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Cologne intergrating curriculum dentistry

Submission date 28/09/2026	**Recruitment status** No longer recruiting	[_] Prospectively registered [_] Protocol [_] Statistical analysis plan [_] Results [_] Individual participant data [X] Record updated in last year
Registration date 30/09/2026	**Overall study status** Completed	
Last Edited 29/09/2026	**Condition category** Oral Health	

Plain English summary of protocol
Not provided at time of registration

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Study information

Scientific Title
Engaging lecture formats in clinical dental education: a comparative cohort evaluation of student-related outcomes and examination performance

Acronym
CICD

Study objectives

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 23/03/2026, Ethics Committee of the Medical Faculty at the University of Cologne (Kerpener Strasse 62, Cologne, 50937 Köln, Germany; +49 221 478 82900; ek-med@uni-koeln.de), ref: 25-1290

Primary study design
Interventional

Allocation
Non-randomized controlled trial

Masking
Open (masking not used)

Control
Historical

Assignment
Parallel

Purpose
Educational improvement of the clinical dental curriculum

Study type(s)

Health condition(s) or problem(s) studied
Educational improvement in dental clinical curriculum

Interventions
The intervention consisted of an enhanced, blended-learning-based teaching approach implemented in the clinical dental curriculum at the Department of Operative Dentistry and Periodontology, University Hospital Cologne, Germany. The intervention was delivered to dental students in the clinical phase of their education (7th–10th terms) during the winter term 2025 /26. The intervention was implemented in 12 of the 15 main clinical lectures delivered during the term.
The intervention combined face-to-face teaching with asynchronous online learning and formative assessment. Five lectures incorporated a flipped-classroom approach, in which students were provided with recorded online lectures before the corresponding face-to-face session. Formative assessments were integrated throughout the course and included pre-class quizzes delivered via the ILIAS learning platform and in-class or post-class assessments using an audience response system (Mentimeter). These assessments included multiple-choice questions and word-cloud activities and were used to support self-assessment, reinforce learning objectives and provide opportunities for feedback.
During the face-to-face sessions, lecturers used a range of active and engaging teaching strategies selected according to the topic and learning objectives of each lecture. These included video-based learning with subsequent discussion (1 lecture), collaborative buzz-group activities allowing students to discuss topics or clinical cases with neighbouring peers (4 lectures), multisensory learning involving the tasting and comparison of dental toothpastes, mouth rinses and gels discussed during the lecture (1 lecture), and gamification elements (4 lectures). Different methods could be combined within an individual lecture.
The intervention was delivered by the lecturers responsible for the respective clinical lectures as part of the regular university curriculum. All teaching took place within the existing clinical lecture programme at the University Hospital Cologne. Students attended the lectures in person, while online preparatory materials and assessments were completed independently before or after the respective sessions where applicable.
The intervention was delivered throughout the winter term 2025/26. The total intervention period therefore corresponded to the duration of the winter-term lecture programme, comprising 15 main clinical lectures, of which 12 included the enhanced teaching approach and 3 were delivered in a traditional lecture-based format. Each intervention was implemented during the respective scheduled lecture session, with the flipped-classroom components requiring additional asynchronous preparation before the corresponding face-to-face session.
Students were invited to complete an anonymous online questionnaire immediately after each lecture via a QR code. The questionnaire assessed perceived didactic quality, including student engagement, relevance and practical applicability of the content, teaching design and framework conditions, and lecturer behaviour and interaction. The primary comparison was

between lectures using the enhanced teaching approach and traditional lecture-based teaching. A historical control cohort from the preceding winter term (2024/25) was additionally used for comparison.
Follow-up consisted of the end-of-term written examination, which was completed by all students as part of the regular curriculum. The examination comprised 30 newly developed multiple-choice questions with four answer options. Examination performance was descriptively compared between the intervention cohort (winter term 2025/26) and the historical control cohort (winter term 2024/25). No additional intervention-related clinical follow-up was required.

Intervention Type
Behavioural

Primary outcome(s)
1. Students' reactions to the lecture and intervention measured using an online questionnaire evaluating educational/student-reported outcomes, including six items assessed on a 5-point Likert scale (5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree, 1 = strongly disagree) at the end of each lecture

2. Mean school grade measured using an online questionnaire at the end of each lecture

3. Examination performance measured using the mean passrate of the mandatory written exam at the end of the semester

4. Qualitative feedback measured using free-text comments analysed using a thematic approach informed by Reflexive Thematic Analysis according to Braun and Clarke at the end of each lecture

Key secondary outcome(s)

Completion date
06/02/2026

Eligibility

Key inclusion criteria
1. Students in the clinical dental curriculum (7th to 10th semester)
2. Aged 18 and older

Healthy volunteers allowed
Yes

Age group
Mixed

Lower age limit
18 Years

Upper age limit
120 Years

Sex

All

Total final enrolment
189

Key exclusion criteria
Not meeting the key exclusion criteria

Date of first enrolment
01/10/2025

Date of final enrolment
06/02/2026

Locations

Countries of recruitment
Germany

Sponsor information

Organisation
University of Cologne

ROR
https://ror.org/00rcxh774

Funder(s)

Funder type

Funder Name
Quality Improvement Comission (Qualitätsverbesserungskommission) of the Medical Faculty, University of Cologne, Germany

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Not expected to be made available