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Teaching for a profession competence - Learning to become a Herd Veterinarian

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Introduction

How to teach for a profession competence? How to teach decision makers? How to teach to become a herd veterinarian?

As assistant professors, we - Dorte Bay Lastein (DBL) and Inge Larsen (IL) - have coordinated the veterinary master level course in Herd Health Management (HHM) the latest two years (University of Copenhagen, 2019a, 2019b). We chose to write this assignment together to exchange ideas and feedback throughout the HHM course, which despite differences in species have many similarities regarding pedagogical considerations. We both have a background as veterinary practitioners working with HHM on cattle and swine, respectively. As such the interactions between theory and practice – application of academia in a practical herd setting - is a central part of our prior experience, and it is highly relevant for the present course.

The HHM course is a voluntary specialization course for last year veterinary medicine students. The course aims at students, who post-graduation want to work with veterinary advisory services in production animal herds, e.g. cattle or pig herds. Despite the students' interest in the topics, their prior knowledge and experience with milk and pig production vary.

In 2019 the course ran from 4 March to 13 June, and 15 students joined (11 in the cattle track and 4 in the pig track). The course consists of a 14-week program (University of Copenhagen, 2019a) and includes lectures, workshops in addition to herd visits, intensive practical and analytical group work on one swine- or cattle herd for each group of students, with 3-

5 students in each group. The groups plan their activities in the herds themselves and visit their project herd 3 to 5 times. In between visits and other student activities, DBL and IL have supervision meetings with the students. In cooperation with the students, we arrange scientific lectures and workshops with subjects related to herd health counseling. The students are - to some degree - involved in the process of determining which lectures they are 'in need of', to make a thorough herd analyses; either by deciding the entire topic or by priming the teachers on specific herd related issues within a topic before the lectures/workshops. Each group writes a report about their herd analysis and suggestions for improvements and intervention. The students also have 3 weeks in apprenticeship in external veterinary clinics or on farms. The reports handed in for feedback and are approved by DBL or IL, but not graded. The exam is a graded 4-hour written exam where the students can cite from their report in their answers. The exam question refer to understanding of scientific methodology in a practical setting and critical thinking in different areas of the HHM field, exemplified and cited by the students through the project work and additional written answers.

The overall Indented Learning Outcomes (ILO) translated from the course description, are:

> *The student must through project based work in industrialized herds, be able to teach themselves to be the key person in science based solutions of complex problems regarding health, fertility and welfare and consequences thereof for production and economics.*
> (University of Copenhagen, 2019a)

Overall, HHM can be categorized as a Problem-based (PBL) and project-oriented course with a high degree of student involvement and work, with practice-based as well as theoretical problems (Krogh & Wiberg, 2015). With their project herd as an example the students should learn to point out relevant problems within a herd (based on interviews with the farmer, own observations in the herd and by data analysis). These problems are to be investigated further, and in the end, the students should provide relevant suggestions for interventions for the farmer to improve health, welfare or production.

The course aims at students getting the competences to fulfill an academic profession in a transdisciplinary and practical, real-life herd setting; in addition to learning specific veterinary knowledge or skills.

To ensure future alignment between course description and course elements, to enhance deep learning of ILO and to ensure novice supervisors'

ability to monitor learning progress this UP assignment will focus on the following issues:

A. **Mapping of Intended Learning Outcomes:** Identify and organize specific ILOs, student activities and associated learning styles to identify suboptimal learning support (cattle track, DBL).

B. **Student Scientific and Solution based Seminars (4S):** Introduce and evaluate 'student-seminar on scientific topic' to enhance 'fast academic and critical learning' (pig track, IL).

C. **Self-evaluation schemes - monitoring learning progress and group performance:** Introduce and evaluate student self-evaluation forms before supervision meetings to monitor the students' learning progress during the course and enhance the possibility to continuously redirect supervision and teaching strategies for groups and individuals (cattle track, DBL).

Description of theory

The course is officially labeled as 'exemplary learning' in the course description with the aim that students use scientific methodology - both quantitative and qualitative - to find solutions in real-life livestock herd contexts. The decision on teaching methodology was made by the prior course responsible and could have several reasons, as described by (Christiansen, 2010) e.g. curriculum overload, maximizing learning outcomes by activating students in a meaningful context. Overall the herd analysis of one herd thus serves as 'exemplary teaching and learning' (Krogh & Wiberg, 2015), with the aim to make the students able to transfer their competences to other areas within herd health management (i.e. generic learning). As we use commercial herds and apprenticeships, the learning process also can be categorized as 'situated learning' (Dolin, 2015), and resemble the real world situation as much as possible. Both the teachers and hosts for apprenticeships (veterinarians in practice or laboratories, farmers) have the role of 'masters' at different levels, either real time or postponed.

When studying the course description and the course plan different theoretical aspects of learning come to our minds. Most part goes in line with a 'constructivist approach' to learning, as described by Dolin (2015). The students have prior knowledge from former courses to build on. In this course, they learn both through adaptation, assimilation and

accommodation; e.g. they learn to implement prior knowledge and use skills in practice (bridging prior and new knowledge and skills), they develop the need for new knowledge which they add to or use for reconstruction of prior knowledge or skills etc.

Also; aspects of 'cognitive' learning elements are considered (Dolin, 2015). In the HHM course, the students have time to learn (e.g. relatively few planned lectures) and a large variety of study activities (e.g. reading, writing, observing, presenting, talking, doing, calculating, reflection, etc.). Literature in active learning and learning styles refers to Dales cone (Anderson, 2019; Lauridsen, 2012, see figure 5.1). The point is; the more active 'doing what you must learn in a meaningful setting' the more you learn. This has lead us to the idea to map ILOs, study activities to different 'ways of learning' to see if the course could be further improved regarding these learning aspects. This idea of mapping is in line with the recommendations by Krogh (2015).

In the HMM course, communication with special emphasis on dialogue has historically played a central role, as competences within human interactions are not found anywhere else in the veterinary curriculum. During workshops, students train reflection and dialogue practices very similar to the principles of Socratic methodology (Højlund Larsen, 2012). The dialogue is central in relation to the collaboration with farmers and peers in practice to make understanding of the herd context common, and to move people towards the same 'goals for the herd' (e.g. the aim of veterinary advisory services). This draws lines to elements of 'social constructivism' as described by Dolin, 2015, as learning is activated in the social interaction and when the students have to formulate their own hypothesis and test them in the herd setting. This dialogue process also corresponds to a student/supervisor situation and a leader/employee situation in some ways. Inspiration for the use of dialogue in supervision has been used, in the hope that outcome of supervision meetings with students could be increased Larsen, 2018.

Additionally the theory of 'situational leadership' introduced to the students during the communication workshop by an external teacher (Birkenfalk, 2019). The idea is that leaders (in this case the supervisor) can be helped to evaluate employees (in this case the students) according to their present 'engagement' and 'competence' regarding specific tasks and adjust leader styles/practice (here teaching style) accordingly to being directing, coaching, supporting or delegating. If employees (here students) become aware of their own situation – related to engagement and competences,

they might improve their competences to lead themselves (here learn by themselves). In addition, if students are aware of the potentials of active learning (e.g. Dale's cone of experience) they will appreciate that their own 'doing' will maximize their learning and perhaps being less frustrated about uncertainty in the learning process and about the workload.

The challenge of supervision and monitoring of the group work in progress and the individual students over 3-4 month warrants a systematic approach to formative assessment. Hence, we decided to work with repeated self-evaluation schemes inspired by the situational leadership model.

Pedagogical projects in HHM course 2019

A. Mapping of Intended Learning Outcomes

Material and methods

We used the cattle track as an example of mapping ILO, the course activities and the learning styles. The HHM course program is partly presented in appendix A. We identified and mapped ILO from the course description in a table (appendix B) with knowledge, skills and competences in the vertical plan and study activities in the horizontal plane. Subsequently, we categorized the study activities into five ways of learning; see, hear, read, write, say and do; as listed in Dales' cone of experience (5.1).

In this way, we tried to clarify ILO that are not sufficiently covered by a range of different learning methods. In the right column, concluding remarks on issues which can be optimized in future courses are presented. In this way, we can use the mapping to maximize learning outcome in future courses through better planning of activities.

In the present assignment, the ILO and study activities are not linked to the exam structure (e.g. at present 7 specified themes) as originally planned. We realized that these themes and their contents are subject to easier change than the ILO and that planning of study activities seem more pedagogically important than the exam format at present. This alignment process of the summative assessment, however, is a natural next step.

Results and Conclusion

Mapping of the course with many ILO's is complicated. The results are shown in B. The work is preliminary and must be considered an ongoing

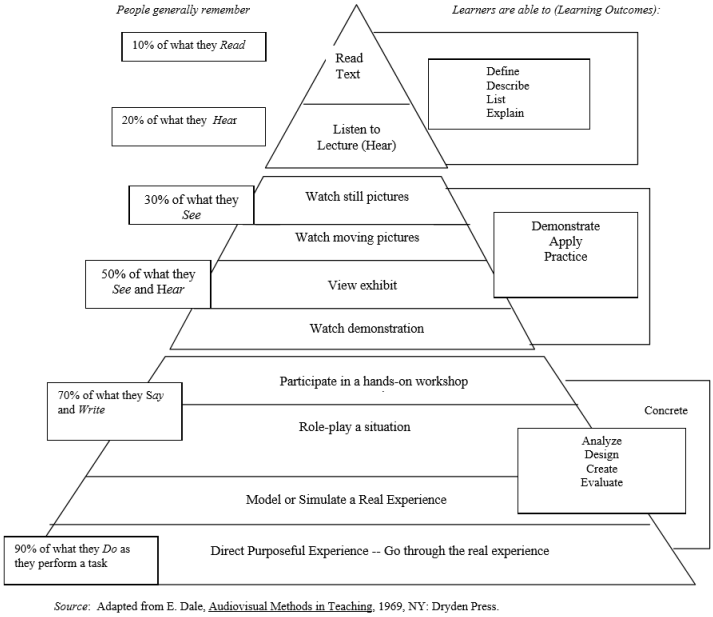

Fig. 5.1. Dale's cone of experience (Anderson, 2019). Text in *italics* indicates learning styles.

process, as we get even more confident with the course contents. We found it difficult to decide on the categorization of learning styles and which ILOs were insufficiently covered, just by the mapping procedure and we sought some guidance in the post course student evaluations. The ongoing work on mapping might include the ILOs, the summative assessment themes and the student evaluation. However, the present process gave increased insight and room for reflection on the different aspects of the course. It helped to get a better overview and thereby indicated where corrections and ideas to new initiatives in the study activities are needed.

In the table in B, grey markings of text describe the study activities we find most important to implement. Some of these activities have been implemented and tested during this UP assignment; e.g. student seminars and the use of self-evaluation-schemes in supervision. The details of these new

initiatives and/or integration of other pedagogical principles related to the identified poorly covered ILO are described in detail in the following sections. Introduction of a didactical contract, core literature and an overview of the analytical process are other issues to work on including in the HMM course.

However, a final comment on the issue of core text. The ILO mapping and student post course reflections indicated that increased organization of specific core texts to help students organize specific scientific learning and reduce their frustration levels. To some extent, this will be contradiction to the pedagogical principles of constructivist self-learning (e.g. in real life you must seek the information you need yourself), but we think that the students with the least prior specific knowledge related to pig and cattle production could benefit significantly by increased organization of text material.

B. Student Scientific and Solution based Seminars (4S)

Introduction

In autumn 2018 IL had a meeting with the students, who were interested in doing HHM project work in a pig herd. During this meeting, some of the students came up with the suggestion to have specific lectures on diseases of pigs as part of the course program, and they even suggested the possibility of doing these lectures themselves.

Inspired from the student's idea and the wording from the course description "The student must through project based work in industrialized herds, be able to teach themselves to be the key person in science based solutions of complex problems regarding health", IL and the students tried out "Student Scientific and Solution based Seminars" (4S) in the HHM swine course 2019.

The concept of 4S was 20 minutes oral seminars presented by the students based on a problem that they identified in their project herd. The topic could be a specific disease, feeding strategy or similar.

The outline of the student seminars was a power point presentation containing:

a. A brief overview of the herd problem
b. A short summary of textbook knowledge
c. A summary of relevant peer reviewed papers on this topic (minimum two papers)

The presentation was followed by:

d. Oral feedback from the remaining group
e. Oral feedback from teacher

The time for preparation was agreed with the group of students and should not exceed one day; Both due to time limitation in this course, but also as an exercise in the future life as busy veterinary practitioners, where one does not have weeks to find an answer; in most cases just one afternoon or one evening.

The idea of the specific 4S concept as part of the HHM course was to give the students a tool for self-learning and method on how to seek knowledge for problem solving tasks in their future profession. The time for preparation was one day, as we also wanted them to realize, that they are able to gain relevant, scientific knowledge even in a short time.

The process to acquire new knowledge in the 4S preparation is a student-centered approach to teaching, where the students work with a problem / topic themselves. The learning theory behind is "constructivism" (Dohn et al., 2015)

The method of using cases in teaching and learning is summarized by Krogh et al., 2015 as an invitation for students to develop:

- Communicative competences
- Ability to structure knowledge
- Ability to adopt a holistic approach.

To give an oral presentation is for some students a big challenge. A consideration for the 4S seminars was the psychodynamic learning approach (Dohn et al., 2015), where we aimed for the emotional aspect in creating an environment for the students, where they could feel safe doing their presentations. In reality, the idea was that if the student knew their audience well (fellow students who had been or were going to do a presentation as well and a teacher whom they (hopefully) found trustworthy), that could promote a positive experience for the students to do a scientific presentation.

Hattie (2007) define feedback as information provided by an agent (e.g., teacher, peer, book, parent, self, experience) regarding aspects of one's performance or understanding. Both receiving and providing feedback is a challenge and a discipline that requires rehearsal (Rienecker, 2015).

The HHM students were instructed to give feedback on the scientific content mainly. IL, as the teacher, focused on scientific contents as well as

presentation technique aiming at doing formative feedback with suggestions for improvement.

Method

The 4S seminars were planned, carried out and evaluated during the HHM course according to this plan:

1) Course introduction (10 March 2019):
    a. Explanation and agreement with students on the concept of 4S (didactical contract).
2) Project herd visits planned and carried out by the students (March-April)
3) Identification of herd problems by the students (March-April)
4) Discussion and selection of topics and dates for presentation.
    a. Agreement between students and teacher.
5) 4S Seminars (29 March (1 student) and 21 May 2019 (2 students))
    a. One student postponed and never gave a presentation
6) Evaluation (19 and 25 June 2019)
    a. Individual, recorded semi structured interviews with all students about the HHM swine course in general and 4S in more detail. Anonymized for this report.

Results

Three of four students gave 4S presentations with specific pig diseases as their chosen topics: "*Mycoplasma suis*", "*New Neonatal Porcine Diarrhoea*" and "*Porcine Cytomegalovirus*".

IL observed the students as they presented and provided feedback. The presentations were all nicely prepared and structured, regarding topic, relevance and peer-reviewed studies.

The student-to-student feedback worked very well and resulted in lively discussions; actually, the students did most of the work and IL made minor comments and corrections in her feedback only.

Besides student training, the 4S provided IL with an insight of the level of knowledge and competence among the students; for instance, that the understanding of epidemiological terms varied quite a bit.

The students regarded the 4S concept "exciting", a "nice training", and a nice possibility to focus on diseases in the herds. Student citations – translated from Danish:

Student 1:

Exiting. . . very exiting . . . I liked it. . . I also think it is training for future work.
Student 2:

It was awesome to sit for just half a day, and then what you discovered was what you defended. . . .It was a bit stress full among the other tasks. . .
Student 3:

. . . they were nice. . . because you were able to focus on the diseases out there and that was probably what I expected, ...dive into it, find literature. . . "

The one student that did not give a presentation lacked energy and a deadline:

Student 4:

". . . perhaps it should have been programmed, like "now you do this" this week, because. . .
I did not have the energy in the beginning, I did not know how to make it (IL: time wise), so I postponed and postponed, then you went on holiday and then I should have presented to X (IL: a different teacher). . . I really forgot! . . . It will always be annoying to have such an extra task, but afterwards . . . when we were writing . . . then it was nice for Y (IL: one of the other students) that the text and references were there. . . "

Discussion

The idea for the 4S concept came from some of the students attending the HHM swine course. For next year's students, we will also arrange a meeting for both pig and cattle student, asking about their expectations. It is our impression that it works well to structure at least a part of the course based

on these expectations; whether it then should be student seminars, poster presentations or a completely different type of tool. The student centered approach and method of using cases in teaching works well – and does not take up additional time for the teachers.

In case-based learning and case seminars, the teacher often serves as the chair and facilitator who must support the student's discussions about the case (Krogh et al., 2015).

The personal experience of IL is:

> I have learned to keep quiet. . . previously I had the impression, that I had to talk a lot and sort of *spread out my knowledge*. At times, I still need to do that, but more often, when the students asked my opinion, I responded by asking for their opinion, and often, they reached a conclusion, using their own words, and without me stating anything, except asking questions".

Constructivism is one theory to support the 4S concept; that the students have to teach themselves new knowledge. As mentioned by Dolin (2015) application of new knowledge is based on existing knowledge. If new knowledge does not fit into an existing understanding, a conflict can arise. IL experienced a minor conflict with one student, who had one prior understanding about a treatment strategy, and when questioned about this, it resulted in a discussion (in a good tone). The discussion made the student do further literature research, which resulted, perhaps not in a change of mind, but a deeper reflection and knowledge about arguments behind her/his opinion.

Immediate, oral, peer-student and teacher feedback was included in the 4S concept to refine scientific misunderstandings – if there were any. It was also included to increase the interest among the students as audience to the presentation, because we thought that when they knew they had to give active feedback, they would stay focused. For these students, however, this idea was not at all relevant because they were very eager in asking questions related to the topic and its relevance for the project herd or for other herds they had visited. It is our impression that the students choosing HHM swine this year were so highly dedicated and motivated to become swine veterinarians that they grasped and engaged in all topics they found relevant to speed this process.

Potential learning outcome increases with more student control and complex problems (Krogh & Wiberg, 2015).

In project work, students must learn to manage and organise a process where many things are uncertain (Krogh & Wiberg, 2015, p. 215).

For the HHM course in general the freedom to self-plan but also lack of structure was pointed out as a challenge. As one student said in the interviews:

> At times I was very frustrated about the process of it all, because this course is pedagogically different from other courses, and I sometimes thought: Why do we have to figure everything out by ourselves ... more or less ... Because we often do know how to do it! We understand how to think in boxes, like; now we are taught this and now we are taught that. We spend the last five years doing so. That is the reason, planning everything by ourselves is a challenge.
> It is a requirement that the supervisor is very observant about when things start going in the wrong direction, and keep asking the students: How are you? Do you need guidance?

The student centered, problem-based nature of the HHM course also made it difficult for us as teachers to choose how to organize and help the students. It felt like we had to choose between 'freedom' and 'structure'. As described in the next section, a systematic and explicit strategy for formative assessment could potentially give the supervisor support in this process.

With the 4S seminars as an example, for next year's course, we will try to implement structured freedom by providing a specific outline of the 4S seminars: *Introduction, What is this disease/case about? Why is it relevant in this herd? What do the textbooks say? What does peer reviewed literature say (minimum 2 papers), Based on what you discovered, how would you advice the farmer?* and tell the students to do whatever they like within these frames.

Conclusion

The aim of the Student Scientific and Solution based Seminars concept as part of the HHM swine course 2019 was to give the students a tool for self-learning and method on how to seek scientific knowledge for problem solving tasks in their future profession. Most students found the seminars "exciting", a "nice training", and a nice possibility to focus on diseases in the herds. However, one student lacked energy and a deadline which

emphasizes, that despite a high level of freedom and independency in the course, the students need certain frames to work within.

C. Self-evaluation schemes - monitoring learning progress and group performance

Introduction

Supervision for several groups and up to 25 individuals (present maximum limit of students per course) at the same time over 3-4 months in the described HHM course calls for a tool for the supervisor to ensure the progress of both the groups and the individual students. Also, the introduction to self-evaluation and increased reflection on the students own efforts might promote and help them to take responsibility for own learning and improve their ability to lead themselves. Students potentially become able to request the most appropriate leadership style to specific tasks from their future employers and collaborators.

The theory and principles of 'situational leadership' were introduced for the students during a 4-day communication workshop run by an external teacher in March and in April 2019 (Birkenfalk, 2019). The scheme represents the structure of the summative assessment/exams; seven themes on academic issues and scientific methodology in addition to issues of organization and planning (e.g., problems related to group work and collaboration). The student had to rate their individual perception of competence (low/medium/high) and engagement (low/medium/high) on all issues, their need for a specific leadership style (directive, coaching, supportive or delegating) and could further add written reflections to each issue and in general.

The evaluation-scheme was in its original form developed by the former course responsible, but never used intensively for progressive formative assessment. The scheme consists of a short written and graphical introduction and a blank table (Appendix C).

Material and methods

In Spring 2019, the HHM cattle track was run with three student groups with 3-5 people in each group; 11 students in total. The use of self-reflection for learning was used in a pre-course, so the students were familiar with the idea

of reflecting upon learning processes. The use of the self-evaluation methods was briefly introduced on the first course day, alongside introduction to the didactical contract of constructivist and exemplary learning, including the potential frustrations during the learning process. The students were collectively asked to deliver a one-page reflection on their expectations on the cattle track. The students were asked to individually fill in the scheme before 3 preplanned group supervision meetings. The students did not see each other's evaluations.

At the first group-meeting the students in each group were 'thanked' for their efforts of filling in the scheme, and the purpose of the process was explained face to face. The scheme was available at all times on the common digital learning platform. Each individual student was asked and reminded by common electronic announcements, to fill in the scheme a few days before each of three preplanned group supervision meeting (3-4 weeks apart). Subsequently the schemes were emailed to the supervisor at least 1 workday before scheduled meeting time. The groups were also asked to send in a proposed common agenda before and common notes after each supervision meeting. A final self-evaluation-scheme was filled in after the exams were over, as a part of the course evaluation process. The students were further given a possibility to do oral evaluation in plenum (reflection and dialogue) after exams and before grades were revealed to the students.

The empiric materials for analysis consist of 10 reflection papers (out of 11 possible) on student expectations written after the first day introduction, 26 pre-supervision-meeting evaluation forms (out of 33 possible) and 5 post-exam evaluation forms (out of 11 possible). Five students participated in the plenum evaluation and wrote a one page evaluation reflection on the course in general (out of 11 possible). Two additional students have evaluated by email afterwards; one the course in general and the other the use of self-evaluation scheme specifically. These materials were revisited to describe the results of the implementation process of the self-evaluation scheme.

Results and discussion

Not all students have handed in all schemes and reflection papers. However, some students from all groups handed in reflections on the requested times giving the supervisor materials to work with prior to meetings, and all students did hand in schemes at some point in time.

We observed some differences in the way the student filled in the scheme; some did it by hand, some as picture files with 'digital sticky notes', but most wrote directly in the Word-documents. Also, we observed a difference in whether the individual students used only 'rating of competences, engagement and leadership style', or whether they wrote notes and comments. These differences do not affect the usefulness seen from the supervisor perspectives, but allow for all students to choose their preferred way of written communication.

One student made an explicit evaluation on some practical issues of the self-evaluation scheme. It was pointed out that the overview of the 'goals of the course' in table form was a valuable tool to monitor own progress. The student also appreciated that the scheme was concerned about both scientific issues and collaborative issues. It was, however, indicated that filling in all ratings for all issues for each meeting was 'too much work'. This student used rating of issue headings instead in addition to notes and comments.

In a supervisor perspective, the use of reflections and schemes was positive during the preparation phase before meetings. DBL used approximately 30 minutes before the meeting to look through the scheme, and add element to the proposed common agenda. DBL could give special attention to areas of concern, especially were student ratings were placed in directive or coaching or where comments indicated that explicit issues must be integrated e.g. collaborative issues on group work.

For future development, we will make a more thorough introduction and demonstration of the scheme during the communication workshop. The scheme could be integrated in the digital teaching platform as planned assignments to structure the process. Also, the schemes could potentially be used within the group to facilitate internal communication on learning. Initially the students showed some reluctance to fill in the scheme, but as the course went on with the group supervision meetings and the schemes and contents were used actively to improve our communication they became a more integrated and accepted part of the student-supervisor collaboration.

The reflection papers were used at the first meeting together with the self-evaluation scheme by the supervisor to get to know the students better. This way of seeing students as individuals seemed to promote their engagement in the academic process. The schemes enabled the supervisor to do so despite a relatively larger number of students. However, we also experienced that students with special need (e.g. dyslexia) did not bring this information to the supervisor before the end of the course, despite the obvious possibility to inform the supervisor on the scheme. Perhaps emphasis

on such 'special needs' could be made explicitly. We later learned that lack of communication between teachers from a pre-course could be the reason for this lack of information on a student's special need.

The following quotes illustrate different students reflection upon their own motivation. One student realized in the initial reflection paper that he wrote the notes for self-motivation, and not only for the supervisor: *"I wrote some of my remarks as a 'whip' to myself before I graduate. I have holes in my memories that needs refreshing"* (early course reflection).

Another student explicitly emphasized that the didactical contract of a social constructivist learning process was explained and understood: "*The above* (not cited) *is my expectation, however I know that the learning outcome depends of our selves (e.g. the group), and therefore I mostly have expectations for myself.*"

During the course the self-evaluation schemes were used to monitor both group work and scientific progress. One example of problems regarding group work was interesting seen from a pedagogical perspective. In the first evaluation, all students in the group expressed enthusiasm and mutual respect towards the other group members. In the second evaluation, all group members made notes on different issues related to group work and collaboration. Initiated by these remarks and some un-official talks with the students, an extra supervision meeting on the issue was arranged. One student was contacted by phone first to hear his version alone. The supervisor (DBL) made a written description of the problem based on the communicative principle introduced during the communication workshop which was then mailed to the students prior to the meeting. The meeting was held like a 'Socratic dialogue meeting' (Larsen, 2012), so all group members had room and time to express their opinion. The group delivered their notes on the meeting and the supervisor rewrote a common paper of agreement. In the subsequent self-evaluation, all group members expressed that they were past the major frustrations and conflicts within the group and could continue the academic work with greater engagement. This process demonstrate that a problems related to group work could be detected and dealt with based on the schemes.

Seen from a supervisor perspectives, it could be advantageous to use the scheme more actively 2-3 weeks before exams to monitor for students with specific 'holes in understanding and engagement' to further maximize learning output and results of formative assessment for individual students. The students should be informed of the possibility to receive individual supervision on specific issues. Using the scheme after exams, as in this

assignment for pedagogical reasons, is not intended for replication next year.

It is evident that the most structured and organizational talented students used to schemes to reflect on both scientific and organizational process issues within the group. The less organized students seemed to use the schemes mainly for personal evaluation. A major advantage is that it gives the student time and possibility to reflect and obtain insight into own learning process; expectations and achievement.

The post exams reflection clearly illustrate how students perceive 'freedom to learn' differently. Some worship the independent and self-guided learning process as the 'best in the course, whereas other would have preferred a preplanned structure. This schism is also the dilemma for the supervisors perspective; how to let students learn themselves and to maintain control without losing the goal in sight. The self-evaluation-scheme seems to work as a part of giving the students 'free reins, but still holding on to the ends of them'.

The exemplary principle of teaching is used to promote 'deep learning' and circumvent overload of specific knowledge on specific issues. The goal for the students is to become self-efficient in the methodology of veterinary sciences in a broad sense, and demonstrate their competences at the formative assessment and in their future jobs. Seen from a pedagogical perceptive on this alignment, one student reflected post exams:

> The exam was redundant. I didn't have to read up for the exam. I learned all I needed during the process.

Overall perspectives on pedagogical considerations for the HHM course 2019

DBL and IL chose to work together on the task of preparing, performing and evaluating student centred teaching for the final project in the course "Teaching and Learning in Higher Education", because, the pedagogical approaches for each our "tracks" were almost the same, and we knew we would benefit from and support each other.

Having said that, we chose to solve the task in different ways: DBL used ILO mapping and self-evaluation schemes while IL tried out student seminars. We both agree that all three concepts could be refined, developed and used in both the cattle and pig track next year.

Student seminars could be integrated in the cattle track, to enhance specific knowledge and skills. Such seminars could work as theoretical introduction to the practical and herd orientated workshops, that is already a part of the cattle track. On these workshops the students have prepared herd specific question on the workshop topic. If 4S should work as a primer of understanding of the topic to the next day, one or two students should prepare a scientific presentation the day before the workshop. The presentation itself would serve as a learning process for the individual students in reading and evaluating scientific material and presenting for peers, and the oral introduction could help the fellow students on theoretical issues of the workshop.

Individual, self-evaluation schemes could be implemented in the pig track to increase structure and insight both for students and teachers on student progress – or lack of progress, and if certain topics would be in need of more attention. The self-evaluation schemes could be made individually and confidentially between student and teacher (as in 2019), or within the student-group with an open discussion on how the students feel they are doing – both in terms of scientific issues, but also regarding group work, and how the teachers experiences the process.

By continued mapping of ILO with the old and new study activities, we can implement and refine learning styles for all activities. By following the students in supervision and evaluation, we will aim at enhancing their learning outcome further; and thereby guide the students to reach their goals of becoming herd veterinarians. Potentially, we could improve the teaching and supervision more by examining the 'lowest graded students' evaluations thoroughly.

We discussed the results of this report with Professor Liza Rosenbaum Nielsen who asked for our reflection regarding course resources; Why don't we make this course an e-learning activity, which is much cheaper, and re-useable for coming years? A hypothetical, but highly relevant question that could be posed by the administration to the course responsible.

An answer why we should keep using a relative high amount of supervision hours for this course could be that simple use of fact-based learning is not adequate for veterinary herd counseling, where apart from diseases also personal ambitions, economics, public opinion, one health etc. have to be considered. If the university want to educate students to 'become herd veterinarians', exemplary based, project oriented learning with close supervisor collaboration is necessary to learn to navigate in an animal production which is constantly changing.

As teachers, it is a great privilege to work with dedicated students who are very close to becoming colleagues, and the responsibility to prepare them for professional life and train them to use and maintain their academic standard and skills is a demanding pedagogical challenge. Increased insight and experience in organizing and supervising in the HHM course during this second year has evolved our pedagogical skills and competences. The UP course has provided us with theoretical input and motivation to look upon the course and its structure with open and proactive eyes. We will fight to keep the main structure of the course as Problem-based (PBL) and project-organized despite potential structural and organizational arguments against it.

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A Course program – cattle track (part of)

DB 1.3.2019

Differentiering KVÆG 2019 FORELØBIG PLAN

Uge	Måned	Dato	Formiddag	Lokale	Underviser	Eftermiddag	Lokale	Underviser
10	Marts	4	9.30-12.00 Velkommen + Intro ved Dorte	G8 1.02	JPNI / IL/DB			
		5	Klovdage - Tåstrup		NC	Klovdage - Tåstrup		NC
		6	Klovdage - Tåstrup		NC	Klovdage - Tåstrup		NC
		7	Mulighed indledende besætningsbesøg					
		8	Mulighed indledende besætningsbesøg					
11	Marts	11						
		12						
		13						
		14						
		15	STAT/EPI-DAG 10-16	følger	MOK/DB	STAT/EPI-DAG 10-16	følger	MOK/DB
12	Marts	18						
		19						
		20						
		21						
		22						
13	Marts	25				Planlagte Vejledermøder: Hold 1 kl. 13.30-15	DB kontor, G8. 2.s	DB
		26	DKF - kongres			DKF - kongres		
		27	DKF - kongres			DKF - kongres		
		28	Evt. CPHcattle lunch kl 12-13	følger		Planlagte Vejledermøder: Hold 2 kl.13-14.30 Hold 3: kl.15-16.30	DB kontor, G8. 2.s	DB
		29	Økonomi/Simherd	følger	JE/DB	Økonomi/Simherd	følger	JE/DB
14	April	1	Repro - Ålborg		VIKING	Repro - Ålborg		VIKING
		2	Repro - Ålborg		VIKING	Repro - Ålborg		VIKING
		3	Repro - Ålborg		VIKING	Repro - Ålborg		VIKING
		4						
		5						
15	April	8				Planlagt skype-vejledermøde á 1 time: Hold 1-2-3 fra kl. 13-16		DB
		9	Kommunikation, principper og redskaber	følger	SB	Kommunikation, principper og redskaber	følger	SB
		10	Kommunikation, principper og redskaber	følger	SB	Kommunikation, principper og redskaber	følger	SB
		11	STAT/EPI-DAG 10-16	følger	MOK/DB	STAT/EPI-DAG 10-16	følger	MOK/DB
		12	Yversundhed-Workshop 12-18	Kirke Hyll	MIFA	Yversundhed-Workshop 12-18	Kirke Hyllinge	MIFA
16	April	15						
		16						
		17						
		18	Skærtorsdag					
		19	Langfredag					
17	April	22	2. påskedag					
		23	DEL B					
		24	DEL B					
		25	DEL B					
		26	DEL B					
18	April	29	DEL B					
	Maj	30	DEL B					
		1	DEL B					
		2	DEL B					
		3	DEL B					
19	Maj	6	DEL B					
		7	DEL B					
		8	DEL B					
		9	DEL B					
		10	DEL B					
20	Maj	13	DEL B					
		14	DEL B					
		15	*Mastitis-konference - info følger	DGI byen		*Mastitis-konference - info følger		
		16	*Mastitis-konference - info følger	DGI byen		*Mastitis-konference - info følger		
		17	Kr.bededag					
21	Maj	20	STAT/EPI-DAG 10-16	følger	MOK/DB	STAT/EPI-DAG 10-16	følger	MOK/DB
		21	ETIK-workshop 9-12		PS/DB	Planlagt vejledermøde: Hold 2:kl.13-14 Hold 3 kl. 15.16	Kontor G2, 2.sal	DB
		22	Planlagt vejledermøde: HOLD 1 - kl. 10-11	Kontor G2, 2.sal				
		23						
		24						
22	Maj	27						

B Results: Mapping the Cattle track – course mapping according to study activities and learning styles

Appendix B: Course mapping – Cattle track; ILOs > study activities

Cattle track	ILO *(2019)	Teaching activities; evaluate according to activity; see, hear, read, write, say, do									
	Description – according to course	Assumed prior knowledge*	Lecture; Introductions, congres participation	Workshops; Mastitis Feeding, Etics, Economy Communication	Herdvisit; 3-5 on herd location	Article, written material selected by teacher	Selfstudy; group or alone	Report; group	Farmers seminar; group	External apprenticeship; alone including written assignment	Proposed changes to teaching 2020+; make all farmers seminars compulsary for all students
Knowledge	Milk production	some	Hear		Do – to some degree	Read	Read	Write		See, Hear	Introduce selected basic core literature
	Cattle health	X	Hear	See, hear (metabolism, mastitis)	Do	Read	Read	Write		See, Do	
	Cattle welfare	X	Hear	Do (claws)	Do		Read	Write		See, Do	
	Cattle reproduction	X	Hear	See, hear, Do		Read	Read	Write		Do?	
	Biosecurity	some			Do		Read	Write			
	Epidemiology and basic statistics (extra external supervision)	X	See, hear	Do		Read	Do	Write			
	Herd management (farmers task)	some		See, hear (feeding)	See		Read	Write		See	Propose stay at farms for apprenticeship for inexperienced students
	Legislation – vet/medicine	X			See		Read	Write		Write	
	Legislation – herd/farm	X			See		Read	Write			
	Advisory function			See, hear (communication)	Do			Do	Do, say	Se, Hear	
	Public control programs	X – prior in attached course									
	Scientific literature – quantitative + qualitative research		See, hear				Read	Read			Minor assessment or student seminars could reinforce this theme
	Economy (extra external supervision)	some		Do (Economy-simulation)		Read	Do, Read	Write			Only work explicitly with one strategy during teaching, but read and write on other strategies

Appendix B: Course mapping – Cattle track; ILOs > study activities

	Communication/teaching theory; argumentation structure			Do	Do, Say				Say, Do		Argument structure has not been included – must be included or excluded from curriculum
	Etics		See, hear					Write		Write	
Skills	Planning own learning		Hear				Do				Task is implicit in didactical contract; increased emphasis and better introduction. And imbedded use of self-evaluation schemes
	Project planning				Do		Do	Do			Disposition of analysis - inspiration or clarification needed
	Seek academic literature	X – from bachelor					Do	Do			
	Evaluate literature						Do	Do			Increased emphasis including qualitative research methodology.
	Conduct a study in herd context				Do		Do	Do			
	Describe complex problems				Do			Write	Do		
	Formulate interventions							Write	Do		
	Communicate to farmers – written and orally								Say, Do		
	Communicate to peers – written and orally			Say, Do			Do - but only within group	Do	(Do - vet not primary aim here)		Lack of training in supervised setting; Student seminar introduction in cattle track or feedback on other group reports
Competences	'Become a proactice herd veterinarian'; as in develop, propose and evaluate scientifically based herd interventions										2019; all 11 students passed. Lowest grade 4 – two students grade 12.

											No mention of word 'analyze' in ILO 2019. Could be included.

*For ILO in detail see course description – link in references.

C Self -evaluation scheme – blank

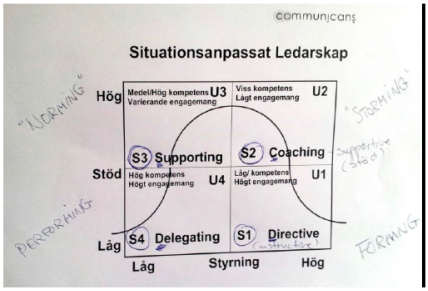
LØBENDE (SELV) EVALUERING - SVEK13114U-Besætningssundhed, DBL/IL2019
Skemaet er baseret på principperne om situationsbestemt (selv)ledelse, som blev introduceret under første del af kommunikationskurset med Sigge Birkenfalk.

Skemaet på side 2 udfyldes individuelt af den studerende med navn og gruppe før alle de tre planlagte vejleder-møder (kvæg), uanset at møderne afholdes gruppevis.

Hver studerende udfylder skemaet med baggrund i deres personlige opfattelse af processens forløb. Gruppemedlemmer er derfor ikke nødvendigvis enige, hvilket heller ikke er målet før ultimo maj.

Skemaet sendes til vejleder én arbejdsdag før mødet per mail.

Figuren nedenfor skitserer de overordnede principper (på svensk)



NAVN: GRUPPE: Opgave/mål (overordnede emner - stikord)	Engagement Lav/Høj	Kompetence. Lav/Høj	Udviklingstrin U1-U2-U3-U4	Ledelsesbehov fra vejleder Di, C, S, De	Indsats - hvad, hvem, hvordan, ... Særligt vigtigt ved U1 og U2!
Organisation/planlægning af:					
Gruppearbejde					
Besætningsbesøg 1-6 (2)					
Rapport skitse (fase 1-2-3)					
Kilder/referencer					
Landmandsseminar					
Konkret praktisk og teoretisk fagligt arbejde med de 7 temaer					
Evidens					
- Brug af databaser					
- Læsning og tolkning af videnskabelige artikler					
- Læsning og tolkning af andre publikationer					
- Viden og tolkning af videnskabelig metode (kvan + kval)					
- Vidne om begrebet 'Evidensbaseret rådgivning'					
Sygdomsdiagnostik					
- Egne kliniske observationer (velfærd, sundhed, prod)					
- Egne kliniske data/indsamling					
- Data fra DMS/Database					
- Sygdomsmonitorering					
- Hypotese/Analyse/tolkning					
Medicinanvendelse					
- Vetstat					
- Besætningsdiagnoser					
- Lovgivning					
Kvantitative analyser					

- Univariable analyserM X2 + t-test					
- Multivariable analyser; lin + log					
Sundhedsøkonomi					
- Simple beregninger					
- Simherd					
Kommunikation og samarbejde					
- Interview landmand					
- Interview dyrlæge					
- Sammenfatning i henhold til *kommunkationsbegreber'.					
Veterinær indsats i besætningen					
- Rådgivningsprogrammer og lovkrav					
- Praktisk arbejde og rådgivning i besætningen					
- Kvartalsrapporter					
- Organisation af dyrlægepraksis					
Forståelse af:					
Kursusmål jf. kursusbeskrivelse					
Spilleregler jf .dokument					
Vurderingskriterier ved eksamen – kommer i april/maj					

Kompetence (def. i dette kursus): "Evnen til at kunne bruge sin viden og sine færdigheder i praksis og i forhold til aktuelle udfordringer"

Hvilket niveau af kompetence? "Evnen til at bringe færdigheder og basal viden i anvendelse til at udføre besætningsdyrlægefunktioner på et niveau, der matcher de aktuelle krav i professionelt arbejdende dyrlægepraksis".

Andre forhold du eller gruppen ønsker belyst eller vejledt omkring: