

Basic Clinical Skills - E-learning in the Veterinary Curriculum

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1. EXECUTIVE SUMMARY

Information and Communication Technology (ICT) in the form of on-line teaching, face-to-face video-cases and video-performances has recently been applied in the veterinary curriculum at the University of Copenhagen. By using ICT in teaching of Basic Clinical Skills, we have managed to overcome many of the obstacles seen previously and learning has not only been enhanced, but has also become much more fun according to the students.

Background and description

At the Department of Small Animal Clinical Sciences, Basic Clinical Skills are taught in small groups in the seventh semester. Until recently the course has been dominated by teaching of concepts and theories by means of lectures and books. The method was time consuming - eating away valuable hand-on time and was relatively dull for students and teachers alike. Since 2006/07 a new method of teaching Basic Clinical Skills has been implemented at the department. By using e-learning, video-cases and video-performances the students are now presented with all the theoretical topics on-line. From their home computers they are guided through the theory by use of narrated Power Point presentations and via videos they can observe how to perform the different skills. The narrated video-demonstrations show them, step by step, how to perform the individual clinical or surgical procedure. Consequently, the students now turn up in class well prepared and ready to practise their newly acquired knowledge.

By placing all the theoretical lectures on-line we can now spend the entire length of the course practising hands-on procedures. In class, students work with in house dogs and cats, with stuffed toy animals, with cadavers and with research pigs. During the course the students are also shown video-cases, presenting them with clinical cases that they would otherwise have little chance of ever observing. Additionally, videos illustrating the problems of Client Communication are shown and discussed in the classroom. Finally, during the performances of surgical skills, the students are filmed, so that they can watch themselves on-line the following day.

Conclusions

The implementation of e-learning at the Department of Small Animal Clinical Sciences has resulted in a considerable improvement in the students performances in Basic Clinical Skills. The time saved by placing the theoretical lectures on-line has not only given us maximum hands-on time, it has also given us an opportunity to deal with subjects that were previously neglected because of the limited amount of time available. Finally, the possibility for the students to be able to *watch* how to perform a skill - repeatedly, if necessary, is a very welcome improvement to the curriculum.

2. INNOVATION

At the Department of Small Animal Clinical Sciences, University of Copenhagen, Basic Clinical Skills are taught in small groups in the seventh semester out of eleven. Five groups attend each semester.

The course is divided into two parts: A surgical course which runs for eight days and a physical examination course, which runs for twelve days.

Until recently the setup of these courses has been the traditional one of endless theoretical lectures repeated several times during the semester. This method was time consuming - eating away valuable hands-on time and it was relatively dull for students and teachers alike.

In September 2006 and 2007 new methods of teaching these subjects were implemented, by making use of e-learning, video-cases and video-performances.

The combination of text, sound and video makes it much easier to present subjects that are both theoretical and practical, such as Basic Clinical Skills.

Being able to observe - repeatedly - how to perform the actual clinical and surgical procedures prior to performing them in class, makes it much easier for the students to understand and remember the individual tasks.

With the implementation of our new e-learning system, the entire Basic Clinical Skills course (eight + twelve days) can now be spent on *practicing* the skills, as the students are now presented with the theory on-line, before coming to class.

3. PEDAGOGY

In the beginning of the semester, before the lectures start, the students receive an e-mail with log-on information and information on what to prepare for day one.

From their home computer, they log on to the e-learning platform:

<https://absalon.ku.dk>

Here they will find the two courses, Basic Surgical Skills (BSS) and The Physical Examination Skills (PES).

Both courses consist of a line of chapters concerning a variety of surgical or clinical subjects.

Each subject is presented in narrated PowerPoint presentations and narrated videos.

Physical Examination Skills (PES)



In the PES course, each chapter corresponds to a certain organ or organ-system and describes and show *why* and *how* to perform a full clinical examination of that organ, step by step. The students prepare a new chapter (organ) every day and on the following day show up in class well prepared to perform the clinical examination on our in-house dogs and cats.

After spending approximately 1 ½ - 2 hours practicing on these animals and recording their findings, the students go to our video-room, where a number of video-screens are lined up. In small groups the students now watch different video-cases concerning the organ-system in question. They discuss their findings and present them in class.

By watching these videos, the students get a chance to see relevant cases. This is an opportunity that was previously impossible to offer, as we were always dependant on what kind of patients were hospitalized at the given time.

The time saved by not having to give long theoretical lectures has not only given us maximum time for hands-on, it has also given us time to work with a subject that has previously been neglected: Client Communication and the Taking of History.

The final chapter in the PES e-learning course describes and illustrates this subject. To illustrate client diversity and to get a chance to discuss problems and pitfalls during the taking of history, we show the students a line of videos of different situations from practice. Some cases are made with actors, some with real clients. Each case is discussed: we talk about mistakes made, problems you might face, ethical matters, economy, empathy, etc. etc.

We end up with a session of live role play - the students acting as veterinarians and the teachers acting as clients. We all have a lot of fun during these sessions!

Basic Surgical Skills (BBS)

The BSS course consists of a line of chapters concerning basic surgical principles and techniques - for instance haemostasis, asepsis and suture technique, as well as certain surgical procedures.

The students prepare a number of chapters before day one. Now, when they show up in class they are well prepared and have all the theoretical background they need to practice the skills they have been taught on-line.



The first two days this practice takes place in our Skills Lab - a laboratory where all the procedures are performed on models: Stuffed toy dogs and cats! On the third day of the course the students advance a step and are now allowed to practice on cadavers donated to the department.

So during the first part of the BSS course, the students become sufficiently educated to be allowed to do surgery on live research pigs.

It is adamant to the department, that these pigs are utilised in a proper way. It is our duty to ensure that the students are optimally prepared and educated before being allowed to perform the surgical procedures on live animals. It seems that the on-line teaching in combination with the Skills Lab makes this optimal preparation possible. Not only can the

students go back and repeat all the basic surgical skills (both on-line and in the Skills Lab) before going to the operating room, they are also presented (via narrated videos and PowerPoints) with all the surgical procedures that they are asked to perform on the pigs. Finally, while doing surgery on the pigs, the performances of the students are filmed on video so that they can watch themselves on-line the following day. This not only helps them identify their own mistakes, we also believe that it is mentally important for them to see and identify themselves as 'surgeons'. Only the students filmed have access to these personal videos.

By using e-learning and video-showing in PES and BSS as described, we have succeeded in presenting the skills and educational topics in a variety of ways. Thus the students access the subjects both by reading, listening and watching. This is of course combined with 'doing' when they turn up in classes and practice the skills.

Our objective has been that the more approaches you have to a subject, the greater the chance of the students 'getting the point' and the better the chance of the students not getting bored!

We believe that being able to watch how to perform a clinical skill - a physical examination or a surgical procedure - in stead of just looking at pictures and reading a text, makes it much easier for the students to understand and envision what they have to do. And being able to practice the presented skills the following day, gives the students the best fundament to learn from.

Finally, the fact that the students can watch the presentations at home, at their own chosen time and pace and that they can go back and forth and repeat as often as they wish, greatly improves the chances of learning and remembering.

4. TECHNOLOGY

The system used for the students to log on is:

<https://absalon.ku.dk>

This is the e-learning platform at University of Copenhagen, a version of the Norwegian it's learning LMS software. Responsible for this part of the project is IT Learning Center, LIFE. For making the narrated Power Point Presentations, Adobe Presenter was used.

The videos were filmed, edited (Pinnacle) and narrated at the Department of Small Animal Clinical Sciences, LIFE. The recorded videos were encoded to flash video (On2 VP6) and uploaded to the e-learning platform together with a flash video player at the IT Learning Center.

Mutiple choice tests was made on the e-learning platform.

5. USEFULLNESS AND BENEFITS

The new way of teaching Basic Clinical Skills at the Department of Small Animal Clinical Sciences by using e-learning and video-technique has proved to be very useful for teachers and students alike.

First of all the system is very user friendly, easy to work with and to understand for both parties.

From a teacher point of view the system is a great step forward for several reasons: It's a great relief not having to give the same theoretical lecture over and over again - no matter how enthusiastic a teacher, it does end up becoming relatively dull! Instead the teachers can now spend their time *working with* the students and following each individual closely. The time that was previously spent on giving lectures is now available for practical sessions. So now teachers can make sure, that the students are both theoretically and practically prepared for performing the clinical skills (surgery and physical examination) on live animals.

Finally it's a great help for everybody that the teaching material is there once and for all. It's uniform and all the students have access to the same resources. They are no longer dependent on which teacher is teaching on one particular day.

The results seen after implementing the new e-learning courses confirms that the performances of the students have improved considerably.

In PES they are much more confident when handling and examining our in-house dogs and cats, they have a greater understanding of why they have to do the examinations in a certain way and their medical records and use of descriptive terms have improved markedly. What is even more encouraging that it seems as if the students do also show a better performance later on in the curriculum, when they have to implement their new knowledge in the clinics.

In BSS the students are considerably more confident when performing the surgical procedures on the research pigs at the end of the course. They are not nearly as nervous as before, they make less technical mistakes and they finish their procedures even before time is up. In the surgical field, we see the same tendency as with PES: Later in the curriculum, when the students enter the hospital's operating room, both their performances and their confidence have improved compared to when they were taught the 'old way'.

From the student's point of view the evaluation has been extremely positive. Not only were the students thrilled to have so much more time to practice, they mentioned in particular, that the on-line teaching was a great asset.

The most common notes were that it was extremely helpful to be able to:

- Prepare at own chosen time, place and pace
- Repeat the lectures
- Repeat the video-demonstrations
- Listen to the presentations without having to watch (...do the dishes at the same time!)
- Watch how to perform surgical procedures instead of just looking at a drawing (BSS)
- Watch how to perform the clinical examination and handling of the patients (PES)
- Watch clinical cases on video (PES)
- Work with the subject 'Client communication' (PES)

During the evaluation of the BSS course, students were presented with a line of questions, one of which was to grade the e-learning part of the course:

Very bad	0 %
Bad	0 %
Satisfactory	0 %
Good	24 %
Very good	76 %

These student's comments might be the best way to summarize the impressions of the new Clinical Skills courses at Faculty of LIFE, University of Copenhagen:

"One of the best courses so far - if not the best. I gained so much and I still remember everything I was taught."

"I think it was an amazing course. E-learning was great because you could do it at your own speed and without the annoyance of a noisy auditorium"

"This course was fabulous, with all the resources you've used. One could follow a red line throughout the course. A very professional and creative course."

"The best course in the curriculum!"

6. THE FUTURE

As a result of the positive outcome of applying e-learning to the Basic Clinical Skills course, the creators are in the process of developing similar material for other courses at the Department of Small Animal Clinical Sciences.



ACCESS:

<https://absalon.ku.dk>

Site: KU

User name: eunis

Password: 1+3Four

You will enter 'Courses' and find the two courses: Basic Surgical Skills (in English) and Klinisk Undersøgelsesmetodik - KUM (in Danish)