Study competencies

Communication, motivation, resilience, study technique and learning

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STUDY COMPETENCIES

COMMUNICATION, MOTIVATION, RESILIENCE, STUDY TECHNIQUE & LEARNING.

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INTRODUCTION

This inspirational catalog has been prepared as part of a PBL development project "Teaching and guidance in study competencies across educations", conducted during 2018 and financed by Aalborg University with a view to further develop the university's PBL practice.

The inspirational catalog is primarily aimed at teachers and supervisors in the first year of study.

The project's leading question has been: How can one best facilitate the students' study competencies in the first year of study? The purpose has been to improve the opportunities for teachers and supervisors to support the students' study competencies and thus in a larger perspective, support the well-being, learning opportunities, and retention among the students.

Study competencies are defined in this context as: Students are independently able to plan and optimize their own study practice, including: work with their motivation, concentration, communication, own learning goals, and style in relation to the study's learning goals and environment, robustness with regard to changing and unpredictable challenges as well as being able to maintain, prioritize, and process information. The fact that the development of study competencies takes place in a problem-based learning environment, where the work takes place in groups and is based on real-life problems, means that the approach to strengthening the student's study competencies must be adapted to the PBL perspective.

The people behind the project is made up of a group of researchers and administrative people across the various faculties and institutions with experience and knowledge of the topic from a concrete practice. Specifically, we have discussed and analyzed our practice regarding the facilitation of study competencies with a focus on five key themes: Communication, Motivation, Robustness, Learning Objectives, and Study Techniques. Based on our joint discussions, the present five contributions have been prepared by the stated authors.

It is our hope that teachers and supervisors may find inspiration for their own practice and therefore we have endeavored - not just to define the theme in question - but also to propose strategies and give examples of how to use our proposals in practice.

A thought of great appreciation goes to the two of us, Shaline Thedchanamoorthy (Student Counseling) and Thomas Vibjerg Hansen (AUB), who with great enthusiasm have participated and contributed to the lively discussions of the meetings, without however, being specifically responsible for a contribution. The link between the specific theme and choice of author reflects the teaching or research capacity of the chosen researcher/author.

COMMUNICATION

As a supervisor, it can be difficult to support groups in dealing with communicative challenges if you don't understand what they are facing. Often they find it difficult to communicate their frustrations or challenges to each other and this can create an unproductive learning environment. Sometimes, it is simply a matter of creating a situation that allow the students to see and understand each others' challenges.

The purpose of this short piece is to discuss communication in relation to PBL supervision and group dynamics, and to provide three tools that can support supervisors in facilitating better communicative practices in PBL learning environment.

The process of communication is often characterised as a situation involving an initiator who is producing a message for a receiver (Jakobson, 1987). However, the exchange of a message never happens in a vacuum and the initiator and receiver is mutually shaping the message through various communicative means. In addition, the medium for communicating influences the message, as well as the context sets the scene for the entire communication situation. In every aspect communication is complex in collaborative activities in a PBL setting, and something that must be nurtured and cultivated again and again.

If communication works flawlessly no one will notice it, and you get the experience of somewhat understanding the other person. On the other hand, you can experience that you are not communicating very well with another person, also in group work or in supervision activities. It can be difficult to articulate, why one is having a hard time understanding the other, but most likely some basic rules and tools can change the experience of communicating with and in the group. This is also the reason why it is important to describe and agree on some basic rules for a good communicative practice in the group, but also between the supervisor and the group. In a PBL context this often referred to a matching of expectation, which can be formulated as a contract between the students and the group and the supervisor. More generally, the supervisor can act as mediator supporting the student group in noticing and changing the communication practice. In the following, we will also introduce active listening and a communication diagram as tools for supervisors wanting to support groups in achieving a better communicative environment.

Today it is important to consider communication across media, while we still meet face to face to talk about our projects; we also communicate through digital online media and sometimes we even participate in meeting virtually (Ryberg & Davidsen, 2017). In both face-to-face communication and online communication, it goes without saying: you cannot not communicate (Watzlawick, Bavelas, & Jackson, 2011). It is important to remember that everything is communication – everything from a head nod, a look away to a 'like' or a comment in a shared document. All your actions are communicating something to someone, but they are also embedded in social and cultural practice that influence all aspects of communication. That is also why it is crucial to support groups in establishing and developing a good practice for communicating in the group, and between the group and the supervisor.

WHY FOCUS ON COMMUNICATION?

In several of the frameworks describing skills and competences for the 21st century learner and worker communication is often highlighted as a crucial. In AAU, PBL creates a frame for the students to develop skills and competences in communication from being part of a group, supervision activities, oral exams, and status seminars. Over time students will learn good skills in communication as a consequence of the different group constellations they will be part of in the university. It is by no means a matter of the number of words produced by the individual, but a matter of communicating in ways that are beneficial for the individual and the group. Basically, communication is needed in all phases of the project – communication skills can make the difference in developing and deciding on the problem, the analysis, and the oral performance at the group based exam. Today, communication is taking place in various media – face-to-face meetings, emails, text messaging, social network sites. In each of these medias communication can take many forms and the students are required to master communication in each of these medias.

On a general level, communication is important in relation to a range of different topics in a PBL setting:

- the life of the group
- critique and feedback between the students and with the supervisor
- collaborative activities
- supervision on the project
- conflict management
- group roles
- motivation
- comprehension of academic literature

TOOLS FOR DEVELOPING BETTER COMMUNICATION PRACTICES

There are several tools, techniques, and activities for building a better communicative environment in the group. We have decided to focus on three: active listening, communication diagram, and matching of expectations. Active listening is useful for establishing a better mutual understanding of each other in a group, but also useful in the relation between the supervisor and students. The communication diagram as a boundary object illustrating the communication patterns in a group, such a mapping can create awareness of the quality of the collaborative activities in the group. The idea of tasking a group with an activity of matching their expectations – can make it obvious how they want to communicate in meetings, but also in between meetings on for example digital media platforms.

Active listening is a very useful resource in communication. In a communicative situation it is not only the one talking that is doing a job, the one listening is also performing a crucial task in achieving a good and constructive communicative situation. Thus, listening is one of the most important skills you can have as a supervisor and as a member of group. Below is an exercise in active listening, which can support a group in developing a better understanding of each other. This exercise is developed and formulated by Pia Bøgelund. The aim is twofold; developing listening skills, and developing skills in stating how you feel about what is being said, and learning to differ between the two.

Talk with each other in groups of three. Distribute the roles 1, 2 and 3.

30-40 min Switch roles

1 1st person talks about an arbitrary subject of importance – could be your experience from working in collaborative groups prior to university

2 2nd person gives current feedback:

Active listening – Mirror, contain, invite:

Focus on the other, Be curious, Be empathetic, Let the other speak, Repeat with own words, Ask additional questions

But don't:

Judge or evaluate, State your own oppinion, Give ideas or good advice, Talk about your self

At some point – when it makes sense - convey how you feel about the message – on your behalf and on behalf of the other – start out at an appropriate level for you

It makes me curious.. I get excited about… It makes me want to contribute… I like that it.. I get puzzled… I get kind of upset… It annoys me that.. how come..?

I feel happy/angry for you.. It makes me sad for you that..

3 3rd person keeps track of time and notes down comments regarding the tasks of 2nd Person. After 10 minutes 3rd Person gives feedback like this: I noticed.. I might have done…

Discuss your experiences.

Making a **communication diagram** can be a helpful tool for breaking down the communication patterns in a group. It might be difficult for the group to acknowledge and understand their communicative problems as they are embodying the problem itself. In that regard, a supervisor or a student outside the group can act as a medium for solving these problems. The basic idea of making a communication diagram is to map the patterns of communication on paper.

The purpose of the diagram is to illustrate the dynamics and relations in the group, and it is important to discuss the diagram in the group afterwards. You can ask the group: what patterns can you identify? Are there anyone dominating or avoiding the communication situation?

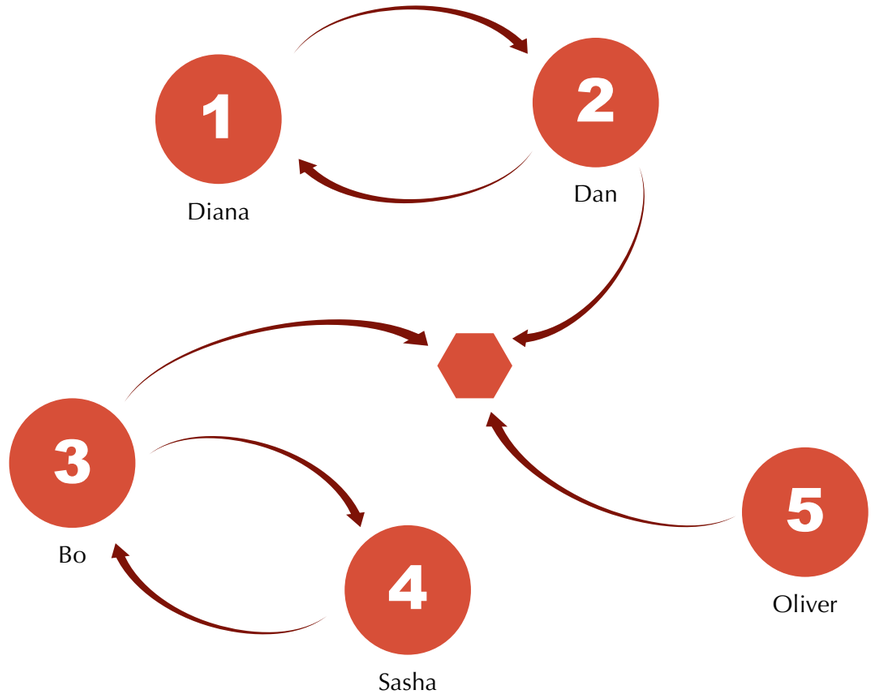

Figure 1: Communications diagram

When students have formed a group, an important first thing to do is an exercise where the group is matching their expectations about their project (see more). It is important that the **matching of expectations** is materialized in a document – sometimes referred to as 'group contract'. Such a contract is often addressing many aspects of what the students find important on an overall level, e.g. do not be late for meetings, notify the rest of the group if you are sick, hand in your paper on the agreed time, etc. On a more detailed level it is important that topics related to the act of communication is included in the contract, this involves communication in face-to-face meetings, written comments on texts produced by the other group members, and online communication in Facebook or related platforms. Simple things such a showing that you have read a message in the Facebook with a 'like' can secure better communication. In general, establishing constructive ways of communicating in groups can make a difference in their problem-based project work.

MOTIVATION

Generally, there are two dimensions when it comes to the motivation of young people, respectively: the specific learning context in which the learning takes place and the larger societal context (Sørensen et al, 2013). If you combine these two dimensions you get four spheres of interest concerning the motivation of young people (figure 1).

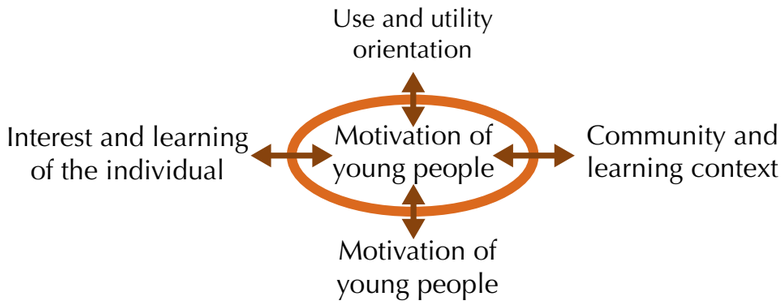

Figure 1: Two relevant dimensions when studying motivation of young adults. After (Sørensen et al, 2013)

The vertical dimension – the societal axis – concerns the purpose of educating young people and the societal task of the educational system. Motivation by utility (diplomas, grades, relevance in a future working setting) or by formation (perspectives and knowledge exceeding what the young adults think they might need). Relevant questions are: To what extent is motivation created through utility and use oriented teaching, to what extent is meaning, formation, and critical reflection important?
The horizontal dimension, the learning context, concerns the hotbed from were motivation stems. Here we have the discussion: to what extent does motivation spring from the experiences, preferences, and interests of the individual young adult or the specific community and learning context available? Both learning settings are important to students at AAU and will be addressed in the following, however we want to emphasize the community context for several reasons. As a problem-based learning university we are interested in how motivation works in groups. We want to understand motivation as a result of social relations and meaning-producing systems in social and cultural contexts (Sørensen et al, 2013, p. 256). Furthermore, research on top motivated individuals also underlines that "the young people's motivation - and top motivation – are linked to contexts and subject fields that the young people are part of (Katznelson et al 2018, p. 257, our translation)". What really motivates young people, according to this research, are

> "Relations:
>
> - that stimulate their knowledge of desire and interest,
> - where there are prospects and perspectives for a goal
> - that gives them experience of mastering and success
> - where they experience making a difference and putting an impression on the world
> - where there are relationships that push, acknowledge, and have expectations for them"
>
> – (Katznelson et al, 2018, p. 257, our translation)

MOTIVATIONAL STRATEGIES IN GROUPS

In a group work you can identify three basic relational dynamics (table 1), of which the evolving kind of group work yields the most creative and developing kind of dynamics. Evolving dynamics occur when and if groups are able to invite and constructively deal with differences in a curious and acknowledging way (Mourier et al, 2008). In table 1 you see an example of the behavior that goes with evolving dynamics.
The groups, where evolving dynamics occur most frequently, apply enhancing motivation regulation strategies (see table two) on a more regular basis (Bøgelund and Nørgaard, 2018).

	Liquidating	Maintaining	Evolving	Example: Evolving
Norm	Difference is a problem	Difference is equalized	Difference is opportunity	Quriosity/Recognition
Handling	Rules	Pseudo consensus	Collaboration	Mirror /Contain
Respons	Error-focus	None	Engaged	Excited/Positive
Confrontation	Attack/defense	Ignore/suppress	Nurtured	Identify/Acknowledge
Resolution	Backward	Standstill	Forward	How to go ahead?
Responsibility	Avoidance	Sacrifice	Action	Who does what?
Sense of reality	War	Denial	Acceptance	
Mood	Aggression	Anxiety	Vitality	
Motto	Me – not you	You - not me	You and me	

Table 1: Three basic types of relational dynamics. Developed with inspiration from (Mourier et al 2008, p.86)

On the contrary, in groups were liquidating dynamics occur more frequently and the underlying mood is aggression we see little social reinforcing, little socially shared goal oriented talk, and a high use of self-handicapping strategies.

Strategy of regulation	Definition	Example
Social reinforcing	Students' identification and administration of reinforcements influencing their motivation and shaping their joint behavior	The students make reciprocal suggestions of how to plan the poster. Peter suggest an idea and Mari completes "why don't we add…". The other two support the plan
Socially shared goal oriented talk	Students using goal-oriented dialogue; thinking about various reasons for persisting in or completing a task	The students discuss which topic to take for poster-task. "Lets take the topic 'metacognition'. That is also a good choice concerning the exam."
Interest enhancement	Increases aspects of students' intrinsic motivation or situational interest while completing an activity	"This is a brilliant idea!" The students express concrete examples to increase joint interest "I can describe my example…"
Task structuring	Decreasing the possibility of off-task behavior by structuring a task or environmental conditions	In a situation where students have difficulties making progress … one student says "Lets' make a list of five most important points"
Self-handicapping	Manufacturing of obstructions before or during a task that makes performing difficult	"This text is so complicated…" "The other group has much better poster than we have"
Efficacy management	Students' ability to monitor, evaluate and control their expectations, perceptions of competence, or self-efficacy	"The task is not easy and this group is not working well" or "The discussion today has been productive. We progressed well!"

Table 2: Motivation regulation strategies in a socially shared learning situation (Jarvela et al, 2007)

The take-away message for groups here are to nurture and unearth relevant differences and work on conflict solving skills – finding the better third road - if they want to be high performance groups (Katzenbach and Smith, 1993). As supervisor, it would be relevant to make the students aware of the crucial link between acknowledging differences as opportunities and high performance culture, and secondly help them foster a socially shared learning situation infused by motivation and ability to cope with differences.

MOTIVATIONAL STRATEGIES ON AN INDIVIDUAL LEVEL

In a more individually based motivational approach, Helle Hedegaard Hein (2013) has developed a typology for academic and creative people that underlines important motivators for different kinds of people according to how they view their work (table 3). According to Hein four of the types are considered motivated, while the fifth is considered a person, who is demotivated and needs revitalization.

	Work is a vocation	Work is Extrovert Performance	Work is introvert Performance	Work is a question of equilibrium	Work is earning for a living
Motivational Understanding	To make a difference in the service of a higher calling	To meet goals and achieve recognition from others	To achieve higher and complex insights within the field	To deliver good craftmanship in a work-life balance perspective	To maximise earnings from a moderate contribution
Psychological Profile	Thrill Seeking	Stress reduction	Thrill Seeking	Stress reduction	Stress Reduction
Work type preference	Questions on the edge	Questions within field	Questions on the edge	Questions within field	Routine
Important motivators	Recognition of vocation	Goal setting Recognition	Flow periods Sparring	Prioritation Planning	Revitalise Profile

Table 3: Five motivational understandings and their implications for important motivators (Inspired by Hein 2013)

People, and maybe even groups, who see their work as a vocation, are motivated by someone acknowledging their calling, whereas people/groups who see work as introvert performance will get motivated by periods, where it is possible to go in depth with a specific field and have vivid collegiate discussions. Both these types are thrill seeking and prefer to work with questions on the edge of the field. The other two types yield just as great results, they just work best under more structured, goal oriented, and planned conditions. Different groups will benefit from finding out how they view their work – since this will teach them what is important in order to keep up spirit and motivation. Two great questions that will spur this discussion in the groups are: **1)** Describe your best working day ever – the day you got your greatest kick? **2)** What factors contributed to giving you the greatest kick and why? Subsequently, a comparison with the table above will yield important information about their motivational types, and how to keep up motivation.

HOW TO FACILITATE A MOTIVATED GROUP AS SUPERVISOR

Based on the above, you have several ways of supporting the motivation of groups.

1) You can facilitate the discussion and embracement of certain tools to heighten their motivation. This could be helping them to discuss what kind of motivational understanding prevails in the group, e.g. what gives them a kick or teach them about the different motivational strategies that heightens motivation on a group level, e.g. that task structuring and social reinforcing are important for group motivation. An earlier PBL project also yielded case material on how to tackle demotivation in groups (see more).

2) You can teach the students to see differences as opportunities and ask them to nurture confrontations in an engaged and curious way instead of hiding away the academics and other kind of differences.

3) Finally, you can stimulate the students' desires and interests in the academic area and push, acknowledge, and have expectations for them.

Some common challenges as concerns no. 2) and 3) are the following as observed from two supervisor group meetings. One rather demotivated group and one motivated, which you would like to push further as supervisor.

Group 1 has a supervisor meeting shortly before they will hand in their project. The overall feedback from the supervisor is that they lack metatext, they gain too little from their laboratory tests, and the conclusions are too thin. What the supervisor does not say is that she appreciates their efforts, but is somewhat frustrated that they give in halfway. Her body language, however, shows the irritation. What she says is that she wants them to dig deeper. One of the students says "I have gone through the textbook", and one of the others agree. The supervisor dismisses this by saying she knows the material is there. The students become more and more quiet. In the end, the supervisor says mild mannerly "everything will work out" and leaves.

Group 2 is a committed and well working group at the start of the project. The supervisor gives feedback and would like the students to discuss some pointers further to push and motivate the students, but the supervisor ends up doing all the talking and no reciprocity takes place. The supervisor ends up leaving with the feeling that he did most of the reflection and took most of the responsibility.

Based on the suggestions above:
A way to improve the motivation in the first group would be to acknowledge the hidden annoyance and curiously invite an investigation of the lack of progress. E.g. by saying aloud "I appreciate your effort, however I am annoyed by the lack of progress and think you could have gone further. Take me through an example were you give in halfway and let's find out together what stops you."
In the other group, the supervisor could have said "My stand on this topic is such and such – let me hear why you think this is a good idea and why not." In both cases the supervisor, by example, is curious about an apparent conflict (lack of endurance and discussion) and invites reflection. In general asking the groups about their own reflections on the worksheets, where they see the weak spots etc. and asking them to reflect on the outcome of the group meeting will spur acknowledgement and learning in them and raise motivation.

RESILIENCE

> *Resilience refers to a class of phenomena characterized by good outcomes in spite of serious threats to adaptation or development*
>
> – (Masten, 2001)

Whereas in a Danish context resilience is often used as a synonym for robustness, there is however a point in distinguishing the concepts, as robustness in everyday life is perceived as a matter of being able to "absorb" the challenges. As an example, a beam, a table, or a chair can seem robust until an overload makes it break. Such perceptions can lead to a belief that if materials, people, or systems do not "break", they are fine, which yet again can lead to rather short-term optimizations to get the most out of the resource. Furthermore, it carries an implicit assumption that the more robust, the better.

In contrast, the term resilience adds a development and adaptation perspective to robustness, and thereby it includes perspectives which might in fact be in contrast to "being robust". The Danish Philosopher Ole Fogh Kirkeby (2017) argues that the fragile, which he links to sensibility, should be more highly valued and connected to robustness. E.g., if we are to create high-performance teams, as Katzenbach & Smith (1993) defines them, research shows that empathy and mutual sensibility is what makes teams move from being well-functioning teams to high-performance teams. Furthermore, recent conceptualizations like productive failures (Kapur & Toh, 2015) have stressed the learning potential and value of situations, where the fragile outbalance the robust.

Last but not least, to add to our understanding of resilience, the adaptive approach should also include a response to the framework conditions. The Danish Sociologist Anders Petersen (2016) have termed the current society as a performance society. In such a society the responsibility of performance is to a high extent internalized by individuals, who are to adapt themselves to comply with the societal demands. As such, they stop putting energy in questioning the institutions around them, and instead they put energy in being the ones, who can in fact comply. But as has been nicely put by Masten: (2001, p. 228) "resilience is an inferential and contextual construct that requires two major kinds of judgments". It is not only about judging whether the adaption or development outcome is assessed to be appropriate. It is just as much a matter of addressing the threat side of the interference, and assess whether this is in fact reasonable.

In sum, we phrase resilience as a matter of addressing, reflecting on, and coping with challenges in a way that includes good outcomes both in terms of personal and organizational long-term development and well-being.

FACILITATING STUDENT RESILIENCE

There are basically three states where students can benefit from a discussion on resilience. First of all, when **entering a learning experience**, students can consider how they will foster resilience (for example in relation to personal learning objectives or group collaborative agreements). Secondly, during periods where students during the learning process find themselves in a situation with **lacking resilience**, they should be supported (typically during supervision) to analyze and optimize their attitudes and behavioral patterns to build or re-build resilience. Finally, when a **learning experience comes to an end**, a summative reflection can be conducted e.g. when a project collaboration comes to an end, the process may reveal more or less implicit resilience strategies which can be evaluated and developed to be able to better cope with similar future situations.

There are many questions that could be asked in this facilitation process, but the following seven questions represent some overall questions that students can address when working systematically to improve resilience:

- ? What does resilience mean to you?
- ? What is/are the challenge(s) you are facing?
- ? Why do you have these challenges?
- ? What is your strategy to meet the/these challenge(s) on a group level as well as on a personal level?
- ? Which indicators of resilience (relate to 1) are embedded in these coping strategies?
- ? How effective was the strategy to maintain resilience?
- ? How can you improve the strategy to address future challenges of the same kind?

To facilitate the student's reflection on which strategies they are using when they meet challenges in their study, it can be beneficial to present some pre-defined coping strategies to have a frame of reference for the discussion. Jørgensen (2017) has distinguished four strategies for children to obtain resilience: the hamster-wheel, helplessness, mentalization and coping.

Inspired by these strategies, we distinguish four strategies for building and maintaining resilience.

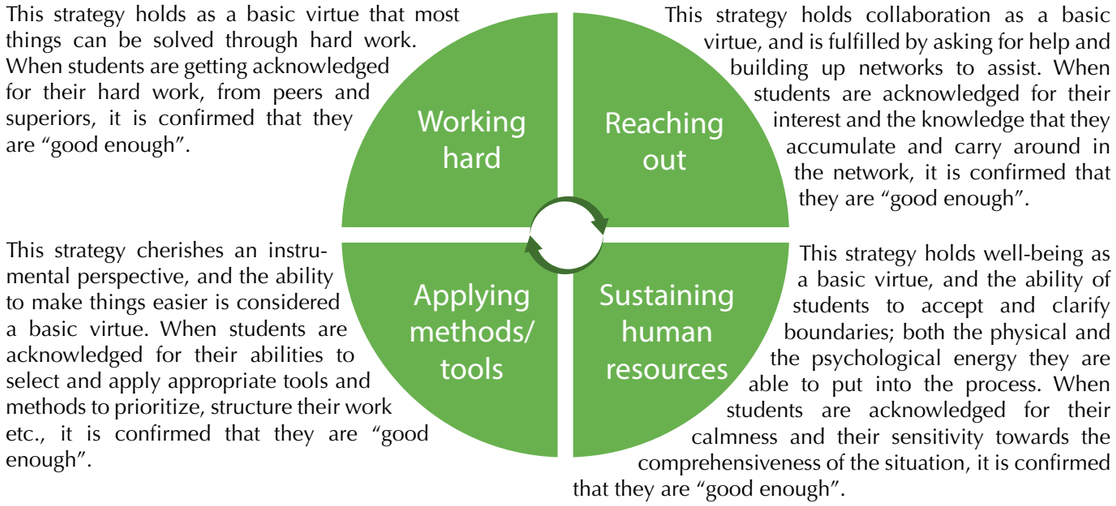

Figure 1: Four strategies for building and maintaining resilience

Typically, all four strategies should come into play. **Hard work**, the **help of others**, and the **use of tools** and methods typically are needed to approach a complex challenge, but it is also a way to build resilience as knowledge, skills, and competences gained can be transferred to other situations. The fourth strategy, **sustaining human resources**, is however needed in order to sustain and not drain the human resources in the process.

There are different approaches to cultivate this fourth strategy. Greg Eells (2015) have introduced the SAVES concept, emphasizing social connection, attitude, values, emotional acceptance, and silliness as some of the key factors to obtain resilience. Dweck (2008) has introduced the theory of mind-setting and the idea of changing the ways you think about a challenge from a fixed to a development perspective. Such approaches direct focus to pursuing what matters, accepting what is, thinking positively, moving away from perfection and collaborating to learn and to do well. The first step is however to recognize that the outcomes of a person's actions will not, in itself, make a person resilient in the long run.

AN EXAMPLE

She had called for a crisis-meeting in the group. She could not stand it anymore. She was putting in so much energy in this project in this critical phase, where the supervisor had mentioned that they were falling behind. She was working during the evenings, and during the weekends too – while others seemed to relax without any sense of urgency.

They met the next day and it was good to bring the frustrations out in the open, but some of the group members had been somewhat offensive, and the discussion at the end seemed to move in circles without any concrete output. They agreed that they would have a talk with their supervisor, and they put group collaboration on the agenda for the next meeting.

At the meeting with the supervisor, he brought forward the resilience strategy circle to discuss the state of the group, and how each of the members contributed to balance the strategies and up-hold resilience. He recommended them to start with a self-assessment – estimating their take on each strategy on a scale from 1-10, where 1 meant that they hardly ever used this strategy, to 10 where they almost always used this strategy. After this self-assessment, he recommended that they discussed the results, and how they could create acceptance and collaborate better in the different strategies. He wanted to have a presentation and discussion of the result at a short meeting before the end of the week.

She sat there thinking during her self-assessment. Well, she scored 10 in strategy 1, being hard working, that was for sure – and also very high in terms of strategy 3, as she was pretty much in charge of the groups' project management system and contributed a lot of methodological considerations to the project. But what about strategy 2 and 4? She had to admit that she seldom reached out – and she also had to admit that she had not given strategy 4 much thought.

The next day, they presented the results from the self-assessment, one-by-one, and then they brainstormed ideas to improve the collaboration initialized by the term "Maybe I could…". They summed up, and each of the group members formulated a statement of commitment. Last, they added a point to the collaboration agreement to secure that mutual commitments were followed-up at the weekly group meeting.

After the meeting when she went home, she thought about the experience working with the resilience matrix. She actually got what she wanted, as the right people agreed that they should work harder to get the group more balanced – even though they still resisted to work on Saturdays. She had promised to reach out more, and reflect on how she could reduce her work hours – but did she really want to do that? And what effect would that have on her grades? And why had the well-being of the others in the group, and herself for that matter, become a blind spot? When she missed her bus-stop, she knew that she might need more time to think.

STUDY TECHNIQUE

Good study habits are important for the student's personal learning outcome. It trains memory and learning, prevents stress, and supports resilience. Although considered important, it is more or less never taught and therefore left to the students to figure out for themselves.

AAU has a homepage addressing study technique - supposedly in an effort to fill the gap. Visit the page and get an idea. As a starting point, it could be shown to new students who could talk in pairs or groups about when and where they read or write best, time schedules and much more.

Before we go further, it should be mentioned that it is commonly agreed upon that good study habits are difficult to achieve if the student does not eat right, sleep well, and get some kind of physical exercise. Study Service are launching a new app in the beginning of 2019 that will address this question. It's called Feel Good and will be integrated in the AAU-student-app. It contains interactive tasks that will help the student obtain a good study technique and is planned to be further developed to include handling of study and exam related pressure.

At a university, a primary task is reading academic texts. They are often difficult to read, abstract, long (compared to required reading in high school), and in some cases even quite boring. According to Sanne Knudsen's reference to research (2013), the reading of academic texts in depth is not intuitive even for the strong students. Therefore, university students need teaching and supervision for the sake of developing strategies for reading and learning (Knudsen, 2013).

LEARNING STYLE

The more self-organized a module, semester, or study is the more important it will be for the student to have good study habits in order to meet the learning objectives. The most effective way can be different depending on the individual's learning style.
Different tests can be found online. Some students will have a good idea about the ways in which their brain works best and others may have been exposed to a learning style test during high school. As a teacher, one can think about ways in which these different learning styles can be exposed to the students when teaching, e.g., diversify the way things are explained.

Learning styles can be classified in many ways and there is no consensus about the ways in which dimensions should be defined, combined, and how many there are. A commonly used test is the Felder-Silverman test also called the Index of Learning Styles (ILS). It operates in four dimensions: sensing/intuitive; visual/verbal; active/reflective; sequential/global. A simpler way of categorizing which most of us can relate to without taking a test is the four modalities:
Visual preference (**show it**), Auditory Preference (**tell it**), Tactile Preference (**by taking notes/reading**) and Kinesthetic Preference (**by doing**).

Learning style tests only tells something about preferred style of learning and nothing about someone's academic abilities. Everyone's learning styles will be a mix of the different modalities. Some people may find that they have a dominant style of learning, with far less use of the other styles. Others may find that they use different styles in different circumstances. You can develop ability in less dominant styles, as well as further develop styles that you already use well.

It is quite important that teachers at first year know how to explain things considering the students' different learning styles. New students might not be aware that a reason they may not understanding a subject is due to a lack of correspondence between their preferred learning style and the way the subject is taught. This may result in the the student feeling misplaced and stupid.

STRATEGIES FOR READING

Peter Stray Jørgensen and others (2008, 1997) recommend that students start their reading by NOT reading and instead starting by looking at the index and headlines and then writing continuously for max. 10 minutes about what they already know about the subject. Activating your pre-knowledge in that way brings you in a better position to understand the text. Sanne Knudsen (2013) argues that when you are writing you remember things you forgot you knew. She sees writing as the best tool for working actively with the content you are reading. It helps learning by storing knowledge in the long-term memory. Thus, the important part about reading is writing.

Sanne Knudsen (2013) recommends that the student use three steps. **A)** Preparing: what am I supposed to learn? **B)** Reading and writing: The points in relation to the purpose of the reading? **C)** Evaluation: Did it work as expected?
Essential is the purpose of the reading. Some students will just start reading everything from page 1 to 250 without thinking about the purpose. That is inefficient in terms of learning.

Way of reading	Purpose	How
Overview **All reading should start here**	To get an **impression** about content and assess how difficult the book/text is. If relevant, assess if it can be used for the purpose in question, usually a project	You only read title, back page, chapter headings, preface, abstract, index, and maybe a conclusion
Scanning	To get **information** about content and the main structure in the text. To find parts you wantv to read more intensely or for finding information you need	You read fast and superficial scanning the pages. You only focus on the important words and don't read whole sentences
Normal reading	To **understand and comprehend** content, meaning, argumentation, structure, problems in question and the results	You read everything
Intensive reading	To **learn details**, collect precise information, learn by heart, repeat nuances	You read everything word by word
Selective reading	To **find** specific information that you need for your project or for an assignment	You read parts of the text or you read to learn whether the text can be used

Table 1: WAYs OF READING. Modified and translated (Jørgensen, 2008)

The student should consider what type of notes/writing fits the purpose of the reading in order to remember and understand the text most efficiently. Different techniques involves writing **in one's own words**, as has been outlined below.

Type of notes	Definition
Linear notes	Follows the sequences in the same order as in the text
Nonlinear notes	You make your own diagram and build it around the central subject of the text. Some students will know it as mind mapping
Cornell-method or double entry logbooks	A page divided in 3: Keywords, details and arguments, own comments.
Paraphrasing	Rewrite parts of the text using your own words. Helps focus on what the author actually is trying to say
Summary	Rewrite the points of a longer text to provide an overview of the main points and arguments, which helps with sharing knowledge in a group.

Table 2: TYPE OF NOTES. Inspired by (Knudsen, 2013) and translated

You could consider having older students from the same study show and ask how he/she is taking notes and why. If you have a student advisor (decentral studievejleder) use them for this purpose as the chances that the students will use the advisor if problems related to the study occur are much higher, given that they have a more personable relationship.

The problem when addressing good study habits is that students often do not realize that they need them. Before a course, the teacher could help the students by using the above tables for reading and taking notes to help the students understand the various ways in which their studying could be improved through the way they read and take notes. It could be by writing a reading guide in Moodle for the first courses. Like this: Get an overview of the whole book. Spend 10 minutes writing what you already know about the subject(s). Read chapters 2 to 5 using normal reading. Read page 45-52 using intensive reading. Take notes in a system that suits you, taking your learning style into consideration. Follow up and evaluate when you see the students in class. Some students might argue that taking notes and writing is too time consuming. On the other hand, even the reading is a waste of time if you cannot remember any of it when you need it.

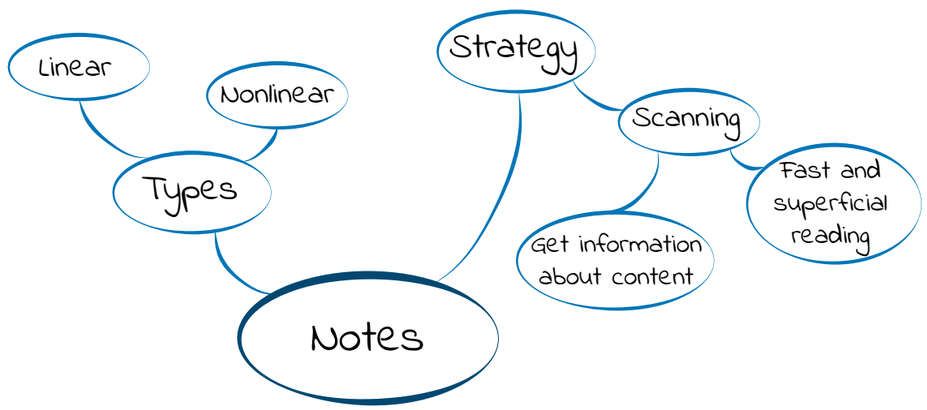

Figure 1: Example of a mind map

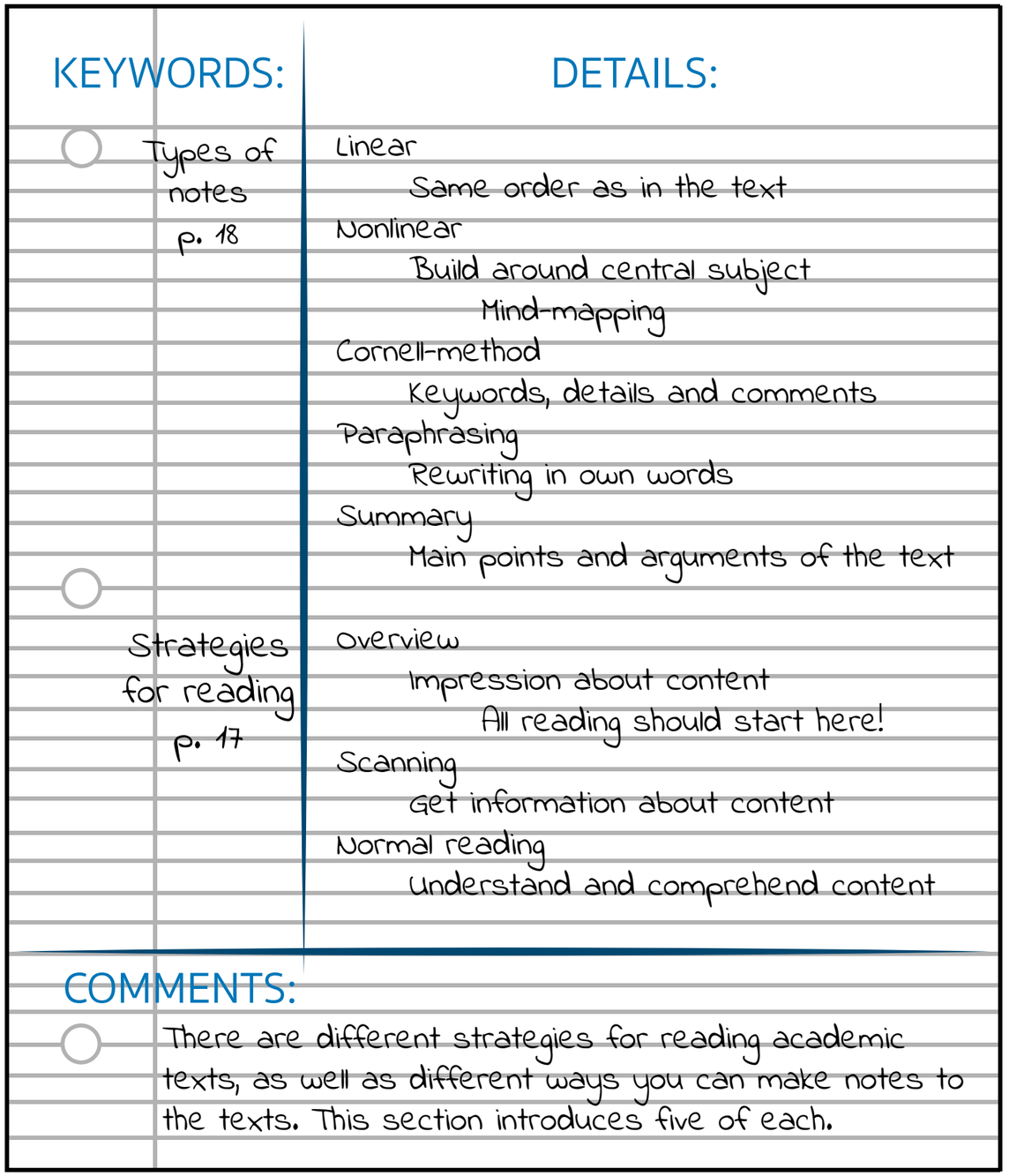

Figure 2: Example of Cornell-method

LEARNING OBJECTIVES

> *141. When we first begin to believe anything, what we believe is not a single proposition, it is a whole system of propositions. (Light dawns gradually over the whole.)*

> *142. It is not single axioms that strike me as obvious, it is a system in which consequences and premises give one another mutual support.*

– (Wittgenstein On Certainty)

INTRODUCTION

One of the challenges that face first year students is to figure out not just what to study, but also how to study; and whether that, the what and the how, is in alignment with the skills and beliefs they already possess and the ones they are presupposed to develop. These questions are mirrored in every discipline and study program through the learning objectives and learning environments. They are present in the study regulations, and all together form what we might call the logic of the program. By logic we refer to the structure by which thoughts, perceptions, conducts, interests, values, and of course knowledge is conveyed within the program. One might say that the logic represents the disciplinary character or identity (or scientific paradigm) that warrant and shape the program. Learning objectives and study regulations is therefore essential in molding the student from an uncertain and insecure first year student into a competent and confident graduate.

This chapter attempts to make us better aware of the need for helping the students to make sense of what they are exposed to, evaluated on, and engage with. By assisting the students to better comprehend where they are, and where they are going, we are also given an opportunity to reexamine a logic that seems so natural to us that we more or less take it for granted. This reflexivity can help to more firmly legitimize our practices and presumptions.

Obviously it is not possible for a first year student to simply get a crash course in the logic of one's study program, but by continuously showing the logic behind our own lectures and supervision, by visualizing the logic of our claims and practices, we will encourage and aid the students in their pursuit of grasping a possible solid 'whole' in the tempest of seemingly disconnected and deviating learning objectives.

DEFINING THE LOGIC

> *If I say that the representation must treat of my world, then you cannot say "since otherwise I could not verify it", but "since otherwise it wouldn't even begin to make sense to me".*

– (Wittgenstein Philosophical Remarks)

There are individual differences from study program to study program when it comes to the logic giving structure to the learning objectives, but at Aalborg University there is also a common trait or a shared structure through the choice of PBL as a pedagogical practice across the university. Another shared structure is related to AAU itself; i.e. the very nature of the kind of or character of AAU as a university is also the proprietor of a certain logic, that colors the programs across the university. Finally, there might also be some common attributes related to science, in terms of all study programs being, what is outlined in the founding charter as, 'scientifically based'. Let us look a little bit closer into these three traits, finding their way into the shared logic across our campus.

AAU is a young university established in 1974 under the slogan Breaking new ground. It came about as part of a political desire to bring new possibilities into a declining area as the traditional industries (shipyards, textile, cement, agricultural products, etc.) were either going under or being restructured. In this sense AAU, like many other universities, is a university caught in the circumstances and the demands that Robert Frodeman describes in Sustainable knowledge (2014). To survive (and develop), these universities have to work in close collaboration with local industries and institutions, they have to create interdisciplinary approaches to research as well as to educational programs, and they have to attract and retain students for whom university is not a 'natural' or obvious choice (so called pattern breakers). For Frodeman, this means that the universities to a large extent have to reorient themselves away from traditional disciplines and traditional universities, and towards a new audience and new stakeholders. Frodeman focuses on the implications of this for researchers, but this also has implications for the students, who has to navigate between being more classic literacy oriented students (of something) and modern labor market oriented trainees (to become something). The cooperating attitude, the importance of localization and the first generation component is all clearly visible in the principles guiding the establishment of AAU:

- equity and democratization through education
- research-based collaboration with stakeholders, civil society, private, and public partners'
- regional development
- a new pedagogical concept of Problem and Project Based Learning (PBL)

(Dirckinck-Holmfeld & Lange, 2014, p. 8)

Turning our attention to PBL, the general idea was to support interdisciplinary collaboration, break down the isolation of academia, and focus on benefits for the society. But PBL also was meant to appeal to a new generation of students who were more familiar with the world outside than inside the university walls, and more interested in life after, than during, the university degree. At the core of these two ideas emerge: one is to better connect higher (theoretical) education and professional practice by including and adopting practical elements; and two, to better connect scientific education and needs in society (e.g. businesses, or public inequities or so called wicked problems.), by the students not learning from a theoretical, disciplined curriculum, but learning through working with real problems. (John R. Savery, 2006; Diana Stentoft,

2016) Although there are many different understandings of the pedagogical execution of problem-based learning, most researchers agree that all varieties of problem-based learning share the following four basic characteristics: **(1)** a focus on complex, real world situations that have no one right answer, **(2)** students work in groups, **(3)** students gain new information through self-directed learning, and **(4)** staff act as facilitators. (Maggi Savin Baden & Claire Howell Major, 2004)

As the first year student at AAU struggles with comprehending 'problem analysis', 'status seminars', 'group creations', 'project supervision' and likewise, the underlining structure of this is to be found in these ideas of AAU and PBL. Ideas concerning a logic of practice, of relevance, of collaboration, of localization, of purpose, of 'non-academia', and so on. These logics are also warranted, both theoretically and ideologically, with a thinker like John Dewey as one key source of inspiration.
Dewey can here be the pass-over to the third trait: science, because science, and the logic of science, is essential to the study programs. The different scientific practices and scientific disciplines or paradigms yield different logics, which needs to be paid attention to, but there are also common characteristics. These are connected to the purpose or benefit of a scientific pursuit and to what is known as demarcation, i.e. the distinction between scientific knowledge and other forms of knowledge or reason. On these issues Dewey first denote a difference between the concrete and the abstract through terms like acquaintance and intellectual, and then notes that abstract thinking is necessary for "the emancipation of practical life—to make it rich and progressive" (Dewey, 1997, pp. 139). He claims the aim to delight in the activity of thinking, and the intellectual virtue as the pursuit of theoretical knowledge through a harmonic and pleasant interactive comprehension and application of this knowledge in one's everyday practices. (Dewey, 1997, pp. 138-143) In Logic: the theory of inquiry (1938) he makes an important distinction between the subject-matter of common sense problems and the subject-matter of scientific problems, by the latter's abstract character (Dewey, 1938, pp. 117).

So the logic here is that science is abstract in nature, and that its purpose is to intellectually qualify the practice of everyday. To grasp this logic of abstraction is one of the key issues in becoming a successful student, often manifested through the use of theory and the ability to theorize, but also through the ability to rise 'above' the situated or merely experienced. Another side of this scientific logic is of course the justification of knowledge, which is linked to learning and adhering to the systematic methods of knowledge acquisition.

STRATEGIES

> *"The knowledge act is man's strongest socially conditioned activity and knowledge a purely social product. Already in the construction of language there is a compelling philosophy rotated in society, already in single words complex theories are implicitly given. Who's is this philosophy, who's theories are these?"*
>
> – (Wittgenstein Philosophical Investigations)

The logic of learning objectives and study regulations are answering the question why, posted to the what and the how, that faces the first year students. Uncovering and taking possession of this answer is necessary for the development of the students' character (as a student of something and a trainee to becoming something). To own this logic is to incorporate it into one's actions and decisions in a way that identifies the student with the study program, and perhaps more importantly identifies the study program with the student, making the student feel 'at home' and finding meaning in the learning objectives and environment of the program.
Although this might look like an individual task, it is on the contrary not so. This logic is, like a language, something that we share, it is something that exists between us, around us, and that holds us together. In that sense it is also acquired in joint ventures, in the interactions and the communities in which we take part. In the study programs at AAU these 'communities of practice' is of course colored by a logic with a strong focus on science and reason. This is what Ludwik Fleck called Denkkollektiven (Thought collectives), with the logic cast as Denkstil (Thought style). (Fleck, 1935)
So the strategy here is to invite the students into these thought collectives, by making them share in the thought styles. This is of essential importance during the first year. Here focus should be less on learning particular pieces of knowledge or even particular methods, but communicating the reasons why something is acknowledged as knowledge and the reasons why certain methods are acceptably applicable. This is what we truly mean when we say that we do not focus on the result, but on the process – that the students learn not just to grasp the particularities, but through an interpretive interaction with them as they gradually see the whole, i.e. starting to comprehend and adhere to the logic of the study program. To help the students with this, there are three vital elements to reflect on:

First, is the interface between elements in the study regulation. How do they fit together? What do they represent? When do we evaluate what?
Second, is the role of courses in PBL and theory of science. Why are they important? How should they be presented and applied? How are they integrated in the study program?
And **third**, is projects and supervision. This is a key element for the logic of our programs. Here, both AAU, PBL, and science meet in a shared and unique form at each individual program. How do we design projects at first and second semester, that can teach, or better said make explicit the logic of the program? How does supervision make use of PBL and theory of science? How do supervisors explain themselves and justify their guidance?
As these focal points indicate, much of the work is reflexive. This is important, because this reflexivity is also what can connect the faculty and the students in the joint effort of comprehending the logic of our mutuality.

> *"§89 …it is, rather, of the essence of our investigation that we do not seek to learn anything new by it. We want to understand something that is already in plain view. For this is what we seem in some sense not to understand."*
>
> – (Wittgenstein Philosophical Investigations)

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Study Competencies

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