

## 7 Summary

### **Development of a multimedia-based interactive eLearning programme combined with the conception of online tests as a supplement to the optional course “Laboratory diagnostics for viral infections in horses” in a context of blended learning.**

The aim of this doctoral thesis was to supplement the traditional optional compulsory course “Laboratory diagnostics for viral infections in horses” with eLearning components in a context of blended learning. Blended learning is a form of eLearning which combines training sessions with compulsory attendance and computer-aided, internet-based learning. The work consisted of four essential parts:

- 1.) development of the eLearning programme with prior determination of requirements,
- 2.) development of online tests,
- 3.) optimization of a laboratory diagnostic test, and
- 4.) subjective evaluation of the eLearning programme in a participant survey.

First of all, requirements were determined in a questionnaire during an optional compulsory course offered in traditional form in the winter semester of 2005. The results of the survey provided important insights concerning the expectations and demands made on eLearning programmes by the course participants. These findings were considered to a large extent in the conception of the eLearning programme.

After eliciting the available technical resources – it was considered to use either html or an authoring tool (software) – the knowledge of how to use suitable authoring software was acquired during a one-week workshop organized at the Center for Digital Systems (CeDiS). After the workshop, the decision was made to use the Trivantis software “Lectora International Publishing Suite” for the compilation of the eLearning programme. A user licence for “Lectora” was inexpensively acquired by the Central Facility for Computing Services (ZEDAT) of the Freie Universität Berlin.

Lectora allows the compilation of eLearning materials even without profound html knowledge. Updates can be performed with little effort within the eLearning programme.

The eLearning programme imparts knowledge about virus families which may be involved in respiratory diseases of horses, necessary for the practical part of the optional compulsory course. Thus it allows the differential diagnostic investigation and/or exclusion of possible viral pathogens.

With “Lectora” all intended functionalities and a multimedia-based appealing design were implemented as requested. The eLearning programme is furthermore easy to use. It contains many interactive pages presenting questions. After these are answered, feedbacks with the correct answers are shown so that the users can already assess their individual learning outcome while they are working with the programme.

The content of the eLearning programme was also converted to pdf format and made available on the learning platform “Blackboard” so that the course participants could choose to print out the files. 87% of the participants exercised this option.

In addition to the programme, online tests were generated which allowed the course participants to individually assess the learning outcome. Unlike the learning programme, the tests were not compiled using the authoring software “Lectora”, but via the general learning platform “Blackboard” of the Freie Universität Berlin. They were designed as multiple choice tests without grading which could be taken by the participants several times within a fixed period of provision. For the present thesis, this period of provision was limited to four weeks (two weeks before the optional compulsory course and two weeks after the end of the course).

Those course participants who chose to assess their learning outcome with the help of the online tests (about one third of the course participants) mostly did all six available tests and without exception obtained good results. The participants could take the tests several times and the most recently obtained results were shown in the grade book. The tests proved to be well adapted for the assessment of the individual learning outcome, efforts should however be made to motivate the remaining course participants to take the tests, too. In this respect, the course participants should be informed about the online tests during the virology lectures already. It should be emphasized that the tests will not be graded and were developed merely with the aim to assess the individual learning outcome.

Due to the fact that the best learning outcome will be achieved by hands-on exercises, it was decided to add not only eLearning components to the course repertoire, but also a concrete laboratory diagnostic test. A hemadsorption test was selected and optimized in order to suit the requirements for a practical course. The following conditions had to be fulfilled by the test:

- The test had to be feasible within the three lessons of the course,
- the test had to produce concrete results, and
- it should not have already been performed during the general virology practical course.

The selected hemadsorption test produced well-analyzable results. The plan is that participants of future optional compulsory training courses will conduct the hemadsorption test independently.

After the course participants had worked with the eLearning programme, they were consulted about their experiences in the framework of a subjective evaluation using another questionnaire. They were asked to evaluate the eLearning programme. The results showed that the eLearning programme was very favourably received by the course participants. 70% of the participants stated that working with the eLearning programme had a positive influence on their motivation to deal with the subject matter, and 85% of the participants invested more time into looking into the subject matter thanks to the learning programme. All participants supported the development of more eLearning programmes at the Institute of Virology, Department of Veterinary Medicine, Freie Universität Berlin.

The present thesis has shown that supplementing traditional courses with eLearning components has proven to be a useful measure which will therefore continue to be developed at the Institute of Virology.