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Problem Based Learning and Entrepreneurship

A Guide to Facilitate Problem Based and Entrepreneurial Project Work

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PROBLEM BASED LEARNING AND ENTREPRENEURSHIP

A GUIDE TO FACILITATE PROBLEM BASED
AND ENTREPRENEURIAL PROJECT WORK



AALBORG UNIVERSITET
AALBORG ESBJERG KØBENHAVN



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PREFACE

This guide is a result of a co-construction of experiences bringing together experienced facilitators of entrepreneurial PBL from SEA (Supporting Entrepreneurship, AAU Innovation) and PBL researchers at the Aalborg Centre for Problem Based Learning in Engineering and Science and Sustainability under the auspices of UNESCO (UCPBL).

This endeavour is a part of “StartUp I Praxis” (SIP), a 3-year project that seeks to develop and integrate internships in start-ups and give students the possibility to earn ECTS credits in the process. One of the main goals of SIP is to develop ways to facilitate academic and entrepreneurial learning during the student’s internship. We believe that the best way to achieve this is to connect the practice of Business Development with the distinctive approach to learning PBL, that AAU is internationally known for, thereby creating a deliberate way to guide and facilitate the student’s entrepreneurial and academic learning journey. The project is a collaboration between Aalborg University, Copenhagen Business School, Copenhagen University, Aarhus University and the Danish Foundation for Entrepreneurship. The project is backed by the European Social and Regional Development Fund.

The inputs to guide future facilitators of entrepreneurial PBL were given at workshops, where the SEA team of business developers experimented with aligning their facilitator practice with conceptual frameworks from a PBL environment. Based on these workshops as well as meetings and observations of the activities in SEA, it has been possible to adapt PBL methodology and facilitator guidelines to an entrepreneurial mindset.

We would like to thank the SEA business developer team at AAU innovation for their inputs. More specifically, we thank Liv Holm Andersen, Ivan Butler, Marie Fallgaard, Rasmus Hedegaard, Heidi Nørgaard Jensen, Lasse Jensen, Line Uggerly Jørgensen, Jacob Lundberg and Jesper Helleskov Sørensen for their valuable inputs on business developers’ facilitation practice. We would also like to thank the head of UCPBL, Professor Anette Kolmos, for her comments and inputs for the guide. Finally, we thank the Danish Foundation for Entrepreneurship for making it possible to develop this guide.

Although this guide has been developed in an Aalborg University context, it is our hope that the guide will serve as a source of inspiration for a broader audience of facilitators who in their everyday practice help students to develop entrepreneurial competences.

Aalborg, June 2020
Jette Egelund Holgaard (UCPBL)
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INTRODUCTION

Entrepreneurial PBL can be defined as (Strand et al., 2019): “a study approach where students through iterative learning processes develop an entrepreneurial mindset in a problem oriented project work. Wondering is the driving force, where theoretical, methodological and empirical knowledge is transferred to new value creation through targeted action based on an ethical foundation and in interplay with relevant actors”.

Strand et al. (2019) pictured the entrepreneurial PBL process as shown in Figure 1. In this model, PBL and entrepreneurship are intertwined in a spiral of learning. Whereas the PBL dimension is stressed by continually consulting the “perspective and understanding of the problem”, the entrepreneurial mindset is emphasised in the ongoing attention to the scope of value creation. It is about creating a product with market value, a business — whereas in other projects, there is more focus on “making a good report”.

The open-source guideline “Facilitation in a PBL environment” (Kolmos et al., 2008) addresses how faculty can support students’ learning in a problem based learning environment. As stressed by Kolmos et al. (2008), the core of PBL facilitation is situated facilitation to address the different disciplines, different types of problems, different types of project organisations and last but not least the different mix of different values, learning styles and perspectives that students, facilitators and external partners bring into the project. The purpose of this follow-up guide is to adapt these guidelines to entrepreneurial PBL. In other words, we address the question: What is special about situated facilitation of entrepreneurial PBL?

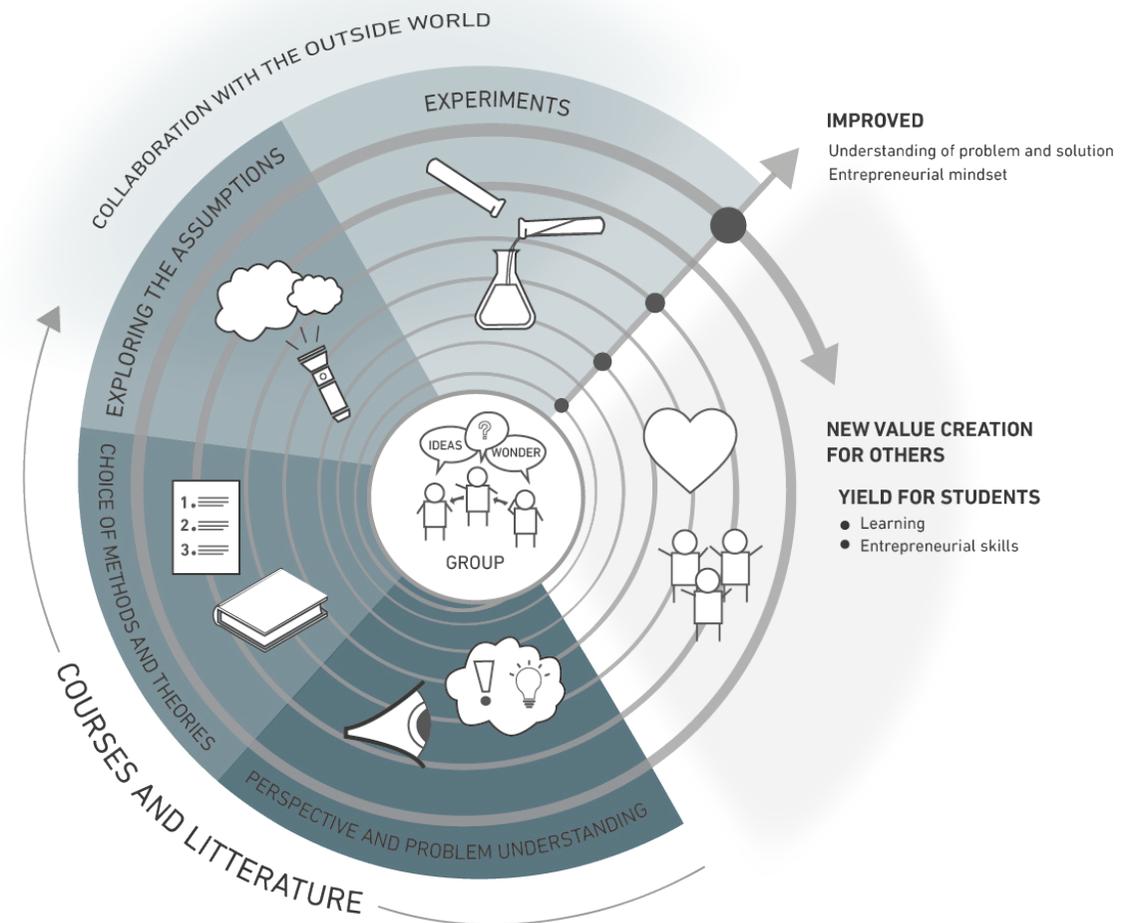


Figure 1: Model for the entrepreneurial PBL process (Strand et al., 2019:12).

Figure 2 outlines the model for situated PBL facilitation (Kolmos et al., 2008). This model has inspired the structure of this guide, as we will elaborate on the particularities of entrepreneurial PBL facilitation with reference to this model.

Section 2 will address the **facilitator** strategies and roles in entrepreneurial PBL

Section 3 will focus on special challenges for the team of **students** when working on an entrepreneurial project and potential ways to support students in facing these challenges.

Section 4 will address attention points when supporting the students in the entrepreneurial process **from idea to problem solving**.

Section 5 will focus on how to address **team collaboration and organisational learning** in the facilitation process.

Section 6 will provide some considerations to **the educational context**.

Finally, Section 7 will provide a **synthesis of good advice** to facilitate entrepreneurial PBL.

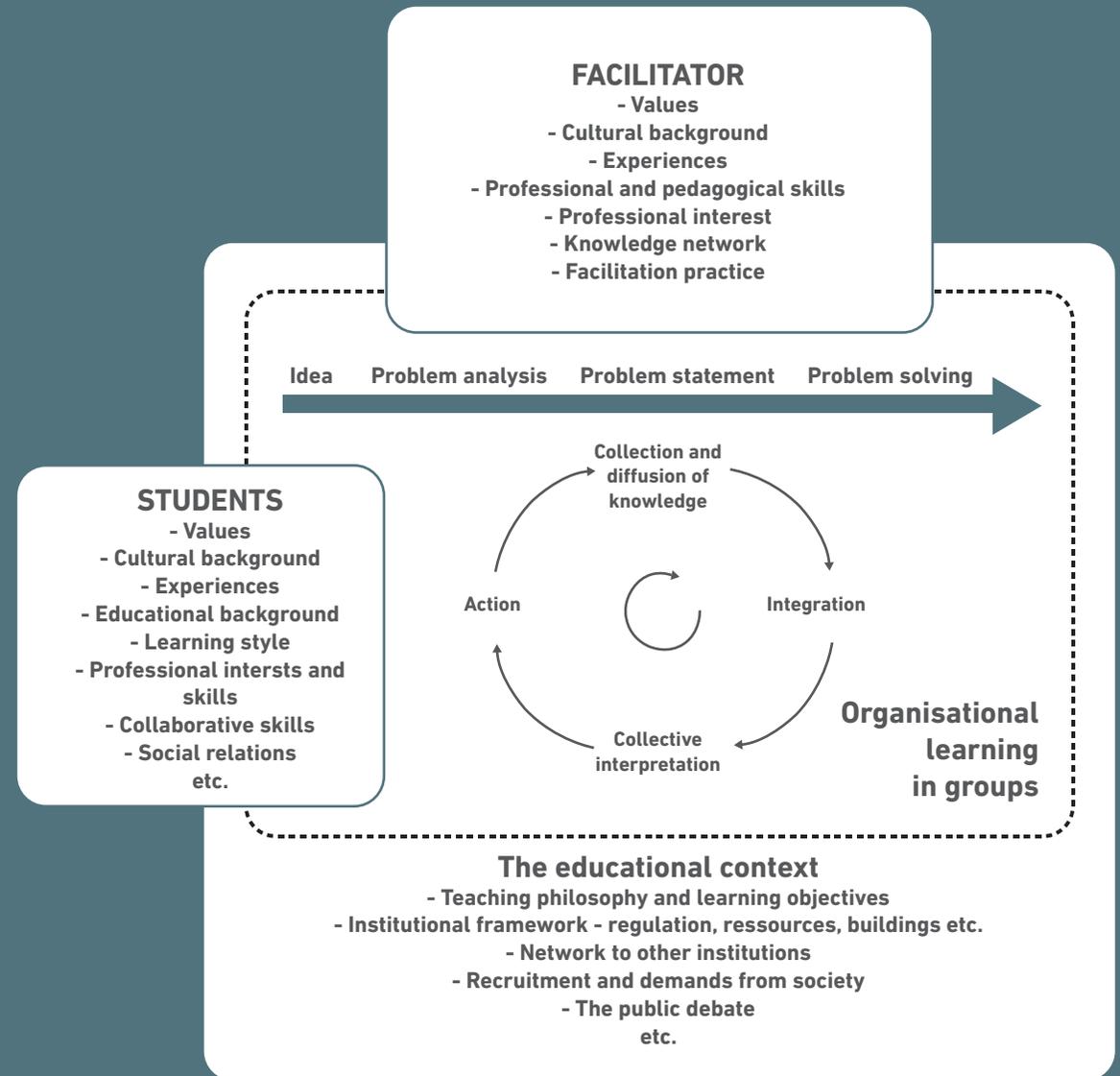


Figure 2: The complexity of PBL (Kolmos et al, 2008)

1 FACILITATOR STRATEGIES AND ROLES FOR ENTREPRENEURIAL PBL

Facilitators are different considering their values, their background, their experiences and their facilitation strategy. For many facilitators, the facilitation strategy is however rather tacit. Overall guidelines have been formulated suggesting codes of conduct for “good” facilitation. Some suggestions are (based on Rienecker et al., 2005):

- Both facilitator and students find the project interesting.
- Students are facilitated “where they are”.
- Both parties are aware of their roles and therefore the process of matching expectations is crucial.
- The facilitator shows empathy but does not act as a therapist.
- The facilitator is concerned about mutual aspects of the project. For entrepreneurial PBL validation, planning and value creation are key aspects.
- The facilitator is aware of quality requirements for deliverables. For entrepreneurial PBL, this could be pitches and business models.
- The facilitator prevents the group from “barking up the wrong tree”.

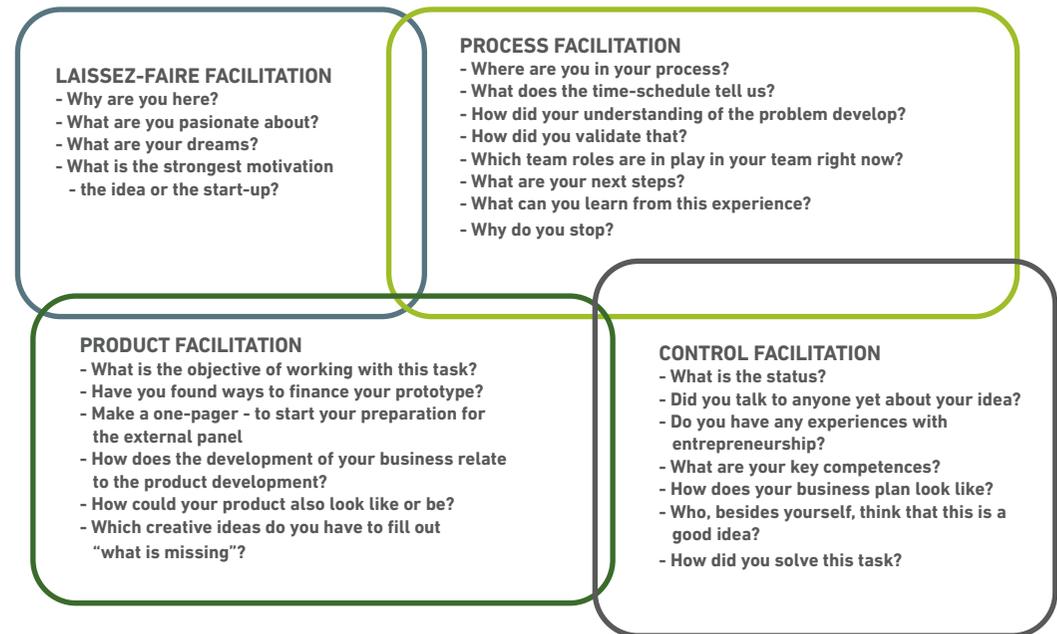
But even though such overall guidelines for what can be considered “good” facilitation are valuable, facilitators will differ considerably depending on what they consider to be best practice, even in situations that do not directly call for a specific facilitation pattern. In many occasions, and at least as a reference for further reflection, the facilitation style typically reflects the learning style of the facilitators. In other words: **We tend to teach students as we would like to be taught ourselves.**

A learning style test is therefore an effective tool for the facilitators to become aware of one’s own learning style and reflect on how this learning style is potentially transferred to the teaching of students (see Figure 3 and Felder & Soloman (2020) to take the test). Comparing your learning styles and making a comparison across the team of business developers can reveal whom to contact to get another perspective on your facilitation. Whereas your learning style can be considered as a way to illustrate your own preferences just now, it does not necessarily mean that you have to act on your preferences only.

SENSING <ul style="list-style-type: none"> - Draw on physical sensation - Practical and observing - Prefer the concrete: facts and data - Prefer repetition 	INTUITIVE <ul style="list-style-type: none"> - Draw on insight - Imaginative and interpretive - Prefer the abstract: theory and modeling - Prefer variation
VISUAL <ul style="list-style-type: none"> - ‘Show me how’ - Prefer pictures and diagrams 	VERBAL <ul style="list-style-type: none"> - ‘Explain to me how’ - Prefer written and spoken explanations
ACTIVE <ul style="list-style-type: none"> - ‘Let’s try it out’ - Process information by physical activity - Learn by working with others 	REFLECTIVE <ul style="list-style-type: none"> - ‘Let’s think it through’ - Process information introspectively - Learn by working alone or in pairs
SEQUENTIAL <ul style="list-style-type: none"> - Understand in continuous and incremental steps - Linear reasoning process - Convergent thinking and analysis 	GLOBAL <ul style="list-style-type: none"> - Understand in large leaps - Tacit reasoning process - System thinking and synthesis

You can structure your facilitation by mixing different facilitation roles. Finn Collin once said that in contrast to personalities, **social roles are like jackets — you can choose to wear them, and you can choose to leave them in the closet.** Even though the raincoat might not be the one you prefer as the most comfortable, it is needed for rainy weather. In other words, it is important to be able to shift to the facilitation role that the situation and the students call for. This might also mean that staff have to take on new roles when entering a PBL environment. In the project, business developers expressed that in their experience they found it rather difficult to change roles from being a consultant to being a facilitator.

Tofteskov (1996) describes four **different types of facilitation:** process, product, laissez faire and control facilitation. Whereas process facilitation is focused on the course of learning, product facilitation is result oriented. Whereas laissez faire facilitation takes self-directed learning to the extreme, leaving students rather alone with their responsibility for their own learning, control facilitation is focused on ensuring that the students are progressing as expected and according to the learning objectives. The point is that a mix of facilitation roles is needed in the problem based project, and to exemplify this for entrepreneurial PBL, Figure 4 points out examples of what business developers typically ask in relation to the different facilitation roles. The point in Figure 4 is that all questions are pointed out by experienced business developers as highly relevant for entrepreneurial PBL, and from that it follows that all roles can be considered relevant to support entrepreneurial PBL. The trick is to question yourself continuously: What facilitation role is needed for these students at a particular point in the process and why is that?



Examples of questions incubators used in alignment with the different roles

At a workshop with business developers, they were asked in subgroups to sketch how they typically would change the intensity of the different facilitation roles in the different phases of the project. The lesson learned was that the subgroups had different approaches, when thinking about concrete cases of student groups — so it depends. For example, if the group of students has a high focus on the product, then the facilitator might counteract with a high degree of process facilitation — and vice versa

The one basic rule however is that the **facilitation role should be determined by students' needs, not facilitator preferences.**

2 | TYPICAL CHALLENGES FOR STUDENTS IN THE ENTREPRENEURIAL PROJECT - AND HINTS TO HELP THEM

A premise for situated facilitation aligned with students' needs is that the facilitator can decode the situation and be able to see the project from the students' perspective. Some students are very explicit about their challenges whereas in other situations you have to decode the situation and analyse and act on what you have experienced. Share your "outside" observations with the students, and after students have validated the insights, you and your students can start pointing out potential paths to meet the challenges. Gather storylines of potential coping strategies and transfer the learnings from these experiences to future practices.

In the following, we present examples of that by highlighting some typical challenges for students in entrepreneurial PBL pointed out by the SEA business developers and potential advice to cope with them.

1. They come with an idea – but have no clue about how to start the development process and what it implies.

You have to provide them with a structure for the process. A potential structure is presented in Section 4 as a potential roadmap when moving from idea to value. Students have to understand that they can modify the structure to fit their purposes, but still many students like to have a point of departure for doing so. Especially, this is highly recommended for entrepreneurial PBL due to the complex and unpredictable nature of such projects. Too many variables and too few fix-points in a learning process can disrupt the flow of learning, especially when the learning is not structured in ECTS and the perspective is not the end of a semester but a potential company.

2. They have no clear understanding of what to expect from a facilitator from outside the disciplinary domain.

This question goes both ways – you do not have a clear understanding of what to expect from them either. Therefore, a mutual exchange of expectation and thereafter a mutual agreement on the code of conduct for collaboration are needed. As a part of this process, the facilitator and students have to present what they can offer in the collaboration process and, just as importantly, what they cannot offer. A key is to link to their ordinary study practice. Students from a PBL environment know what to expect from a "normal" supervisor such an environment. This is one of the reasons why it makes sense for business developers to act as "normal" supervisors and follow PBL, to minimise confusion and misunderstandings.

3. Students are in love with ONE idea – and sometimes they have unrealistic expectations to the potentials of the particular idea.

Rule number 46 in "90 Rules for Entrepreneurs" (Broodryk, 2017) is "Kill your darlings", and it is stated that entrepreneurs should stop looking at their business in terms of emotional attachments but rather as financial liabilities. On the other hand, it can also be argued that emotional attachment is not something that we can just stop by introducing rational arguments and rules. Another way to go could be to acknowledge excitement when it is there and acknowledge disappointment when it is there, and for the latter be ready to emphasise the learning outcomes from the entrepreneurial project. As one business developer noted: The trick is to take what is considered to be a failure and make something good out of it.

4. They think product, not process as a way to counteract this you have to take on a facilitator role that focus on process, not product.

As a way to counteract this, you have to take on a facilitation role that focuses on process, not product. However, it should not be a manipulative process — it should be a strategy with mutual acceptance. You should make clear that your role is also to ask the questions and bring up perspectives that complement students' perspectives. If students keep talking about their idea, take time to listen to what they find important right now and express that you appreciate the idea to an extent where it would actually make sense to move further.

Then, start to question how students will do so, e.g. by asking: How will you make sure that there is actually a need that is strong enough to create a business based on this idea? It is important to remind students that their product idea has to be validated by real customers — and this typically means that the idea is considerably changed when confronted with reality.

5. They rush into product development based on common sense conclusions about the demand/need.

This is a job for the control facilitator: Why do you think that? How do you know that? Who told you that? How many have you talked to? Who have you talked to? How would they know? Tell the reason for your questions and why agile processes are so important in product development — or as the control facilitator would ask: Why do you think I am asking all these questions? In other words, students need to validate their assumptions before moving forward.

6. Coping with uncertainty – both related to personal matters, competences, resources, potential of the idea as well as learning objectives.

Start questioning the student to find out what the uncertainty is about (means or ends), how they feel about it and why. They might not start stating they have a hard time handling uncertainty — maybe they will show this by simply not knowing what to ask or being very poorly informed about the process. Ask about the next step. If they are unsure, provide suggestions for different paths and suggest a meeting in the very near future to follow-up. In sum, in a process with a high degree of uncertainty about the next steps, there is a need for a high degree of process facilitation.

7. They have trouble defining their business model

Make sure that they understand that defining a business model is a skill and like all skills it grows out of experience. So, of course they have trouble defining their business model — you just have to tell them that this is quite normal — and as for any skill development, patience and a certain degree of what Kapur (2008) calls constructive failure are needed. Furthermore, business models are complex. As one of the business developers noted: Entrepreneurship is a discipline in itself.

8. Having a hard time to establish contact to user groups

Chang et al. (2014) conclude that motivation, opportunity and ability (the MOA model) affect a person's entrepreneurial intentions through personal attitude, subjective norms and perceived behaviour control. With this in mind, we can ask ourselves whether having a hard time establishing contact with user groups is a motivational matter (e.g. I am actually more interested in being in the lab than talking to all these people, or I feel insecure about contacting other people or that other people might take advantage of the idea), an opportunity matter (e.g. It is hard to find somebody at the moment that is able to participate as there is a lockdown due to COVID-19) or a matter of ability (e.g. "I simply do not know how to make a user-needs-in-context study"). Together with the student, find out what the problem is, before you suggest any solution based on your presumptions.

9. Lack of networks - especially moving beyond disciplines and establishing funds

Business developers are typically champions in managing knowledge networks and are good at mediating contact with others. However, do not miss the opportunity to tell the story about how you have established your knowledge network, and provide students the chance to map their own knowledge network in order to picture how it gradually expands during the project. Talk about networking as a skill (e.g. pitching your message effectively, using one contact to get to the next, targeting your message) and discuss how students can develop in this concern. As one of the business developers noted: It is about changing the scope of knowledge acquisition to network acquisition.

10. Lack of students' planning skills – for example creating overview and definitions of milestones

Project management schemes have to be appropriated to the problem and project-type, but it also have to be appropriated to the students. Some students make a great effort to make rather comprehensive and detailed plans, and yet loses overview. Some students have no plan, and feel they have overview although it seem to change from week to week and from person to person. Suggest flow diagrams and timelines for you to get a quick overview of their process – typically students will realise that the simplicity in what they would present to others often provide the overview they needed themselves. Furthermore, workshops and structures e.g. for pitches can provide a platform for students to develop their coordinator skills.

11. Maintaining momentum

Maintaining momentum is first of all a matter of realising which kind of momentum is actually expected — from peers, from the facilitator and not least from external partners. In this concern, the process facilitator becomes important in asking students to set goals and evaluate their work progress in the group considering the time schedule (as deadlines, milestones and deliverables), the workload, the expected outcomes, etc. Evaluating is also about reflecting and asking why: What happens when the process loses momentum? What can be done about it? What energises the process? The facilitator can by such inquiry process trigger student engagement in different areas of the business development process.

12. Inconsistency in team members' commitment to the idea and to the group

A real team is people with complementary skills who are equally committed to common goals and working approaches (Katchenbach & Smith, 1993). Still, people are not the same, considering their dreams, their values as well as their work and learning preferences. Inconsistency is thereby expected, but if the inconsistency is too large in terms of commitment to the common goals of the team, then the motivation can fade. For entrepreneurial PBL, several of the business developers pointed out that team motivation was even more important than for a "normal" PBL project. As a facilitator, you can help students define premises for commitment in their collaboration agreement, you can reach out when you sense an atmosphere of despair, and you can help clarify the reasons for potential demotivation and discuss solution strategies with the students. But at all times, you have to remember that the responsibility for staying committed and carrying out the entrepreneurial project rests with the students.



3 | THE PROCESS FROM IDEA TO VALUE - PROVIDING STUDENTS WITH A ROAD-MAP FOR ENTREPRENEURIAL PBL

In entrepreneurial PBL, the typical phases of a problem based process (from idea to problem solving) are mixed with the entrepreneurial ambition of value creation. Figure 5 presents a phase model for entrepreneurial PBL with the purpose of creating a structure for students to approach this specific type of problem based project. The model is elaborated in Holgaard et al. (2020) as a guide for students to structure especially the first phases in a problem based and entrepreneurial project. When facilitating students along this model, different types of questions can be used as triggers in the different stages:

Clarifying the initiating idea (idea and background): What is the idea? Where does the idea come from? Why do you find this idea especially interesting? Why have you decided to get together to follow this idea? What kind of value do you expect to create based on this idea? How far are you in the process? Do you have any experience with entrepreneurial processes? What are your learning ambitions? How much are you willing to invest in this process?

Clarifying the initiating problem (value proposition): What are the potential gains if this idea is realised? What are the pains that the idea, if realised, will ease? Are there any relations between pains and gains that are worth focusing on? What do you actually know in considering these pains and gains, and what do you just think you know? What kind of overall question(s) could direct a further problem analysis?

Problem analysis (planning): How will you start getting an overview of the problem? What different aspects of the problem (including their inter-relations) do you find especially important to study? What are your arguments for this specific focus? How do you make sure that this delimitation is aligned with what others find relevant? How will you make sure to distinguish between assumptions and conclusions? When will you stop analysing?

Problem validation and scoping (customers and validation): What supports your value propositions? What value do you expect to deliver to the customer? How do we propose to make money? Are the customer segments large enough to create a viable business? What could an initial business model look like? To what extent can conclusions and perspectives from the problem analysis be externally validated?

Problem formulation (validated value proposition and plan): How can the initial problem be revised based on what you know now? What kind of overall question(s) could direct the following problem solving process? What kind of objectives can be used to measure success? How will you manage the problem solving process? Do you have the right team culture and management to succeed? A problem formulation is more than a value proposition related to the product/business in mind — it is about setting direction for the process towards value creation.

Like for the previous phase, it is important to be able to pitch your initial problem formulation in order to open it up for inputs from outside the teams. At this stage, the pitch should include pains/gains, the solution in mind, what initially validates the solution, together with an overall plan for the next 3–6 months. As a supplement, a written problem statement would serve the purpose of having a clear and explicit point of reference to structure the problem analysis.

Problem solving and beyond: How will you cover both the product/service and business model lines of thinking? What are the core milestones in the next phase? What kind of knowledge networks are needed? How can you establish those? What kind of frameworks and methods are needed? Is there any reason for changing what we thought we knew? How far are you in the value creation process? What did you gain? What did you learn?

Such questions and having a clarified model that sketches what the process might look like can be a way of scaffolding students through the complex process with many unknown variables. It is very important to ensure that such phase models are used to help and not force students to follow a specific learning path.





1. INITIATION IDEA

What characterises the idea?

Product - service - business concept

Type of innovation: Incremental or more radical



3. PROBLEM-ANALYSIS

What are the PAINs & GAINs for who, where, when, and how - what is the potential for value creation (the why)



5. PROBLEM-FORMULATION

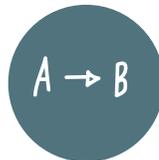
Update the initiating problem-formulation to be more precise
Formulate questions that initiates actions to create value
Clarify the flow of actions



2. INITIATING PROBLEM

State the problem, understood as a discrepancy between an actual state and the vision embedded in the idea.

What should be analysed to clarify the current PAINs and potential GAINs?



4. PROBLEM-VALIDATION AND SCOPING

Conclusion of the problem analysis is validated with external partners
Based on the validated model a business model is prepared (focus on how)



4 | TEAM COLLABORATION AND THE ORGANISATIONAL LEARNING CYCLE - ATTENTION TO TYPICAL BLIND-SPOTS

In the previous section, we focused on different phases from idea to value, and likewise there are different development stages in becoming a high performance team. As Lennér Axelson & Thylefors (1998) note, the initial phase might be characterised by uncertainty as well as vague norms and roles together with “nice” communication, unity, generosity and idealisation. Later on, roles are defined, subgroups are created, and hopefully also a greater feeling of being a “we” is internalised.

If, however, the performance and outcome of team efforts are not as expected, conflicts might arise and the facilitator might suddenly change from being a consultant to acting as a mediator. As the facilitator, it is therefore important to **be in the moment and with THIS team**. Avoid the trap of telling about what could have been done, or what will most likely happen — instead, address the situation as a natural element of learning. You might be a specialist in entrepreneurship, but you are not a specialist in these people and in their process — they are.

Students have to take responsibility for their own learning, and this also means that they have to take responsibility for their own team. Students themselves are the ones who can produce a **collaboration agreement** that actually makes sense. Even though you as a facilitator are not the one to make the decisions about how the team should work together, you can put potential ways for team collaboration on the agenda. For example, you might point students to Team Canvas (see theteamcanvas.com), which provides a framework for students to structure the discussion of how to work collectively as a team.

Likewise, support students in making their own **team profiles** (see Section 2), and ask students how they will cope with potential blind spots in their preferences, as this will provide you just as much input to situate your facilitation. The team profile can also be an entrance to highlight that you also pay attention to the **individuals in the group** (as the team profile is based on individual contributions). The facilitator furthermore has a role in reminding students to reflect on the alignment between what is agreed and what is practised.

Sometimes actions have to be adapted to fit the agreement, and sometimes the agreement has to be adapted to cover practice and even improve practice. Furthermore, ask students to share their collaboration agreement as this tells you a lot about the group that you are facilitating. Sometimes facilitators are eager to address the team of students and not the individual students. This, however, includes a risk of overlooking individual challenges, e.g. lack of motivation, lack of commitment, etc. You might talk to the group but have an eye for each individual — and even take rounds to seek and value students' individual points of view.

Another aspect of team collaboration is that students have different knowledge platforms. In terms of working on problem based projects, some might have had intensive PBL courses, while others have little prior knowledge. Likewise, students might lack entrepreneurial skills, while others are more experienced. For a smoother transfer to entrepreneurial PBL, be ready to **point students to concrete PBL & entrepreneurship introductory literature, online resources and activities for them to learn more**.

Finally yet importantly, entrepreneurial PBL creates a specific flavour to the **organisational learning cycle**, which is presented in the centre of the model for situated facilitation (Figure 1). In Figure 6, examples of good advice from facilitators to students from the SEA business developers are related to the organisational learning cycle.

Whereas SEA business developers found the continuous process of supporting knowledge generation and action as a natural part of their facilitation practice, they realised that they might not as naturally prompt students to ensure proper integration and interpretation of knowledge in the teams. Figure 6 might serve as a checklist before a supervisor meeting for a facilitator to consider if there is any advice mentioned that students could benefit by right now and to support and motivate students in all phases of their organisational learning.



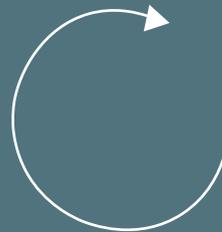
THE ORGANISATIONAL LEARNING CYCLE

ACT

- Clarify the plan for action - who is doing what, when, how and why?
- Go ahead - plans are to guide you and not limit you - entrepreneurial processes are creative processes.
- Remember the value of reflections-in-action - make diaries, sketches, storyboards ect. to capture these reflections.
- Validate - validate - validate - keep focus on the value of your actions
- Getting stuck just means that you have to accept less or that you can shift focus

GENERATE

- Clarify the focus for knowledge generation
- Collect reflections on your own previous experiences
- Collect reflections on others actions (Primary or secondary sources)
- Ensure the balance of using academic, commercial and informal channels of information.
- Be a networker - the entrepreneurial project needs that: Find one who knows one which might know (snow-ball method).
- Be aware that you are not the source of information (e.g. equal to a potential user), you are the information generator.



INTERPRET

- Clarify your shared understanding of what is important considering the knowledge platform from the previous phase.
- Clarify what the group members want to act on and why?
- Clarify what you, as a group, would consider common target and specify success factors for the planed action.
- Structure the process: Make a decision meeting and plan for on-going follow-up meetings to keep focused.
- Discuss how you will ensure acceptance of and commitment to team decisions.

INTEGRATE

- Document visions, prospects and experiences - use pitches, storylines, working papers...
- Discuss the level of integration: subgroups, groups, across groups, external partners.
- Create a structure for the integration: e.g. a work shop, a scheduled group presentation.
- Honesty and transparency are keys to presenting experiences in a way that optimise learning - discuss how you will ensure this.

Figure 6: The organisational learning cycle (Dixon, 1994) exemplified by advices that business developers typically make use of in entrepreneurial PBL

5 | CONSIDER THE EDUCATIONAL CONTEXT - LEARNING OBJECTIVES AND PROFESSIONAL PROFILES

Typically, the business developer perspective supports students from different disciplines, and therefore **the educational context is not always clear as it can be defined from outside, e.g. by formal curricula**. If there are any formal learning objectives related to the discipline that the students are fulfilling through the entrepreneurial and problem based project, it is important that students present those to you in the beginning.

Discuss with them the potential constraints and synergies in the entrepreneurial PBL process, and remind students (and yourself) that you can supplement but not counteract the formal learning objectives. There might also be more than one facilitator guiding the students.

Students who have the **opportunity to get co-facilitation** with help from a business developer, besides having the help of a domain specific facilitator, thereby have to take into consideration that the facilitation is **not** only situated but also distributed. This provides a new perspective on the exchange of expectations and alignment of roles in the first phase of the project, but it also provides a combined access to different knowledge networks and learning potentials to deal with sometimes different and even contradicting views. Likewise, for the students, a meeting at the beginning of the process including all formally assigned facilitators can help clarify roles and expectations. It might also be possible to **expand the educational context to external partners**, in a more formal way — by adding business representatives as mentors.

As for example, AAU Innovation has succeeded in matching students up with experienced business executives and entrepreneurs who will provide students with a sense of real-life organisational practices and act as mentors for start-ups. This will help to clarify professional identity (what I am, and what I am not) as well as potential career paths. Entrepreneurial projects that furthermore move into partnerships with companies add another out-of-university dimension to the educational context.

Finally yet importantly, we should not forget that **business developers and students in entrepreneurial projects are not only reacting in the educational context; they also have the opportunity inform and change it**. Maybe you have an idea of how to change the educational context in order to foster even more entrepreneurial projects. Maybe entrepreneurial PBL can serve as a new way to frame mega-projects. Maybe entrepreneurial PBL can add other perspectives to curriculum development and new types of learning objectives. In any case, you and your students are the ones who would know what is needed.

Entrepreneurial PBL in itself can be entrepreneurial — if we want it to.



6 | FINAL REMARKS - A SYNTHESIS OF GOOD ADVICES

Based on the workshops and the discussions between UCPBL and the business developer team in the SEA case, our final remarks will be formulated as the following collection of overall advice for facilitating a problem based and entrepreneurial project work:

1. Get students aware of the nature of the entrepreneurial problem based project from the very beginning:

- a. Address the learning ambition: learning how to and cope with entrepreneurial projects – it is another and more personal aspect of value creation.
- b. Explaining the balance between the abstract and the concrete. The both have to address the big picture, the broad scope and wild ideas and the narrow, the concrete and the details.
- c. Students have to know that it is OK not to understand everything – focus on what is important.
- d. Students have to accept the value of failures as well as the frustrations and feelings attached.
- e. Motivate student to value the problem design process in order to avoid immature problem formulations (an eventually solutions of low value).
- f. Prepare students for ongoing reflections on the value of the learning-processes and stress that it is an integrated part of process-facilitation.

2. Situate your facilitation:

- a. Try to avoid transferring your own preferences for learning to the team you are facilitating. There is no single right way to facilitate – start on neutral ground and adjust.
- b. Match your expectations with the students. How do you overall see your role as facilitator – what do they expect?
- c. Try to understand what type of facilitation the team needs – depending on team constellation, development and motivation.
- d. Acknowledge that all persons involved (including teams and colleagues) have divers learning styles.
- e. Provide a degree of product facilitation in the beginning to capture the sense of hype and motivation in the team.
- f. Try to get a balance between thinking and acting – if the students use too much time on thinking , push for action and vice versa.
- g. Be problem based in your own facilitation - situate your facilitation to the problems that the team addresses just now.

3. Be a role model:

- a. Do not provide the impression that you know everything – provide questions, insights, alternatives.
- b. Try also to address perspectives that you not, as a facilitator, naturally focus on – share this with students and explain how you identified blind-spots.
- c. Balance your own experiences (usually in the form “I did ...”) with other experiences (“other start-ups have ...”) with scientifically validated theories (“based on a study of....it is argued that...”).
- d. Share your failures with enthusiasm and pride.
- e. Show how to maintain focus — if you tend to get side-tracked yourself, that does not help the students to focus — and share the models that you use to create an overview.

4. Acknowledge that students are to take responsibility for their own learning:

- a. Avoid telling students what their target is – it is not your target. Be a facilitator, not a consultant.

- b. Assist students with suggestions of methods/models — and motivate every suggestion.
 - c. Help the team on their way without necessarily telling them which way to follow
 - d. Avoid taking over the process – the team has to take charge, e.g. calling for meeting, setting up an agenda.
 - e. Avoid getting personally involved – it is their ideas and their ambitions.
5. Share and exchange experiences with your colleagues and make use of the diversity in the facilitator team (professional experience, disciplinary background etc.).

According to the last point, about sharing experiences with facilitation of problem based and entrepreneurial projects, this is exactly what we have tried to do in this guide based on the current practices and prospects at Aalborg University. It is our hope that it will initiate more reflections, discussions and elaborations on the synergic interaction of PBL and entrepreneurship.

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