PBL Teacher's Manual

Deriving from experiences in agri-entrepreneurship problem-based education between African and European Higher Education Institutions

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AgriSCALE
Scaling agro-entrepreneurship through problem-based learning

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Aalto University, Finland
Bishop Stuart University, Uganda
Egerton University, Kenya
Gulu University, Uganda
Häme University of Applied Sciences, Finland
Jomo Kenyatta University of Agriculture and Technology, Kenya
Mulungushi University, Zambia
University of Pavia, Italy
University of Zambia, Zambia

Purpose of this PBL teacher's manual

This PBL teacher's manual collects best practices and lessons learnt from the PBL student challenges organized in multinational and multidisciplinary teams during the AgriSCALE project. **The content derives from teacher trainings, mentoring of mentors meetings, and experiences shared in project blogs, reflection session and in feedback collected through quality surveys during the AgriSCALE project period in 2020 - 2024.** These activities were also informed by the practical experiences and results of the preceding EACEA/ CBHE PBL South Asia project (link to EACEA portal) [1].

The manual serves as a practical guide for teachers in Higher Education Institutions (HEIs) who aim to incorporate Problem-Based Learning (PBL) in their teaching and follow-up to equip graduates with future relevant working life and entrepreneurial skills through collaborative real-life business challenges. The manual also provides practical outlook for curricula transformation processes towards more student-centered education.

[1] https://erasmus-plus.ec.europa.eu/projects/search/details/598755-EPP-1-2018-1-FI-EPPKA2-CBHE-JP

Why PBL?

Problem-based Learning (PBL) is an effective and practical instrument **in strengthening co-operation of HEIs with societal organizations** in reforming, in this case, agri-entrepreneurship education, and in equipping next generation graduates with working life - relevant and entrepreneurial skills.

By using PBL as an educational framework, the students are solving real-life business challenges in diverse teams to find new sustainable business opportunities and **to gain competencies to face the changing world**. For the student, participating in PBL challenge can lead to significant career prospects.

Simultaneously, the teachers need to rethink their professional practices shifting from teacher-directed learning into more **student-centered and competency based education**.

At the institutional level the direct collaboration between HEIs and local industries, communities, societal organizations and stakeholders **allows further partnerships, innovation, research activities leading to societal impact**.

"Since the challenge comprised of students from different geopolitical settings, this broad perspective of individuals provided unique but relevant solutions for tackling the challenge"

"To improve graduates' employability and make learning meaningful, there is a clear need for a paradigm shift towards student-centered teaching methods." [2]

[2] Ojok, K., et al. (2022). The need for an educational paradigm shift in sub-Saharan Africa. HAMK Unlimited Professional. https://urn.fi/URN:NBN:fi-fe2022120970258

How PBL student challenges were organized in AgriSCALE project?

- Each African HEI partner was hosting one or more student challenge during the project period.
- Each project HEI partner participated in one or more student challenges hosted by another African HEI partner. In typical situation, the participants per challenge were the hosting African HEI, one European HEI, and 1-2 additional African partner HEIs.
- PBL teacher competence training was organized as part of the AgriSCALE project to allow skills development and establish shared practices for the PBL activities with students.
- European partners had a role to support the implementation and mentoring in practice.
- The African host university identified the local stakeholders, industry partners, and the case for the PBL student challenge in the agro-entrepreneurship subject area.
- Two-week joint fieldwork periods were organized with the students and mentors of participating HEIs at the location of the hosting HEI.
- The practices before and after the field trip varied case by case depending on the overall set-up between the participating HEIs. The aim was to allow time for online communication between the mentors and student teams both before and after the field visit.
- Student teams of approximately 5 student per participating HEI were formed. Student teams were supported by 1-3 mentors per HEI.

Photo by Yose Photography. Zambia 2023.

PREPARATION

How to set up a PBL student challenge?

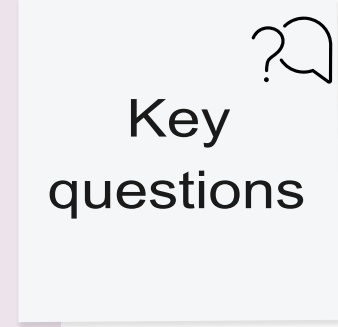
"Preparation and coordination of the PBL challenge takes time and is more demanding than normal lecturing."

HOW TO SET UP A PBL STUDENT CHALLENGE

Setting up a PBL student challenge in the Higher Education Institutions requires careful pre-planning, effective coordination and understanding of how the PBL student challenge can be fitted in the students' curriculum, how the learning related and practical matters are managed, and who are the key actors in the whole process. The teachers also need to re-think their roles and move to more participatory and collaborative teaching practices. There are multiple ways to set up a PBL student challenge depending on the prevailing local conditions, curriculum related limitations, number and level of engaged students, and available enthusiastic and skillful teachers in each institution.

SETTING UP A PBL STUDENT CHALLENGE - KEY QUESTIONS TO GET STARTED

- Are you collaborating with other Higher Education Institutions (HEIs)? Who are the participating HEI partners?
- What are the institutional rules and regulations? Can the PBL student challenge be part of an existing course? Or do you need to establish a new course? Or are you offering the PBL student challenge as a separate non-curricular activity?
- Do students gain study credits? Or are you providing an additional certificate?
- What are the learning outcomes? What skills and competencies are improved?
- What are the tasks and assignments for students?
- What is the timeframe? Does the PBL challenge include fieldwork or intensive working periods?
- How do you assess the learning of students? Who is responsible of the assessment?
- Who are the responsible teachers and mentors? What are their roles and responsibilities?
- How do you form the student teams? Do you have one or more teams? Are they working on the same challenge, or do you provide several parallel challenges?
- Are you able to provide student teams a functional learning space with equipment and facilities needed?
- Is additional funding required? Could the challenge industry partner cover some of the costs?
- Where can you find the challenges? Who are potential stakeholders? Do you have existing links to local industries or other actors in the field?



BUILDING A TIMELINE

In practical terms before starting to draft further details for PBL student challenge, all involved entities must agree on the timeline. The PBL process can be planned for different durations of time and often depends on the overall set-up. To allow deeper knowledge building and self-reflection, 3-6 months for the whole process is recommended. There must be time allocated before and after the fieldwork. When more than one HEI is involved, the participating HEIs must also agree, how and how often the student teams from different institutions meet.

BEFORE THE FIELDWORK [1-2 months]
Reserve enough time for student team to

- prepare and look into the challenge context and topic through background study,
- prepare their project plan and data collection plan,
- team up and have clear division of the team roles and
- prepare themselves for any cultural encounters in the case of multicultural student challenge.

FIELDWORK [1-2 weeks]
The fieldwork can be designed as a 1-2 week intensive working periods, or if feasible, as several shorter field visits. The intensive fieldwork provides more focused teamwork and opportunity to reiterate the ideas, deepen the teamwork, and intensify learning.

AFTER THE FIELDWORK [1-2 months]
Analyzing and reporting the findings, disseminating the results, and reflecting on the learning together.

Teacher's role here is to:

- facilitate the learning process, design the tasks and assignments, review and assess the progress, provide feedback, and act as a first link between the industry partners and stakeholders
- ensure that the student team has tools to implement the data collection, carry out interviews, and draw conclusions
- discuss and provide feedback, facilitate the reflections of learning, assess the results, provide credits or certificate, organize final review, presentation or dissemination event

LEARNING OUTCOMES

By engaging students in the PBL learning process, they are expected to gain skills and competences for their future working life, project management, and job creation. The PBL process enhances their critical thinking, problem-solving and, in this case, entrepreneurial skills. **Teachers must re-create the learning outcomes every time to match the current situation, needs, and aims.** The learning outcomes creates also base for the assessment criteria. Each participating HEI may have different learning outcomes for the same PBL challenge depending on their own set-up, curricular requirements and course framing.

Example of the expected learning outcomes (Bishop Stuart University, Uganda)

In this challenge, participating students can anticipate acquiring a diverse range of knowledge, skills, and competences that will not only enrich their personal development but also enhance their preparedness for a successful career in various fields. The expected learning outcomes encompass:

1. Participatory Problem-Solving Skills
2. Cultural Competence
3. Solution Design and Innovation
4. Effective Communication and Engagement
5. Entrepreneurial Mind-Set
6. Networking and Collaboration
7. Empathy and Social Responsibility
8. Problem-Solving under Constraints
9. Project Management Skills
10. Interdisciplinary Learning
11. Global Perspective
12. Resilience and Adaptability

In summary, students participating in this challenge can expect to emerge with a well-rounded skill set, a heightened awareness of global issues, and a robust foundation for future success in their academic and professional endeavors. This experience offers a unique opportunity for personal growth, cultural enrichment, and the development of practical skills that extend far beyond the confines of traditional classroom learning.

TASKS AND ASSIGNMENTS

Depending on the set-up, to support students' learning process number of individual and team tasks should be prepared. The tasks and assignments also allow more comprehensive assessment both at team and individual levels. The tasks should be planned so that they produce directly content for the running PBL challenge, support critical thinking, self-reflection, and develop project management skills in practice. The given tasks should be linked to learning outcomes and further to final assessment criteria.

Example of the assignments in a PBL student challenge (Aalto University, SGT Studio course, Finland):

FINDING THE CHALLENGE

The ground for PBL student challenges is created through real-life cases with local stakeholders, businesses, societal and governmental organizations or communities. The students will learn invaluable work life skills and simultaneously this will allow further partnerships, research and innovation activities between the HEIs and local industries. The problem can be defined by the partner or it can be defined together with the mentors and students as part of the learning process.

- Start with very real and local problems
    - collaborate with local communities for community outreach and societal impact
    - collaborate with local business for further research and innovation activities

- Typically the given challenge or problem does not have right or wrong answer
- Students could be part of identifying the problem (an open challenge) and defining the challenge together with the mentor as part of their learning process
- Collaborate with other faculties and research groups in your own institution to gain truly cross-disciplinary knowledge sharing experience

To note!

The case brief should be written based on the overall set-up and expected learning outcomes. Teacher must decide whether the students are expected to participate in identifying and defining the problem as part of their learning process, or are they given a ready problem.

STAKEHOLDERS IN PBL STUDENT CHALLENGE

The term 'stakeholder' refers here to the challenge external partner, the challenge owner or provider, often also referred as the 'client'. The stakeholders are the industry partners, companies, organizations or communities who are currently active in the field and seeking for new solutions and wanting to enhance their collaboration with Higher Education Institutions.

TYPICAL STAKEHOLDERS IN PBL STUDENT CHALLENGE

1. **LOCAL COMPANY**
    - often requires an agreement
    - works well also as an one-off case
    - timing can be challenging
    - can lead to work opportunities for the students
2. **COMMUNITY OR LOCAL SOCIETAL ORGANIZATION (NGO, CSO)**
    - often slower process
    - benefits from continuation (several student challenges in row or other follow-up activities)
    - the problem harder to identify
3. **RESEARCH BASED ORGANIZATION OR A RESEARCH GROUP**
    - close by, easy to reach
    - can produce content to the ongoing research
    - often quite hypothetical
4. **GOVERNMENTAL INSTITUTION**

TO NOTE!
In practical terms, agree clearly upon the following:

Make a clear agreement between HEI and the stakeholder stating at least the following:

- students are not with an employment contract with the stakeholder (company)
- clear agreement on the IPR (often regulated by the university): who owns the students' work and material produced?
- what can be expected as an outcome (typically an idea, scenario or prototype, often not final solution to the problem)
- how much the stakeholder is needed in guidance and mentoring the student team during the process (do they meet regularly, do they only join reviews, are they expected to give feedback, are they expected to be part of assessment?)
- is the stakeholder expected to cover any costs (field visits, material, equipment or other). Identify how much, for what purpose and how the payments are processed.

PBL IN ACTION

find
partners and
stakeholders

frame
the challenge

form
the teams

follow
the process

ROLES

In the PBL student challenges, there are many different participants with their divergent roles. It is important that everyone understands their own role as part of the PBL process, and that everyone understands who else is involved and why. Each role may have different expectations of the whole process, therefore it is really important to identify each role carefully and aim for consistent, shared understanding of the expectations. Each role may include one person or a group of people.

TYPICAL ROLES IN PBL INCLUDE:

- **STUDENT TEAM** - students are in the center, the team is expected to work independently and take responsibility of their work, student team typically consists of 4-6 students, diversity in the student team is highly recommended
- **MENTOR(S)** - teacher, often a faculty member, a tutor or supervisor, who supports the student team, facilitates the learning process, often also manages the course practicalities and pedagogical execution, a PBL student challenge may have several mentors
- **COURSE ADACEMIC LEADER** - usually professor in charge of the programme / course, overseeing the process, acts as an institutional support, issues credits or certificate
- **STAKEHOLDERS** - offering the real-life challenges, often local industry partner or a business owner
- **EXTERNAL EXPERTS** - supporting in the problem-solving, providing expertise on the topic, can be for instance a faculty researcher or industry representative

"Roles must be discussed together"

"Expectations of all participating actors must be clearly expressed"

"Successful mentoring requires a significant time commitment. It becomes a problem when one cannot balance mentoring responsibilities with other personal and professional commitments."

"You don't need to be an expert mentor; it is a continuous learning process"

FORMING STUDENT TEAMS

The student team is the core of the whole PBL challenge. Student teams are formed based on the initial set-up. At this stage the organizer should already have clearly written out timeline, learning outcomes, case description, understanding of the roles and course plan with tasks and assignments ready. Clear selection criteria helps to justify the team formation. Multidisciplinary teams are highly recommended!

TO NOTE WHEN FORMING THE STUDENT TEAMS

Create team forming criteria:

- Decide how many students you are aiming for one team. Teams of five students have proven to be good!
- Decide how many teams you need. This naturally depends on the set-up, challenge brief, aimed results, number of challenges, and number of participating HEIs.
- Decide who is your target student group. From which study programs you are aiming to get students? Multidisciplinary teams allow more comprehensive approach to problem-solving and peer-learning!
- Decide how different teams from different participating HEIs are working together. Are they working on their own teams, or in mixed teams? Mixing teams also only during the joint fieldwork can be beneficial.

"Aiming for balanced diversity in the student team is crucial. Meaning balance in knowledge, skills, cultural diversity, gender, and study background"

"Discussing with the case provider helped us to identify right type of students for this particular case."

"Forming teams of 5 students. During the process to mix groups to share knowledge among everyone"

ROLE OF THE MENTOR(S)

Teachers who support the learning process in PBL student challenge are here called mentors. Role of a mentor can be two-fold; mentor can be someone who knows the content of the student challenge and is an expert on the topic, or mentor can be someone who has good team facilitation skills. Having first-time mentors working together with more experienced mentor and organizing 'Mentoring of Mentors' opportunities for peer support has proved to be beneficial.

ROLE AND KEY CHARACTERISTICS OF A MENTOR

- **Right attitude and mindset** to student-centered learning approach
- **Ability to facilitate the process**, understanding the collective responsibility and effective communication among the students to promote teamwork and effective problem-solving
- **Guiding, advising, supporting and coaching** the students to find sustainable solutions and effective strategies to the challenge
- **Team building** abilities and tools to help the student team to find their strengths and motivation as a team
- **Fluent and open communication with the stakeholders** enabling the interaction with the problem owners
- Ability and willingness to take care of the **practicalities, logistics and coordinating activities** for fluent execution of the PBL challenge
- **Being a good and active listener**, inspiring and motivating, ensuring well being of students
- **Being able to build trust** between students coming from different cultures and countries, and **create a safe learning space** for everyone to openly share and reflect

*"My role was to **support the student team throughout the challenge** while letting them be in the driver seat."*

*"Having great **interpersonal skills** is one key strength that makes me stand out as mentor."*

"I was working closely with other mentors and learning how they do their work."

*"Throughout the project, I provided inputs where deemed necessary but **let the students make final decision** regarding the project."*

*"As mentor, **providing emotional and practical support** to the students during [illegible] helped them [illegible] their goals."*

*"As a mentor, it is imperative that one is understanding and be **willing to listen as the needs of each student are different.**"*

"I was an advisor, a guide and leader during the entire student challenge and being part of the host university, required me to do more."

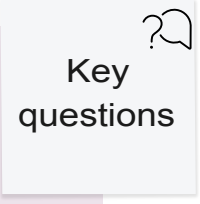
*"Mentoring can be a rewarding experience as it gives one a chance to make a difference in the lives of other people and also provides **a learning opportunity** for growth to the mentor."*

ROLE & RESPONSIBILITY OF THE STAKEHOLDER

The stakeholder plays a key role in the PBL student challenge. They are the challenge owners, case providers, and experts on the case. They are the link to the working life. They are also those who benefit from the students' work and problem-solving results. By being active and available throughout the student challenge, it increases the students' motivation to participate and gain the aimed future work-life connections.

The stakeholders can be included in as many learning events as possible. They should be asked to provide direct feedback to the student team during the learning process. They can also be included in the mentoring and assessment activities. The stakeholder's role, like other roles, must be clearly brought out and agreed in advance.

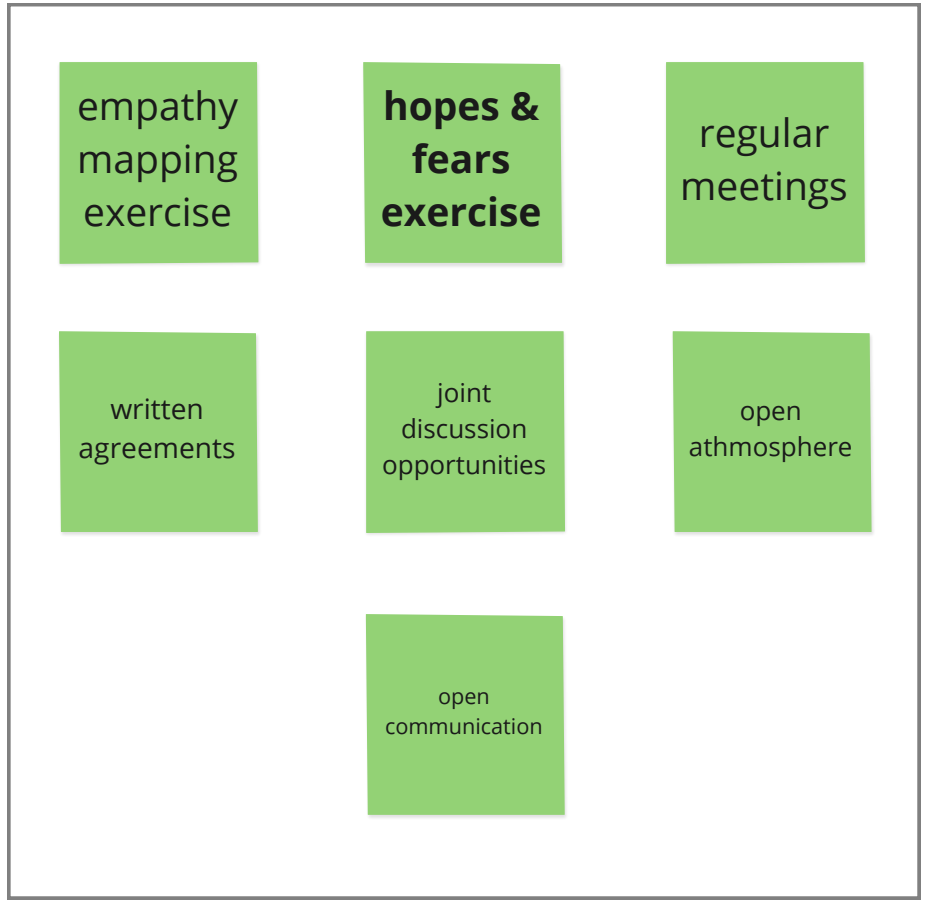
ROLE AND RESPONSIBILITIES (EXPECTATIONS) - KEY QUESTIONS



- What are the expected responsibilities or duties of the stakeholder?
- As minimum, what is required from the stakeholder? Who is the contact person? Who is providing the case brief? What material is available through the stakeholder?
- How and when the stakeholders are involved in the student challenge process?
- In which learning events the stakeholders take part? How and when the stakeholders provide feedback? Do they participate in the presentation events? Do they participate in the assessment?
- Can the students have direct contact with the stakeholders? How do they communicate?
- How are the stakeholders going to use the material students produce?

MANAGE EXPECTATIONS

The expectations of all parties may be too high if they are not explicitly communicated throughout the PBL process. Expectations of each participant from individual level to organizational level must be tracked at every stage of the working process. It is also important that all parties understand what the others are expecting - or not expecting. **The focus should be more in the learning process than in the final result.**



"From the student challenge, I learnt that is important as mentor to manage expectations from the students. The mentorship process is not and easy fix and takes a lot of time and effort to help others achieve their goals."

"Sharing and hearing about the mentoring experiences of those who have done it before is very powerful"

"Hopes & Fears exercise reveals hidden doubts and worries of individuals and challenge partners. It also helped in managing expectations in all levels."

FACILITATING THE LEARNING PROCESS & TEAMWORK

Mentor has the main responsibility in facilitating the active and successful teamwork. **Everything starts with gaining trust and managing the expectations between the mentor, student team and stakeholder.** Purposeful icebreakers and use of several different team building and peer-learning activities are found useful in motivating the student and keeping them interested throughout. Collaboration and constant communication between mentors from participating HEIs is crucial!

KEY ASPECTS FOR FACILITATING THE LEARNING PROCESS & TEAMWORK

- Set-up a functional **physical learning space**, a meeting room or a class-room, that supports active peer-learning, allows participatory workshops, and is flexible for different types of activities. Typically non-auditorium room with movable tables and chairs, tool box with big paper sheets, markers, sticky notes, and preferably good internet connection and big screen with good audio for online meetings.
- **Get to know and share** with the team each team members' motivation, expectations, hopes & fears, needs, skills and competencies through several facilitated team activities throughout the process. Good mentoring attitude is that the mentor also actively participates in sharing their own traits with the students.
- **Creating ground rules or team contract** for teamwork helps everyone to understand how the team works together. This can also include fun factors!
- Arrange **regular mentoring meetings** with the student team. Keep the meetings focused. Allow also time for feedback and reflection! Encourage the team to meet also on their own.
- **Collect feedback - and give feedback!** Use the feedback to improve things along the way! Do not only criticize, support ways to gain feedback through self- and peer-reflection.
- **Plan tasks and assignments** that support the PBL learning process directly. Create tasks that support also individual self-reflection. For instance learning diaries are good tool for both students and mentors.
- Create **clear timeline** with purposeful checkpoints, mid-reviews and stakeholder inclusion. Good practice is to build the timeline together with the student team and stakeholder.

"Use ice-breakers, they make team work better!"

"Online work before the challenge was a success and created a good starting point for challenge field work weeks. Students formed WhatsApp groups and were familiar to each other beforehand"

"Search for creative environment outside class room is effective."

FIELDWORK

Fieldwork is often the most fruitful experience in the PBL student challenge. In the AgriSCALE project, field work was planned for two-week periods when student teams from all participating HEIs met in the host institution, worked together and visited the stakeholders in the field. In the multinational field work also cultural and social aspects must be addressed as part of the learning process.

KEY ASPECTS FOR SUCCESSFUL FIELDWORK

- Make **a solid plan** for the fieldwork well in advance, including practicalities and data collection plan
- The fieldwork schedule must be **planned in collaborative manner** between all parties. The hosting institution, mentor and the stakeholders are playing the most crucial role in fieldwork planning. All participating mentors must be part of the fieldwork planning process. In best case, if feasible, the student teams can be included in the fieldwork planning as well. This will advance their motivation to join actively in the fieldwork activities when also their needs are listened and met.
- **Flexibility is key to success** also in here. It's good to leave some space for unexpected events and needs appearing during the fieldwork. Often the good practice is to plan the first week more carefully, and leave more space for the second week (if that is the set-up and timeframe).
- Student teams can be given a role to facilitate some sessions during the fieldwork.
- Leave **time for digesting** and re-formulating the new information. Leave time for reflections. Leave time for rest.
- Allow enough **time for team building** activities, getting to know each other, and self-reflection.
- Plan "in fieldwork" mentoring sessions. The fieldwork gives good chance for **joint mentoring** and peer-reflection on the mentoring practices between mentors from different HEIs!
- Not worth only sitting in a meeting room! Go out! Observe! **Allow time for observation!**

"Working with people from different cultures can be challenging. Different norms, beliefs or taboos can lead to silent conflict."

"Breaking down the problem and distribute the tasks between different teams gives more learning opportunities."

CLOSING THE CHALLENGE

"The PBL student challenge learning process requires constant reflection, critical analysis and re-iteration of the ideas. This should be promoted at all levels with all roles from individual learning processes to the case and teamwork, mentoring and stakeholder participation. Everyone in the process is learning."

RESULTS & DELIVERABLES

The results here mean the final work of the student team, often **a written report and presentation**, sometimes supported by **a prototype** of an idea or any other application. The results can also be in some other form depending on the case brief, needs of the stakeholder, overall-setup, and learning outcomes. **Part of results is also how to communicate about them to wider audience.**

FEEDBACK

Give and collect feedback. There is a huge effect on the atmosphere and motivation of students how and with what attitude the feedback is given. There should be **balance between critique and positive support**, and also space for self-reflection. The feedback should be timely and support student's personal learning and individual skills development. At its best the given feedback guides the students learning journey and empowers them highly.

By collecting feedback from the students **throughout the process** by using different methods gives them also possibility to be heard. By listening the students, the mentors and course academics can improve their mentoring practices and develop their own facilitation skills.

REFLECTIONS

The PBL student challenge learning process requires **constant reflection**, critical analysis and re-iteration of the ideas. This should be promoted at all levels with all roles from individual learning processes to the case and teamwork, mentoring and stakeholder participation. **Everyone in the process is learning.**

ASSESSMENT FOR LEARNING

The assessment is probable when the PBL student challenges are part of curricular activities. It's evident that each HEI has their own overall assessment culture that may differ considerably between countries, institutions and disciplines. Therefore, the **assessment method must be adjusted to fit in each HEI's own system**. In general terms, the PBL learning process requires clearly set **assessment criteria** (rubrics or matrix) where both competence- and process-based learning is observed based on the intended learning outcomes. The assessment method should measure the learning impact both on the whole team and on individual student.

Alternatively (or additionally), **a certificate** for the successful participation in the PBL student challenge can be given. The certificate can be a remarkable addition to student's portfolio and CV when entering the working life. Also mentors can be given a certificate for their work as facilitating the PBL process with external industry partners.

KEY ASPECTS TO NOTE WHEN ASSESSING A PBL STUDENT CHALLENGE

- Do not only assess the end result! The assessment is a continuous process throughout the PBL student challenge.
- Both knowledge and process based learning must be assessed. **Focus on formative assessment!**
- The assessment must be based on the criteria created based on the learning outcomes.
- The assessment criteria must be clearly communicated to all parties in the beginning of the process.
- Assessment is usually done by the mentor(s), some assignments can be also assessed by other faculty members.
- Stakeholders can also be asked to participate in the assessment of the student team with more focused and specified questions.
- **Use of peer- and self-assessment** as a complementary method puts up some peer pressure for students and teaches more structured self-reflection and feedback from student-to-student.
- The peer- and self-assessment can have direct influence on the total grade, typically 20% of the grade.

ADDITIONAL READING

These professional articles and reflective blog writings are jointly written by the project partners during the AgriSCALE project. The writings are published in HAMK's online platforms HAMK Unlimited (https://unlimited.hamk.fi/) and HAMK Beat (https://blog.hamk.fi/hamk-beat/).

The HAMK Unlimited publishes experts' viewpoints on current phenomena, and HAMK Beat is a reviewed public blog site.

PARTNERS' VIEWPOINTS

PUBLISHED PROFESSIONAL ARTICLES AND REFLECTIVE BLOG WRITINGS

1 Professional training on problem-based learning for East and Southern African university teachers: Lessons learned

Määttänen, S., Knuutti, U.-M. & Laitinen, E. (2022). Professional training on problem-based learning for East and Southern African university teachers: Lessons learned. HAMK Unlimited Professional. https://urn.fi/URN:NBN:fi-fe2022080252547

2 Problem-based learning framework for agricultural extension to boost agricultural productivity in Sub-Saharan Africa

Ngongola-Reinke, C., Mwiinga, M., Lungu, O. N., Nkonde, C., Määttänen, S., & Laitinen, E. (2022). Problem-based learning framework for agricultural extension to boost agro-entrepreneurship and agricultural productivity in Sub-Saharan Africa. In E. Laitinen, S. Määttänen & U.-M. Knuutti (eds.), Problem-based learning & agropreneurship in Africa. HAMK Unlimited Professional. https://urn.fi/URN:NBN:fi-fe2022091258407

3 The need for an educational paradigm shift in Africa

Ojok, K., Kimatu, J. N., Mutambo, J., Okidi, L., Ruhiu, S., Määttänen, S. & Laitinen, E. (2022). The need for an educational paradigm shift in sub-Saharan Africa. In E. Laitinen, S. Määttänen & U.-M. Knuutti (eds.), Problem-based learning & agropreneurship in Africa. HAMK Unlimited Professional. https://urn.fi/URN:NBN:fi-fe2022120970258

4 Introducing problem-based learning to teach dairy production in Zambia for the first time: A teacher's perspective

Yambayamba, K., Mufungwe, J., Määttänen, S. & Laitinen, E. (2022). Introducing problem-based learning to teach dairy production in Zambia for the first time: A teacher's perspective. In E. Laitinen, S. Määttänen & U.-M. Knuutti (eds.), Problem-based learning & agropreneurship in Africa. HAMK Unlimited Professional. https://urn.fi/URN:NBN:fi-fe2022061546614

PARTNERS' VIEWPOINTS

5 Application of problem-based learning in higher education in soil and climate change studies

Mulonda, K., Indeche, A., Chabala, L. M., Kaluba, P., Simfukwe, P., Siatwiinda, S. M., Orek, C., Lelei, J. J., Canwat, V., Phiri, E., Määttänen, S. & Laitinen, E. (2022). Application of problem-based learning in higher education in soil and climate change studies in Sub-Saharan Africa. In E. Laitinen, S. Määttänen & U.-M. Knuutti (eds.), Problem-based learning & agropreneurship in Africa. HAMK Unlimited Professional. https://urn.fi/URN:NBN:fi-fe2022061546651

6 The challenges and needs of professional teacher training

Harrison, S., Yengwe, J., Mwelwa-Zgambo, L., Kasivu, G., Mwania, J. M., Kiggundu, J., Ngamau, C., Obegi, F., Loyolah, R., Määttänen, S., & Laitinen, E. (2022). The challenges and needs of professional teacher training. In E. Laitinen, S. Määttänen & U.-M. Knuutti (eds.), Problem-based learning & agropreneurship in Africa. HAMK Unlimited Professional. https://urn.fi/URN:NBN:fi-fe2022101161556

7 University-industry collaboration through problem-based learning

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8 Tips for planning real-life cases and company cooperation for learning purposes

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PARTNERS' VIEWPOINTS

9 Building a safe learning environment

Knuutti, U-M. & Määttänen, S. (2022). Building a safe learning environment. HAMK Beat. https://blog.hamk.fi/hamk-beat/building-a-safe-learning-environment/

10 Building effective student teams in problem-based learning

Määttänen, S., Knuutti, U-M. & Laitinen, E. (2022). Building effective student teams in problem-based learning. HAMK Unlimited Professional. https://urn.fi/URN:NBN:fi-fe2022062047879

11 Large classes pose a challenge for problem-based learning: Truth or myth?

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PARTNERS' VIEWPOINTS

13 Educational perspective for solving Zambia’s and Kenya's dairy value chain challenges

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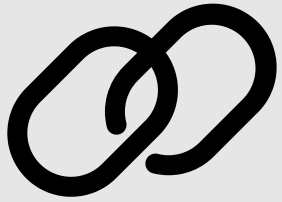
14 Facilitating mentoring in problem-based learning

Helenius, N., Knuutti, U.-M. & Määttänen, S. (2023). Facilitating mentoring in problem-based learning: Experiences from a multi-mentor model. *HAMK Unlimited Professional,* 1.12.2023. https://urn.fi/URN:NBN:fi-fe20231123148671

COMPLEMENTARY MATERIAL



The AgriSCALE project activities were also informed by the practical experiences and results of the preceding EACEA/ CBHE PBL South Asia project (link to EACEA portal).

This section includes links to some relevant supporting materials produced as a result of the PBL South Asia project.

5

PBL SOUTH ASIA | MOOC & PBL WORKBOOK

"PBL FOR GLOBAL SUSTAINABILITY" MOOC VIDEO CONTENT

Module 0 - Lesson 1 - Learning Methods
Module 0 - Lesson 2 - What is PBL?
Module 1 - Lesson 1 - Fundamentals of Team Building
Module 1 - Lesson 2 - Team Building Process
Module 1 - Lesson 3 - Introduction to Co-creation
Module 2 - Lesson 1 - Choose and Frame a Global Challenge
Module 2 - Lesson 2 - Stakeholder Analysis
Module 3 - Lesson 1 - Problem Analysis
Module 3 - Lesson 2 - Step-by-Step Approach Problem Analysis
Module 4 - Lesson 1 - Needs and Needs Assessment
Module 4 - Lesson 2 - How to Conduct a Needs Assessment?
Module 5 - Lesson 1 - Idea Generation Method: Brainstorming
Module 5 - Lesson 2 - Concept Generation Methods
Module 5 - Lesson 3 - Concept Evaluation and Selection Methods
Module 6 - Lesson 1 - Basics of Prototyping
Module 6 - Lesson 2 - How to Prototype
Module 6 - Lesson 3 - Prototyping Step-by-Step Approach
Module 7 - Lesson 1 - Challenges of the Global Development Context
Module 7 - Lesson 2 - Sustainability and Technology in Development
Module 7 - Lesson 3 - Ensuring Impact
Module 8 - Lesson 1 - Results and Assessment
Module 8 - Lesson 2 - Communicate your Results

LINK TO PBL MOOC VIDEOS AND EXERCISES

PBL MOOC Lectures - YouTube
PBL MOOC Exercises - YouTube

LINK TO PBL MOOC WORKBOOK

PBL_for_Global_Sustainability_MOOC_Workbook_stand-alone__with_editable_text_fields_and_notes_.pdf (europa.eu)

South Asia

Co-funded by the Erasmus+ Programme of the European Union

PBL SOUTH ASIA MATERIAL AVAILABLE THROUGH

https://erasmus-plus.ec.europa.eu/projects/search/details/598755-EPP-1-2018-1-FI-EPPKA2-CBHE-JP

PBL South Asia website: http://www.pblsouthasia.com

SELF-STUDY TEST

TEST 1:
Starting the PBL with the students: creating the supportive learning environment
https://link.webropolsurveys.com/S/DBCDAB5D181B5AAD

TEST 2:
21st century skills and competences
https://link.webropolsurveys.com/S/543B36F68B55249F

TEST 3:
Mentor and teamwork skills
https://link.webropolsurveys.com/S/5332C8DB87E9DE7C