SELF-LEARNING AND SELF-ASSESSMENT OF PRECLINICAL TOOTH PREPARATION WITH NEW ELECTRONIC VALIDATION SYSTEMS
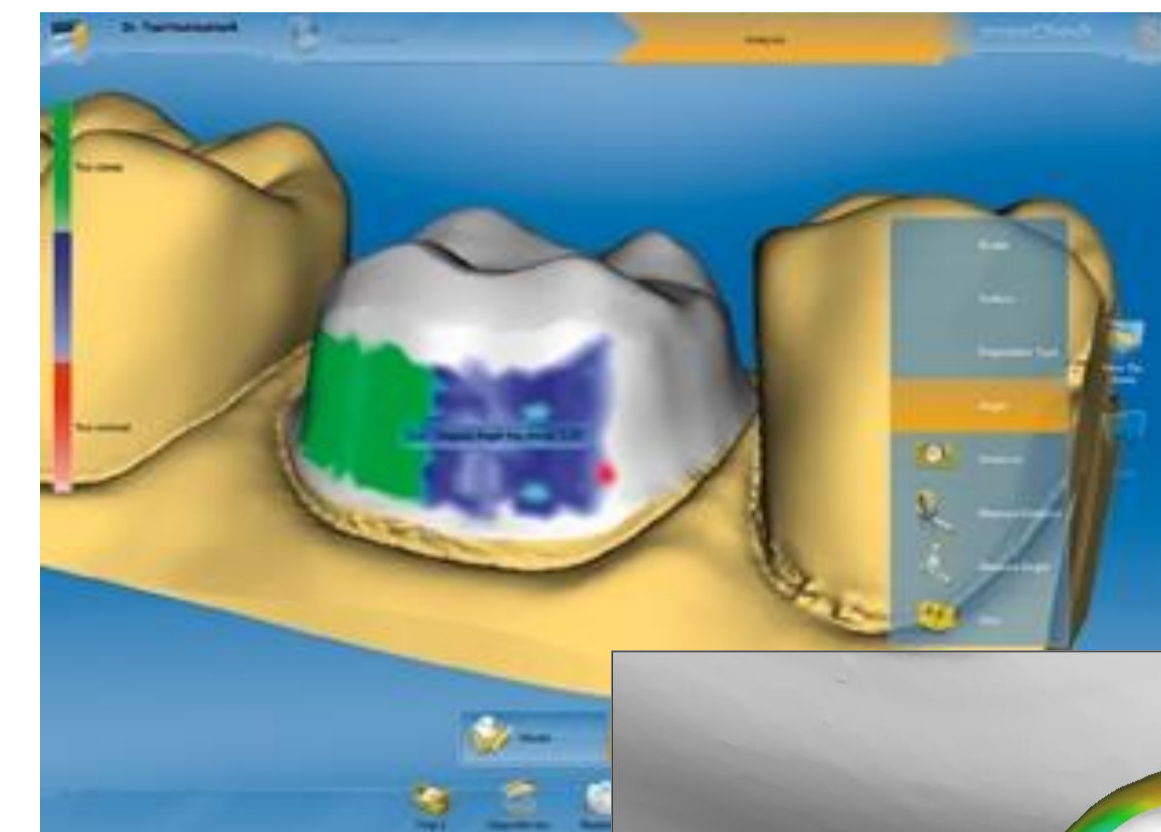
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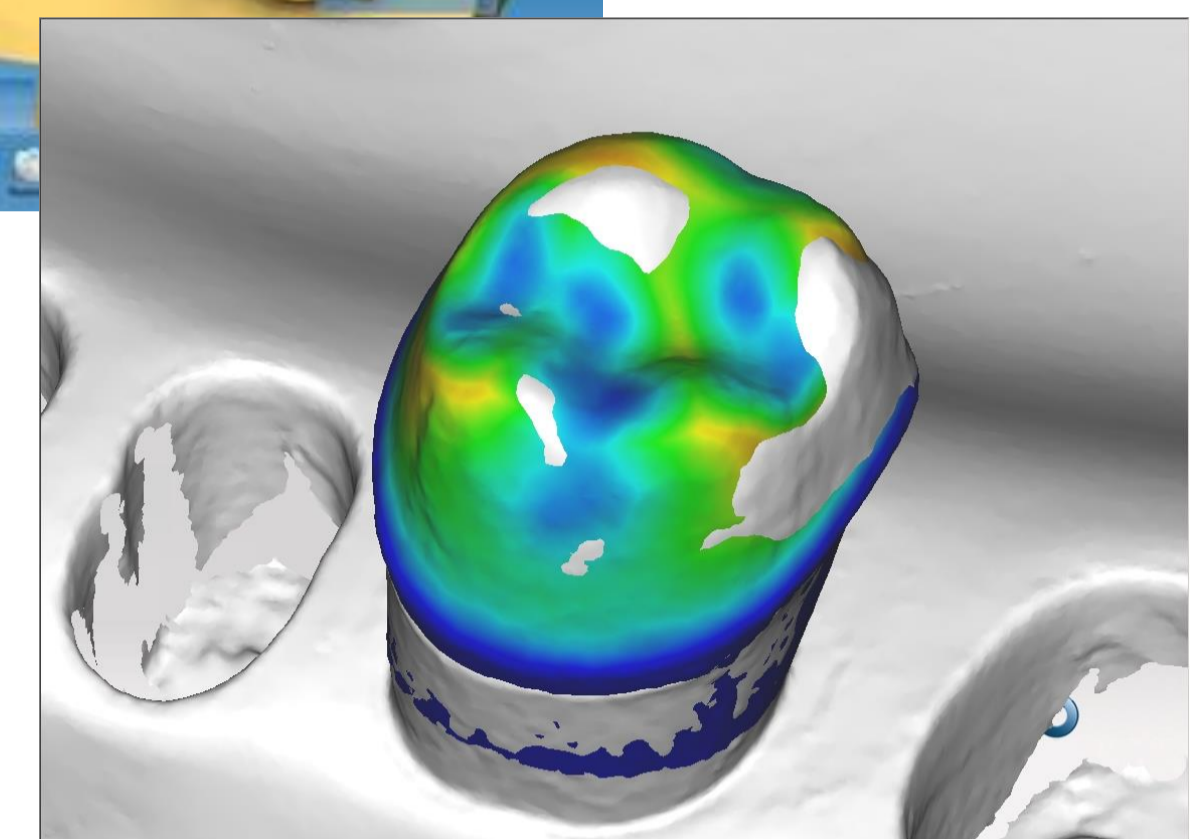
Introduction:

In preclinical dental education one main topic is to learn how to do preparations for dental restaurations like crowns and bridges. The student has not only to handle his equipment in an adequate manner but more difficult to learn is to get a visual image how the preparation should look like. Therefore up to now we show to our students a „master preparation" as a guideline they have to „copy". Mostly they need a lot of advice from lecturers to compare their praparation with our masterprep. To reduce this teaching time we introduced two different self-learning systems to our students.
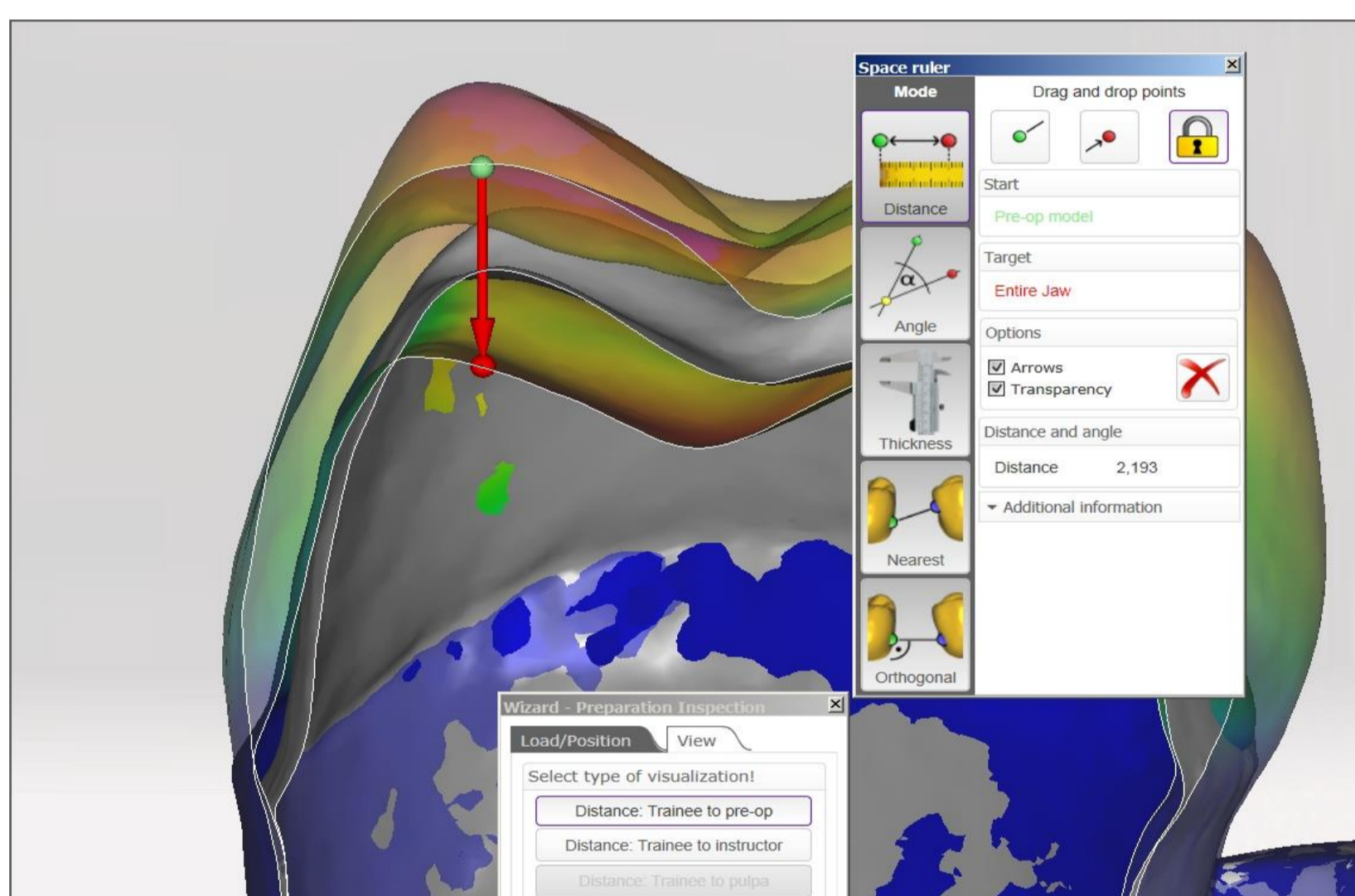
prepCheck by Sirona

Aim:

In this study we compared the learning success for different types of instruction about how to do a specific tooth preparation. Therefore we compared the traditional teaching method of „teacher supported learning" versus two „self-learning systems" in combination with hard- and software supported self-assessment.

Dental Teacher by KaVo

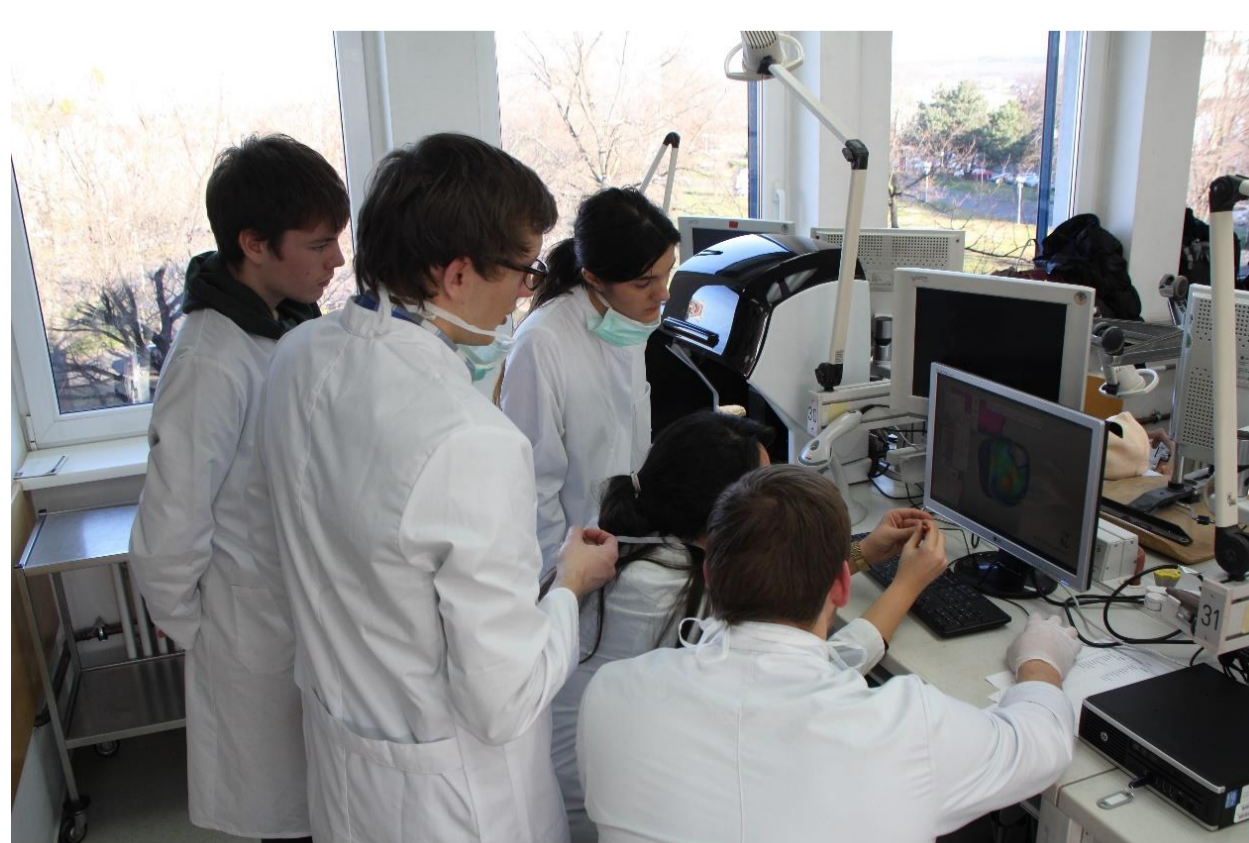Color coded Assessment with measurement of distances

Dental Teacher

Study Design:

45 students who had just finished their first course in propaedeutic dentistry but without any experience in tooth preparation participated in this study. First all of them got a lecture about handling of handpices and basic instructions of preparation techniques. One tooth was selected as the „training tooth" and its preparation was demonstrated. Additionally there was a „master preparation" on display. Then the students where divided randomly into three groups. Group one was taught in a conventional way by a lecturer. They could show their preparations with a direct response and rating as often as they wanted. Group two could use the DentalTeacher (KaVo GmbH) to scan their preparation and compare it to a prescaned masterprep. The deviation between the master-prep and the student-prep was shown color coded with a given limiting value. The students could use this self-assessment tool as often as they wanted. There was no support provided by a lecturer. Group three could use the PrepCheck (Sirona GmbH) in the same way as group two. Over a period of three days all students could do as many preparations and validations as they wanted. On day four all students had to pass a preparation test of the same tooth. All teeth were rated by two experienced lectureres by double-blind visual assessment and by one lecturer as an rating of the scanned teeth of every group (using the DentalTeacher). All groups together had to pass a group discussion with a lecturer about their impressions of their specific teaching method and its advantages and disadvantages.
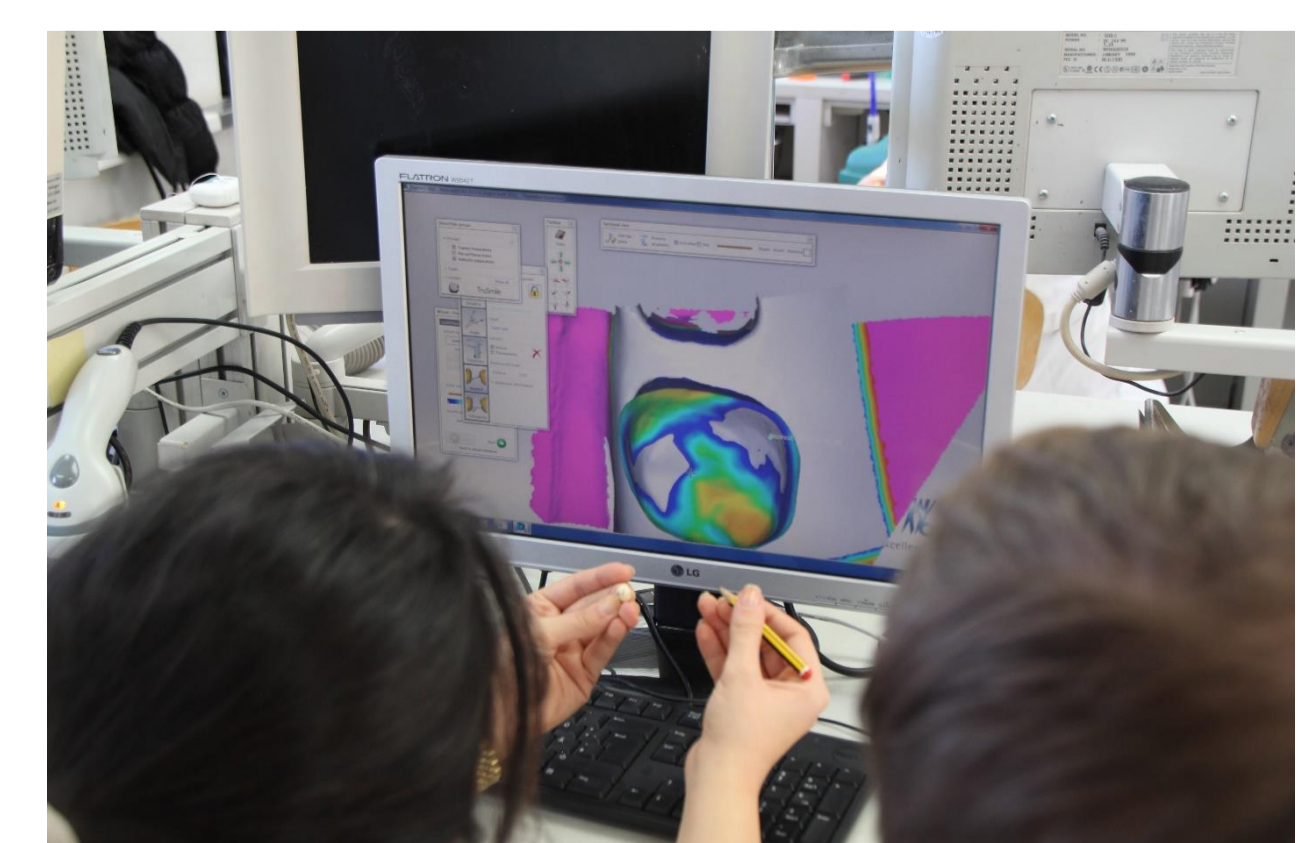
Results:

The rating of the teeth showed a wide variation from 1 (very good) to 5 (fail) in every group. The averages in these three groups were nearly the same without any significant difference; therefore we could not grade one teaching method better than any other one. The comparison of visual rating by a lecturer with the DentalTeacher supported rating was in more than 50% of the cases different for half a grade or more; in appr. 10 % the difference was two grades. As a trend however we found more preparations with to much overall removal of dentin in group one (Lecturer supported) and occlusal removal in group 3 (PrepCheck by Sirona). The best fit of students preparations to the master-prep (as a trend, but without any statistical evidence) could be seen in group two (DentalTeacher by KaVo).

Conclusion

In the discussion most students emphasized the opportunity of self-assessment without any rating from a lecturer (and therefore with less waiting time). As a positive side effect of the digital systems mostly the assessments where done as a „rating session" by a group of students. Nevertheless nearly all students asked for a combination of „lecturer based" and „digital based" education with a clear preference for the DentalTeacher instead of the PrepCheck.

Assessment as teamwork

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