P4ELECS
Platform for Electrification Skills & Competences

Quicksheet

How to create self-assessment with a model answer

Co-funded by the European Union

About

A **self-assessment** is **a (set of) question(s), an assignment, a task** that learners can use to test if they master the learning outcomes of the building block (BB). The self-assessment covers all the learning outcomes of the BB.

A **model answer** is a tool for the learner to check if the answer given is correct.

Benefits

- It helps the student to understand the **expected level of understanding or competence** after processing the BB. This is valuable for student learning (Nicol et al., 2014).

- It will help the learner to (self)assess if the content of the BB is **sufficiently mastered**.

Guidelines

The self-assessment covers the question of the BB and its learning outcomes

- When assessing a learner, we want to be sure to assess what we intended with our BB, hence that we cover the question of the BB. If the question of the BB is about knowing something, we must assess that knowledge. If the question is about applying something, we must assess the ability to apply. Testing application requires another type of question than when assessing knowledge.

  Example
  - Knowledge: Name three characteristics of an AC-DC converter.
  - Application: How will an AC-DC converter on paramter X behave when the value of Y is decreased?
- Although knowledge-based questions can be included, at least one application-focused question should always be present when assessing application skills. Make sure to indicate that the application question is essential in the self-assessment.

Ensure that the learner can complete the assignment using only the content covered in the BB

- We make BBs for diverse learners. That implies we do not know exactly what they know, nor what their skills are. We try to cope with these unknown factors by indicating the expected prior knowledge in the BB. It is important that the learner should not need other information mentioned in the BB, including the prior knowledge, and the assignment.
- Ofcourse we can ask something that is not directly in the BB. If we want students to be able to apply something in a new context, we must give them an assignment with an unfamiliar context. If we want to students use new information, we can explain it in the assignment.

Example

If a student should use a specific standard that differs in different conditions and the learner should not know the standard by heart, the standard should be provided in the assignment.

Formulate the assignment as clear as needed for the learner

- Formulate the question as precise as possible.
  - **Example**
    - 👎 Can you tell something about X?
    - 👍 Explain the concept of X by means of an example.
  - **Example**
    - 👎 Give the advantages of Y.
    - 👍 Give 4 advantages of Y.
- Consider breaking down a complex question into multiple sub-questions.
  - **Example**
    - 👎 Why is the installation in this case right of wrong?
    - 👍 Is the installation in this case right of wrong? Give three reasons to support your answer.

Reliability is less critical in a self-assessment

- Describe in the assignment the conditions under which the student should make it (e.g. alone, with the material, in a certain timeframe, …. - see the examples below).
- It is not necessary to be sure that the student does it as prescribed, that is the student's responsibility.

Make sure the learner can use the model answer to self-assess the correctness of the answer(s)

- In general learners should be able to process the BB by themselves, without the direct support of a teacher. Therefore, it is necessary that learners get indications to assess the correctness of their answers. There are many ways to do that.
- **Some possibilities**
  - Give the right answer.
  - List what wrong answers might be and explain why they are wrong. As a teacher you often know what learners find difficult, where they have problems with. In the model answer you could discuss these frequent mistakes.
  - Indicate which elements in the answer should minimally be included, to be sufficient.
    - **Example**
    - Your answer should contain at least this explanation (all underlined concepts should be mentioned)
    - Maximum power tracker can optimize the charging of the batteries in all weather conditions, regardless of the voltage production of the PV panel.
    - Make sure you can explain why a system without MPPT can't function optimally.

Examples

BB learning outcome

The student can explain the different types of batteries by means of the different dimensions.

A possibility

Questions

1. Indicate in the list the different types of batteries
    - Word 1/word 2/word 3/word 4/ word 5/ word 6/word 7/ word 8/ word 9 /word 10
2. What are the dimensions in which the types of batteries can be distinguished?
3. Type 3 batteries score low on dimension Y. Correct or not? Explain.

(Start of a) Model answer

Question 1:

- correct answers are Word 1, word 2, word 5, word 7 & word 9
- Word 3 is not a type of battery but a brand/...

Question 2:

The three dimensions are ... If you used X in your description, that is fine too. If you indicate Y as a dimension, that is wrong because...

Question 3:

Not correct because ...

Examples

BB learning outcome

The student can explain the different types of batteries by means of the different dimensions.

Another possibility

Question

Name 5 types of batteries and explain the similarities and differences between them based on the 3 different dimensions

(Start of a) Model answer

- Your answer should contain: Word 1, word 2, word 5, word 7 and word 9.
- You can distinguish batteries in 3 three dimensions. If you used X in your description, that is fine too. If you indicate Y as a dimension, that is wrong because...
- The table below (include) indicates how the different types of batteries are differed on each of the dimensions. It is important to clearly understand the differences because ...

Examples

BB learning outcome

The student can plan and evaluate the installation of a home battery.

One possibility

Assignment

Description of a situation where a home battery is being installed. (The description is rich and contains more information than necessary. This demands that the learner selects the relevant information.)

How do you assess the steps being taken in this case? What other steps would you suggest?

(Start of a) Model answer

- The installation process went fine until ...
- If you see X, that's an indication of ... and you could react to it by ...
- If you proposed to do Y, that is not correct because ...

Examples

BB learning outcome

The student can plan and evaluate the installation of a home battery.

Another possibility

Assignment

Description of a situation where a home battery should be installed. (The description is rich and contains more information than necessary. This demands that the learner selects the relevant information.)

Which major steps should be taken to install the battery, from the given situation?

(Start of a) Model answer

- A possible way of approaching the installation is ... /the most logical approach is...
- The minimum is...
- What you should avoid is ... If you did this, it is most likely that your home battery will function suboptimal.
- The most relevant information in the description is...
- It is not necessary/incorrect to use information X because ...

Additional information
Quick sheet on questions
Quick sheet on excersises
Explanation of the descriptor ‘learning outcomes’
Explanation of the descriptor ‘prior knowledge’
Additional reading in dutch: Vanhoof, S. & Speltincx, G. (2021). Feedback in de klas. Verborgen leerkansen. Lannoo Campus.
Addition reading in English: Nicol, D. J., & Macfarlane-Dick, D. (2006). Formative assessment and self-regulated learning: a model and seven principles of good feedback practice. Studies in Higher Education, 31(2), 199–218. https://doi.org/10.1080/03075070600572090

Good luck!