Sustainability Toolkit: Guidance for Reviewing Teaching Tools

Thank you for reviewing a contribution to the Sustainability Toolkit. This document will help to guide you through the review process. If you have any questions, please email Rhythima Shinde at rhythima.shinde@klhsustainability.com or Wendy Attwell at w.attwell@epc.ac.uk

Reviewer expectations

What you can expect as a Sustainability Toolkit content reviewer:

- That we will treat you as the professional and subject matter expert that you are.
- That we will not ask you to review an unreasonable amount of content (our expectation is that this will not exceed two or three pieces of content per year).
- That we will be clear about your assignments and deadlines.
- That, once you have completed your first review assignment, we will recognise your academic citizenship by adding your bio and photo to our Contributors page.

What we expect from you:

- That you will act professionally within this role and bring your expertise to the table when reviewing content.
- That you will follow the applicable reviewer guidance document(s).
- That you will ask us for support if you feel that the content of the review assignment lies outside of your expertise.
- That you will abide by any applicable rules, regulations or laws, including those regarding privacy and data protection.
- That you will maintain confidentiality about the content of the review assignment until it is published.
- That you will work to agreed deadlines once you have accepted a review assignment.

Guidance for reviewers

This toolkit provides resources and guidance for the teaching of sustainability in engineering.

- After each section, questions are posed for you to consider in relation to the contribution.

- On the contribution, please use "track changes" and comments to make suggestions related to each question (as required) that can guide the author in revisions.

- Aim to summarise your thoughts on the overall contribution and how much (if any) further work it needs from the author.

- Return the contribution in Word (.doc or .docx) or equivalent format to Rhythima Shinde at rhythima.shinde@klhsustainability.com

- If you prefer not to be contacted by the author to discuss your review, please let us know in advance.

Teaching tools: Purpose and Outcomes

- Teaching Tools are intended to support educators' ability to apply and embed sustainability topics within their engineering teaching.

- Providing educators with support in this area is a critical step. Educators need to quickly and easily find help with:
    - Adapting and integrating existing sustainability resources to their disciplinary context;
    - Implementing new and different pedagogies that support sustainability learning;
    - Structuring lessons, modules, and programmes so that sustainability skills and outcomes are central themes.

- Thus, these teaching tools will provide crucial guidance for those who may be teaching sustainability-related material for the first time, or who are looking for new and different ways to integrate sustainability into their teaching.

- They may take the form of case studies, learning activities, discussion prompts, debate or role play scripts, technical content related to sustainability, worksheets, slides, or other similar teaching materials.

- Before you begin to review, you should familiarise yourself with the variety of Teaching Tools in the Sustainability Toolkit, since we want these resources to be produced in a similar style and format.

Case studies

- Case studies should mimic the length, style, tone and format of existing case studies in our Sustainability Toolkit and Ethics Toolkit. Before you begin to review, please familiarise yourself with some existing case studies to get a feel for the format and the approach.

- Case studies present real-world scenarios that can be used in teaching about sustainability in engineering.

- They are usually based on a real example, although fictionalised cases are acceptable when they are grounded in realistic detail.

- The audience for these case studies is educators seeking to embed sustainability into their engineering teaching.

- Please see the current research on good practice in writing case studies, which you may find helpful as you review, as well as our article on creating the perfect recipe for a case study. This 'recipe' can guide you as you review so that you can encourage authors to include or develop other aspects of the case. Both articles are from our Engineering Ethics Toolkit, but the guidance given can be adapted for sustainability cases.

- Case studies will vary in length depending on scope and resource, but many are around 1500-2000 words. They should reference relevant online open-source resources.

Overview

- The case study should be presented as a narrative about a sustainability issue in engineering. This issue should allow educators to address large-scale concerns (the SDGs and/or social, regulatory, economic, or environmental concerns) as well as small-scale concerns (individual issues such as personal choices, daily practice, relationships, etc.). Additionally, there should be enough emphasis on the engineering part of the case so that technical material could be introduced. Further ideas for case study topics could include approaches for maintaining / mending rather than new products, e.g. right to repair, up-to-date case studies from industry, understanding the sustainability implications within educational practice (e.g. 3D printing, cloud use, energy, whiteboards), etc.

- Ideally, sustainability cases should provide an opportunity for students to develop one or more competencies that experts agree are essential for demonstrating sustainability knowledge, skills, and attributes. AdvanceHE's Education for Sustainable Development Guidance and Engineers Without Borders – UK's Global Responsibility Competency Compass both describe relevant competencies that could be included as learning outcomes or aims in a sustainability case.

  o Is there a strong narrative to the case?

  o Are there places where technical topics could be integrated?

  o Does this resource help introduce or develop concepts related to sustainability, sustainable development, and/or global responsibility so that learners can engage with these topics in the context of engineering?

Authenticity

- Case studies are most effective when they feel like they are realistic, with characters that you can identify or empathise with, and with situations that do not feel fake or staged. Giving characters names and backgrounds, including emotional responses, and referencing real-life experiences help to increase authenticity.

  o Does the case have authentic characters and situations?

Complexity

- Many cases are either overly complicated so that they become overwhelming, or too straightforward so that they can be "solved" quickly. A good strategy is to try to develop multiple dimensions of a case, but not too many that it becomes unwieldy. Additionally, complexity can be added through different parts of the case so that instructors can choose a simpler or more complicated version.

  o Is there a clear dilemma in the case?

  o Does the case provide enough complexity to challenge users, but not so much that people might avoid engaging with it?

Activities and resources

- The contributors should provide a variety of suggestions for discussion points and activities to engage learners, as well as a list of reliable, authoritative open-source online resources, to both help educators prepare and to enhance students' learning. Where information is presented from another source, it needs to be properly referenced.
    - o Are there sufficient questions, prompts or teaching activities to guide discussion or classroom use?
    - o What other activities should they include?
    - o Are open resources or links to other toolkit materials included, and are these sufficient?
    - o What additional resources or references should the author include?

Suggestions

- Provide any further suggestions or guidance that you think would help the author(s) improve the case study.
    - o Have you included comments and/or tracked changes feedback for clarity, depth or reorganisation?
    - o Have you flagged up anything that's missing?
    - o Have you summarised your thoughts on the overall contribution and how much (if any) further work it needs from the author?

References & resources

- Where information is presented from another source, it needs to be properly referenced.
    - o Are sources cited using [Harvard referencing](#)?
    - o Are open resources or links to other toolkit materials included?
    - o What additional resources or references should the author include?

Educational level

- A beginner-level case is aimed at learners who have not had much experience in engaging with complex sustainability topics, and usually focuses on only one or two dimensions of a dilemma. An Advanced-level case is aimed at learners who have had previous practice in engaging with sustainability issues, and often addresses multiple levels of complexity. An Intermediate case is somewhere in between.
    - o Has the author assigned an educational level to the case study?
    - o Does it appear to be the correct level?

Assessment

- If possible, the author should suggest assessment opportunities for activities within the case, such as marking rubrics or example answers. This is not mandatory but is helpful to have.
    - o If included, are these suitably developed and acceptable to include with the case?

Format

The case study should be structured using the following format:

- Learning and teaching notes: This is an overview of the case and its dilemma, and how it relates to [AHEP's themes](#).

- Learning and teaching resources: A list of reliable, authoritative, open source online resources that relate to the case and its dilemma. These can be from a variety of sources, such as academic institutions, journals, news websites, business, and so on. We suggest a minimum of five sources that help to provide context to the case and its dilemmas. You may want to suggest an author flag up certain resources as suggested pre-reading for certain parts of the case, if you feel that this will enrich the learning experience.

- Summary: This sets out the case's initial situation and characters.

- Dilemma - Part one: This elaborates on the case and provides the ethical dilemma for the character.

- Questions and activities: This is where the author provides suggestions for discussions and activities related to the case and the dilemma.

- Further dilemmas: Some case studies are sufficiently complex at one dilemma, but if the case requires it you can provide further parts (up to a maximum of six).

- Further questions and activities: After each part, the author should provide further suggestions for discussions and activities related to the case and the dilemma.

- Assessment: If possible, the author should suggest assessment opportunities for activities within the case, such as marking rubrics or example answers.

- Keywords: On the submission form, authors will be prompted to provide keywords as educational aims and professional situations highlighted in the case.

Corrections

- If possible, aim to correct any spelling, grammar, or punctuation mistakes as you review, but remember that editing, proofreading and formatting are the next stage of the process.

Returning the reviewed case study

- Return the contribution in Word (.doc or .docx) or equivalent format to Rhythima Shinde at rhythima.shinde@klhsustainability.com

Case enhancements

- Case enhancements are teaching materials and resources that help educators to employ the Sustainability case studies and lead the activities referenced within them.

- Enhancements provide crucial guidance for those who may be teaching sustainability material for the first time, or who are looking for new and different ways to integrate sustainability into their teaching.

- They may take the form of discussion prompts, debate or role play scripts, technical content related to the case study, worksheets, slides, or other similar materials.

- Before you begin to review, you should familiarise yourself with an existing case enhancement or two from the Ethics Toolkit, since we want to be consistent in style and format.

Purpose

- Imagine that you are an engineering educator who is new to sustainability and new to using a case study. You turn to the case enhancement to help you employ the case study in your class.

  o Does the enhancement help develop and expand on the ideas in the case study so that learners can engage with the topics more broadly or deeply?

  o If not, what guidance is needed to make this possible?

Presentation and Clarity

- Depending on the enhancement, contributors may have chosen to provide worksheets, slides, problem sets, or narrative prompts.

  o Is the enhancement explained in such a way that you could understand how to use it?

  o Is the material clearly introduced and described?

References & resources

- Depending on the topic, educators may need additional resources or guidance to support their use of the enhancement. For instance, background information may be required or a technical topic explained. Where information is presented from another source, it needs to be properly referenced.

  o Is sufficient material provided so that educators can easily employ the enhancement?

  o Are open resources or links to other toolkit materials included?

  o Are sources cited using [Harvard referencing](#)?

Suggestions

- Provide any further suggestions or guidance that you think would help the author(s) improve the case enhancement.
  o Have you included comments and/or tracked changes feedback for clarity, depth or reorganisation?
  o Have you flagged up anything that's missing?
  o Have you summarised your thoughts on the overall contribution and how much (if any) further work it needs from the author?

Format

The case enhancement should follow this format:

- States which case study the enhancement applies to.

- Overview: States which activity or discussion within the case study the enhancement expands upon. Gives an overview of the activity, how it might be implemented, how long it might take, and any other relevant points.

- Details any specific materials or software required for the activity.

- Lists any extra resources recommended in order to undertake the activity (it doesn't need to list any of the resources that are already provided in the original case study).

- Explains the activity in as much detail as is required (this will vary depending on the type of content being developed.)

- If possible, provides assessment guidance–marking rubrics, sample answers, etc.

Corrections

- If possible, aim to correct any spelling, grammar, or punctuation mistakes as you review, but remember that editing, proofreading and formatting are the next stage of the process, and we will assess for this.

Returning the reviewed case enhancement

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Other teaching tools

Project briefs

- Please see this guidance on submitting a project brief: https://epc.ac.uk/toolkit/using-projects-for-integrating-sustainability-into-engineering-education/

Technical tools

- Please see this guidance on submitting a technical tool: https://epc.ac.uk/resources/toolkit/sustainability-toolkit/sustainability-toolkit-get-involved/ > Contribute a teaching tool > Section C

Purpose

- Imagine that you are an engineering educator who is new to teaching sustainability topics. You turn to this teaching tool to help you apply and embed these in your module.
  - Does this resource help introduce or develop concepts related to sustainability, sustainable development, and/or global responsibility so that learners can engage with these topics in the context of engineering?
  - If not, what guidance is needed to make this possible?

Presentation and Clarity

- Depending on the resource, contributors may have chosen to provide worksheets, slides, problem sets, or narrative prompts.
  - Is the resource explained in such a way that you could understand how to use it?
  - Is the material clearly introduced and described?

References & resources

- Depending on the topic, educators may need additional resources or guidance to support their use of the enhancement. For instance, background information may be required or a technical topic explained. Where information is presented from another source, it needs to be properly referenced.

  - Is sufficient material provided so that educators can easily employ the resource?

  - Are open resources or links to other toolkit materials included?

  - Are sources cited using Harvard referencing?

Suggestions

- Provide any further suggestions or guidance that you think would help the author(s) improve the resource.
  - Have you included comments and/or tracked changes feedback for clarity, depth or reorganisation?
  - Have you flagged up anything that's missing?
  - Have you summarised your thoughts on the overall contribution and how much (if any) further work it needs from the author?

Format

The teaching tool should follow this format:

- Overview
    - Short description of what the resource is and what it aims to do.
    - States how it is related to sustainability, sustainable development and/or global responsibility, referring to external content such as the UNSDGs, AHEP, the Engineers Without Borders – UK Global Responsibility Competency Compass, or the Engineering for One Planet Framework.
    - Provides an overview of the activity suggesting how it might be implemented and in what contexts, how long it might take, and any other relevant delivery information.
- Details any specific materials or software required for the activity.
- Lists any learning and teaching resources recommended in order to undertake the activity, including suggested pre-reading or other references.
- Explains the activity in as much detail as is required (this will vary depending on the type of material the resource addresses.)
- If relevant, provides assessment guidance–marking rubrics, sample answers, etc.

Corrections

- If possible, aim to correct any spelling, grammar, or punctuation mistakes as you review, but editing, proofreading and formatting are the next stage of the process and we will also review for this aspect.

Returning the reviewed teaching tool

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