Introduction: After the hype of using computers in the 2000’s in pure e-learning environments, the results have been disappointing. Blended learning is suspected to combine the benefits of traditional courses with e-learning.

Aims: What are student’s perceptions of learning experiences in traditional courses, e-learning and blended-learning groups? Is there an influence on the test results afterwards?

Materials and Methods: 75 students (52 female, 23 male) attending an orthodontic course in diagnostics (facial diagnostics) were divided into three groups, traditional lecture and seminar (A:N=26), e-learning (B:N=11) and blended-learning (C:N=38).

Group A: Introduction, lecture with PowerPoint slides followed by paper based exercises

Group B: Introduction, only computer based instruction and training with the software

Group C: Introduction, PowerPoint supported lecture combined with software based training

The students had no prior knowledge to the facial analysis used.

A special e-learning software (Fig. 1) for facial analysis was developed (Borland Delphi 7, including patient management, learning tool and facial analysis function). Each student was evaluated with a questionnaire (Tab. 1) with 20 items in four categories (motivation, didactics, response and effect) after completing the course.

In addition each student had to pass a test with 20 images to analyse afterwards. The software was distributed free of charge to all students after the test.

Results: Group differences were tested using the Kruskal-Wallis test and showed significant differences between all the groups and all items together. For detailed testing, multiple pair comparisons according to Dunn were performed. Intrinsic and extrinsic motivation in the blended learning group were significantly higher (Tab. 2) than in the traditional learning and e-learning environments (which showed no difference). Questions dealing with didactic quality showed significant differences, with best rating in the blended-learning group (see pictures below). The question complex “response” was significantly better rated than the other groups; however, in the suspected effect by the participants e-learning was rated inferior to the other groups. But exactly this group showed the best test results.

Discussion: The motivation in the blended learning group was higher, but this may be an artefact of doing something completely different with easy-to-use software. All aspects recommend blended learning: the lectures were well prepared, the students feel better and expect a better knowledge gain, but better test results are not to be expected. That the best results were provided by the e-learners may be caused by the nature of the topic “facial analysis” – perhaps it meets the requirements for learning this topic, even if it’s not so much fun to do so. On the other hand long, term effects were not investigated here.

Conclusions: As a result, e-learning only cannot be recommended as the one and only in teaching facial analysis in orthodontics. The networking of electronically generated content and personal contact leads to higher motivation, but no better test results can be expected. The didactic method should always be carefully selected to meet the requirements of the subject to be trained. Computers are not the better teachers, but can effectively help in the preparation for examinations.

References: