

## VETERINARY SKILLSLAB GHENT UNIVERSITY

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# FLIPPING THE CLASSROOM: DOES IT WORK FOR THE SKILLS LABORATORY?

### Flipping the classroom

- Students gain basic knowledge outside of class
- Followed by active learning in class

### Skills laboratory at Ghent University

Teaching clinical skills on simulators was recently incorporated in the curriculum in a new compulsory course. The course 'Clinical and communicative skills' is spread over four years of training, from the second bachelor to the second master year. Dummy models and simulators are used for teaching various clinical skills, starting with basic skills such as animal handling, and progressing over the years to more complex procedures such as intubation or neutering. Due to the large number of students, time for supervised skills laboratory practise is limited. Therefore, the flipped classroom model was used to maximise an active learning experience.

### Methodology

Starting in October 2016, students of the second master year (fifth year) followed the course based on the flipped classroom model.

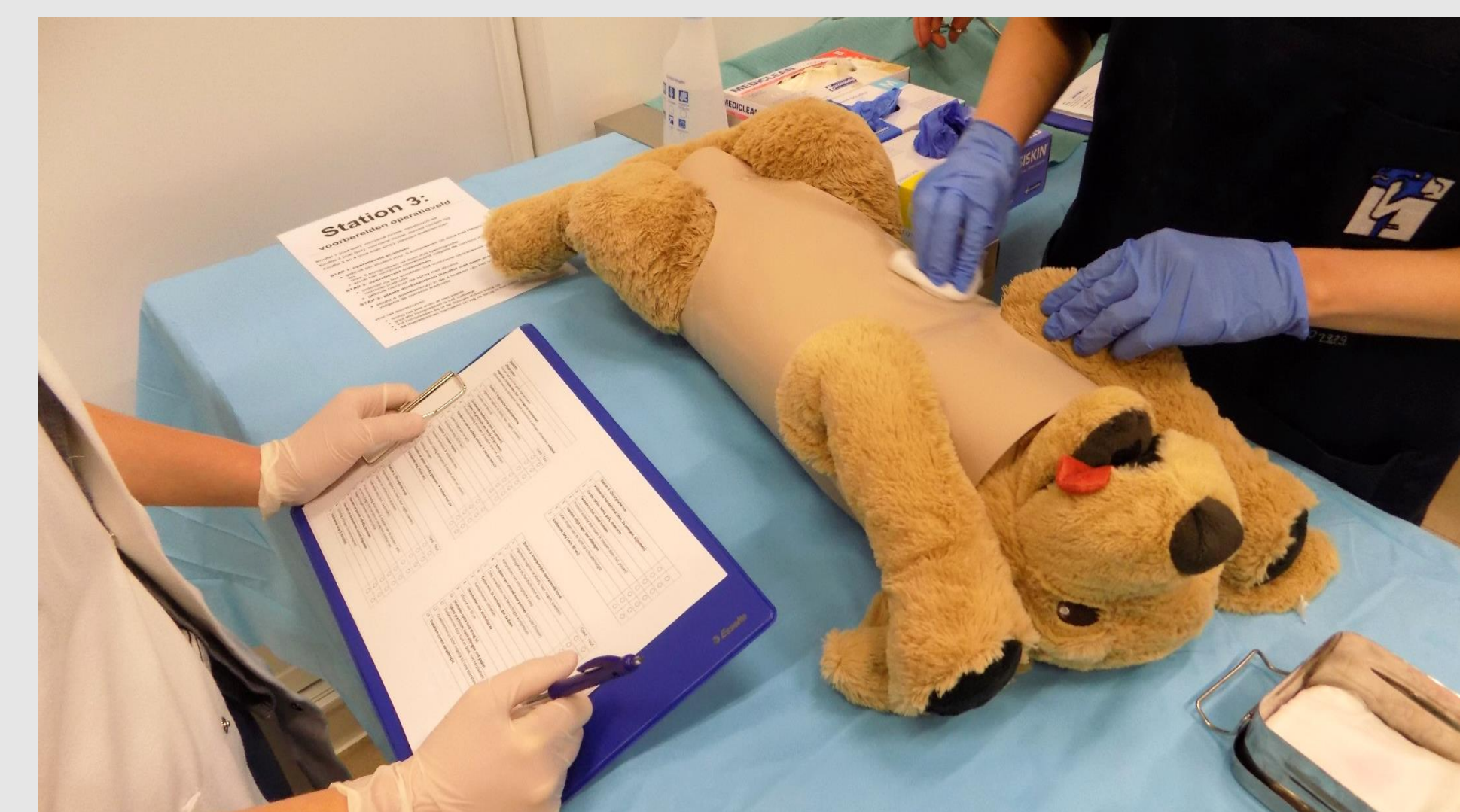
Nine online 'learning paths' and associated practical learning sessions were developed:

1. Surgical preparation and asepsis
2. Suturing and tying knots
3. Injections
4. Anesthesia
5. Bovine obstetrics
6. Examination of the bovine reproductive tract
7. Examination of the equine reproductive tract
8. Cytology and biopsy of the equine uterus
9. Semen handling and insemination

Prior to the 1 to 2 hour practical sessions, students were required to study the online 'learning paths', consisting of text, pictures, video clips, links to interesting background information, a forum for questions and a pre-class test.

The compulsory pre-class test could be repeated as many times as the students wanted to, but a minimum score of 75% was required for admission to the practical session. The time spent viewing the online learning path and the results of the test could be viewed by the instructors. The goal was to acquire conceptualisation and visualisation of the clinical skills.

During the practical session in the skills laboratory, the students did not receive additional explanation about the skills, but started to practice the skills immediately. They worked in pairs, taking turns with one student performing the skill and the other giving feedback using a checklist. A tutor was present throughout the practical session to provide additional feedback and to answer questions.

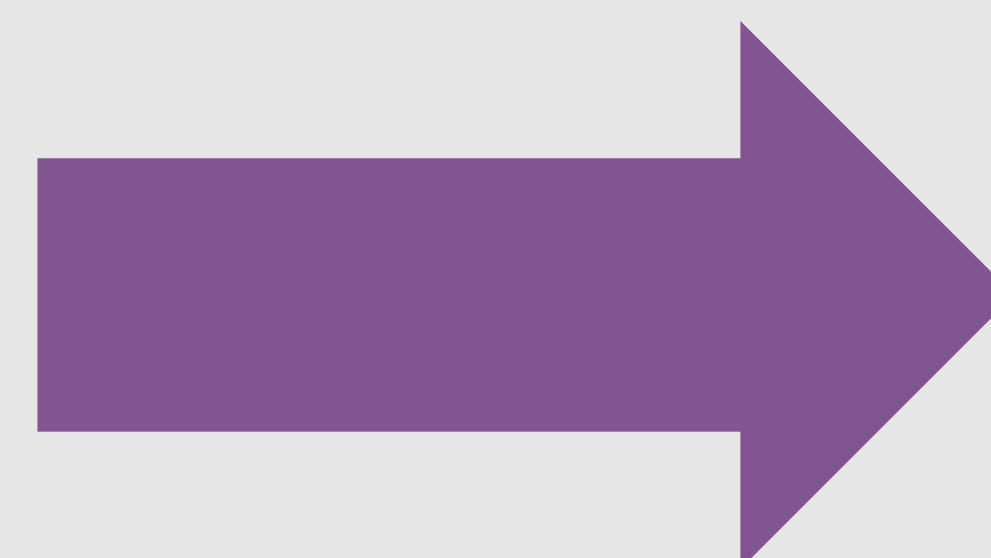


In the skills laboratory:  
active skills learning + peer feedback



### Preparation: 'learning paths' online + pre-class test

The screenshot shows the MINERVA interface with a checklist for 'Chirurgische rub' (Surgical scrub) and a video demonstrating the correct technique. The checklist includes items like 'Inleiding', 'Basisprincipes hygiëne', 'Steriele handschoenen (open)', 'Preoperatieve handhygiëne', 'Aantrekken chirurgische kiel en steriele handschoenen (gesloten)', 'Voorbereiden operatieveld', 'Chirurgisch instrumentarium', 'Forum', 'Inhoud practicum', and 'Zelftoets'. The video shows a person in green scrubs and a cap performing hand hygiene at a sink.



### Results

All students (n=292) had to follow the session on surgical preparation and asepsis. The learning path was viewed by 287/292 students prior to the practical, for 38±24 minutes (range 2-134 minutes). However, some students reported more time spent on preparation than recorded, using a printout of the text. The test score of ≥75% was attained by 290/292 students, with a median of 2 attempts (range 1-16).

Subjective instructor feedback indicated that students were well-prepared. Informal student feedback indicated the need for additional live demonstrations, especially for complex skills.

### Conclusion

The flipped classroom model can work in the skillslab. Future improvements to the learning paths could be:

- including slow step-by-step demonstration of the skill with narration in the videos
- stimulating narration of the steps by the student, by including this into the test.

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