer „strongly disagree",
$i = 2$ for the answer „disagree",
$i = 3$ for the answer „neutral",
$i = 4$ for the answer „agree",
$i = 5$ for the answer „strongly agree",
n_i – The number of questionnaires where the answer was marked with the corresponding weight w_i, the number of occurrences.

Each research question was related to a Bloom's taxonomy level (Figure 3.1).

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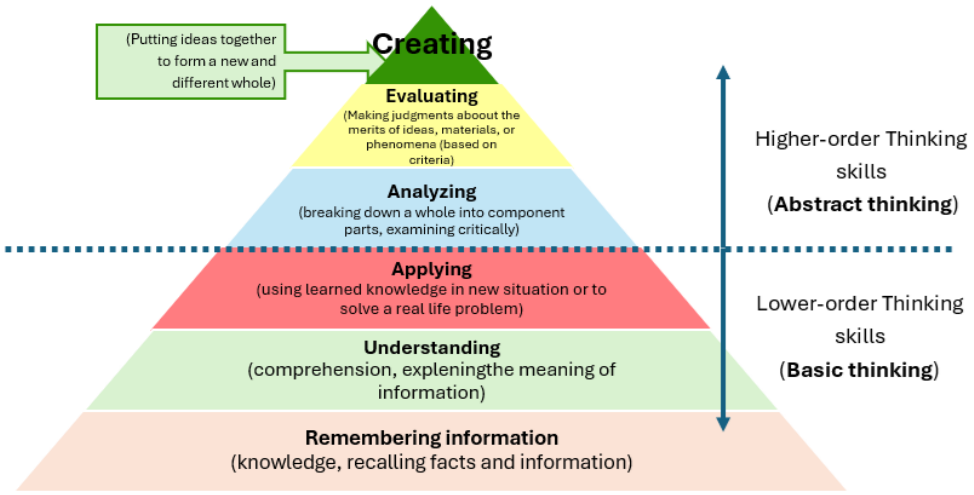

Figure 3.1: Levels of Bloom's Taxonomy

The surveys also include questions related to the to "as-is" analysis as described in the SCABEE Initial Analysis Research Framework [6]:

- **Parameter 1 (Creating an Understanding)** | To what extent did the TCS strengthen students' positive attitude towards sustainable development (does it sufficiently support: awareness, understanding, acceptance of the environmental challenge)?
- **Parameter 2 (Developing the Fundamentals)** | To what extent did the TCS support the student in increasing competences related to *system thinking, framing a problem or situation, critical thinking* in the field of sustainable development?
- **Parameter 3 (Giving Insights)** | To what extent did the TCS support the student in e.g. holistic understanding of 'environmental sustainability'; interdependencies between elements of the Earth's biophysical system; sustainable circular economy issues.
- **Parameter 4 (Building Solutions)** | To what extent did the TCS support the student's ability:
  - to analyse the environmental impact, e.g., conduct a LCA - Life Cycle Analysis or Assessment, OEF - Organizational Environmental Footprint/PEF - Product Environmental Footprint, EPD - Environmental Product Declaration, or similar?
  - to develop circular solutions, hence, adopt R-strategies (e.g., rethink, refuse, reuse, remanufacture, repurpose, recycle, and recover) or related topics, e.g., Sustainable Business Models or PSS (Product Service System)?
- **Parameter 5 (Driving the Implementation)** | To what extent did the TCS support the student's competencies within, e.g.:
  - Change management?
  - Cultural understanding?
  - Collaboration and management?
  - Environmental legislation (e.g., Green Deal, Eco-design for Sustainable Products Regulation, or A new circular economy Action Plan)?

3.2 Evaluation scope

The criteria used in the evaluation process are shown in Table 3.1.

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Table 3.1: Evaluation criteria for SCABEE evaluations

	Criterium	Meaning	Survey	
			Teacher	Student
x_1	Relevance	The extent to which the TCS respond to objectives.	x	
x_2	Coherence	Coherence of TCS content with the curriculum.	x	
x_3	Effectiveness	The extent to which the TCS achieved, or is expected to achieve, its objectives, and its results, including any differential results across TCSs.	x	x
x_4	Efficiency	The extent to which TCS brings, or can bring, benefits to students/industry.	x	x
x_5	Impact	The extent to which the TCS has generated or is expected to generate significant positive or negative, intended or unintended impacts.	x	x
x_6	Sustainability (Continuousness)	The extent to which TCS benefits will continue, or are likely to continue, into the future.	x	x

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4 Evaluation and impact assessments schemes

4.1 Peer review evaluations

4.1.1 Objectif and implementation

Peer-review evaluations are done by the project partners to ensure a high quality of the different Teaching Case Studies. Each partner completes one peer-review evaluation for all Teaching Case Studies from the other partners. Feedback from these peer-reviews is used by the partners to improve their TCS.

Peer-reviewing is done using a structured document template (Annex B).

4.1.2 Peer-review template structure

Introducing questions - completed by the teacher

- Name of the partner as TCS author
- Name of the partner as TCS reviewer(s)
- Date of review

Evaluation questions

Part A Content and formal assessment

MQ1 **Thematic Relevance:** Does the TCS content align with the theme/goals of the SCABEE project? The content of the TCS matches the scope and the theme of the SCABEE project? (tick *X*)

Yes	Can be improved	Not applicable

Tips for improvement, comments:

MQ2 **Significance:** Will the topic of TCS be interesting for your group of students? (put comments)

Partner	Yes	Can be improved	Not applicable
ESTA			
FHV			
SUT			
UCN			

MQ3 **Correctness in form and content:** Do you have any substantive comments on the content of TCS? Whether the methods used are appropriate to solve the proposed problem? If so, please write what:
+ Tips for improvement, comments:

MQ4 **Quality of Content:** The content is described in sufficient detail and placed in the context of current trends in sustainability (Tick *X*)

Yes	Can be improved	Not applicable

+ Tips for improvement, comments:

MQ5 **Difficulty level:** Is the study at the right level of detail for your target group of students? If not, what should be changed? (Tick *X*)

Partner	Partner's target group	Yes	Can be improved	Not applicable
ESTA				
FHV				
SUT				
UCN				

+ Tips for improvement, comments:

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MQ6 **Presentation**: The TCS is clear and well written: quality of language, quality of figures/tables/formulas (Tick *X*)

Yes	Can be improved	Not applicable

+ Tips for improvement, comments:

MQ7 **Completeness of documents:** Are all necessary documents, instructions and files available? Is the TCS formally correct? If not, what is missing? (Tick *X*)

Yes	Can be improved	Not applicable

+ Tips for improvement, comments:

MQ8 **Is the TCS title appropriate to the content?**

Yes	Can be improved	Not applicable

+ Tips for improvement, comments:

Part B Sustainability impact assessment

Assessment of the impact of TCS on raising awareness of sustainable development

MQ1 **Parameter One (Creating an Understanding)**
To what extend does the implementation of the TCS strengthen a positive attitude towards sustainable development (Does it support: awareness, understanding, acceptance of the environmental challenge)?

very low	low	moderate	high	very high
1	2	3	4	5

+ Tips for improvement, comments:

MQ2 **Parameter Two (Developing the Fundamentals)** To what extent does the implementation of the TCS support the student in increasing competences related to *system thinking, framing a problem or situation, critical thinking* in the field of sustainable development?

very low	low	moderate	high	very high
1	2	3	4	5

+ Tips for improvement, comments:

MQ3 **Parameter Three (Giving Insights)** To what extent does the implementation of the TCS support the student in e.g. holistic understanding of 'environmental sustainability'; interdependencies between elements of the Earth's biophysical system; sustainable circular economy issues.

very low	low	moderate	high	very high
1	2	3	4	5

+ Tips for improvement, comments:

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MQ4 **Parameter Four (Building Solutions)** To what extent does the implementation of the TCS support the student's ability:

- to analyse the environmental impact, e.g., conduct a LCA - Life Cycle Analysis or Assessment, OEF - Organizational Environmental Footprint/PEF - Product Environmental Footprint, EPD - Environmental Product Declaration, or similar?
- to develop circular solutions, hence, adopt R-strategies (e.g., rethink, refuse, reuse, remanufacture, repurpose, recycle, and recover) or related topics, e.g., Sustainable Business Models or PSS (Product Service System)?

very low	low	moderate	high	very high
1	2	3	4	5

+ Tips for improvement, comments:

MQ5 **Parameter Five (Driving the Implementation)** To what extent does the implementation of TCS supporting the student's competencies within:

- implementing transformation, requiring competences in change management, cultural understanding, collaboration and management skills
- Change management?
- Cultural understanding?
- Collaboration and management?
- Environmental legislation (e.g., Green Deal, Eco-design for Sustainable Products Regulation, or A new circular economy Action Plan)?

very low	low	moderate	high	very high
1	2	3	4	5

+ Tips for improvement, comments:

Bloom's taxonomy

What Bloom's taxonomy level do you attribute to the TCS?

Remember	Understand	Apply	Analyse	Evaluate	Create
1	2	3	4	5	

+ Scheme with levels of Blom's taxonomy

4.2 Teacher evaluation survey

4.2.1 Objectif and implementation

The Teacher evaluation survey aims at getting feedback of actual implementation of TCS with classes. It targets the different criteria described above. This evaluation is done by the teachers from the partner institutions, but teachers from outside the consortium are also invited to complete this evaluation.

For an easy access, a specific link exists to open a prefilled online form for homogeneous data sets. The access is facilitated through the creation of a dedicated short link, easier to use, and two dedicated QR-Codes, one in SCABEE green, and one in black and white (Figure 4.1). The invitation with the QR-Code and the short link are added in a preamble to the Teacher's note, document giving additional information to the teacher using a TCS.

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https://rebrand.ly/t6d736

Figure 4.1: QR-Codes in SCABEE green and b/w, and short link to access the online teacher evaluation form for the TCS 'Sunshine for production' (SUT)

4.2.2 Teacher's evaluation survey structure

Instructions for completing the survey:

- For each question, mark only the most appropriate answer on a scale of 1-5, or enter an answer, or tick *X* if the question requires it.

Introducing questions

- Title of lecture
- Title of Teaching Case Study
- Name of institution/country
- How many students participated in the Teaching Case Study (TCS)?

Evaluation questions

MQ1 **Relevance of the Teaching Case Study for student's awareness of climate change and related challenges and opportunities**

In your opinion, did the TCS:

SQ1.1 help students to improve their awareness of climate change?

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

SQ1.2 help students to realize that their actions affect environment/sustainable development?

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

SQ1.3 has given students the insights to help understand environmental impacts and to develop a personal approach to overall and global environmental issues?

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

MQ2 **Coherence of the Teaching Case Study with regard to your lecture**

In your opinion, did the TCS:

SQ2.1 Help you in the improvement of your teaching?

strongly disagree	disagree	neutral	agree	strongly agree

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1	2	3	4	5

SQ2.2 fit well with the course you teach?

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

MQ3 **Effectiveness of the Teaching Case Study for discovering concrete solutions/actions to react to environmental challenges**

In your opinion, has the TCS:

SQ3.1 allowed you to discover new topics for your classes?

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

SQ3.2 made you conscious about environmental challenges issues for the industry?

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

SQ3.3 made you aware of new opportunities for companies due to environmental change?

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

SQ3.4 helped you to be able to discuss and reflect on environmental aspects?

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

MQ4 **Efficiency of the set-up of the Teaching Case Study for my lecture**

In your opinion, the Teaching Case Study

SQ4.1 addressed an relevant topic

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

SQ4.2 was well structured

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

SQ4.3 integrated all necessary information and data to work on it

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

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MQ5 Impact of the Teaching Case Study

Parameter 1 (Creating an Understanding) | To what extent did the TCS strengthen students' positive attitude towards sustainable development (does it sufficiently support: awareness, understanding, acceptance of the environmental challenge)?

Very low	Low	Moderate	High	Very high
1	2	3	4	5

Parameter 2 (Developing the Fundamentals) | To what extent did the TCS support the student in increasing competences related to *system thinking, framing a problem or situation, critical thinking* in the field of sustainable development?

Very low	Low	Moderate	High	Very high
1	2	3	4	5

Parameter 3 (Giving Insights) | To what extent did the TCS support the student in e.g. holistic understanding of 'environmental sustainability'; interdependencies between elements of the Earth's biophysical system; sustainable circular economy issues.

Very low	Low	Moderate	High	Very high
1	2	3	4	5

Parameter 4 (Building Solutions) | To what extent did the TCS support the student's ability:

- to analyse the environmental impact, e.g., conduct a LCA - Life Cycle Analysis or Assessment, OEF - Organizational Environmental Footprint/PEF - Product Environmental Footprint, EPD - Environmental Product Declaration, or similar?
- to develop circular solutions, hence, adopt R-strategies (e.g., rethink, refuse, reuse, remanufacture, repurpose, recycle, and recover) or related topics, e.g., Sustainable Business Models or PSS (Product Service System)?

Very low	Low	Moderate	High	Very high
1	2	3	4	5

Parameter 5 (Driving the Implementation) | To what extent did the TCS support the student's competencies within, e.g.:

- Change management?
- Cultural understanding?
- Collaboration and management?
- Environmental legislation (e.g., Green Deal, Eco-design for Sustainable Products Regulation, or A new circular economy Action Plan)?

Very low	Low	Moderate	High	Very high
1	2	3	4	5

What Bloom's taxonomy level? (Tick)

Remember	Understand	Apply	Analyse	Evaluate	Create

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The Teaching Case Study…

SQ5.1 increased the attractiveness of the lecture

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

SQ5.2 motivates me to build other content of other courses

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

SQ5.3 has awaken my curiosity to learn more about environmental issues and potential actions to minimise environmental impacts

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

MQ6 Sustainability (Continuousness, Duration)

SQ6.1 I will continue using this Teaching Case Study with future classes

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

SQ6.2 I envisage using other Teaching Case Studies addressing environmental questions in my lectures

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

SQ6.3 I will suggest using this Teaching Case Study to colleagues from my and other institutions

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

SQ6.4 I will think about developing my own Teaching Case Studies with a focus on sustainability

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

Optional information

Name of the teacher*(optionally)

E-mail of the teacher*(optionally)

The teacher evaluation survey is available in English only (Annex C).

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4.3 Student evaluation survey

4.3.1 Objectif and implementation

The student evaluation survey aims at getting feedback from students who worked with a TCS. It also targets the different criteria described above, but with different questions. All students are invited to answer the survey, that is anonymous. Thus, no control can be done and '100%' response quota reached might be reached or not.

As for the teacher evaluation survey, specific links and QR-Codes have been created to facilitate the access to the prefilled online form of a TCS for homogeneous data sets. (Figure 4.2). Depending on the TCS, the invitation with the dedicated QR-Code and short link are added to the debriefing document that is used after the TCS with the students or presented to students in another manner.

https://rebrand.ly/s6d736

Figure 4.2: QR-Codes in SCABEE green and b/w, and short link to access the online student evaluation form for the TCS 'Sunshine for production' (SUT)

4.3.2 Students' evaluation survey structure

Instructions for completing the survey:

- For each question, mark only one most appropriate answer on a scale of 1-5, or enter an answer, or tick *X* if the question requires it.

Introducing questions

- Name of institution/country:
- Study degree (level/year/semester):
- What is your field of study? (study line)

Business studies	Engineering studies	Business and engineering studies	Other, please specify

- Title of lecture
- Title of Teaching Case Study
- Date(s) of TCS usage (mm-yyyy)
- What is your own evaluation of your personal environmental awareness?
  - I am not interested at all in environmental issues
  - I am slightly interested in environmental issues
  - I am a fairly interested in environmental issues
  - I am a interested in environmental issues
  - I am very interested in environmental issues

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Evaluation questions

MQ1 **Relevance of the Teaching Case Study for my awareness of environmental change and related challenges and opportunities**

The Teaching Case Study:

SQ1.1 helped me improving my awareness of environmental impact

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

SQ1.2 helped me realize that my actions affect environment/sustainable development.

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

SQ1.3 gave me an insight so I can contribute to preventing harmful environmental impacts and apply a personal approach to the overall and global environmental issues.

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

MQ2 **Coherence of the Teaching Case Study with regard to my study programme**

The Teaching Case Study:

SQ2.1 fitted well to my study's programme

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

SQ2.2 helped me learn relevant skills to minimise the environmental impact

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

SQ2.3 enabled me to better consider environmental impacts in my professional life, e.g., in design, production and/or commercialisation of products/services.

strongly disagree	*disagree*	*neutral*	*agree*	*strongly agree*
1	2	3	4	5

MQ3 **Effectiveness of the Teaching Case Study for discovering concrete solutions/actions to react to environmental challenges**

The Teaching Case Study:

SQ3.1 let me discover a new subject

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

SQ3.2 made me conscious about challenges about environmental issues for the industry

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

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SQ3.3 made me aware of new opportunities for companies due to environmental changes

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

SQ3.4 enabled me to discuss and reflect on environmental aspects

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

MQ4 Efficiency of the set-up of the Teaching Case Study for my learnings

The Teaching Case Study:

SQ4.1 addressed an interesting topic

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

SQ4.2 was well structured

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

SQ4.3 integrated the necessary information and data to work on it

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

MQ5 Impact of the Teaching Case Study

The Teaching Case Study

SQ5.1 contributed to prepare me to address environmental issues in my **professional** life

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

SQ5.2 helped me addressing environmental issues in my **personal** life

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

SQ5.3 has awakened my curiosity to learn more about environmental issues and potential actions to minimise environmental impacts

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

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MQ6 Sustainability (Continuousness)

SQ6.1 I would you suggest continuing using this Teaching Case Study with other classes

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

SQ6.2 I would suggest using more Teaching Case Studies addressing environmental questions in my curriculum

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

SQ6.3 I think the effects of TCS remain in the long term (e.g. in my student's life/professional life)

strongly disagree	disagree	neutral	agree	strongly agree
1	2	3	4	5

The student evaluation form is available in

- Danish (Annex D)
- English (Annex E)
- French (Annex F)
- German (Annex G)
- Polish (Annex H)

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5 Conclusion

Based on a literature review as well as the SCABEE Initial Analysis Research Framework [6], the partners developed under the lead of Silesia University of Technology (SUT) three different evaluation schemes:

- A peer-review evaluation, done by partners prior to the use of a TCS with the aim to improve the quality and to assess the coherence with the SCABEE project's aims to raise awareness and show opportunities coming from sustainability to students.
- A teacher's evaluation aiming at gathering feedback from the use of a TCS, including number of participants or year and field of study. This evaluation is implemented as an online form.
- A student evaluation where the feedback from those students is asked who benefitted from one of the TCS.

Teacher and student evaluation address six evaluation criteria as defined by the OECD [2] with different questions:

- Relevance
- Coherence
- Effectiveness
- Efficiency
- Impact
- Sustainability

The results from the different SCABEE evaluations will be presented in a separate deliverable at the end of the project in August 2026.

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Annex A References

1. United Nations (2022), **The 2030 Agenda for Sustainable Development Sub-Fund Evaluation Framework United Nations Peace and Development Sub-Fund**, https://www.un.org/sites/un2.un.org/files/2022/06/evaluation_framework_of_the_2030_agenda_sub-fund.pdf, accessed 20 March 2024
2. https://www.oecd.org/en/topics/sub-issues/development-co-operation-evaluation-and-effectiveness/evaluation-criteria.html, accessed 25 March 2024
3. Ministry of Regional Development (2012), **Evaluation Guide for public administration employees**, Warsaw, Poland, https://www.ewaluacja.gov.pl/media/11102/poradnik_ewaluacji.pdf
4. www.jica.go.jp
5. https://home-affairs.ec.europa.eu/whats-new/evaluations-and-impact-assessments_en#completed-evaluations-and-impact-assessments, accessed 25 March 2024
6. SCABEE Consortium (2024), **SCABEE Initial Analysis Research Framework**, https://scabee-project.eu/reports, accessed 10 April 2024

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Annex B TCS Peer-review template

Name TCS

Peer review evaluation

1 Instructions and introduction

For each question, mark only one most appropriate answer on a scale of 1-5, or enter an answer, or tick *X* if the question requires it.

Name of the partner as TCS author	
Name of the partner as TCS reviewer(s)	
Date of review:	
Field of TCS (e.g., Technologie, Business, Product development…)	
Level of necessary knowledge:	Beginner – Medium - Expert

2 Evaluation questions

Part A Content and formal assessment

MQ1 Thematic Relevance: Does the TCS content align with the theme/goals of the SCABEE project?

The content of the TCS matches the scope and the theme of the SCABEE project? *(tick X or comment)*

Yes	Can be improved	Not applicable

Tips for improvement, comments:

Co-funded by the European Union

Project partners
esta school of business & technology Bielfort
FHV Vorarlberg University of Applied Sciences
Silesian University of Technology
UCN

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MQ2 Significance: Will the topic of TCS be interesting for your group of students? (put comments)

Partner	Yes	Can be improved	Not applicable
ESTA			
FHV			
SUT			
UCN			

Correctness in form and content: Do you have any substantive comments on the content of TCS? Whether the methods used are appropriate to solve the proposed problem? If so, please write what:

Tips for improvement, comments:

MQ3 Quality of Content: The content is described in sufficient detail and placed in the context of current trends in sustainability (Tick *X*)

Yes	Can be improved	Not applicable

Tips for improvement, comments:

MQ4 **Difficulty level: Is the study at the right level of detail for your target group of students? If not, what should be changed? (Tick *X*)**

Partner	Partner's target group	Yes	Can be improved	Not applicable
ESTA				
FHV				
SUT				
UCN				

Tips for improvement, comments:

MQ5 **Presentation: The TCS is clear and well written: quality of language, quality of figures/tables/formulas (Tick *X*)**

Yes	Can be improved	Not applicable

Tips for improvement, comments:

MQ6 **Completeness of documents: Are all necessary documents, instructions and files available?**
Is the TCS formally correct? If not, what is missing? (Tick *X*)

Yes	Can be improved	Not applicable

Tips for improvement, comments:

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MQ7 Is the TCS title appropriate to the content?

Yes	Can be improved	Not applicable

Tips for improvement, comments:

Part B Sustainability impact assessment

Assessment of the impact of TCS on raising awareness of sustainable development

MQ1 Parameter One (Creating an Understanding)

To what extend does the implementation of the TCS strengthen a positive attitude towards sustainable development? (Does it support: awareness, understanding, acceptance of the environmental challenge)? (Tick X)

very low	low	moderate	high	very high

Tips for improvement, comments:

MQ2 **Parameter Two (Developing the Fundamentals)**

To what extent does the implementation of the TCS support the student in increasing competences related to *system thinking, framing a problem or situation, critical thinking* in the field of sustainable development? (Tick X)

very low	low	moderate	high	very high

Tips for improvement, comments:

MQ3 Parameter Three (Giving Insights)

To what extent does the implementation of the TCS support the student in e.g. holistic understanding of 'environmental sustainability'; interdependencies between elements of the Earth's biophysical system; sustainable circular economy issues.

very low	low	moderate	high	very high

Tips for improvement, comments:

MQ4 Parameter Four (Building Solutions)

To what extent does the implementation of the TCS support the student's ability:

- to analyse the environmental impact, e.g., conduct a LCA - Life Cycle Analysis or Assessment, OEF - Organizational Environmental Footprint/PEF - Product Environmental Footprint, EPD - Environmental Product Declaration, or similar?
- to develop circular solutions, hence, adopt R-strategies (e.g., rethink, refuse, reuse, remanufacture, repurpose, recycle, and recover) or related topics, e.g., Sustainable Business Models or PSS (Product Service System)?

very low	low	moderate	high	very high

Tips for improvement, comments:

MQ5 Parameter Five (Driving the Implementation)

To what extent does the implementation of TCS supporting the student's competencies within:

- implementing transformation?
- requiring competences in change management, cultural understanding, collaboration and management skills?
- Environmental legislation (e.g., Green Deal, Eco-design for Sustainable Products Regulation, or A new circular economy Action Plan)?

very low	low	moderate	high	very high

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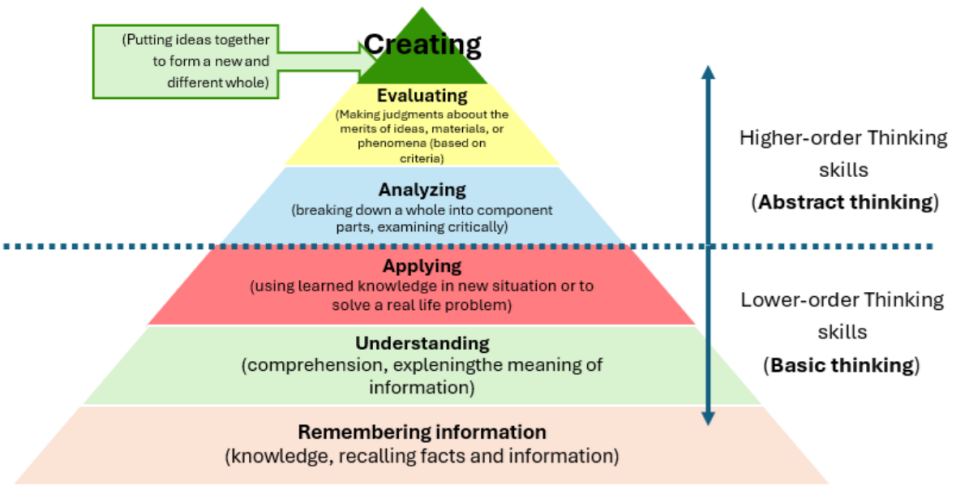
Tips for improvement, comments:

Part C Bloom's taxonomy

What Bloom's taxonomy level do you attribute to the TCS? (Tick X)

Remembering information	Understanding	Applying	Analysing	Evaluating	Creating



Annex C TCS specific online teacher survey (English)

Teaching Case Study

Feedback survey

Sunshine for production!

Optimize production schedules to photovoltaic panels & energy storage

Dear lecturer,

you used the Teaching Case Study 'Sunshine for production!' with your class, and we hope you and your students enjoyed it.

Please share your feedback with the author(s), this will help improving the case and making it even better.

This survey is anonymous, and we are not collecting any data except those submitted by you and the date of submission. We are only using collected data to evaluate the impact of our Teaching Case Studies. Data are neither shared nor published individually.

Thank you very much for your help.

The SCABEE Team

Name of your institution *

Country of origin of your institution? *

Please Select

In which study year are your students (main group if mixed classes)? *

Please Select

Ex.: Students successfully accomplished 3 study years ⇒ they are now in their 4th year ⇒ Select 4

Name and date of the lecture where the Teaching Cases Study (TCS) has been used?

Name *

Date *

21.02.2025

What is the field of the study programme? *

- Engineering studies
- Business studies
- Engineering & Business studies
- Other

How many students participated in the Teaching Case Study? *

e.g., 23

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Relevance of the Teaching Case Study for student's awareness of climate change and related challenges and opportunities

The Teaching Case Study...

... helped your students improve their awareness of environmental impact *

strongly disagree | disagree | neutral | agree | strongly agree

... helped your students realise that their actions affect environment/ sustainable development *

strongly disagree | disagree | neutral | agree | strongly agree

... has given your students the insights to help understand environmental impacts and to develop a personal approach to overall and global environmental issues *

strongly disagree | disagree | neutral | agree | strongly agree

Coherence of the Teaching Case Study with regard to your study programme

The Teaching Case Study...

... helped you to improve your teaching *

strongly disagree | disagree | neutral | agree | strongly agree

... fitted well with the course in which you used it *

strongly disagree | disagree | neutral | agree | strongly agree

Effectiveness of the Teaching Case Study for discovering concrete solutions/actions to react to environmental challenges

The Teaching Case Study...

... allowed you discovering a new subject for your classes *

strongly disagree | disagree | neutral | agree | strongly agree

... made you conscious about challenges about environmental issues for the industry *

strongly disagree | disagree | neutral | agree | strongly agree

... made you aware of new opportunities for companies due to environmental changes *

strongly disagree | disagree | neutral | agree | strongly agree

... helped you to be able to discuss and reflect on environmental aspects? *

strongly disagree | disagree | neutral | agree | strongly agree

Efficiency of the set-up of the Teaching Case Study for my learnings

The Teaching Case Study...

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... addressed a relevant topic *

strongly disagree | disagree | neutral | agree | strongly agree

... was well structured *

strongly disagree | disagree | neutral | agree | strongly agree

... integrated all necessary information and data to work on it *

strongly disagree | disagree | neutral | agree | strongly agree

Impact of the Teaching Case Study

Parameter 1: Creating an understanding

To what extent did the TCS strengthen students' positive attitude towards sustainable development (does it sufficiently support: awareness, understanding, acceptance of the environmental challenge)? *

very low | low | moderate | high | very high

Parameter 2: Developing the fundamentals

To what extent did the TCS support the student in increasing competences related to system thinking, framing a problem or situation, critical thinking in the field of sustainable development? *

very low | low | moderate | high | very high

Parameter 3: Giving insights

To what extent did the TCS support the student in e.g. holistic understanding of 'environmental sustainability'; interdependencies between elements of the Earth's biophysical system; sustainable circular economy issues. *

very low | low | moderate | high | very high

Parameter 4: Building solutions

To what extent did the TCS support the student's (1) ability to analyse the environmental impact (e.g., conduct a Life Cycle Analysis or Assessment, an Organizational Environmental Footprint, a Product Environmental Footprint, a Environmental Product Declaration, or similar?) or (2) to develop circular solutions, hence, adopt R-strategies (e.g., rethink, refuse, reuse, remanufacture, repurpose, recycle,and recover) or related topics(e.g., Sustainable Business Models or Product Service System)? *

very low | low | moderate | high | very high

Parameter 5: Driving the implementation

To what extent did the TCS support the student's competencies within, e.g.: Change management? Cultural understanding? Collaboration and management? Environmental legislation (e.g., Green Deal, Eco-design for Sustainable Products Regulation, or A new Circular Economy Action Plan) *

very low | low | moderate | high | very high

Bloom's taxonony evaluation

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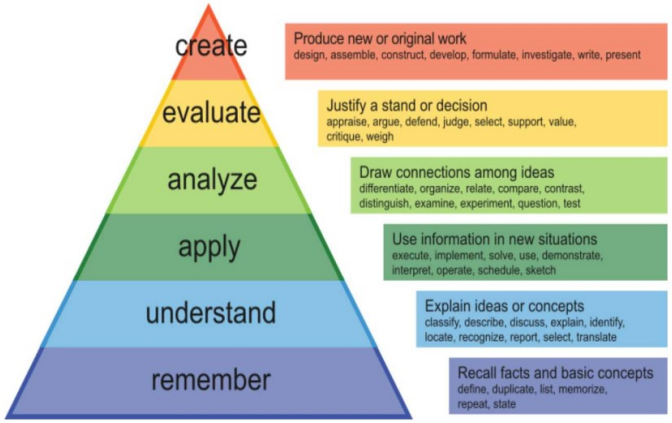
What level of Bloom's taxonomy would you put to this Teaching Case Study?

Please Select

Show Bloom's taxonomy



By Tidema - Own work, CC BY 4.0, https://commons.wikimedia.org/w/index.php?curid=152872571

The Teaching Case Study...

... increased the attractiveness of your lecture *

strongly disagree | disagree | neutral | agree | strongly agree

... motivated me to build environmentally related content of other lectures *

strongly disagree | disagree | neutral | agree | strongly agree

... has awaken my curiosity to learn more about environmental issues and potential actions to minimise environmental impacts *

strongly disagree | disagree | neutral | agree | strongly agree

Continuousness

I will continue using this Teaching Case Study with future/other classes *

strongly disagree | disagree | neutral | agree | strongly agree

I envisage using other Teaching Case Studies addressing environmental questions in my lectures *

strongly disagree | disagree | neutral | agree | strongly agree

I will suggest using this Teaching Case Study to colleagues from my and other institutions *

strongly disagree | disagree | neutral | agree | strongly agree

I will think about developing my own Teaching Case Studies with a focus on sustainability *

strongly disagree | disagree | neutral | agree | strongly agree

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Volontary information if you agree to be contactd if the author(s) would like to discuss with you about your evaluation

Name

First Name

Last Name

Email

example@example.com

Thank you very much for using this SCABEE Teaching Case Study and for participating in its evaluation.

Submit

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Dansk

Feedback-undersøgelse

Sunshine for production!

Optimize production schedules to photovoltaic panels & energy storage

Kære studerende,

Du har deltaget i undervisningscasen 'Sunshine for production!', og vi håber, at du har nydt den.

Del gerne din feedback med forfatterne, så vi kan forbedre casen og gøre den endnu bedre.

Denne undersøgelse er anonym, og vi indsamler ikke andre data end dem, du har indsendt, og datoen for indsendelsen.

Mange tak for din hjælp.

Mange hilsner
SCABEE-teamet

Din institution *

Vælg venligst

Hvor studerer du? *

Vælg venligst

Hvor mange år har du studeret? *

Vælg venligst

F.eks.: Du har gennemført 3 studieår ⇒ du er nu på dit 4. år ⇒ Vælg 4

Hvad er dit nuværende studieområde? *

- Teknik
- Forretning
- Teknik og forretning
- Andet

I hvilke af dine forelæsninger er Teaching Case Study blevet brugt?

Navn *

Dato *

21.02.2025

Hvordan vurderer du din personlige bevidsthed om miljøspørgsmål? *

- Jeg er slet ikke interesseret i miljøspørgsmål
- Jeg er lidt interesseret i miljøspørgsmål
- Jeg er ret interesseret i miljøspørgsmål
- Jeg er interesseret i miljøspørgsmål
- Jeg er meget interesseret i miljøspørgsmål

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Teaching Case Study's relevans for min bevidsthed om miljøforandringer og relaterede udfordringer og muligheder

Casestudiet...

...hjalp mig med at forbedre min bevidsthed om miljøpåvirkning *

meget uenig | uenig | neutral | enig | meget enig

...hjalp mig med at indse, at mine handlinger påvirker miljø/bæredygtig udvikling *

meget uenig | uenig | neutral | enig | meget enig

... gav mig en indsigt, så jeg kan bidrage til at forebygge skadelige miljøpåvirkninger og anvende en personlig tilgang til de overordnede og globale miljøspørgsmål *

meget uenig | uenig | neutral | enig | meget enig

Sammenhæng mellem undervisningscasestudiet og min uddannelse

Casestudiet...

... passede godt til mit studieprogram *

meget uenig | uenig | neutral | enig | meget enig

... hjalp mig med at lære relevante færdigheder til at minimere miljøpåvirkningen *

meget uenig | uenig | neutral | enig | meget enig

... gjorde mig i stand til bedre at tage hensyn til miljøpåvirkninger i mit arbejdsliv, f.eks. i design, produktion og/eller markedsføring af produkter/ services *

meget uenig | uenig | neutral | enig | meget enig

Effektiviteten af undervisningscasestudiet til at finde konkrete løsninger/ handlinger til at reagere på miljømæssige udfordringer

Casestudiet...

... lod mig opdage et nyt emne *

meget uenig | uenig | neutral | enig | meget enig

... gjorde mig bevidst om udfordringer med miljøspørgsmål for industrien *

meget uenig | uenig | neutral | enig | meget enig

... gjorde mig opmærksom på nye muligheder for virksomheder på grund af miljøforandringer *

meget uenig | uenig | neutral | enig | meget enig

... gjorde det muligt for mig at diskutere og reflektere over miljømæssige aspekter *

meget uenig | uenig | neutral | enig | meget enig

... tog et interessant emne op *

meget uenig | uenig | neutral | enig | meget enig

Effektiviteten af opsætningen af undervisningscasestudiet for min læring

Casestudiet...

... var godt struktureret *

meget uenig | uenig | neutral | enig | meget enig

... integreret de nødvendige oplysninger og data til at arbejde med det *

meget uenig | uenig | neutral | enig | meget enig

Virkningen af casestudiet om undervisning

Casestudiet...

... bidraget til at forberede mig på at håndtere miljøspørgsmål i mit PROFESSIONELLE liv *

meget uenig | uenig | neutral | enig | meget enig

... bidraget til at forberede mig på at håndtere miljøspørgsmål i mit PERSONLIGE liv *

meget uenig | uenig | neutral | enig | meget enig

... har vækket min nysgerrighed efter at lære mere om miljøspørgsmål og potentielle tiltag til at minimere miljøpåvirkninger *

meget uenig | uenig | neutral | enig | meget enig

Kontinuitet

Jeg vil foreslå, at bruge denne undervisningscase i andre klasser *

meget uenig | uenig | neutral | enig | meget enig

Jeg ville foreslå at bruge flere undervisningscases, der behandler miljøspørgsmål, i mit pensum *

meget uenig | uenig | neutral | enig | meget enig

Jeg tror, at virkningerne af casen forbliver på lang sigt (f.eks. i mit studie- eller arbejdsliv) *

meget uenig | uenig | neutral | enig | meget enig

Indsend

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Annex E TCS specific online student survey (English)

scabee Teaching Case Study

English (UK)

Feedback survey

Sunshine for production!

Optimize production schedules to photovoltaic panels & energy storage

Dear student,

you participated in the Teaching Case Study 'Sunshine for production!', and we hope you enjoyed it.

Please share your feedback with the author(s), this will help improving the case and making it even better.

This survey is anonymous, and we are not collecting any data except those submitted by you and the date of submission.

Thank you very much for your help.

The SCABEE Team

Your institution *

Where are you studying? *

Please Select

Please Select

For how many years have you been studying? *

Please Select

Ex.: You successfully accomplished 3 study years ⇒ you are now in your 4th year ⇒ Select 4

What is your field of current studies? *

- Engineering studies
- Business studies
- Engineering & Business studies
- Other

Name and date of lecture the Teaching Cases Study (TCS) has been used?

Name *

Date *

21.02.2025

How do you rate your personal awareness of environmental issues? *

- I am not interested at all in environmental issues
- I am slightly interested in environmental issues
- I am fairly interested in environmental issues
- I am interested in environmental issues
- I am very interested in environmental issues

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Relevance of the Teaching Case Study for my awareness of environmental change and related challenges and opportunities

The Teaching Case Study...

... helped me improve my awareness of environmental impact *

strongly disagree | disagree | neutral | agree | strongly agree

... helped me realise that my actions affect environment/sustainable development *

strongly disagree | disagree | neutral | agree | strongly agree

... gave me an insight so I can contribute to preventing harmful environmental impacts and apply a personal approach to the overall and global environmental issues *

strongly disagree | disagree | neutral | agree | strongly agree

Coherence of the Teaching Case Study with regard to my study programme

The Teaching Case Study...

... fitted well to my study's programme *

strongly disagree | disagree | neutral | agree | strongly agree

... helped me learn relevant skills to minimise the environmental impact *

strongly disagree | disagree | neutral | agree | strongly agree

... enabled me to better consider environmental impacts in my professional life, e.g., in design, production and/or commercialisation of products/ services *

strongly disagree | disagree | neutral | agree | strongly agree

Effectiveness of the Teaching Case Study for discovering concrete solutions/ actions to react to environmental challenges

The Teaching Case Study...

... let me discover a new subject *

strongly disagree | disagree | neutral | agree | strongly agree

... made me conscious about challenges about environmental issues for the industry *

strongly disagree | disagree | neutral | agree | strongly agree

... made me aware of new opportunities for companies due to environmental changes *

strongly disagree | disagree | neutral | agree | strongly agree

... enabled me to discuss and reflect on environmental aspects *

strongly disagree | disagree | neutral | agree | strongly agree

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... addressed an interesting topic *

strongly disagree | disagree | neutral | agree | strongly agree

Efficiency of the set-up of the Teaching Case Study for my learnings

The Teaching Case Study...

... was well structured *

strongly disagree | disagree | neutral | agree | strongly agree

... integrated the necessary information and data to work on it *

strongly disagree | disagree | neutral | agree | strongly agree

Impact of the Teaching Case Study

The Teaching Case Study...

... contributed to prepare me to address environmental issues in my PROFESSIONAL life *

strongly disagree | disagree | neutral | agree | strongly agree

... contributed to prepare me to address environmental issues in my PERSONAL life *

strongly disagree | disagree | neutral | agree | strongly agree

... has awakened my curiosity to learn more about environmental issues and potential actions to minimise environmental impacts *

strongly disagree | disagree | neutral | agree | strongly agree

Continuousness

I would you suggest continuing using this Teaching Case Study with other classes *

strongly disagree | disagree | neutral | agree | strongly agree

I would suggest using more Teaching Case Studies addressing environmental questions in my curriculum *

strongly disagree | disagree | neutral | agree | strongly agree

I think the effects of Teaching Case Studies remain in the long term (e.g. in my student's or professional life) *

strongly disagree | disagree | neutral | agree | strongly agree

Submit

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Teaching Case Study

Français

Enquête de retour d'information

Sunshine for production!

Optimize production schedules to photovoltaic panels & energy storage

Cher étudiant,

Vous avez participé à l'étude de cas pédagogique « Sunshine for production! », et nous espérons que vous l'avez appréciée.

N'hésitez pas à faire part de vos commentaires à l'auteur ou aux auteurs, cela permettra d'améliorer l'étude de cas et de la rendre encore meilleure.

Cette enquête est anonyme et nous ne collectons aucune donnée, à l'exception de celles que vous mettez ainsi que la date à laquelle vous les avez soumises.

Nous vous remercions de votre aide.
L'équipe SCABEE

Votre institution *

Où est-ce que vous étudiez? *

Merci de sélectionner

Merci de sélectionner

En quellle année d'études êtes vous? *

Merci de sélectionner

Ex : Vous avez accompli avec succès 3 années d'études ⇒ vous êtes maintenant dans votre 4ème année ⇒ Sélectionnez 4

Quel est votre domaine d'études actuel ? *

- Etudes d'ingénieur
- Etudes de Commerce
- Etudes d'ingénierie & commerce
- Autre

Dans le cadre de quel cours l'étude de cas pédagogique a été utilisée ?

Nom *

Date *

21.02.2025

Comment évaluez vous votre propre sensibilité pour les questions environnementales ? *

- Les questions environnementales ne m'intéressent pas du tout
- Je m'intéresse un peu aux questions environnementales
- Je suis assez intéressé par les questions environnementales
- Je m'intéresse aux questions environnementales
- Je suis très intéressé par les questions environnementales

Pertinence de l'étude de cas pédagogique pour ma sensibilisation au changement environnemental et aux défis et opportunités qui y sont liés

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L'étude de cas pédagogique...

...m'a aidé à augmenter ma conscience de l'impact sur l'environnement *

pas du tout d'accord | pas d'accord | neutre | d'accord | tout à fait d'accord

...m'a aidé à prendre conscience que mes actions ont un impact sur l'environnement/le développement durable *

pas du tout d'accord | pas d'accord | neutre | d'accord | tout à fait d'accord

... m'a donné un aperçu qui me permet de contribuer à la prévention des effets néfastes sur l'environnement et d'appliquer une approche personnelle aux questions environnementales globales et mondiales *

pas du tout d'accord | pas d'accord | neutre | d'accord | tout à fait d'accord

Cohérence de l'étude de cas pédagogique par rapport à mon programme d'études

L'étude de cas pédagogique...

... s'inscrit bien dans le programme de mes études *

pas du tout d'accord | pas d'accord | neutre | d'accord | tout à fait d'accord

... m'a permis d'acquérir des compétences utiles pour minimiser l'impact sur l'environnement *

pas du tout d'accord | pas d'accord | neutre | d'accord | tout à fait d'accord

... m'a permis de mieux prendre en compte les impacts environnementaux dans ma vie professionnelle, par exemple lors de la conception, de la production et/ou de la commercialisation de produits/services *

pas du tout d'accord | pas d'accord | neutre | d'accord | tout à fait d'accord

Efficacité de l'étude de cas pédagogique pour découvrir des solutions/actions concrètes pour réagir aux défis environnementaux

L'étude de cas pédagogique...

... laissez-moi découvrir un nouveau sujet *

pas du tout d'accord | pas d'accord | neutre | d'accord | tout à fait d'accord

... m'a fait prendre conscience des défis à relever en matière d'environnement pour l'industrie *

pas du tout d'accord | pas d'accord | neutre | d'accord | tout à fait d'accord

... m'a fait prendre conscience des nouvelles opportunités qui s'offrent aux entreprises en raison des changements environnementaux *

pas du tout d'accord | pas d'accord | neutre | d'accord | tout à fait d'accord

... m'a permis de discuter et de réfléchir aux aspects environnementaux *

pas du tout d'accord | pas d'accord | neutre | d'accord | tout à fait d'accord

... a abordé un sujet intéressant *

pas du tout d'accord | pas d'accord | neutre | d'accord | tout à fait d'accord

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Efficacité de la mise en place de l'étude de cas pédagogique pour mes apprentissages

L'étude de cas pédagogique...

... était bien structuré *

pas du tout d'accord | pas d'accord | neutre | d'accord | tout à fait d'accord

... a intégré toutes les informations et données nécessaires pour y travailler *

pas du tout d'accord | pas d'accord | neutre | d'accord | tout à fait d'accord

Impact de l'étude de cas pédagogique

L'étude de cas pédagogique...

... a contribué à me préparer à aborder les questions environnementales dans ma vie PROFESSIONNELLE *

pas du tout d'accord | pas d'accord | neutre | d'accord | tout à fait d'accord

... a contribué à me préparer à aborder les questions environnementales dans ma vie PERSONNELLE *

pas du tout d'accord | pas d'accord | neutre | d'accord | tout à fait d'accord

... m'a rendu curieux pour en savoir plus sur les questions environnementales et sur les actions possibles pour minimiser les impacts environnementaux *

pas du tout d'accord | pas d'accord | neutre | d'accord | tout à fait d'accord

Continuité

Je suggère de continuer à utiliser cette étude de cas pédagogique avec d'autres classes *

pas du tout d'accord | pas d'accord | neutre | d'accord | tout à fait d'accord

Je suggère d'utiliser davantage d'études de cas pédagogiques portant sur des questions environnementales dans mon programme d'études *

pas du tout d'accord | pas d'accord | neutre | d'accord | tout à fait d'accord

Je pense que l'effet d'apprentissage par les études de cas pédagogiques se maintient à long terme (par exemple pour mes études ou ou ma vie professionnelle) *

pas du tout d'accord | pas d'accord | neutre | d'accord | tout à fait d'accord

Soumettre

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Annex G TCS specific online student survey (German)

Teaching Case Study

Deutsch

Feedback-Umfrage

Sunshine for production!

Optimize production schedules to photovoltaic panels & energy storage

Hallo,

Sie haben an der Fallstudie 'Sunshine for production!' teilgenommen, und wir hoffen, dass sie Ihnen gefallen hat. Bitte teilen Sie mit den Autoren Ihr Feedback, damit die Fallstudie verbessern werden kann. Diese Umfrage ist anonym, und wir sammeln keine Daten außer denen, die Sie uns übermitteln, und dem Datum der Übermittlung.

Herzlichen Dank für Ihre Hilfe,
Das SCABEE-Team

Ihre Hochschule *
Bitte auswählen

Wo studieren Sie? *
Bitte auswählen

In welchem Studienjahr sind Sie? *
Bitte auswählen
Bsp.: Sie haben 3 Studienjahre erfolgreich absolviert ⇒ Sie sind jetzt im 4. Studienjahr ⇒ Bitte 4 auswählen

Was ist Ihre Studienrichtung? *
Ingenieurswesen
Wirtschaftswesen
Ingenieurs- und Wirtschaftswesen
Sonstige

In welcher Vorlesung wurde die Fallstudie verwendet?

Name *

Datum *
21.02.2025

Wie bewerten Sie Ihr eingenes Umweltbewusstsein? *
Ich interessiere mich überhaupt nicht für Umweltfragen
Ich interessiere mich nicht wirklich für Umweltfragen
Ich bin ein wenig an Umweltfragen interessiert
Ich interessiere mich für Umweltfragen
Ich interessiere mich sehr für Umweltfragen

Relevanz der Fallstudie für mein Bewusstsein für Umweltveränderungen und die damit verbundenen Herausforderungen und Möglichkeiten

Die Fallstudie...

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...hat mein Umweltbewusstsein gestärkt *

stimme überhaupt nicht zu | stimme nicht zu | neutral | stimme zu | stimme voll und ganz zu

...hat mir bewusst gemacht, dass meine Tätigkeiten einen Umwelteinfluss haben *

stimme überhaupt nicht zu | stimme nicht zu | neutral | stimme zu | stimme voll und ganz zu

... hat mir einen Einblick gegeben, so dass ich dazu beitragen kann, schädliche Auswirkungen auf die Umwelt zu verhindern und mich persönlich für allgemeine und globale Umweltthemen einzusetzen *

stimme überhaupt nicht zu | stimme nicht zu | neutral | stimme zu | stimme voll und ganz zu

Kohärenz der Fallstudie in Bezug auf meinen Studiengang

Die Fallstudie...

... hat sich gut in mein Studium eingefügt *

stimme überhaupt nicht zu | stimme nicht zu | neutral | stimme zu | stimme voll und ganz zu

...half mir, relevante Fähigkeiten zu erlernen, um Umweltauswirkungen zu minimieren *

stimme überhaupt nicht zu | stimme nicht zu | neutral | stimme zu | stimme voll und ganz zu

... hat mich befähigt, Umweltauswirkungen in meinem Berufsleben besser zu berücksichtigen, z. B. bei der Gestaltung, Produktion und/oder Vermarktung von Produkten/Dienstleistungen *

stimme überhaupt nicht zu | stimme nicht zu | neutral | stimme zu | stimme voll und ganz zu

Effektivität der Fallstudie zur Entdeckung konkreter Lösungen/Handlungen, um auf Umweltprobleme zu reagieren

Die Fallstudie...

...ermöglichte mir, ein neues Thema zu entdecken *

stimme überhaupt nicht zu | stimme nicht zu | neutral | stimme zu | stimme voll und ganz zu

... hat mir die Herausforderungen von Unternehmen in Bezug auf Umweltfragen bewusst gemacht *

stimme überhaupt nicht zu | stimme nicht zu | neutral | stimme zu | stimme voll und ganz zu

...hat mich auf Möglichkeiten für Unternehmen aufgrund von Umweltveränderungen aufmerksam gemacht *

stimme überhaupt nicht zu | stimme nicht zu | neutral | stimme zu | stimme voll und ganz zu

...ermöglichte es mir, über Umweltaspekte zu diskutieren und nachzudenken *

stimme überhaupt nicht zu | stimme nicht zu | neutral | stimme zu | stimme voll und ganz zu

...behandelte ein interessantes Thema *

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stimme überhaupt nicht zu | stimme nicht zu | neutral | stimme zu | stimme voll und ganz zu

Effizienz des Aufbaus der Fallstudie für mein Lernen

Die Fallstudie...

... war gut strukturiert *

stimme überhaupt nicht zu | stimme nicht zu | neutral | stimme zu | stimme voll und ganz zu

... enthielt die für die Bearbeitung erforderlichen Informationen und Daten *

stimme überhaupt nicht zu | stimme nicht zu | neutral | stimme zu | stimme voll und ganz zu

Auswirkungen der Fallstudie

Die Lehr-Fallstudie...

... dazu beigetragen hat, mich darauf vorzubereiten, Umweltfragen in meinem BERUFLICHEN Leben anzugehen *

stimme überhaupt nicht zu | stimme nicht zu | neutral | stimme zu | stimme voll und ganz zu

... dazu beigetragen hat, mich darauf vorzubereiten, Umweltfragen in meinem PERSÖNLICHEN Leben anzugehen *

stimme überhaupt nicht zu | stimme nicht zu | neutral | stimme zu | stimme voll und ganz zu

... hat meine Neugierde geweckt, mehr über Umweltfragen und mögliche Maßnahmen zur Minimierung von Umweltauswirkungen zu erfahren *

stimme überhaupt nicht zu | stimme nicht zu | neutral | stimme zu | stimme voll und ganz zu

Weitere Nutzung

Würden Sie vorschlagen, diese Fallstudie auch in anderen Klassen zu verwenden? *

stimme überhaupt nicht zu | stimme nicht zu | neutral | stimme zu | stimme voll und ganz zu

Ich würde vorschlagen, mehr Fallstudien zu Umweltfragen in meinen Lehrplan aufzunehmen *

stimme überhaupt nicht zu | stimme nicht zu | neutral | stimme zu | stimme voll und ganz zu

Ich glaube, dass der Lernerfolg durch Fallstudien langfristig ist (z.B. in meinem Studenten- oder Berufsleben) *

stimme überhaupt nicht zu | stimme nicht zu | neutral | stimme zu | stimme voll und ganz zu

Absenden

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Annex H TCS specific online student survey (Polish)

Teaching Case Study

Polski

Badanie satysfakcji

Sunshine for production!

Optimize production schedules to photovoltaic panels & energy storage

Drogi uczniu,

Mamy nadzieję, że podobało Ci się studium przypadku „Sunshine for production!".

Prosimy o podzielenie się swoją opinią z autorem(ami), co pomoże ulepszyć studium przypadku i uczynić je jeszcze lepszym.

Ta ankieta jest anonimowa i nie zbieramy żadnych danych, z wyjątkiem tych przesłanych przez Ciebie i daty przesłania.

Dziękujemy bardzo za pomoc.
Zespół SCABEE

Twoja instytucja *

Wybierz

Gdzie studiujesz? *

Wybierz

Od ilu lat studiujesz? *

Wybierz

Przykład: Pomyślnie ukończyłeś 3 lata studiów ⇒ jesteś teraz na 4 roku ⇒ Wybierz 4

Jaki jest Twój obecny kierunek studiów? *

- Studia inżynierskie
- Studia biznesowe
- Engineering & Business studies
- Inne

W którym z Twoich wykładów wykorzystano metodę Teaching Case Study?

Nazwa *

Data *

21.02.2025

Jak oceniasz swoją osobistą świadomość kwestii środowiskowych? *

- W ogóle nie interesują mnie kwestie środowiskowe
- Jestem nieco zainteresowany kwestiami środowiskowymi
- Jestem dość zainteresowany kwestiami środowiskowymi
- Interesuję się kwestiami środowiskowymi
- Jestem bardzo zainteresowany kwestiami środowiskowymi

Znaczenie dydaktycznego studium przypadku dla mojej świadomości zmian środowiskowych oraz związanych z nimi wyzwań i możliwości

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Studium przypadku nauczania...

...pomógł mi zwiększyć świadomość wpływu na środowisko *

zdecydowanie się nie zgadzam | nie zgadzać się | neutralny | zgadzać się | zdecydowanie się zgadzam

...pomógł mi uświadomić sobie, że moje działania wpływają na środowisko/ zrównoważony rozwój *

zdecydowanie się nie zgadzam | nie zgadzać się | neutralny | zgadzać się | zdecydowanie się zgadzam

... dał mi wgląd, dzięki któremu mogę przyczynić się do zapobiegania szkodliwemu wpływowi na środowisko i zastosować osobiste podejście do ogólnych i globalnych kwestii środowiskowych *

zdecydowanie się nie zgadzam | nie zgadzać się | neutralny | zgadzać się | zdecydowanie się zgadzam

Spójność dydaktycznego studium przypadku w odniesieniu do mojego programu studiów

Studium przypadku nauczania...

... dobrze pasował do mojego programu studiów *

zdecydowanie się nie zgadzam | nie zgadzać się | neutralny | zgadzać się | zdecydowanie się zgadzam

... pomógł mi nauczyć się odpowiednich umiejętności, aby zminimalizować wpływ na środowisko *

zdecydowanie się nie zgadzam | nie zgadzać się | neutralny | zgadzać się | zdecydowanie się zgadzam

... umożliwiło mi lepsze uwzględnienie wpływu na środowisko w moim życiu zawodowym, np. w projektowaniu, produkcji i/lub komercjalizacji produktów/usług *

zdecydowanie się nie zgadzam | nie zgadzać się | neutralny | zgadzać się | zdecydowanie się zgadzam

Skuteczność dydaktycznego studium przypadku w odkrywaniu konkretnych rozwiązań/działań w odpowiedzi na wyzwania środowiskowe

Studium przypadku nauczania...

.... pozwól mi odkryć nowy temat *

zdecydowanie się nie zgadzam | nie zgadzać się | neutralny | zgadzać się | zdecydowanie się zgadzam

... uświadomił mi wyzwania związane z kwestiami środowiskowymi dla branży *

zdecydowanie się nie zgadzam | nie zgadzać się | neutralny | zgadzać się | zdecydowanie się zgadzam

... uświadomił mi nowe możliwości dla firm ze względu na zmiany środowiskowe *

zdecydowanie się nie zgadzam | nie zgadzać się | neutralny | zgadzać się | zdecydowanie się zgadzam

... umożliwił mi przedyskutowanie i zastanowienie się nad aspektami środowiskowymi *

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zdecydowanie się nie zgadzam | nie zgadzać się | neutralny | zgadzać się | zdecydowanie się zgadzam

... poruszył interesujący temat *

zdecydowanie się nie zgadzam | nie zgadzać się | neutralny | zgadzać się | zdecydowanie się zgadzam

Efektywność konfiguracji Teaching Case Study dla mojej nauki

Studium przypadku nauczania...

... był dobrze zorganizowany *

zdecydowanie się nie zgadzam | nie zgadzać się | neutralny | zgadzać się | zdecydowanie się zgadzam

... zintegrował niezbędne informacje i dane do pracy nad nim *

zdecydowanie się nie zgadzam | nie zgadzać się | neutralny | zgadzać się | zdecydowanie się zgadzam

Wpływ Studium Przypadku Nauczania

Studium przypadku nauczania...

... przyczynił się do przygotowania mnie do zajmowania się kwestiami środowiskowymi w moim życiu ZAWODOWYM *

zdecydowanie się nie zgadzam | nie zgadzać się | neutralny | zgadzać się | zdecydowanie się zgadzam

... przyczyniło się do przygotowania mnie do zajmowania się kwestiami środowiskowymi w moim OSOBISTYM życiu *

zdecydowanie się nie zgadzam | nie zgadzać się | neutralny | zgadzać się | zdecydowanie się zgadzam

... rozbudził moją ciekawość, aby dowiedzieć się więcej o kwestiach środowiskowych i potencjalnych działaniach mających na celu zminimalizowanie wpływu na środowisko *

zdecydowanie się nie zgadzam | nie zgadzać się | neutralny | zgadzać się | zdecydowanie się zgadzam

Ciągłość

Sugerowałbym dalsze korzystanie z tego studium przypadku w innych klasach *

zdecydowanie się nie zgadzam | nie zgadzać się | neutralny | zgadzać się | zdecydowanie się zgadzam

Sugerowałbym wykorzystanie w moim programie nauczania większej liczby studiów przypadków dotyczących kwestii środowiskowych *

zdecydowanie się nie zgadzam | nie zgadzać się | neutralny | zgadzać się | zdecydowanie się zgadzam

Myślę, że efekty Teaching Case Studies utrzymują się w dłuższej perspektywie (np. w życiu zawodowym moich uczniów) *

zdecydowanie się nie zgadzam | nie zgadzać się | neutralny | zgadzać się | zdecydowanie się zgadzam

Prześlij

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