

Questionnaire: Survey of Criteria Importance for the Evaluation of Engineering Students' Performance in online PBL

We are grateful for your participation in this survey on the importance of indicators to evaluate engineering students' performance in online PBL course. The purpose of this survey is to determine the relative importance of the initially screened evaluation indicators, helping to extract key criteria to construct a comprehensive evaluation index system. In this survey, you are invited to present basic information first and then complete an importance judgment form based on your professional knowledge, work or learning experience, as well as the definitions of the evaluation indicators. Thanks again for your support and cooperation! Please note that all answers are anonymous.

1. What is your age range? (**for teachers**)

☐ 25-34 ☐ 35-44 ☐ 45-54 ☐ 55-64 ☐ over 65

2. What is your age range? (**for students**)

☐ 18-19 ☐ 20-21 ☐ 22-23 ☐ 24-25 ☐ 26-27 ☐ 28-29 ☐ over 30

3. What is your gender?

☐ Male ☐ Male ☐ Other ☐ Prefer not to answer

4. What is your level of education? (**for teachers**)

☐ Bachelor's degree ☐ Master's degree ☐ Doctoral degree

5. What is your current stage of education? (**for students**)

☐ Undergraduate stage ☐ Master's stage ☐ Doctoral stage

6. What is your current major/field of study?_____

7. Have you had any previous experience with online PBL?_

☐ Yes ☐ No

8. How many years have you been engaged in online PBL courses? (**for teachers**)

_____years

9. How many semesters have you been engaged in online PBL courses? (**for students**)

_____semesters

Importance judgment form for evaluation criteria of online PBL courses for engineering students

Criteria	Definitions of criteria	Importance of criteria
Technical Competency (B ₁)	This indicator evaluates engineering students' ability to use technology effectively for learning purposes, including e-learning platform navigation, use of learning tools and applications, and technical problem-solving.	<input type="checkbox"/> Extremely important <input type="checkbox"/> Very important <input type="checkbox"/> Important <input type="checkbox"/> Neutral <input type="checkbox"/> Unimportant
Knowledge Application (B ₂)	This involves assessing whether engineering students have applied the relevant knowledge and skills gained from their studies into actual project work.	<input type="checkbox"/> Extremely important <input type="checkbox"/> Very important <input type="checkbox"/> Important <input type="checkbox"/> Neutral <input type="checkbox"/> Unimportant
Collaboration and Contribution (B ₃)	This indicator assesses students' ability to collaborate and interact effectively with peers. Meanwhile, it measures individual contributions made within a group setting, such as contributing ideas and suggestions to group projects.	<input type="checkbox"/> Extremely important <input type="checkbox"/> Very important <input type="checkbox"/> Important <input type="checkbox"/> Neutral <input type="checkbox"/> Unimportant
Online Engagement (B ₄)	This indicator measures whether engineering students can engage actively in various online PLB activities, whether students can respond to the quizzes, discussions and complete assignments on the e-learning platform.	<input type="checkbox"/> Extremely important <input type="checkbox"/> Very important <input type="checkbox"/> Important <input type="checkbox"/> Neutral <input type="checkbox"/> Unimportant
Sustained Learning (B ₅)	This indicator focuses on students' ability to retain and apply acquired knowledge over time, as well as their motivation and enthusiasm for continued learning beyond the course completion.	<input type="checkbox"/> Extremely important <input type="checkbox"/> Very important <input type="checkbox"/> Important <input type="checkbox"/> Neutral <input type="checkbox"/> Unimportant
Mastery of Content (B ₆)	This indicator assesses students' comprehension and mastery of course content, such as key concepts, theories, methods or ideas, through assignments, tests, and quizzes.	<input type="checkbox"/> Extremely important <input type="checkbox"/> Very important <input type="checkbox"/> Important <input type="checkbox"/> Neutral <input type="checkbox"/> Unimportant
Critical Thinking (B ₇)	This criterion assesses students' ability to think critically about sustainable decision-making issues in engineering field. It evaluates their analytical skills, ability to evaluate evidence, and make sound judgments based on logic and reasoning.	<input type="checkbox"/> Extremely important <input type="checkbox"/> Very important <input type="checkbox"/> Important <input type="checkbox"/> Neutral <input type="checkbox"/> Unimportant
Problem-Solving Skills (B ₈)	This criterion evaluates how effectively engineering students are able to address sustainability challenges encountered. This can be measured by looking at the variety of solutions they come up with or their ability to solve technical difficulties while working on practical projects.	<input type="checkbox"/> Extremely important <input type="checkbox"/> Very important <input type="checkbox"/> Important <input type="checkbox"/> Neutral <input type="checkbox"/> Unimportant
Time Management (B ₉)	This indicator evaluates whether students can ensure adequate allocation of time to ensure timely completion of tasks and projects in online PBL.	<input type="checkbox"/> Extremely important <input type="checkbox"/> Very important <input type="checkbox"/> Important <input type="checkbox"/> Neutral <input type="checkbox"/> Unimportant
Reflection and Learning (B ₁₀)	This criterion evaluates students' ability to reflect on their learning and identify areas for improvement. It assesses their self-awareness, openness to feedback, and their approach to continuous learning in sustainable decision-making in construction and project management.	<input type="checkbox"/> Extremely important <input type="checkbox"/> Very important <input type="checkbox"/> Important <input type="checkbox"/> Neutral <input type="checkbox"/> Unimportant
Sustainability Integration (B ₁₁)	This criterion measures engineering students' ability to integrate sustainability principles into sustainable decision-making. It evaluates their understanding of sustainability requirements and their implementation in project planning and execution.	<input type="checkbox"/> Extremely important <input type="checkbox"/> Very important <input type="checkbox"/> Important <input type="checkbox"/> Neutral <input type="checkbox"/> Unimportant