Activation of veterinary students during field- and classroom teaching

Line Svennesen

Department of Veterinary and Animal Sciences
University of Copenhagen

Motivation and justification

Course context

My primary teaching is within udder health in dairy cattle. I teach parts of the « cattle week » in the course "Practical Herd Health Management and Meat Inspection". It is a mandatory 7.5 ECTS course for veterinary master students https://kurser.ku.dk/course/svek13006u. The cattle week is similar to the « pig week » described by Nielsen et al., (2015). Attending is 25-45 students per course. The goal of the cattle week is that students gain knowledge, skills and competencies to fulfill the requirements of a cattle veterinarian with farm consultancy. This is assessed by an oral exam.

Practically, the cattle week consists of 3 days of excursion (field trip) and 2 days on campus with group work and lectures. It is mandatory for the students to be present at 4 out of 5 days. Udder health is a central topic, and traditionally there are sessions on udder health every day of the excursion. These sessions are mainly monologue based with the students listening and watching. The campus days normally includes a 1-hour lecture on udder health. Also, other topics are covered in a more lecture-like form, but most of the time on campus is for the students to work on group reports, which are the product of the week and the foundation for the oral exam. The students are divided into 12 groups of 2-4 students beforehand. We use those groups during the whole week. The topics and questions for each of the 12 group reports are fixed, and out of the 12 groups, 3 has to cover udder health in their reports.

Challenges

I mainly teach in the field, which is a unique chance to increase the learning through using all senses, through activity and by allowing students to experience (Grindsted et al., 2013). However, I have found it difficult always to engage and activate students. Sometimes, I feel like being a tour-guide (monologue), and thereby we do not take advantage of the field trip potential. Furthermore, the interaction with larger groups of students in noisy surroundings on farm is difficult, also mentioned by Nielsen (2015).

Decreasing the level of monologue, by making activities with a lot of sheets to fill for the students, can have the downside that the focus is transferred to filling the sheets, not the purpose of the activity, also discussed by Augustian et al., (2022) as the cookbook approach.

I am aware that just doing traditional lectures in a farm is not an activation that serves the purpose of understanding things in their context, but I find that choosing the right activities for the learning goals of a 20 minutes teaching session is a challenge. Students have emphasized in course evaluations that especially during the cold months, they do not want to be lectured on farms. Related to costs and time of field visits this has a rationale, even though the meaning of the students may be affected by other circumstances, like discomfort and tiredness during the field visits.

A second important aspect is to make activities that serve a purpose and can be validated and institutionalized (TDS model, https://obl.ku.dk/theme/tds-model/). Higher taxonomy levels may be reached if we do follow-up on activities from the field visit. Likewise, working on own data may motivate students during classroom exercises.

A third challenge is that the constructive alignment (Biggs, 1996) between teaching and learning activities (TLA) and the assessment (oral exam) could be increased. The oral exam is well suited for the case based teaching and supports that it is relevant for a veterinarian to be able to explain complex topics. However, in relation to the risk of students getting very nervous for the oral exam, and because it is quite unusual to have oral exams in the veterinary study, I find it could improve the

alignment between the TLAs and the exam if an activity on presentation was introduced.

Therefore, the question to be answered with this project is; How to plan and conduct teaching in udder health - with high activation and constructive alignment in the field as well as the classroom?

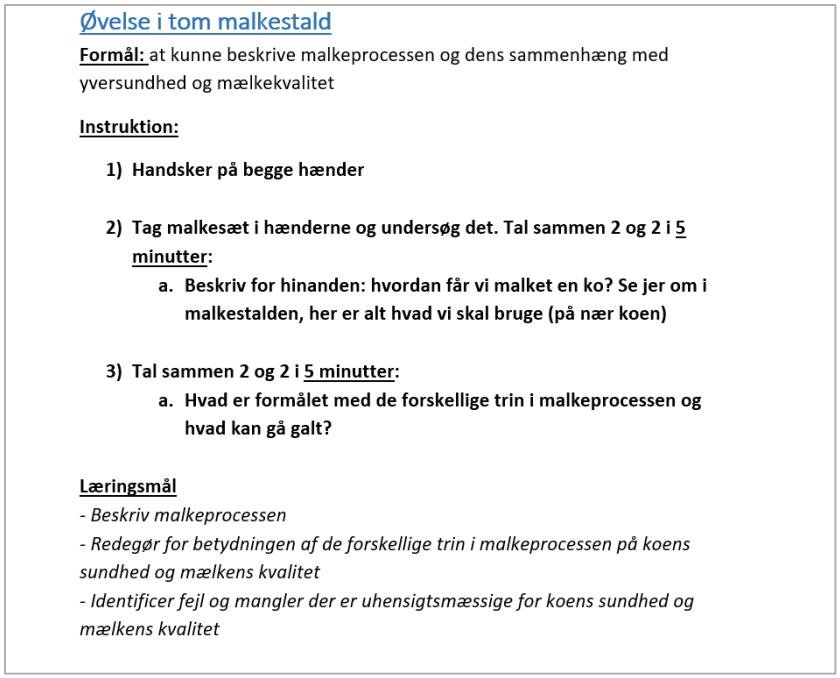
Interventions in field- and classroom teaching

The goal was to increase learning about udder health through 3 different interventions in teaching;

1) Increase activity in farm visit to increase the use of senses and the experience during field visit (make sure it is not something we could have done in classroom).
2) Catch up on activity from farm visit to increase taxonomy level (SOLO: multistructural and relational) and to detect if some topics are not understood by the students. Validation and institutionalization.
3) Practice oral presentation to increase constructive alignment between TLAs and the assessment (oral exam).

The intervention

The intervention was carried out in the autumn of 2023. For the field visit I planned two 20 minutes teaching sessions in the milking parlor of a cattle farm. The students were rotating in 4 teams (3 groups in each team), meaning that I should teach 8-10 students times 4. The first session was in the empty parlor, and the second session was with cows and milking personnel present in a daily milking situation. The instructions and the intended learning outcomes (ILO) for the first session are shown in Figure 1.



Øvelse i tom malkestald

Formål: at kunne beskrive malkeprocessen og dens sammenhæng med yversundhed og mælkekvalitet

Instruktion:

1) **Handsker på begge hænder**

2) **Tag malkesæt i hænderne og undersøg det. Tal sammen 2 og 2 i 5 minutter:**
   a. **Beskriv for hinanden: hvordan får vi malket en ko? Se jer om i malkestalden, her er alt hvad vi skal bruge (på nær koen)**

3) **Tal sammen 2 og 2 i 5 minutter:**
   a. **Hvad er formålet med de forskellige trin i malkeprocessen og hvad kan gå galt?**

Læringsmål

- Beskriv malkeprocessen
- Redegør for betydningen af de forskellige trin i malkeprocessen på koens sundhed og mælkens kvalitet
- Identificer fejl og mangler der er uhensigtsmæssige for koens sundhed og mælkens kvalitet

Fig. 1. Instructions and ILOs for the first field session

For the second part (active milking) I planned a relatively simple data collection. I divided data collection into 3 tasks/sheets that were rotating between the 3 groups of students in each team. The 3 tasks were introduced to the whole team before entering the barn, because it is difficult to talk with a larger group of students when the milking is going on (noise, space). I presented the data collection with the goal that the students should use data later, to assess udder health in the farm and report to the farmer (real veterinary purpose).

For the classroom teaching, I planned a session of 1 hour. The first activity was for the students to create a modified concept map (White & Gunstone, 1992). I asked the students (working in their 12 groups) to write single concepts on post-its. After 5 minutes, I asked each group to create a map and draw how concepts were related to each other. This should serve to structure the complex topic “udder health”. As this was partly just a warm-up, I did not ask the students to describe relations between concepts (typically part of a concept map). After another 5 minutes, each group presented their map to another group. This was intended a direct training for the exam.

The second classroom activity was case-based. The students were still working in their 12 groups, but on 3 different datasets, which I

provided in print. All data were related to udder health on the farm, but split into 3 parts to limit the number of pages each group had to consider. One of the data-parts was the data collected by the students on farm earlier that week, but in a summarized version (I did the counting of the registrations made by the students). The groups had 15 min to understand and analyze the data and then we did a plenum session to summarize results from all groups. We ended up with advice on udder health to the farmer, which I reported back to the farmer after the teaching.

The ILOs of the data collection and the classroom session are listed in Figure 2.

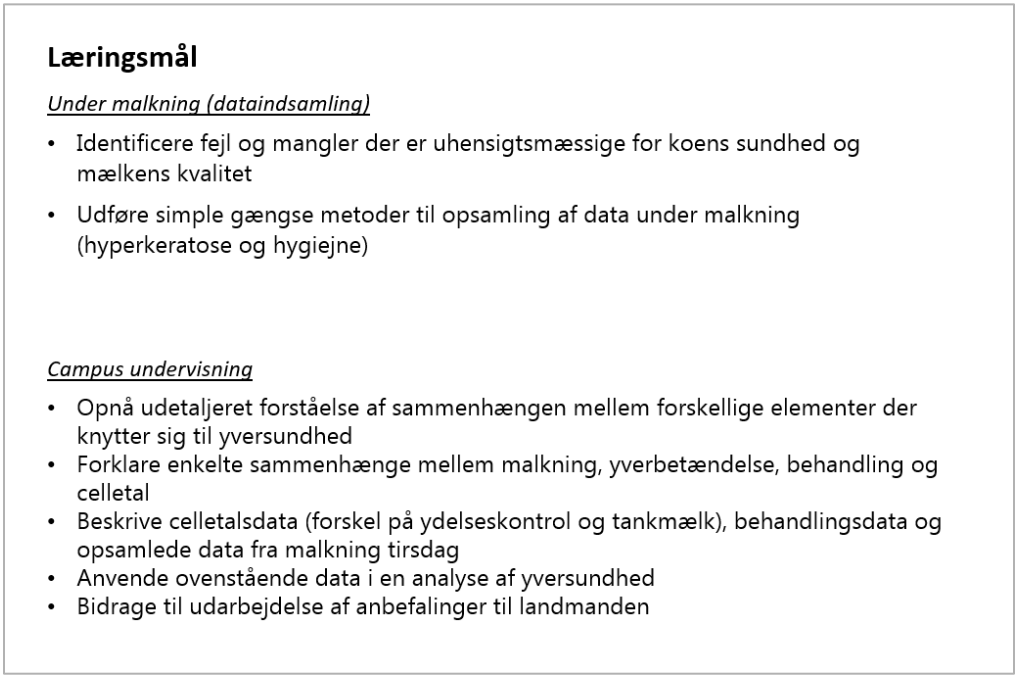


Fig. 2. ILOs of the second session of the field teaching, and the classroom teaching

Feedback

A success would be if the students were active and talking about udder health during the field- and classroom teaching. This was evaluated through my own observations as well as observations from my two UP supervisors.

To assess if the students achieved the ILOs, observations from the teaching as well as the oral exam were used. The learning experience

from the field was indirectly evaluated during the classroom teaching, based on the concept maps and the students' case analyses.

Last, after the classroom teaching, I asked the students to provide feedback on "How can I make my teaching better?" in mentimeter.com.

Results

Activation in the field

The activation of the students definitely increased compared to previous monologue teaching, and several senses (visual, auditory, tactile, and olfactory) were activated in the field, and furthermore during the work with post-its and prints of data in the classroom.

By making the students answering each other questions, they were even more active and trained the oral presentation.

I experienced that it was not natural to all students just to grab milking machines or touch the cows. My supervisors also observed this. I therefore tried to do things together with the students and it appeared to work, either because the instruction was then watched and not only told, or because it felt more safe to follow what I did.

During the data collection, the activity was high. My supervisors observed that the energy from the milking personnel working was "transferred" to the students' speed. The students had to be fast, otherwise cows left and it was not possible to do the observations. I think, because the students were tired and filled up with impressions, it was fun and kind of liberating to focus on data collection (skills and lower taxonomy level) and work with high speed for 20 min.

Understanding content and context

I was happy to see the concept maps. The students included a lot of factors and showed how complex the topic is. The udder health concept appeared well understood when questioned at the exam.

The analysis of the case afforded critical questions to data quality and legislation, showing that the students' critical thinking was activated.

Some of the case data was hard to understand, but I think it was beneficial to the whole group that something had to be asked and discussed in plenum. To be explained through their data examples.

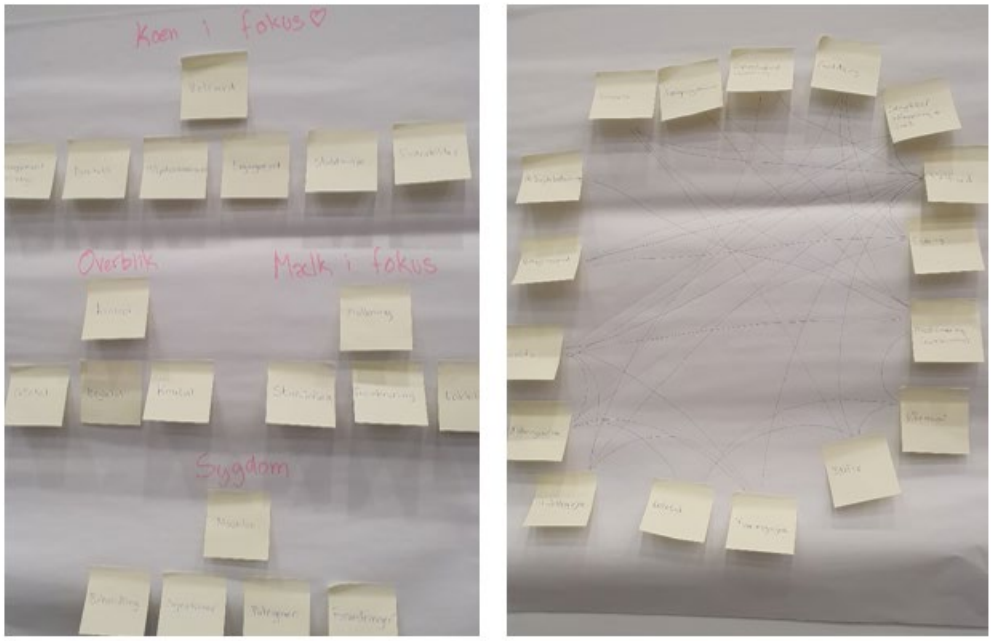


Fig. 2. Example of two different "concept maps" on udder health

Practicing for oral exam

Students were active, both listening and talking during presentations in small groups (observed).

For the plenum session of the case, I have to work on activation of the groups that are not presenting their part, and the time was too short to round of. This was also mentioned in the students' evaluations (Figure 2). I find this part important, not only because it is the institutionalization, but also because it provides some meaningfulness to the work of the students when they are actually making the suggestions for the farmer to increase udder health.

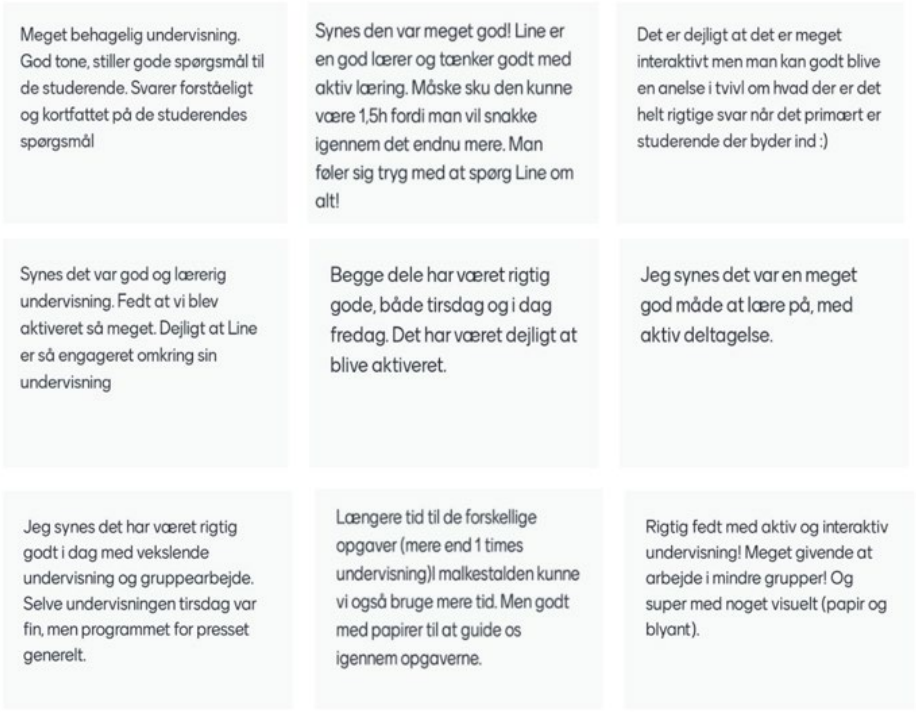


Fig. 2. Example of evaluations from the students after classroom teaching

Reflection and perspective

The students appeared to be happy with the active teaching format, even though it is not discipline learning. The reason may be the positive effect of the safe learning environment. Three days of excursion (freezing together and using different senses) may result in a student-teacher and student-student relation important for the output of the activities.

In general the principles of active learning came into play in the sense that the students should work actively on a topic to accommodate new knowledge (Biggs, 2014). However, the feedback from the students was not going that deep. Only about half of the students responded to the question in mentimeter.com, and about 10% were asked about udder health at the exam.

In the future, I will continue to work on the active learning methods and increase focus on the didactical contract and instructions. In example, I experienced that even though I did a short introduction to the

data collection before we entered the milking parlor, the groups often needed individual instruction every time they switched to a new exercise.

Regarding time, I changed a bit for the following block. I extended the classroom session to 1½ hour to increase time for catching up on the case. We also got more into depth with data and analysis, but still it felt like more time could be spend. I think though, that 1½ hour is the maximum of time we should use, so I need to structure how to validate and institutionalize.

Discussion of the project with the cattle week responsible resulted in considerations about feedback formats, the use of different senses during field visits and discussion of level of abstraction for different teaching formats (taxonomy).

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