The following pages detail the abstracts selected under the heading of Topic Related Oral Presentations and General Abstract Presentations. The latter being subdivided into a number of presentation themes.

This year’s Topic Related Presentations cover a broad range of topics related to our meeting theme of Learning together to improve oral health and quality of life. At this year’s session, we will hear four diverse presentations on:

- DentCPD: Promoting Quality Assurance and Accreditation of Dental Workforce Educational Activities
- A systematic review of e learning – implications for curriculum planners, teachers and researchers
- The oral cavity is part of the body!

Given the large volume of posters historically received, and the need to ensure all delegates who wished were given an opportunity to present, this year’s meeting sees the introduction of a new method of presentation for abstracts. Gone are the standard printed posters, this year replaced by a short three-minute presentation and discussion as part of a themed presentation session. These will be held in various rooms offering a better environment for delegates.

All sessions are running concurrently at 08:00 on Thursday 24th August. Room allocations are detailed below and rooms are in the Faculty of Philosophy building. We appreciate you may wish to leave and re-enter the various theme rooms and we would ask you to please do as quietly as possible to respect those presenting.
We appreciate that this is a change in format for many and would ask your co-operation and patience as we trial this new method for the ADEE ‘abstract’ presentation session. We are confident that in time it will become a popular means of presentation at our meeting.

This year the general abstract themes are:

<table>
<thead>
<tr>
<th>Theme</th>
<th>Room</th>
<th>Number of abstracts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment</td>
<td>204</td>
<td>10</td>
</tr>
<tr>
<td>Curriculum</td>
<td>205</td>
<td>4</td>
</tr>
<tr>
<td>Evaluation</td>
<td>206</td>
<td>13</td>
</tr>
<tr>
<td>Faculty Development</td>
<td>207</td>
<td>4</td>
</tr>
<tr>
<td>Inter Professional Education</td>
<td>205</td>
<td>6</td>
</tr>
<tr>
<td>Other</td>
<td>207</td>
<td>8</td>
</tr>
<tr>
<td>Teaching Methods</td>
<td>208</td>
<td>12</td>
</tr>
<tr>
<td>Technology enhanced Learning</td>
<td>209</td>
<td>13</td>
</tr>
</tbody>
</table>

All sessions start at 08:00 and we ask you to be seated in the allocated room on time. If you are presenting in more than one session we ask you to go to the room for your first session and once presentation there is completed, go to your next room. We have advised the adjudicators to accommodate such movement between rooms and to the running order. The running order is per this booklet.

This year in response to delegate feedback a prize for best poster presentation in each of the themes is being awarded at the general assembly. A notice will be displayed at the registration desk lunchtime Friday advising of the winner in each theme.

In closing, I must acknowledge in advance the efforts of the volunteers and my colleagues on the Executive who will assist in the poster evaluation process and selection of best poster awards, as without their commitment and assistance this work would be impossible to complete. Thanks also to Professor Vytaute Peciuliene and her local team for their assistance.

I hope you enjoy this new format and appreciate it will be a change we are, however, confident it will give a better abstract presentation environment to you all.
## Abstract Session Evaluators

<table>
<thead>
<tr>
<th>Theme</th>
<th>Room</th>
<th>Session Chair</th>
<th>LOC representative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment</td>
<td>204</td>
<td>Julia Davis</td>
<td>Vygandas Rutkunas</td>
</tr>
<tr>
<td>Curriculum</td>
<td>205</td>
<td>Rui Amaral Mendes</td>
<td>Vilma Brukiene</td>
</tr>
<tr>
<td>Evaluation</td>
<td>206</td>
<td>Stéphanie Tubert</td>
<td>Estera Miliuniene</td>
</tr>
<tr>
<td>Faculty Development</td>
<td>207</td>
<td>Corrado Paganelli</td>
<td>Ruta Bendinskaite</td>
</tr>
<tr>
<td>Inter Professional Education</td>
<td>205</td>
<td>Rui Amaral Mendes</td>
<td>Vilma Brukiene</td>
</tr>
<tr>
<td>Other</td>
<td>207</td>
<td>Corrado Paganelli</td>
<td>Ruta Bendinskaite</td>
</tr>
<tr>
<td>Teaching Methods</td>
<td>208</td>
<td>Cristina Manzanares</td>
<td>Deimante Ivanauskaite</td>
</tr>
<tr>
<td>Technology enhanced Learning</td>
<td>209</td>
<td>Petra Hahn</td>
<td>Linas Zaleckas</td>
</tr>
</tbody>
</table>
Topic Related Abstract Presentations

ADEE 2017
Vilnius: Lithuania
Title: Skills Optimiser Self-Evaluation Tool (SOSET): A facilitated self-evaluation and educational process for the dental practice team.
Presenter: Assoc Prof Michael Botelho
Authors: Bornstein MM¹, Agrawal K²

Authors’ Affiliation:
¹ Oral and Maxillofacial Radiology, University of Hong Kong, Hong Kong, Hong Kong
² Prosthodontics, University of Hong Kong, Hong Kong, Hong Kong

Background: Despite e-learning’s perceived ability to deliver effective and cost efficient learning resources, there is limited evidence to support best-practice approaches.

Aims & Objectives: This paper systematically reviews e-learning through the lens of dental radiology interventions to identify significances or limitations of learning outcomes and research methods. Future enhancements for research design, reporting and e-learning goals will be presented.

Materials and Methods: A methodologically appropriate systematic review was performed, articles identified, abstracts read and papers identified. Outcome measures were extracted relating to “knowledge” and student preferences and the nature of the learning interventions and research methods analyzed.

Results: From 514 papers, 15 met the inclusion criteria. 13 papers reported positive students’ perceptions/attitudes however, evaluation methods were diverse. 6 studies showed significant knowledge outcomes, 3 studies showed no difference and one study used incorrect analysis. Two studies had no control groups. E-learning interventions were diverse ranging from one 30-minute activity to integrated online resources for “blended” learning. Study design ranged from randomized controlled trails to intervention with no control group. From an analysis of the goals/outcomes, the level of knowledge was categorized into 4-levels: understanding, analysis, diagnosis and performance (UDAP). Of the 6 studies that identified significant differences, 5 were at the level of understanding and one at the level of diagnosis and one at the level of analysis and skills performance.

Conclusions: The learning content goals, e-learning interventions and outcome measures used in these papers was diverse and lacked detail. The “knowledge” levels used for e-learning and evaluation outcomes were at a low level and not clearly defined. Future curriculum planners, educators and researchers need to plan detailed and focused learning and research goals with learning content and outcomes defined at the relevant knowledge performance level (UDAP). This will allow more precise measurement of learning/outcomes not only to allow comparisons but more importantly to inform learning practice.
Topic Related Oral Presentation No. 2.

Title: Skills Optimiser Self-Evaluation Tool (SOSET): A facilitated self-evaluation and educational process for the dental practice team.

Presenter: Dr Alison Bullock

Authors: *Bullock AD¹, Barnes E², Cowpe J³, Moons K⁴, Chestnutt I⁵, Hannington D⁶, Negrotti C⁷, Allen M⁸, Bale S⁹

Authors’ Affiliation:
¹² Cardiff unit for research and evaluation in medical and dental education (CUREMeDE), School of Social Sciences, Cardiff University, Cardiff, United Kingdom
³⁵ School of Dentistry, Cardiff University, Cardiff, United Kingdom
⁴⁶⁷ Dental postgraduate section, Wales Deanery, Cardiff University, Cardiff, United Kingdom
⁸⁹ Aneurin Bevan university health board, Newport, United Kingdom

Background: Studies across the health service reveal benefits of team-work. We have yet to establish how to optimise the skill-mix of the dental team to achieve best service delivery.

Aims & Objectives: This study built upon an established self-evaluation process (Maturity Matrix Dentistry) and a logic model of the dental skill-mix literature to develop a whole-team self-evaluation tool for optimising practice skill-mix.

Materials and Methods: Following the realist approach, research literature was coded for high-level factors (positive and negative) describing the conditions/context (C) under which the mechanisms (M) operate to produce desired outcomes (O). Influences on skill-mix were extracted and presented in a matrix. The items within domains of influence were refined following consultations with dental professionals.

Results: Nine domains of influence relating to dental team skill-mix in general dental practice, were derived: practice belief in teamwork; scope of team members’ practice; the practice and premises; patients’ needs and views; system efficiency and business case; staffing; delegation systems and protocols; training, CPD and lifelong-learning; and communication and team meetings. Each domain contains six sub-levels, against which the dental teams benchmark themselves during a tutor-facilitated group discussion. To encourage self-directed learning, a ‘sources of help and advice’ document can be referred to after the session.

Conclusions: Based on a well-established methodology (Maturity Matrix, Maturity Matrix Dentistry), the SOSET is a straightforward way for the whole practice team to discuss skill-mix. The tool acknowledges that a practice may be at different levels of progress in each domain. It enables good practice to be recognised alongside areas for improvement. It also allows different staff groups–or individuals–to discuss educational needs related to teamwork. Currently trials of the SOSET are underway in South Wales, UK.
**Topic Related Oral Presentation No. 3.**

**Title:** DentCPD: Promoting Quality Assurance and Accreditation of Dental Workforce Educational Activities  
**Presenter:** Dr Jon Cowpe  
**Authors:** *Cowpe JG  
**Authors’ Affiliation:** Cardiff University Dental School, College of Biomedical and Life Sciences, Cardiff University, Cardiff, United Kingdom


**Aims & Objectives:** The aims & objectives of this continued work has been to address additional issues: Quality Assurance (QA) and Accreditation of dental CPD, identified by the DentCPD project as being in need of strengthening and clarity.

**Materials and Methods:** A project, commissioned, in UK by Committee for Postgraduate Dental Deans and Directors (COPDEND), included a literature search, survey and series of consultations in the UK and through the ADEE network to produce a QA framework. In addition, a mechanism for EU-wide external recognition/accreditation was discussed at the ADEE Life-long learning SIG in 2016.

**Results:** A QA Framework for Dental Workforce Development was initially published in 2014 and after further refinement again in 2016. Consisting of four sections: Planning & Development, Delivery, Evaluation, Administration, it provides an opportunity for dental registrants (CPD ‘Users’) and CPD ‘Providers’ to benchmark their CPD against a series of quality criteria. This provides evidence of quality for stakeholders, including regulatory bodies. An Accreditation Framework has been compiled for ADEE, to offer EU-wide external recognition of educational activities.

**Conclusions:** QA Framework: supports CPD ‘Providers’, strengthening the quality of their Educational Activities (EdAs) and encourages CPD ‘Users’ to measure the value of their CPD activities and reflect on the impact on their clinical practice.

Accreditation Framework: provides an opportunity for ADEE, acting as the recognised European dental educational organisation to accredit a range of dental CPD EdAs.

Aspiration: both initiatives should promote mobility of dental professionals with appropriately quality assured records of their continuing education and development which in turn should support a high standard of patient care.
**Topic Related Oral Presentation No. 4.**

**Title:** The oral cavity is part of the body!

**Presenter:** Prof Peter Holbrook  
**Authors:** *Holbrook WP1  
**Authors’ Affiliation:**  
Faculty of Odontology, University of Iceland, Reykjavík, Iceland

**Background:** Dental students may receive teaching in basic and even para-clinical sciences in conjunction with students in other health-care disciplines. It is, however, not common for students in other health-care disciplines to receive much information on oral and dental health matters.

**Aims & Objectives:** To assess dental and oral health-care topics that are relevant to undergraduate teaching in other health-care courses.

**Materials and Methods:** The curricula of faculties within the School of Health Sciences of the University of Iceland, were studied. Participation of teachers in the Faculty of Odontology with courses in other health-care faculties was investigated and the perceived need for further advantageous collaboration was assessed.

**Results:** There are many areas of oral and dental health care relevant to health disciplines outside dentistry. In recent years there has been a considerable decrease in edentulousness among the elderly and an increase in recognition of patients with various special needs requiring oral and dental treatments. Underlying medical problems may have a serious effect on oral/dental health and oral health may compromise general health, especially with relation to infection from the oral cavity. Several social and economic factors affecting general health are also associated with oral/dental health.

**Conclusions:** Increasing awareness and understanding of oral/dental conditions among health workers outside dentistry could lead to earlier and correctly-focused treatments, and/or referral to dental practitioners and specialists. Improved oral and dental health care could reduce costs and possible complications to the overall health of patients.
General Abstract
Presentations

ADEE 2017
Vilnius: Lithuania
Theme: Assessment
Number: 1

Title: The effect of using an exemplar in a pre-clinical formative assessment for learning conservative preparations in carious teeth.

Presenter: Dr Andrea Rung

Authors: *Rung AR

Authors’ Affiliation:
Dentistry and Oral Health, Griffith University, Gold Coast, Australia

Background: Formative assessments are designed to monitor students learning outcomes by providing timely feedback; making learning more effective. This study aims to evaluate the impact of exemplars on a formative assessment.

Aims & Objectives: To evaluate the effect of using an exemplar on students’ ability to prepare a carious tooth.

Materials & Methods: 87 novice students were randomised in group A (41) and group B (46). Both groups received the same instructions on cariology and operative techniques to conservatively prepare carious teeth.

Formative assessment activity: Every student received an ivorine tooth with carious lesions and were instructed to prepare the tooth, to assess the preparation by themselves and then together with their tutor. Two days later students were instructed to repeat the activity in a new carious tooth with the same lesions.

The exemplar: A written document available on line with the photo of an ideal preparation of the tooth provided and comments on how the preparation was achieved.
First day: Group A performed the activity without the exemplar and Group B performed the activity with the exemplar.
Second day: Group A and B performed the activity with the exemplar.

Results: In the first day, group B with exemplar showed a significantly better performance that group A without exemplar. On the second day, group A, now with the exemplar, performed better than group B but the difference was not statistically significant.
Group A showed significant improvement between the first and second attempt while group B underperformed compared with their first attempt and group A second attempt. While not significantly different, group A performed better on the second attempt than those who have the exemplar both days.

Conclusions: The results suggest that an exemplar allows students to achieve competencies faster and that more practice might not result in competence improvement.
Theme: Assessment
Number: 2

Title: The Predictive Validity of Dental School Selection Methods in Europe

Presenter: Dr Claudia Cunningham

Authors: *Cunningham CM1, Patterson F2, Ibbetson R3, Cleland J4

Authors’ Affiliation:
1&3 Aberdeen Dental School, University of Aberdeen, Aberdeen, United Kingdom
2 Department of Psychology, University of Cambridge, Cambridge, United Kingdom
4 Institute of Education for Medical and Dental Sciences, School of Medicine, University of Aberdeen, Aberdeen, United Kingdom

Background: Almost all students admitted to dental school will graduate and work as dentists (NES 2016). The selection processes of dental schools must therefore reliably identify candidates who have the potential to become competent clinicians. However, to date, there has been no overview of the predictive validity of dental school selection tools.

Aims & Objectives: This study aims to synthesize the dental admissions literature reporting on the relationship between performance at selection with performance throughout dental school.

Materials & Methods: We performed a systematic search of SCOPUS, Pubmed and Ovid using the MeSH terms ‘Education’, ‘Dental’, ‘Criteria’ and ‘school admission’. Exclusion criteria included Non-English Language, Post-graduate, Non-European and studies that did not present empirical data (e.g., opinion pieces). The date range investigated was 1987-2017.

Results: Our search yielded an initial set of 486 titles. We removed duplications and applied exclusion criteria, leaving 21 papers for analysis. The nature of the study designs dictated a narrative synthesis of the literature. Most studies were published within the last 10 years (n=14). The majority were from the UK (n=9). Predictive validity of non-cognitive measures was the most prominent research area (n=14). Cognitive measures were investigated by 11 studies. The remaining studies (n=5) investigated the use of practical or manual dexterity testing. The majority (n=17) were single site studies; 5 studies were single-cohort studies. Control or comparison groups, adequate sample sizes and appropriate long-term follow-up measures were rare.

Conclusions: This research highlighted a lack of good quality studies examining the predictive validity of dental admissions selection methods and means no conclusion can be drawn as to the “best” tools for dental school selection. Without further research to improve the evidence base, there is a risk that dental school admissions may fail to select those candidates most likely to become competent clinicians.
Theme: Assessment

Title: Exploring shared understandings, student experience and viva assessment performance arising from an interactive "act as the examiner" video tool for students and staff

Presenter: Dr Ilona G Johnson

Authors: *Johnson IG, Oliver SO

Authors’ Affiliation: School of Dentistry, Cardiff University, Cardiff, United Kingdom

Background: Staff-student understandings of assessments are important for consistency, experience and performance. Video can be used to improve understandings but interactive learning may enhance this further.

Aims & Objectives: Explore staff-student understanding of assessment criteria, student experience and viva performance after using interactive "act as the examiner" online video training.

Materials & Methods: An interactive online video resource was developed for students, to “act as the examiner” online; this consisted of two mock viva videos (one fail and one distinction), interactive marking criteria, assessment feedback after each case and an opportunity to submit feedback using a five-point scale and prompts for qualitative comments. These were delivered to students in advance of the third-year viva. Examiners completed a similar exercise prior to the examination as part of calibration activities. SPSS was used for descriptives, contingency tables and T-test analyses.

Results: A total of 45 students (59% of the year) completed the full online exercise. Student and examiner assessments of the cases were within the same grade boundary, but examiners used a wider range of marks. For Case 1, the mean student mark was 36% (95% CI 34,39), while the mean staff mark was 33% (95% CI 27,38). For Case 2, the mean student mark was 74% (95%CI 71,77) while staff awarded this 81% (95% CI 76,86). Students agreed the resource was useful for their understanding of the assessment (97%), and agreed that they would like to have more of these resources (96%). Most (77%) agreed they felt less stressed about the assessment after using the tool and 75% agreed they knew what to expect. The group who used the tool attained significantly higher final assessment marks (p<0.05).

Conclusions: Video based interactive “act as the examiner” tools appear to improve student experience, shared understandings of viva assessments and student performance. Further work is needed to explore similar tools for other assessments.
**Theme:** Assessment  
**Number:** 4

**Title:** Do the entry qualifications and skills of successful applicants to a graduate entry Bachelor of Dental Surgery (BDS) degree course predict performance during the degree?

**Presenter:** Dr Karen Rouse

**Authors:** *Rouse KA, Buller V, Groves SE, Magee AP, Tagiyeva-Milne N, Welbury R*

**Authors’ Affiliation:** School of Dentistry, University of Central Lancashire, Preston, United Kingdom

**Background:** Research has shown that admission grades correlate with performance in medical schools but the literature is lacking with regard to dentistry. UK Universities typically give A level grade offers of AAA or AAB for BDS entry at age 18. Our graduate entry BDS course requires at least A Level grades of CCC and a 2:1 degree.

**Aims & Objectives:** Aim - to assess the predictive value of a graduate entry BDS selection process.  
Objectives – to determine whether i) students with lower A level grades struggle during BDS, ii) A level grades predict future academic performance.

**Materials & Methods:** Four BDS cohorts (n=106) were recruited. We investigated correlations between A level grades and basic science examination scores in 2nd and 3rd BDS, using the Pearson Correlation Coefficient.

**Results:** In the first cohort there was:
1) Some correlation between A level grades and a) 2nd BDS science overall (r = 0.418, p = 0.019), b) 2nd BDS Oral Development and Anatomy (r = 0.356, p = 0.049), c) 2nd BDS Human Health and Disease 1 (r = 0.428, p = 0.016), d) 2nd and 3rd BDS science overall (r = 0433, p = 0.015)
2) No significant correlation between A level grades and 3rd BDS science overall (r = 0.354, p = 0.052)

**Conclusions:** A level achievement may be correlated with performance in basic science, despite all students having at least a 2:1 degree. Analysis will be extended to cover all four cohorts thus increasing the power of the study. Correlation between A level grades and clinical knowledge performance will also be investigated. Students will also be categorised into those who achieved sufficient A level grades for direct undergraduate entry and those who did not. t-tests will be used to compare performance in basic science and clinical knowledge between the groups.
**Theme:** Assessment  
**Number:** 5

**Title:** How to Validate the Cut Score for OSCE Assessment in Undergraduate Dental Education

**Presenter:** Dr Muhammad Naveed Khalid

**Authors:** *Khalid MN, Oliver SJ, Johnson IG

**Authors’ Affiliation:**  
School of Dentistry, Cardiff University, Cardiff, United Kingdom

**Background:** The setting of standards for individual OSCE stations is a controversial area. We examined how the validity of cut scores can be enhanced by using subjective judgement of examiners.

**Aims & Objectives:** There is a vast amount of literature on standard setting in assessment however there is no gold standard setting procedure for OSCE assessment. Borderline regression methods are currently used to set standards for individual OSCE stations and to make pass/fail decisions based on the number of stations passed. The aim of the study was to examine the validity of borderline regression cut score for individual OSCE stations by utilising global scores provided by examiners.

**Materials & Methods:** Year 2 BDS OSCE assessment objective checklist data were collated for each station alongside the overall global (subjective) judgement on Likert scale (Fail, Borderline Pass, Clear Pass, and Good Pass). We undertook 2 by 2 contingency analysis to compare the total number of students failing by the borderline regression method and the overall subjective judgement.

**Results:** We found that the subjective judgement of the examiners on the candidate’s performance correlated well with borderline regression cut score for most stations except on station 7 (disinfection). We compared and tracked whether the same candidates were failed by borderline regression and overall subjective scores. We observed minor differences for most stations which may be attributed to a difference between objective criteria and examiners’ view of student competence for tasks.

**Conclusions:** Checking of individual OSCE station borderline regression cut scores with the overall subjective scores is a useful post assessment check to enhance the validity and credibility of the cut scores. This approach can also help to identify stations where a review of objective criteria may be indicated.
Background: Students’ emotions towards assessment has been widely studied, but less interest has been given to teachers’ emotions. It has been found that it is especially hard for teachers to fail students (Ilott & Murphy 1997).

Aims & Objectives: The aim of the study was to investigate what kind of assessment related emotions do expert university teachers experience in their assessment and teaching practices.

Materials & Methods: This study is part of a larger research about assessment in higher education, which was done in two parts. First part was a questionnaire which was sent to members of Teachers’ Academy on University of Helsinki and to teachers of one pedagogics course. The number of responses was 47 (33 female, 12 male). As part of the questionnaire they were asked about their willingness to participate in a thematic interview. The second part consisted of 16 interviews (8 male, 8 female) of expert university teachers from the group. The interviews were recorded, transcribed and analysed according to emotions: positive (self-efficacy believes, joy, hope, passion, relief, perception, pride), negative (disappointment, anxiety, frustration, irritation, embarrassment, anger, fear, boredom) and neutral feelings.

Results: The teachers experienced wide range of emotions from positive (joy) to negative (anger). More experienced teachers seemed to be more neutral in their emotions.

Conclusions: Assessment seems to be a very emotional process and encounters a large entity of teachers’ work. The teachers experience joy when students succeed and learn. In the other hand frustration seems to be common especially when the teachers do not feel that assessment promotes learning and motivates. However, perceiving assessment as an essential part of work seems to buffer negative emotions related to assessment.
Theme: Assessment  
Number: 7

Title: Endodontic diagnosis and treatment planning knowledge among undergraduate dental students at Vilnius University

Presenter: Mr Antanas Blažys

Authors: *Blažys A¹, Jankauskaitė D², Genutytė E³, Aleksejūnienė J⁴, Pečiulienė V⁵

Authors’ Affiliation:
¹,²,³&⁵ Institute of Odontology, Faculty of Medicine, Vilnius University, Vilnius, Lithuania
⁴Department of Oral Health Sciences, Faculty of Dentistry, The University of British Columbia, Vancouver, BC, Canada
⁵Institute of Odontology, Faculty of Medicine, Vilnius University, Vilnius, Lithuania

Background: Our observations indicate a lack of knowledge among undergraduate dental students regarding diagnosis and treatment planning of endodontic cases. Similar differences exist among dental graduates. A study examining such knowledge is necessary for the improvement of undergraduate endodontic curriculum.

Aims & Objectives: To examine and compare the level of dental students’ knowledge in different training years regarding diagnostics and treatment planning of endodontic pathology.

Materials & Methods: The sample included 3rd, 4th and 5th year dental students (n=88) studying at Vilnius University, Lithuania. The students’ knowledge was evaluated using multiple choice questionnaires based on five endodontic scenarios including radiographs. In addition, students reported about their confidence levels in treatment planning of cases. Questions were asked in succession with increasing complexity imitating clinical circumstances. Data were analyzed by one-way ANOVA test with the Post Hoc Bonferroni adjusting using the SPSS software.

Results: The participation rate was 88% (n=77). Self-reported confidence levels were slightly higher in senior year than in junior year students (71%, 73%, 77%). The 4th and 5th year students presented correct knowledge for two and 3rd year students for one out of 5 cases. Significant (p<0.05) differences in knowledge between the 3rd and 4th year students were found with the latter having better knowledge. No significant differences were observed between the final year and younger undergraduate dental students.

Conclusions: With increasing years of training dental students showed increasing knowledge regarding diagnosis and treatment planning of endodontic pathology.


**Theme:** Assessment  
**Number:** 8  

**Title:** Digitising summative assessment in dental education - benefits and challenges  
**Presenter:** Prof Anne Møystad  
**Authors:** *de Lange T¹, Møystad A², Torgersen G²  
**Authors’ Affiliation:**  
¹Department of education, University of Oslo, Oslo, Norway  
²&³ Institute of clinical dentistry, University of Oslo, Oslo, Norway

**Background:** Dental education in general, and oral radiology in particular, is highly digitised in which alignment of assessment, clinical training and professional practice is of vital importance. In the present study the ambition was to develop computer-based summative assessment to improve clinical relevance of the exams and the alignment between teaching and assessment.

**Aims & Objectives:** The aims of the study were to investigate benefits and challenges in implementing a digital summative assessment and study the clinical relevance in relation to clinical training and practice.

**Materials & Methods:** The study was based on semi-structured focus-group interviews from two distinct student populations (2016 and 2017) in a bachelor programme in dental hygiene. In addition, conversational data from a plenary discussion from the whole second student population (2017) were collected and analysed. The data were approached on basis of content analysis and meaning condensation.

**Results:** A benefit experienced in the digital summative assessment was the ease in typing and editing answers on the computer. This suggests an increased effectiveness in computer-based compared to analogue exams. An additional advantage was the experienced relevance of the exam related to the clinic. This finding refers both to the digital presentations of images, but also to the entire setting in the clinic and dental practice. Challenges reported by the students were limited viewing conditions for presenting radiographic images and the tendency that students lost oversight during the exam due to the linear manner assignments were presented. The last finding on lacking overview revealed an influence on student performances which should be taken seriously in designing digital summative assessment.

**Conclusions:** In conclusion, the digital layout increases efficiency and clinical relevance of exams to a certain extent. Obstacles were found in limitations related to image presentation and limited overview. The latter challenge raises questions related to developing suitable assessment forms as well as digital assessment software.
Background: The educational and medical system are combined in the Victor Babes University of Medicine and Pharmacy of Timisoara. This is the place where an unexperienced kid that joins our institution becomes not only a complete formed doctor but also an adult that knows more than medicine, is ready to face life without fears.

Aims & Objectives: In this paper, a possible approach to the way in which students are prepared for their future medical career and a description of how semester exams can be improved is described.

Materials & Methods: We will attempt to use technology to create an interactive teaching-learning system, in which the teacher is invited to be not only a coordinator of the course or laboratory, but also an active implicated participant. The implementation of this idea should be designed for two types of teaching: for the theoretical course, including a teacher and group of students whom he addresses to; for the practical labs, where again, there is a lab assistant (doctor) and a limited group of students. In both cases, there must be a way to capture the student’s attention. An interactive teaching method already implemented was proposed using SMART Technologies. A software called SMART Notebook collaborative software was used, that makes the teaching process more attractive for the student and it’s very helpful for the teacher.

Results: The student assessment aims not only to show how he was able to assimilate the information received in the course of a semester, but also to express the teacher’s pedagogical skills. This method of teaching and assessment is not something innovative, it is a set of practices observed or wanted by the students of this university.

Conclusions: This method is proposed in order to improve and increase student’s knowledge and skills. An alternative to being good in something is to excel in that field.
Theme: Assessment

Title: Effect of examiner calibration on OSCE pass mark when borderline regression method is used

Presenter: Reza Vahid Roudsari

Authors: Mr Reza Vahid Roudsari

Authors’ Affiliation: University of Manchester, Turner Dental School, Manchester, United Kingdom

Background: The conduct of the OSCE exams in the Division of Dentistry, The University of Manchester underwent major changes in 2014 in the sense that global marking was introduced to allow setting the pass score using borderline regression analysis (BRA). Due to the nature of the changes, training and calibration of the OSCE examiners became paramount; however, due to the time-strain and occupational commitments of the OSCE examiners, an online training and calibration package was developed and launched and the examiners were advised to use it prior to the exam. Since the latter was a “desirable” exercise, a number of the examiners chose to do the training while some chose not to. This gave us a unique opportunity to have a large dataset of two groups: calibrated (Cal) and non-calibrated (nCal) examiners.

Aims & Objectives: What we did not know was that if the exposure to online training had an effect on the pass mark of the stations set by BRA.

Materials & Methods: A panel of six determined the pass score for each station using the modified Angoff (mAngoff) method. This score was used as a point of reference for the future analyses. The objective and global score data for the Cal (study) and nCal (control) groups were collected. Using BRA, the pass mark for each station was calculated. To take the station difficulty into consideration, the difference between the BRA and mAngoff pass marks were calculated for each examiner.

Results: The difference between the pass marks set by Cal and nCal groups was not statistically different when the BRA was used.

Conclusions: Although training and calibration of OSCE examiners is considered good practice; however, when the BRA method of standard setting is used, we can potentially rely on the professional judgement of the examiners, regardless of their training history.
**Theme:** Curriculum  
**Number:** 1

**Title:** Erosive Tooth Wear Knowledge and Awareness, Amongst Northern Ireland Dentists

**Presenter:** Dr Peter Fine  
**Authors:** *Stewart P  
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UCL Eastman Dental Institute, London, United Kingdom

**Background:** The apparent increase in the prevalence of erosive tooth wear (ETW) in western society, has resulted in the need for dentists to be able to identify this condition and to have knowledge/skills to treat these patients.

**Aims & Objectives:** The aim of this study was to investigate the knowledge and understanding that dentists have about ETW and to recommend appropriate future teaching.

**Materials & Methods:** A hard copy questionnaire was delivered to dentists in Northern Ireland, which enquired about: i) Demographic information, ii) Knowledge/experience and confidence in recognising ETW, iii) the diagnosis of five clinical scenarios and iv) prevention of further tooth wear. All responses were analysed using SPSS version 24 software package.

Any qualitative data resulting from comments on the questionnaires were noted but not analysed.

**Results:** 93 questionnaires were completed and returned. 59.1% (n=55) were female; their mean age was 32.8 years (SD 8.92) and 65.6% (n=61) were General Dental Practitioners (GDPs); 43.4% (n=32) were vocational trainees (VTs). 52.7% (n=49) reported seeing erosion on a daily basis. 57% (n=53) reported their knowledge had primarily come from undergraduate training. GDPs reported postgraduate courses as their primary source of knowledge and VTs indicated their undergraduate training. The respondents indicated that they felt early diagnosis was important, the mean score on a scale of 1-10, (where 1=not important and 10=extremely important) was 8.26 (SD 1.85).

Only 57.5% (n=50) GDPs and 34.6% (n=9) VTs correctly identified erosion in the clinical scenario questions. 93% (n=84) GDPs and 96.7% (n=29) VTs recognised regurgitation as the most likely cause of palatal erosion. 92.4% (n=85) correctly identified preventative measures.

**Conclusions:** This cohort of dentists demonstrated deficiencies in knowledge and understanding of ETW. There is clearly a need for more and better undergraduate and postgraduate education. The latter could take the form of specific CPD activity and increased availability/access to educational literature.
Theme: Curriculum  
Number: 2

Title: The mobility programs and students opinion

Presenter: Dr María Arregui Gambús

Authors: *Arregui M¹, Fernández-Villar S², Fernández-Bozal J³, Giner L⁴

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Background: The mobility programs and students exchange are a great opportunity to learn new clinical skills and improve the curriculum of students.

Aims & Objectives: To describe mobility programs in the Universitat Internacional de Catalunya (UIC; Spain), and the opinion of our students in their exchange in three universities: Ghent (Belgium), San Martín de Porres (Perú) and Tufts (EEUU).

Materials & Methods: The authors analysed the data from academic year 2003-2004 to 2016-2017. The following variables were taken into consideration: number of students per year came to the UIC and the origin; and the number of students went abroad and their destination. The students opinion was obtained after their exchange, they filled in a survey between January and March of 2017.

Results: The total number of incoming students from 2003-2004 to 2016-2017 academic years were 175, and the outgoing were 105. The 2015-2016 had the highest number of outgoing students (27. On the other hand, 2016-2017 academic year had the highest number of incoming students (32). About the opinion of students, all of them are very grateful for the welcome and the help of clinical instructors and students in their integration and adaptation to the university, especially in Ghent and Tufts; in San Martín de Porres they need a few days to adapt completely to the university clinic. They remark the facilities to do activities in different universities associations. The disadvantages were the difficulty to learn the language (Ghent) and the big distances in the city (San Martin de Porres and Tufts).

Conclusions: The mobility programs are a good experience for students to learn different cultures and clinical training. In our university every year increase the number of “came and go” students to live the exchange experience.
Theme: Curriculum Number: 3
Title: Occupational health - a plea in the curriculum of dental schools?
Presenter: Assoc Prof Marin Vodanovic
Authors: *Vodanovic M², Puriene AP³, Szymańska J³, Galic I⁴, Kelmendi J⁵, Berlin V⁶, Chalas R⁷
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Background: Dentists worldwide are very susceptible to the occupational health hazards and the development of occupational related diseases.
Aims & Objectives: We aimed to point out the most common health problems of dentists in three European countries and to compare training on occupational diseases in study programs for dental students.
Materials & Methods: Original studies regarding occupational diseases among dental professionals in Croatia, Lithuania and Poland were searched from PubMed and Scopus, as well as manually.
Results: Musculoskeletal disorders are the most common occupational health problem reported by dentists in Croatia, Lithuania and Poland. It was found that over 86 % of the surveyed dentists in Lithuania, 78% in Croatia and 77% in Poland experienced work related back pain; 83% of Lithuania, 75% of Croatian and 44% of Polish dentists experienced some kind of pain in shoulders, hands or fingers. Occupationally skin disorders, allergies and vision problems were also very often reported. Ergonomics was introduced in dental students’ curriculum in Vilnius University in 2010, students have only 10 hours of lectures. In Medical University of Lublin the subject “Safety at work and ergonomics in dentistry” is taught by 30 hours (5h of lectures and 25h of labs). On School of Dental Medicine University of Zagreb, an elective course entitled “Occupational diseases in dentistry” has been introduced 2015 in the study program, consisting of 20 hours lectures and labs. Considering the feminization of dental profession this course has also a lecture about the influence of dentistry on reproductive health. Unfortunately on many other dental schools there is no systematic training of dental students regarding occupational diseases and their prevention.
Conclusions: There are numerous health hazards and the prevalence of occupational diseases among dental professionals is high. It is of highest importance to increase health knowledge on occupational hazards among dental students and dental professionals, to train them to work ergonomically.
Background: Children with disabilities, having multiple needs depend on variety of services: medical, dental and social.

Aims & Objectives: Aim of the study: to explore possible areas of action in order to improve management and service of dental care for children with disabilities.

Materials & Methods: 76 children with disabilities living in care institutions participated in the study. Participants had a mild to profound intellectual disabilities with or without other medical conditions. Dental plaque was measured during oral examination and used as a proxy for toothbrushing activity. Simple measure based on a modification of Silness and Low Index was used. Visual examination of upper canine to upper canine was performed. Questioners (answered by social worker or assistant) were used to report: toothbrushing activity, exposure to fluoride, dental visits, barriers to daily oral care.

Results: Oral examination revealed 53% of children had substantial and 40% little plaque visible. 62% of participants got their teeth brushed, 28% brushed themselves, 10% didn’t brush at all. 53% of participants brush or teeth were brushed twice a day, 13%-once a day, 33%-irregularly or didn’t brush at all. 95% of participants used a toothpaste (79% with fluoride, 21%-without), 77% of participants attended dentist once a year for routine appointment. Reported barriers were: behavioral issues (laziness, lack of motivation, interest, independence); disability itself (rejection, toothbrush biting, gastrostoma-fear of using, swallowing a toothpaste); other (bleeding gums, swallowing a toothpaste, inability to spit). 32% of participants didn’t have barriers in daily oral care.

Conclusions: Despite of declared regular dental visits and sufficient daily oral care by social workers and assistants, oral examination revealed, that oral cleanliness of children with disabilities is poor. The study produced a list of possible areas of action for improvement dental care of institutional children: inter-professional communication of caregivers, social workers and dentists; individual oral health education and oral management of children with disabilities; need for comprehensive undergraduate blended learning module.
Theme: Evaluation  
Number: 1

Title: Teaching Fixed Prosthodontics - Clinical vs pre-clinical practice.

Presenter: Dr. Carlos F. Almeida

Authors: *Almeida CF\(^1\), Machado R\(^2\), Lino O\(^3\), Almeida PJ\(^4\), Vaz P\(^5\), Leal C\(^6\), Sampaio-Fernandes JC\(^7\)

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Background: Tooth preparation is a basic technique used in fixed prosthesis treatment, and is therefore of crucial importance to pre-clinical students. In the Faculty of Dental Medicine of the University of Porto (FMDUP), Portugal, the teaching of Fixed Prosthodontics is carried out for three years (15 ECTS). The majority of the available literature defends that the most common region for fixed prostheses is the upper arch and one of the most usually replaced teeth is the premolar. However, neither of these studies had the goal of improving the educational curriculum.

Aims & Objectives: The aim of this study was to quantify and compare the type of teeth that most frequently required rehabilitation with crowns and fixed bridges performed by undergraduate students in Fixed Prosthodontics’ clinical appointments at the Faculty of Dental Medicine of the University of Porto, in two different periods (1990-1994 and 2010-2014), and to define new goals for pre-clinical practice.

Materials & Methods: This study was based on a retrospective review of two-hundred patient reports, divided into two equal samples from distinct periods: the first from 1990 to 1994, and the second from 2010 to 2014, selecting the first 100 patients rehabilitated with fixed crowns or bridges. Statistical analyses at a significance level of 95%, using the SPSS version 22.0.

Results: A total of 357 teeth had been prepared, and the majority involved fixed bridge rehabilitation. No significant differences were found between quadrants. The maxillary teeth were the most frequently prepared, and the number of prepared maxillary teeth remained constant or increased between the two periods. Regarding the lower jaw, a significant difference was observed between periods from molars to canines and premolars.

Conclusions: The lower molars and incisors are no longer currently a frequent treatment. and pre-clinical practical teaching should thus focus on all the upper teeth and on lower canines and premolars.
**Theme:** Evaluation

**Number:** 2

**Title:** Does the nature of the clinical placement have an influence on how confident dental students feel when treating paediatric patients?

**Presenter:** Dr Carly Harrison

**Authors:** *Harrison C, Vahid Roudsari R, Barry S*

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**Background:** Undergraduate students at the University Dental Hospital of Manchester (UDHM) receive paediatric clinical teaching in 10 outreach placements or in a consultant-led hospital setting. The outreach clinics are an integrated part of the students’ experience, allowing them to see a wide variety of paediatric case mix in the primary care setting. The UDHM assumes that students receive similar paediatric experience in all of the clinical settings.

**Aims & Objectives:** To assess if any difference exists in self-reported confidence between those that receive their clinical teaching in an outreach setting or the consultant-led unit.

**Materials & Methods:** Students in 4th and 5th year received a questionnaire. Except for the demographic data, the students were expected to report their confidence in performing 15 key paediatric skills using a 10-point Likert scale. Data analysis was conducted with SPSS (Version 24).

**Results:** A total number of 123 students returned the questionnaire. 86% of the clinical teaching was provided in outreach. In general, both 4th and 5th year students felt confident in preventative dentistry (Likert >5). Confidence in clinical skills increased from 4th-5th year. However, students still reported lack of confidence (<5) in pulp therapy, pre-formed metal crowns and primary extractions. ANOVA and Tukey-Test results are presented to compare between the outreach and consultant-led units.

**Conclusions:** This investigation provides insight into the effect of the clinical setting in developing self-confidence and highlights the most common areas that students lack confidence.
Theme: Evaluation  
Number: 3

Title: Students’ perception of the quality of teaching: A 2-year follow-up study in preclinical courses

Presenter: Dr Jean-Michel Saadé

Authors: Makzoumé J, Chedid N, Fakhouri J, Naaman A, El Osta N, Bou Abboud Naaman N

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Background: Varying teaching methods and learning styles is considered an asset for instructors, and an effective way to increase learning.

Aims & Objectives: The purpose of this study was to determine students’ perception of the quality of teaching after varying teaching methods in preclinical courses.

Materials & Methods: Four faculty teachers developed a questionnaire to inform them on the quality of their teaching. The questionnaire included 16 questions divided into three categories (personal data, teacher performance and learning outcomes effect).

Forty-four subjects enrolled in an undergraduate dentistry program (15 males and 29 females) at baseline filled the questionnaire after having attended their first removable prosthodontics preclinical course. Data was collected, analyzed and kept.

During the next 2 years, the same students actively attended different preclinical courses (Endodontics, periodontics, fixed and removable prosthodontics and orthodontics) and clinical residency as well.

At the end of the last removable prosthodontics preclinical course, 2 years after first completion, the students were asked to fill the same questionnaire. Data was collected and analyzed again, and compared to baseline using Chi-Square test. (p-value <0.05). Students were then asked in focus groups (10 to 12 students) about their perceptions.

Results: Despite the various teaching methods and teacher postures, no significant change was noted in students’ perception. Students reported problems in the quality and time given to feedback and in inter-evaluator inconsistency.

Conclusions: Within the limitations of the study, it was concluded that exposing students to different teaching methods, and different evaluator postures might not influence their perception of the quality of teaching. Further studies are needed to investigate other influencing factors that affect students’ perception.
**Theme:** Evaluation  
**Number:** 4

**Title:** Comparing the value of multiple mini interview station domains by undergraduate academic year and assessor.  
**Presenter:** Dr Robert McAndrew  
**Authors:** Dr Robert McAndrew  
**Authors’ Affiliation:** Cardiff University, Cardiff, United Kingdom

**Background:** Multiple mini interviews (MMIs) are used to assist in the selection of undergraduate dental students by the majority of UK universities offering dentistry degrees.

**Aims & Objectives:** To investigate the value that students placed on 15 different MMI station domains and how these opinions compared to each other and staff.

**Materials & Methods:** For the 2016-17 academic year, all enrolled dental students and the staff participating in the MMIs were polled on a Likert scale as to their opinion on the importance of different stations during undergraduate student selection. Data was collected electronically (Turning Point TM) and exported for analysis.

**Results:** Sixty one staff participated and the response rates per academic year were; Year 1 (97.5%), Year 2 (91.7%), Year 3 (92.5%), Year 4 (92.1%), Year 5 (90.7%). Comparisons of the staff and student perceptions on the value of station domains in student selection revealed the overall staff scores to be higher on all occasions; although graphical comparisons showed variance by year and some similarities for a number of domains. For seven of the station domains (English comprehension, giving instruction, data interpretation, self-awareness, logical thought, breaking bad news and honesty) a discernible increase in value as students progressed through the course was noted. Two stations (critical thinking and reasoning) showed increased value as students progressed through the course but in a less discernible way. Students scored the manual dexterity domain as decreasingly important year on year and four stations (dealing with a dilemma, receiving instruction, creative thinking, ethics and professionalism showed a consistent level of importance to the students.

**Conclusions:** The value of station domains in selection differs not only by academic year but is often at variance to that scored by staff involved in the MMI process; although differences and similarities exist these should be explored further.
**Theme:** Evaluation  
**Number:** 5  

**Title:** Clinical audit on student compliance with the Medical Devices Directive  
**Presenter:** Miss Krishantini Mahendran  
**Authors:** *Mahendran KM, Quinn BFA*  
**Authors’ Affiliation:**  
King’s College London Dental Institute, London, United Kingdom  

**Background:** In an effort to strengthen transparency for consumers and address concerns about safety of materials, the European Commission has amended regulations on medical devices (MEDDEV) to ensure patients receive statements containing essential information and a unique identifier for all medical devices. These legislative changes apply to removable dentures (partial and complete), which are classified as long-term, non-active, invasive medical devices based on MEDDEV-2.4/1.  

**Aims & Objectives:** Dental laboratories supply a ‘patient statement’ upon completion of final denture construction. This statement contains information regarding the laboratory at which the denture was constructed, a list of devices supplied to the patient (e.g. special trays, bite blocks, completed dentures) and their respective product codes. To ensure compliance with MEDDEV guidelines, all patient statements must be handed to the patient. The aim of this audit is to assess student compliance with guidelines on providing information about medical devices to patients.  

**Materials & Methods:** Institutional approval (King’s College London Dental Institute) was granted to conduct an audit. The Electronic Patient Records (SALUD), where removable prostheses had been provided by Dental Students (n=68), BDS Years 3-5, were randomly selected. Clinical notes documented during the final fit stage for the prosthesis were assessed for any mention of patient statement being handed to the patient/escort.  

**Results:** The mean across the entire cohort (n=68) was calculated. The expected compliance rate is 100% however, overall 5.88% of students recorded that patient statements were handed to patients. The highest percentage was noted among Year 3 students (9.09%), followed by Year 4 (5.17%) and Year 5 (0.00%).  

**Conclusions:** At present, the majority of students are not recording that they are complying with the MEDDEV guidelines. Following identification of barriers to compliance, changes will be recommended and a re-audit is scheduled.
**Theme:** Evaluation

**Number:** 6

**Title:** An innovative primary care based undergraduate dental school curriculum: how well does it prepare graduates for foundation training?

**Presenter:** Mrs Angela Magee

**Authors:** *Magee AP, Cook N*

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School of Dentistry, University of Central Lancashire, Preston, United Kingdom

**Background:** This study evaluates an innovative primary care based undergraduate dental school curriculum that aligns more closely with the future working environment of the majority of dentists compared to traditional curricula. Existing evidence of effectiveness is anecdotal.

**Aims & Objectives:** Assess values, attitudes, emotions and anticipated career trajectory of UCLan students pre and post-graduation and compare with graduates of other, more traditional, dental schools. Pilot the data collection method for potential future cohorts.

**Materials & Methods:** UCLan students completed a battery of questionnaires aligned with fundamentals of professional standards and curriculum and assessment frameworks (professionalism, attitudes to patient safety, team working, prevention and stress/burnout) prior to graduation and at 6, 12 and 18-month follow-up. Questionnaires were completed face-to-face, online or via post. Graduates of other dental schools’ completed questionnaires at the 6 and 12-month time-points.

**Results:** Two cohorts of graduates have been recruited from UCLan and other schools. Preliminary results demonstrate no change in career option and specialist training choice among our students between baseline and 6 months. Quality of life and recognising professional incompetence as a major cause of error scores were significantly higher at 6 months than baseline (mean (IQR): 9.5 (5-13.25) vs 18 (15-21), p<0.001 and 21 (19-23) vs 22 (20-24), p=0.005 respectively). UCLan graduates in 2016 scored twice as high in quality of life as the UCLan 2015 cohort (mean 14 vs 7.5, p=0.009). Generally there were no differences between graduates of different schools, but they were more likely to score higher on patient safety training (18 (17-20) vs 17 (15-18), p=0.003) and error reporting confidence (19 (17-20) vs 17 (15-19), p=0.001) at 6 months.

**Conclusions:** Preliminary results suggest a small number of differences between schools in the preparedness of graduates for foundation training. The mode of data collection is proving successful with good response rates (>50% at all four time points).
Theme: Evaluation

Number: 7

Title: Student evaluation regarding the course of Forensic dentistry at the School of Dental Medicine, University of Zagreb

Presenter: Ms Ema Prohic

Authors: *Prohić EP¹, Brkić HB²

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Background: Forensic Dentistry is the area of forensic medicine concerned with the examination of the human teeth, especially in cases of victims who cannot be identified by conventional means or when an attacker bites a victim and leaves bite marks behind. Forensic dentistry is becoming beneficial to new generations of doctors of dental medicine and this survey presents results of a long term course evaluation.

Aims & Objectives: The aim of this research is introduction to the popularization of forensic studies in the academic and professional world of dental medicine.

Materials & Methods: 503 students of School of Dental Medicine, University of Zagreb partook in an evaluative survey regarding the course of Forensic dentistry from the years 1998 to 2013. Students were grading the quality and quantity of the curriculum, teacher’s performance and they displayed their interest regarding different areas of forensic dentistry.

Results: More than 95% of students answered positive to questions concerning the satisfaction with lectures, workshops and the teacher’s syllabus. They consider the class interesting enough and think of it as a necessity in the education of a doctor of dental medicine.

Conclusions: The subject of Forensic dentistry has demonstrated excellent marks and was given great feedbacks with slight improvements in the structure of classes by teacher’s following of students’ suggestions. Method of evaluative survey regarding student courses has displayed its efficiency and its following future use. It also presented the course Forensic dentistry as outstanding, interesting and satisfactory course for future generations in their appointed education of dental medicine.
Theme: Evaluation

Number: 8

Title: Skill-mix in general dental practice: a survey of activities and patient satisfaction with their care.

Presenter: Ms Emma Barnes

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Background: Dental Therapists are an increasingly important member of the dental team. However, the impact on workload arising from having a dental therapist in the practice or patients’ views on receiving treatment from a dental therapist are under-explored.

Aims & Objectives: This study aimed to explore i) activities performed during appointments led by dentists and dental therapists (DTs) ii) patients’ satisfaction with the care they received.

Materials & Methods: Six case-studies of general dental practices in Wales, UK: three with and three without a DT. At each appointment, a patient-satisfaction questionnaire and a staff member-completed appointment record form were completed. We sought to recruit 150 patients seeing a dentist and 100 patients seeing a DT, per case-study practice.

Results: We recruited 1224 patients across six practices (314 DT and 910 dentist appointments). 36% of appointments were regular check-ups, 64% for treatment. Treatments included: preventative work (including periodontal work) (42%), restorations (38%), advanced treatment (10%), extractions (6%). Dentists in practices with a DT, undertook significantly less preventative and restorative work, and significantly more extractions and advanced treatment (p<0.005, \(\chi^2=15.352\)). Some care could have been delegated (37% of appointments with dentists in practices without a DT, 27% in practices with a DT). The commonest reason for non-delegation was that activity was “outside the DT’s scope of practice” (61%) – typically restorations (33%) and advanced treatments (30%). Oral health advice was received by 91% of patients seeing a DT and 86% seeing a dentist. Patient satisfaction and confidence in the dentists’ or DTs’ ability was uniformly high (97% and 99% each group respectively).

Conclusions: Practices with DTs provided a more preventative-focussed approach to patient-care. Dentists in practices with DTs, performed more complex work than in those without. Positive patient satisfaction and confidence in practitioners’ ability across practices suggest patient acceptability of a preventative model delivered by well-trained members of the dental team.
Theme: Evaluation

Title: Using feedback to improve student expectations of a Prosthodontics programme – a 5 year audit

Presenter: Prof Dr Brian Millar

Authors: Hussain F, *Millar BJ

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Restorative Dentistry, King’s College London, London, United Kingdom

Background: This blended learning Masters programme (MClinDent in Fixed & Removable Prosthodontics) is in its 20th year. Feedback is used to improve learner’s satisfaction.

Aims & Objectives: This audit aims to understand learner expectations, with reassessment at 5 years, and measure improved outcomes.

Materials & Methods: A quantitative questionnaire was developed for an online survey as part of ongoing quality assurance. The participants were students and graduates of the programme. Three separate samples were included: all new students embarking on the programme; all current students in years 2, 3 and 4 of the programme; graduates of the programme of the past 3 years. The rationale was to gain some longitudinal perspective over the 4-year duration of the degree. Statistical analyses tested for differences between the groups and for differences within the groups correlating to variables such as gender and age. The study was repeated 5 years later and results compared.

Results: Initial response rates were: 69% for new students, 81% for current students; 66% for graduates and 94% for new students. 87% of current students and 100% of graduates reported satisfaction. The majority of respondents agreed that they gained academic, clinical and career benefits through the programme and that blended learning enabled them to study effectively at a distance while maintaining other commitments. Difficulties in time management, rigorous demands of the course, perceived feelings of isolation and insufficient feedback were identified as issues for concern. Changes were made and a 5 year follow-up audit showed 92% & 96% satisfaction for new and current students.

Conclusions: Interpretation of the data demonstrates that this blended Masters programme in Dentistry is meeting learner expectations and provides a positive, meaningful learning experience for students. Measures brought in to address recorded concerns have been effective. The learner view with assessment and ongoing auditing is essential for continued course evaluation and enhancement.
**Theme:** Evaluation

**Number:** 10

**Title:** “Teacher Student Assistant Roles (Peer Instruction)” Participant Perceptions from the Orthodontics and Dentofacial Orthopedics Department of the Dentistry School-University of Chile

**Presenter:** Prof Dr Eduardo Alvarez

**Authors:** *Alvarez Eduardo AE¹, Miquel Catalina CM², Sobrero Viviana SV³*

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**Background:** In our teaching process we have observed, that the student doesn’t like to interact with teachers in educational activities, the hierarchical relationship of verticality that occurs between teacher and student is very strong, probably generated by the power that the teacher holds because he’s the holder of the knowledge. Therefore, the need to understand our educational practice and to find and test new methodologies, is almost mandatory to fulfill our responsibility to better teaching at all stages of student learning, as well as to allow us to reflect on them and to become aware of change and modifications we could make.

**Aims & Objectives:** As work objectives we set out to analyze and interpret the perceptions of participants in the teaching-learning process of the aforementioned area, relative to teaching-student assistant (Peer Instruction), advantages, disadvantages and the role exercised by the teacher assistant-student in the teaching learning process. In turn we infer, from these perceptions, whether or not teachers encourage the qualities of teacher-student assistants

**Materials & Methods:** The methodology used is a qualitative research and data collection was conducted through interviews and focus groups. We performed a content analysis of the material collected; the results were recorded and analyzed in detail in systems of categories, which in turn allowed us to answer our research questions.

**Results:** Some results were:
- Students mentioned that the horizontal relationship with peers has an advantage to facilitate learning. (Dimension 1)
- Student assistants are considered to be barely prepared to form part of the teaching process. (Dimension 2)
- All three strata are conscious of the necessity of qualifying the assistant-students to rule the teaching process (Dimension 3)

**Conclusions:** Some conclusions were:
- Teachers do not wish to share their knowledge with the assistant-students.
- Students do prefer a more vertical relationship in the learning process with teachers, not student assistants leading them.
**Theme:** Evaluation  
**Number:** 11

**Title:** Stress in dental undergraduates: A survey of two small dental schools

**Presenter:** Prof Dr Jaya Jayasinghe

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**Background:** Dental training is a relatively long-term, demanding and often expensive course. This could cause stress for the students but this matter has not been much investigated and, particularly, not reported in small dental schools.

**Aims & Objectives:** To determine and compare levels of perceived stress and potential stressors in dental students from two small dental schools; Aberdeen (UK) and Iceland.

**Materials & Methods:** 83 students participated in a cross-sectional, questionnaire-based survey (response rate = 82.2%). Stress levels and sources of stress were measured using Perceived Stress Scale (PSS-10) and Dental Environment Stress Scale (DES-38) respectively. Descriptive data analysis was conducted using SPSS.

**Results:** Participants’ mean age was 26.1 years (22-45), 69% were females and 32% were males. The mean PSS scores for Aberdeen (18.7) and Icelandic students (18.9) were similar. The DES items rated most stressful differed between the groups. Aberdeen students gave examinations and grades, fear of failing course or year and completing graduation requirements the highest stress ratings of 47.8%, 39.1% and 29% respectively. The atmosphere created by clinical faculty (37.5%), lack of time for relaxation (31.3%), completing graduation requirements (31.3%), and inconsistency of feedback on work between different instructors (31.3%) received the highest stress ratings from Icelandic students. Ranking of the mean stress score of the DES

**Conclusions:** Levels of perceived stress in both student groups were higher than the reported population norm of 13.02. However, the perceived stressors were different between groups. The most common stressors for Aberdeen students were related to students’ self-efficacy beliefs such as fear of failing course or year. For Icelandic students high stress was attributed to faculty and administration-related factors such as atmosphere created by clinical faculty. These findings suggest that the potential stressors are different for different dental environments. Hence, individual dental schools require tailored stress-management strategies in order to reduce the levels of stress in dental students.
**Theme:** Evaluation  
**Number:** 12

**Title:** Evaluation Of A Dental School’ Curriculum By Recent Graduates  
**Presenter:** Prof Valérie Roger-Lerol  
**Authors:** *Roger-Lerol V, Nauche M, Tubert-Jeannin S*  
**Authors’ Affiliation:**  
Clermont Auvergne University, School of Dentistry, Clermont-Ferrand, France

**Background:** A dental school is socially accountable for the quality of the training it provides and should check periodically that new graduates are able to fulfill the health needs of the population.

**Aims & Objectives:** The aim of this study was to describe levels of self-rated competency of recent graduates from Clermont-Ferrand dental school (France).

**Materials & Methods:** 183 graduates from three successive cohorts (graduated between 2013-2015) were asked to complete an online questionnaire listing 53 competences extracted from the list of competences of the European dentist defined by ADEE. For each competence, the respondent was asked to self-rate his/her level on a five levels Likert scale: “extremely competent”, “rather competent”, “rather incompetent”, “not competent” and “doesn’t know”. The respondents also had to highlight the five skills they thought that they would have needed to be improved.

**Results:** The response rate to the questionnaire was 57.9%. For 40 competences, more than half of the graduates (52,5-99,2%) judged that they were extremely or rather competent at the end of their studies. Only 13 competences seemed to be poorly acquired (>50% being rather incompetent or not competent). Among them, some are known to be difficult to acquire due to low exposition during dental studies (as complex extractions). For some others, there was a need for a more thorough training in Clermont-Ferrand school (implantology, periodontal surgery, dental practice management).

**Conclusions:** Asking recent graduates about their learning during their studies is of most importance for a dental school and is part of its quality assurance process. The school may identify weaknesses and then implement changes in order to increase the level of competence of its graduates.
**Background:** The World Health Organization (WHO) estimates that about one of 500-700 children born with orofacial cleft. It is reported that orofacial clefts are related to the variety of health complications which includes feeding, speech, physical health problems and also psychological and social difficulties. Oral Health Related Quality of Life (OHRQoL) evaluates the influence of oral disease on the child’s physical, psychological and social functioning.

**Aims & Objectives:** To identify the impact of orofacial cleft on the OHRQoL, compare it with control group and to evaluate whether the OHRQoL of children with orofacial clefts differs between different age groups. Also to assess the difference between responses of children with orofacial clefts and their caregivers.

**Materials & Methods:** 35 patients from Žalgiris Clinics of Vilnius University Hospital, as well as their caregivers, and 35 controls, met our inclusion criteria and completed the Child Oral Health Impact Profile (COHIP) a reliable and standardized questionnaire with the aim to assess self-reported OHRQoL in children and teenagers (age 8-15 years).

**Results:** Children with orofacial clefts had statistically significant lower overall Oral Health Related Quality of Life and Functional Well-being scores than control subjects. No statistically significant differences were found between the responses of children with orofacial clefts in different age groups-8-11 and 12-15 years. Furthermore, there was a statistically significant difference between the responses of children with orofacial clefts and their caregiver’s reports for overall OHRQoL, Functional Well-being, Social-Emotional Well-being, Scholl Environment, Self image, Treatment Expectancy, Oral-Health.

**Conclusions:** Presence of an orofacial cleft significantly decreases overall OHRQoL. The main concern should be oriented to patients functional aspects – chewing, speech and oral hygiene development. Children with orofacial clefts reported much higher overall OHRQoL and subscale rates than their caregivers. Therefore, it is very important not only to take diverse care of orofacial cleft patients but also to give emotional support for their caregivers.
Theme: Faculty Development

Number: 1

Title: Dental Faculty’s Approaches to High Quality Dental Education

Presenter: Assoc Prof Sebnem Dirikan Ipçi

Authors: *Assoc. Prof. Dirikan Ipçi SEBNEM¹, Assoc. Prof. Cakar GOKSER², Prof. Sandalli NUKET³, Prof. Sandalli TURKER⁴, Prof. Oktay INCI⁵

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Background: A framework for developing standards of dental educators has recently been published.

Aims & Objectives: The purpose of this study was to define the clarity about the roles and development needs of dental faculty staff at Istanbul Kemerburgaz University Faculty of Dentistry who’s responsible for managing and delivering undergraduate dental education.

Materials & Methods: A questionnaire was used according to the guidelines of The Committee of Postgraduate Dental Deans and Directors, UK. The questionnaire included 8 domains and within each domain 4 zones. A total of 15 dental faculty staff filled the questionnaire.

Results: Although the academicians designate themselves as sufficient; regarding educational theory and best practice domain, in Zone 1, this is a prerequisite for any dental educator, information related to the learning outcomes and competency areas must be further improved by an education programme. On the other hand, the educators criticize themselves as very competent concerning learning and teaching in the clinical practice and away from. The educators describe themselves as insufficient in assessing the learner against clear criteria, using appropriate tools and providing constructive feedback. In domain 5, 50% of the educators characterize themselves as guide learners on personal and professional development. The more experienced academicians recognize the reflective practice much better. Most academicians would like to have an education related to the local or national quality assurance systems.

Conclusions: In conclusion, the results of this pilot study, revealed that in order to ensure quality in dental education a re-developmental education plan and a workshop must be scheduled to improve the incompetencies stated by the educators.
Theme: Faculty Development
Number: 2

Title: Phenomenography: A Qualitative Research Approach for Exploring Understanding in Education

Presenter: Mr Gerard Balague Viladrich
Authors: *Balague Viladrich G
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Background: Phenomenography as a research approach has evolved from work begun by a team of researchers in the Department of Education at the University of Gothenburg, who were interested in researching qualitatively the experience of learning. From 1970s, phenomenography has developed into a distinctive qualitative approach to understanding not only learning but a broad range of phenomena.

Aims & Objectives: The aim of this poster presentation is to know more about the phenomenography as a qualitative research methodology that investigates the different experiences that students create from the world of their understanding.

Materials & Methods: Bibliographic review in which by exploring the phenomenography as a qualitatively methodology, we aimed to highlight the usefulness of this approach in the educational framework, its implications in the research design, the advantages and limitations.

Results: There seems to be an agreement that phenomenography has helped to the re-conceptualisation of learning and teaching. Thanks to phenomenographic studies, teachers acknowledge their accountability in guiding the conceptualisations achieved by their learners.

Phenomenographic data collection includes mainly close interviews with a limited, purposive sample of students with the interviewer working for an articulation of the students’ reflections on their experience that is as exhaustive as possible. It is essential that the interview questions are posed in such a way that students express their experiences within their own reference structure.

A phenomenographic data analysis sorts perceptions into specific “categories of description”. The set of these categories is sometimes referred to as an “outcome space.” These categories (and the underlying structure) become the phenomenographic essence of the phenomenon.

Conclusions: There are several theoretical frameworks, depending on the researcher’s goals and purposes, that guide qualitative research in order to analyse data in education. If the researcher might want to describe behaviour, understand beliefs or explain phenomena, then phenomenography as a qualitative methodology could be of a great use.
Theme: Faculty Development  
Number: 3

Title: General Dental Practitioners’ Understanding and Perception of Minimally Invasive Dentistry

Presenter: Prof Dr Chris Louca

Authors: Fine P, *Mirsiaghi FARNAZ

Authors’ Affiliation: 
Department of CPD, UCL Eastman Dental Institute, London, United Kingdom

Background: Restorative Dentistry has changed in recent decades partially due to the development of adhesive materials and the changing philosophy on caries management. The inclusion of Minimally Invasive Dentistry (MID) has become an integral part of training for general dental practitioners (GDPs). It has been shown that the traditional, surgical approach to treating caries is destructive, ineffective and maximally interventionist.

Aims & Objectives: The aim of this study was to investigate GDPs’ understanding and perception of MID.

Materials & Methods: This observational, cross-sectional, quantitative study surveyed UK based GDPs using a questionnaire. The questionnaire enquired about: i) demographic information, ii) GDPs knowledge of MID, to evaluate respondents’ agreement on caries risk assessment, treatment planning and materials, and iii) employing clinical scenarios to test knowledge. 

Data was collected at dental conferences by hand via a hard copy questionnaire, following participant consent. Analysis of the data was undertaken using SPSS Version 22.

Results: 87.6% (n=149/170) GDPs responded. 59.7% (n=89) of respondents were male, 83.9% (n=125) were UK trained, their mean age was 27.3 years and 12.8% (n=19) had attended postgraduate training on MID. 10.7% (n=16) reported knowing a great deal about MID, whilst 8% (n=12) reported knowing very little. A caries risk assessment was always carried out by 70% (n=104) GDPs; 91% (n=136) agreed that a caries risk assessment influenced their treatment plan.

The median age in years of those who scored all scenarios correctly was 25; scored two correctly was 26.5 and those who scored one correctly was 28.5 years. The median age of participants who scored none correctly was 33 years.

Conclusions: This study highlighted that knowledge about MID amongst this cohort was poor. The number of years in practice had a significant impact on knowledge scores. Perhaps more training on MID is needed for more experienced GDPs who have not necessarily used this approach throughout their practising lives.
Theme: Faculty Development
Number: 4
Title: How to support student motivation?
Presenter: Prof Sibylle Vital
Authors: Moore U1, Vital S2
Authors’ Affiliation:
1Newcastle University, Newcastle, United Kingdom
2Universite Paris Descartes - Faculte de Chirurgie Dentaire

Background: Students' levels of motivation vary widely within an individual and between them. Intrinsic student motivation is related to experience: past success and failures; and self-esteem. Motivation is proportional to the personal competence felt by the student facing a task and to the value given to this task. Assessment is said to guide learning but an effective learning environment is crucial to motivate students.

Aims & Objectives: As teachers we have to encourage students to take responsibility for their learning in every field of the dental curriculum.

Materials & Methods: Motivation might be increased in different modalities, which may be combined:
- increasing student’s feeling of engagement
- increasing the value students give to a task
- adjusting assessment
- encouraging qualities such as commitment, perseverance, curiosity, emotional intelligence.

Results: With simple changes, student’s feeling of competence could be enhanced. Making connections with previous experience provides confidence. Especially in our professional field, it is beneficial to student to highlight transferable skills. It is also very important to promote student’s results.
To increase the value given to the task by the student, contextualization of the course with anecdote or problem solving is effective; students need to feel involved. Allow students’ to guide their learning. Allow students to actively participate: making decisions, group work may be useful.
Lastly, modalities of assessment should be varied. If assessment guides learning, formative assessment should be preferred allowing feedback and reflection

Conclusions: It is emphasized that creating effective learning environments enhances students' perceptions of competence, commitment and engagement.
**Theme:** Inter Professional Education (IPE)  
**Number:** 1

**Title:** Prevention of early childhood caries: creating a guide for early childhood healthcare professionals.

**Presenter:** Assoc Prof Javotte Nancy

**Authors:** *Dartigue OD¹, Nancy JN², Biscay-Aussel ABA³, Thébaud NT⁴

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**Background:** Children under three-year-old are visiting more often paediatricians, general practitioners, midwives, pediatric nurses and childcare assistants than they visit dentist. As a consequence, these professionals appear to be the first and specific interlocutors for parents. Parents need informations about oral health and professionals can’t tell them precisely because they lack themselves of informations. We made, in 2015, one survey exploring knowledge and mental representations of Early Childhood Caries (ECC) from paediatricians and general practitioners. Less than the half knows the time of the 1st appointment at the dental office or the beginning of toothbrushing. The same survey was made with midwives, paediatricians nurses and childcare assistants and gave the same results. All the professionnals of these two surveys wanted the answers and wished a document with the required informations.

**Aims & Objectives:** Create a guide which provides informations and presents pictures in order to diagnose early caries and to help practitioners to prevent of Early Childhood Caries (ECC). Because they have a major role to play according to the heavy consequences of ECC on children.

**Materials & Methods:** The leaflet was created according to the recommendations of international graphism of leaflet. The graphic design was made by a professional (Photoshop). The content was decided with a multidisciplinary team (pediatricians, general practitioners, pediatric nurses, general and paediatric dentists).

**Results:** The leaflet is composed of 3 parts: «Diagnose the early signs of ECC», «Tell the good practices», «Give the patient care». The leaflet is the poster.

**Conclusions:** We want to share with the French Society of Pediatrics and the French Society of Paediatric Dentistry and with different associations of health professionnals. The next step of our work will be the assessment by some early childhood healthcare professionnals.
**Theme:** Inter Professional Education (IPE)  
**Number:** 2

**Title:** Dietary sugar oral health advice: A Delphi Study. What are the main messages that we should include in teaching for the dental team?

**Presenter:** Dr Ilona G Johnson  
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**Background:** Caries preventive advice to patients about dietary sugar is a core skill for dental professionals. Dietary sugar advice is also important for wider non-communicable disease prevention (e.g. cardiovascular disease). Guidelines for sugar advice vary between professions, which may lead to confusing and contradictory messages.

**Aims & Objectives:** The aim of this work was to develop an inter-professional consensus view of dietary sugar advice to be given by the dental team.

**Materials & Methods:** Method: An e-Delphi was used. Following ethical approval, an expert panel (n=31) of participants (dental health professionals, doctors, nutritionists, dietitians, government representatives and public health specialists) were invited via email to participate in the study. Round 1: Participants were asked to identify 10 key sugar messages that dental professionals should provide to patients; an item list was compiled. Round 2: Participants were asked to rate all items on a 5 point Likert scale of important to not important. Round 3, participants were sent their own rating scores and the all-participant average for each item and were then asked to re-score each item. Data were then analysed with Spearman Rho rank correlation to identify the levels of agreement for important and non-important messages.

**Results:** Results: Of the 31 people invited to participate, 12 completed the Delphi process. A total of 95 sugar message items were generated, these were condensed into 13 key statements. Good agreement was seen Rs=.897 p<.05 and eleven key sugar messages were subsequently identified. These included advising that sugars caused tooth decay, advising that sugars increased the risk of weight gain, and the amount and frequency of sugar should be reduced.

**Conclusions:** Conclusion: This research identified 11 core preventive messages relating to dietary sugar. These messages should be included in training for all dental professionals to ensure that dentists and other healthcare professionals can work together and provide consistent advice and care for patients.
Theme: Inter Professional Education (IPE)  
Number: 3

Title: Professionalism and social media in healthcare: Inter-Professional perspectives of what we need to teach and how we should do this.

Presenter: Dr Ilona G Johnson

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Background: Most students in healthcare professions including dentistry use social media; training is recommended to reduce the professional and personal risks involved.

Aims & Objectives: Explore staff and students’ perceptions of students’ social media training needs.

Materials & Methods: A purposive sample of staff and students (n=13) were recruited for the study. Students from healthcare disciplines were recruited through the student union. Staff involved in teaching professionalism or managing fitness to practice cases were recruited via staff networks. Semi-structured qualitative one-to-one interviews were carried out using an interview guide. Data were audio recorded and then transcribed. Sampling, data collection and analysis were conducted in parallel. A thematic approach was used for analysis. Data collection completed when no new themes emerged.

Results: Students n=8 and staff n=5 participated in the study. Staff and students felt the link between social media and fitness to practice should be included in training. Students were most concerned about professional behaviour in the ‘here and now’ and strategies for dealing with other people’s behaviour (e.g. friends posting images of them). Staff said that content should include regulatory guidance, managing personal profiles in the longer term, potential for serious professional issues (e.g. alcohol or drug images) and the impact on professional careers. Both were concerned about social media posts and agreed that students needed to develop an awareness of the permanence of posts, privacy settings and where to draw the line on professionalism.

Staff preferred delivery in small group seminars to aide learning but students preferred learning in lectures, as this was more anonymous.

Conclusions: Social media training is considered important. Fitness to practice, strategies for managing personal profiles, identifying where to draw the line and managing potential issues should be considered within inter-professional teaching. Approaches for optimal learning and engagement need further investigation as staff and students have divergent views on the best approaches.
Theme: Inter Professional Education (IPE)  
Number: 4

Title: Learning How "Professions Can Work Together To Provide The Best Care": Dental-Pharmacy Inter-Professional Education

Presenter: Dr Ilona G Johnson

Authors: *Johnson IG¹, Smith M², Tomlinson P³, Jones RJ⁴, Jones RF⁵, Jones S⁶

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Background: Inter-professional learning is advocated as a key approach for modern healthcare education however educational practice is still developing.

Aims & Objectives: The aim was to explore qualitative exit poll feedback arising from a series of inter-professional teaching sessions for undergraduate dentists, hygienists, therapists and pharmacists.

Materials & Methods: Five inter-professional teaching sessions were organised for 206 students (Year2 Pharmacy n=104, Year2 Dental n=76, Year1 Hygiene and therapy n=26). Each session included between 30 and 50 students. A teaching plan was sent out in advance to all staff and was cascaded to all students. Students were asked to leave anonymous post-it note feedback comments about their experiences and suggestions at the end of the session. Data were entered manually into Microsoft Excel and thematic analysis was conducted.

Results: Results: A total of 122 students who attended left feedback. Comments focussed on four main themes. 1) A “good” session (n=96 participants), most often where students had learned something new or had particularly enjoyed the experience. 2) Learning about topic areas divided into: where students described having learned about specific topics such as medical histories and medicines (n=84), better knowledge and understanding of professional roles (n=72) and awareness of knowledge gaps (n=21). 3) Timing and fit; students n=14 described where this session best fitted into their schedules, views varied significantly in this area. 4) Organisation and Content; to improve learning was suggested, for example additional preparatory information and pre-reading (n=23).

Conclusions: Conclusion: Inter-professional teaching between pharmacy and dental can provide positive learning experiences, greater awareness of professional roles, medical topics and knowledge gaps. Students appear to prefer: structured sessions with pre-preparation, greater interaction and a good fit to their own stage of learning. Further evaluation of the added benefits which arose from this e.g. subsequent inter-professional cascade of oral health information to medical students is needed.
**Theme:** Inter Professional Education (IPE)  
**Number:** 5

**Title:** Oral health care in retirement homes – introduction of an interdisciplinary training course for dental hygiene students

**Presenter:** Dr Julia Blank

**Authors:** *Blank ECJ, Haas JMK, Fussnegger MR, Gaßmann G*

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**Background:** In the field of preventive dentistry new products are coming into the market with high frequency. Dental professionals are therefore required to assess these utilities with respect to their scientifically proven indications and their therapeutic benefit.

On the other hand preventive dentistry means to take care of a heterogeneous group of patients with different demands with regard to prophylactic measures. Thus, in geriatric dentistry – due to the physical and cognitive impairment of the patients – special patient-centred as well as interdisciplinary communicative competences are required.

**Aims & Objectives:** The described training program pursues two main objectives that are of great importance for the academic education of health care professionals: The competence to critically assess medical devices and measures as well as the abilities for result-oriented interdisciplinary and patient-centred communication.

**Materials & Methods:** Initially students are invited to generate a training course about oral health care in elderly people for geriatric nurses which is later presented in a retirement home. To determine and assess the recommended measures and devices students have to conduct a systematic review of scientific literature and discuss the finding with there fellow students an the tutor. After presenting the training course in the retirement home dental hygienists and geriatric nurses are working together on a selected patient. They compile an individual prophylactic concept for preservation the patient’s oral health and assist each other in case of interprofessional problems.

**Results:** Since 2013 the training program is part of the undergraduate study course Dentalhygiene and preventive management offered by the german praxisHochschule. Evaluation results show a high acceptance of the course through both dental hygiene students and geriatric nurses. Dental hygienists indicate a high level of learning outcomes in particular in matters of communicative competences and scientific methodology.

**Conclusions:** The introduced training course helps preparing students for prospective health care system challenges.
Title: Inter-professional Education: A global perspective  
Number: 6  
Presenter: Prof Cecile Feldman  
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Aims and Objectives: In May 2017, the American Dental Education Association (ADEA) and the Association for Dental Education in Europe (ADEE) held a joint meeting to share advances and help shape the future of dental education. Four workgroups were held, including a workgroup on inter-professional education (IPE). A mind-mapping exercise was conducted to identify concepts that are important to developing, implementing and improving IPE programs.  

Materials and Methods: Prior to the May 2017 meeting, a literature search and review on IPE programs was conducted. Registrants for the IPE workshop were divided into 5 groups. Based upon the literature review, each group was asked to consider 5 questions over the course of the 6 hour workshop (divided into two 3 hours sessions,) and each group was asked to develop mind-maps reflecting their group’s deliberations. Mind-maps graphically reflect concepts or information and show relationships between the concepts identified. The authors took all group developed mind-maps and then produced a master mindmap which included all identified concepts.  

Results: 71 meeting delegates registered for the IPE workshop representing 29 countries. Each group included educators from different countries and different schools, thus each workshop had faculty from schools with “advanced” IPE programs and others from schools with “emerging” IPE programs. Thirteen (13) concept categories were identified with a total of 186 concepts discussed. Concept categories included: objectives, assessments, outcomes, professionals involved, educational opportunities, educational methods, barriers, solutions, best practices, incentives, faculty development, strategic implementation, key points & lessons learned.  

Conclusions: By using a mind-map method, a diverse group of dental educators were able to identify a broad and comprehensive set of concepts important in IPE implementation and improvement. This poster presents the master IPE mind-map, documenting identified categories and concepts.
**Theme:** Other  
**Number:** 1

**Title:** How to decrease blood exposure in academic dental clinics? A collaborative project.

**Presenter:** Assoc Prof Marjolaine Gosset

**Authors:** *Gosset M¹, Cornélie P²

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**Background:** Blood exposure accident is common in academic dental clinics. In Paris (France), it is estimated that as many as 20% of the blood exposure accidents in a hospital are declared by dental students. This data seems to be underestimated since 64% of the students undeclared blood exposure.

**Aims & Objectives:** Our aim is to decrease the incidence of blood exposure accident among dental students by assessing student attitude.

**Materials & Methods:** P.C., a risk prevention advisor fellow, visited 644 students in 6 academic dental clinics in Paris (France). At each clinic, P.C. conducted (1) a diagnosis and (2) procedures to help students to improve their practice. (1) The diagnosis phase corresponds to an audit of the students practices based on observation. (2) In the corrective phase, audit results were presented to the students. Then, education and assessment in hygiene procedures were set up.

**Results:** A- diagnosis phase: the audit revealed that the majority of blood exposure accidents involved anesthesia needles (64% of blood exposure). Mistakes in risk prevention procedures and in ergonomics were also observed. For example, occupational protective clothing were not appropriate in 24% students on average (ex: no protective glasses wearing, no proper fitting of the mask). Moreover, Students often interrupt their practices because of a lack of materials (unprepared procedure) or the waiting for teachers.  
B- corrective phase: in dental clinics, procedures were developed to train students about hospital hygiene. Moreover, 5-minutes audits to review hygiene procedures were also developed in pre-clinical years. In addition, an OSCE station to test knowledge about chair cleaning procedures during the 3-years dental students’ examination.

**Conclusions:** we would like to improve students ergonomics and to promote four-handed work in order to decrease blood exposure while we hope to curb blood exposure incidents in 2017.
Motivational Profiles of Dental Students: A Person-centred Analysis of Differences in Study Strategies, Academic Performance, Self-esteem and Vitality

Presenter: Dr Cesar Orsini

Authors: Dr Cesar Orsini

Authors’ Affiliation: University of the Andes, Santiago, Chile

Background: Self-determination Theory distinguishes different quality types of motivation. Intrinsic motivation, as opposed to controlled motivation, has been associated with improved educational outcomes of dental students. Most research, however, has explored these relationships as group variables, without considering the coexistence of intrinsic and controlled motivation.

Aims & Objectives: Our aim is to characterise dental students’ motivational profiles through a person-centred approach and to analyse differences across the key-outcomes of study strategies, academic performance, self-esteem and vitality.

Materials & Methods: A cross-sectional study was conducted collecting data from 924 Chilean dental undergraduates on demographics, motivation, deep/surface study strategies, academic performance, self-esteem and vitality. Students’ were classified into different subgroups through a K-means cluster analysis using intrinsic and controlled motivation as scores. After validating the clusters, a MANCOVA test was used to assess differences in the outcome variables by cluster membership, controlling for the effects of gender and year of study.

Results: Students’ were clustered into four motivation groups: (1) High Intrinsic/High Controlled (n=384/41.6%), (2) High Intrinsic/Low Controlled (n=190/20.6%), (3) Low Intrinsic/High Controlled (n=253/27.4%), (4) Low Intrinsic/Low Controlled (n=97/10.5%). Group comparison resulted in significant differences across all outcome variables with medium and large effect sizes. Clusters 1-2 had significantly more deep study and less surface study strategies, higher self-esteem and vitality, and better academic performance compared to clusters 3-4.

Conclusions: This is the first study in dental education to classify students’ motivational profiles by the quality of their motivation and assess differences in educational outcomes. Intrinsic and controlled motivation were found to coexist, however, results favoured the high intrinsic motivation clusters, as they displayed the most optimal behavioural and affective outcomes. These results mirror previous studies conducted in other higher education areas. It seems therefore that, to contribute to the improvement of educational outcomes, dental schools should create environments that support students’ interest and volition so as to encourage their intrinsic motivation.
Theme: Other

Title: How Do Dental Students Learn?

Presenter: Dr Jorge Tricio

Authors: *Tricio J, Montt J, Salles P

Authors’ Affiliation:
Centre for Healthcare Education Innovation, Dental School, University of the Andes, Santiago, Chile

Background: Cognitive psychology provides evidence on how HE students should approach their study.

Aims & Objectives: To investigate whether dental students’ study strategies, study places and patterns they adopt before exams agree with the literature and whether they correlate with their levels of reflection.

Materials & Methods: All 526 undergraduate dental students were invited to complete a Learning Strategies Questionnaire (LSQ) along with the Kember’s Reflection Questionnaire. Learning strategies were compared with the Reflection’s results using SPSS®.

Results: A total of 484 (92%) students participated in the study (Mean age: 21.8, 361 females). The three most common reported approaches to writing notes during class/activity were on notepads (29%), computer/tablets (26%), and handouts (24%) from Moodle®; 14% just listened.

76% studied alone, 20% in groups of 2-3 peers, while 4% in larger groups. Regarding places of study, 95% used quiet rooms, while 5% studied in public places. Notwithstanding, 44% studied besides their smartphone/tablet to be connected, 34% not connected to any social media, 20% listening to music, and even 3% watching television.

The most common learning strategies before an assessment were re-reading (24%) and highlighting (22%) notes, followed by summaries (14%) and group questioning (9%). Only 5% started to study two or more weeks before the exam, 44% did it one week earlier, 32% two days ahead, and 20% just the day before.

Finally, those students who started to study two or more weeks before the exam showed significantly (p<0.0001) higher Reflection scores (17.8) compared to those who started studying one week before (16.9), two days ahead (16.4), and just the day before (16.6).

Conclusions: Successful learning strategies suggested in the literature are only followed by small numbers of students. Those who do, have a significantly higher Reflection score than those who don’t. An ongoing learning skills module might help dental students improve their learning.
**Theme:** Other  
**Number:** 4

**Title:** Effect of the Great East Japan Earthquake on students’ perception of inter-personal relations  
**Presenter:** Dr. Ken-chi Tonami  
**Authors:** *Tonami K*, Umemori S², Son HL³, Araki K⁴, Nitta H⁵, Mataki S⁶  
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**Background:** Class of “Introduction to the Behavioral Science” has been conducted in Faculty of Dentistry, Tokyo Medical and Dental University, to improve professionalism. In the class, students’ perception of inter-personal relationship has been surveyed every year.

**Aims & Objectives:** The aim of this study was to examine the effect of the Great East Japan Earthquake in 2011 on students’ perception of inter-personal relations by analyzing the survey results.

**Materials & Methods:** Subjects were the second grade students of faculty of dentistry, Tokyo Medical and Dental University, from 2005 to 2014. The number was 526 in total. A self-administrated questionnaire including 20 questions asking perception of inter-personal relationship was made using 4-point rating scale. The surveys were done in May, July and December using the questionnaire. For each survey point, the scores were analyzed using factor analysis. The score changes over 10 years for each extracted factor were investigated.

**Results:** Scores of the factors concerning with ‘self-affirmation’, ‘mutual understanding’ significantly shifted in the negative direction in 2011 (p<0.05), while those concerning with ‘respect to human’, ‘acceptance of difference in people’, ‘understanding people using knowledge’, ‘self-disclosure’ did not show significant changes. Although the direct damage of the disaster was the least in Tokyo area, repeated earthquake coverage might cause empathy fatigue of students to affect their perception of inter-personal relations.

**Conclusions:** There is a possibility that the Great East Japan Earthquake in 2011 would affect the students’ perception of inter-personal relations.
Background: The provision of suitable, appropriate and timely feedback from tutors to students is considered essential to measure, plan and facilitate learning. Evidence suggests that undergraduate and postgraduate students are generally dissatisfied with the feedback they receive.

Aims & Objectives: The aims of this mixed method study were to: i) evaluate current methods of feedback in postgraduate studies, ii) elicit students’ perspectives about the effectiveness of feedback, iii) determine whether feedback contributes to future learning and iv) understand preferred styles of feedback.

Materials & Methods: A questionnaire based study was conducted, using part-time and full-time postgraduate students. The questionnaire inquired about: i) demographic information, ii) type of feedback received, iii) preferred style of feedback, iv) influence of feedback on future learning and v) suggestions for future feedback. 50% of students were given traditional written and 50% spoken oral feedback. Personal interviews were conducted to enhance the qualitative data, which were analysed thematically.

Results: 138 valid questionnaires were completed and returned. 52% (n=72) students were female, their mean age was 32 years and 65.9% (n=91) were UK trained. 60% (n=82) were part-time students. 73% (n=101) had requested additional, personal spoken feedback; 80% (n=111) would prefer face to face spoken feedback. 63% (n=87) preferred a constructive criticism approach to feedback. 95.6% (n=132) reported feedback influencing future learning.

Five personal interviews were conducted. Thematic analysis revealed the following themes: formative/summative, adequacy of feedback, tailoring feedback, timeliness and style. Formative and summative feedback were considered relevant by 46% (n=23). Constructive criticism was thought to be the most appropriate style of feedback.

Conclusions: Findings indicated that effective feedback was paramount to future learning needs. Students agreed that a more structured approach to feedback was needed and that regular face to face spoken feedback was most beneficial. With a relatively small cohort this is potentially achievable, but would increase the already substantial demands on tutors/teachers.
**Theme:** Other

**Title:** The Barriers encountered by dental students in communicating oral surgery information to patients - a quantitative exploration.

**Presenter:** Miss Rachael E A Harlow

**Authors:** *Harlow REA¹, Levine RS²

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**Background:** Good communication is a skill needed by dental professionals in order to gain valid and informed consent from patients. Poor communication is one of the main sources of successful litigation in the field of oral and maxillofacial surgery (Ford and Cooper, 2016). There is a lack of evidence to determine the specific barriers that dental students face in communicating with patients and as such this study attempts to address this issue.

**Aims & Objectives:**

- To explore the barriers faced by dental students when discussing care related to oral surgery (OS)
- To explore which resources are currently available to students in communicating clinical information in the dental school environment
- To determine which resources dental students find most helpful in communicating clinical information to patient
- To provide a basis for improvement in the experience of dental students when communicating information to patients

**Materials & Methods:** 4th and 5th year dental students were surveyed to investigate confidence in communicating three oral surgery-related scenarios, and use of communication aids. Responses were analysed to determine how students ranked each of the outcome measures.

**Results:** Students rated the least confidence with their own clinical knowledge in relation to the scenarios. Oral-antral communication was the clinical situation that students were least confident with. Students were more likely to make use of information leaflets when communicating with patients.

**Conclusions:** A lack in student clinical knowledge was the greatest barrier to communicating clinical information. New data introduced to the field of dental education could provide a basis through which to improve communication skills teaching, and improve materials available to students on clinics.
Background: Dentists and dental care professionals (DCPs) use social media for personal and professional purposes. There are many positive uses of social media, including as a source of information and as education for patients. Students make extensive use of social media and it is important that they are taught to use it appropriately. There are problems associated with social media; there have been disciplinary cases where dentists and DCPs have been reprimanded for their social media use. There are also case examples in the literature of students being disciplined for social media use.

Aims & Objectives: The aim was to carry out a scoping review mapping out the current state of the literature about the use of social media by dentists and DCPs.

Materials & Methods: The MeSH terms Health Personnel AND Internet were used to search the PubMed database. Prior to the year 2000 was adopted as exclusion criteria, leaving 4215 articles for inclusion. After removing those not about social media, those not available in English and those not specific to dentistry, 39 articles were included.

Results: A large number of the articles included were opinion papers as opposed to primary research (n=30; 77%). All of the articles attempted to educate dentists/DCPs on how to use social media by providing the authors’ view. None of the articles, including the research articles, incorporated the views of other stakeholders e.g. patients.

Conclusions: This literature search illustrates that there is a large number of opinion articles on dentists’ and DCPs’ use of social media compared with the volume of primary research. To be able to educate dentists, DCPs and students, further research is required on how dentists and DCPs should use social media appropriately. This should include the views of patients and other stakeholder groups.
**Theme:** Other

**Number:** 8

**Title:** Transition from Diploma to Degree for Dental Hygienists and Dental Therapists: academic and social experiences

**Presenter:** Mrs Vicky Buller

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**Background:** Dental Hygienists and Dental Therapists enter into higher education following diploma level study. This prior education has predominantly focussed on technical skill competency to meet the required learning outcomes in “Preparing for Practice: Dental Team Learning Outcomes for Registration (GDC 2015). The students are highly motivated to develop both academically and professionally, but early anecdotal evidence has suggested that students experience difficulties in the transition from diploma to degree level study. It has been identified that there is diversity in prior academic experiences, as well as the students having characteristics of being “non-traditional”. This includes studying part time, being mature students returning to study or commuting to university. The concept of student transition for dental students is one that is relatively under researched. An initial literature review was undertaken comprising of two key areas; non-traditional students and student transition.

**Aims & Objectives:** To investigate the social and academic experiences of dental hygiene and dental therapy students during the transition from diploma level study to higher education.

**Materials & Methods:** A single case study design was adopted using interpretive phenomenological analysis (IPA) as the framework. Face to face semi structured interviews using a purposive sampling technique were carried out at different times throughout the programme.

**Results:** Three themes have currently emerged from the analysis:
1. Professional Identity
2. The use of social media to facilitate transition
3. Entering a new community of practice

**Conclusions:** Preliminary results suggest that students have an established professional identity when they enter into higher education and this influences their experiences. The use of social media is a positive contributory factor in facilitating transition but engagement with this can be a challenge for some students.
Abstract

Theme: Teaching Methods

Title: Results after two-year implementation of the Student Mentoring Program of the Dentistry Faculty of Universitat Internacional de Catalunya

Presenter: Assoc Prof Blanca Paniagua

Authors: *Paniagua B1, Lluch AM82, Aguado E3, Gil V4, Silva AM85, Aerales C6, Giner LL7

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Background: The Student Mentoring Program (SMP) is a support program to 3rd year students in their introduction to the dental clinic.

Aims & Objectives: 1) To improve 3rd year students’ adaptation in their first year in the University Dental Clinic.
2) To educate and train 5th year mentored students in some skills and to apply them with 3rd year students.
3) To prepare students as academic staff future candidates.

Materials & Methods: The project participation was voluntary for 5th year students. Following an interview and a personal letter, eleven students were selected according to their personal, academic and motivational profile. Before the beginning of the course, they received theoretical training on 19 competences based on self-management, work and interaction by a professional coach, followed by individual coaching and monthly group meetings, to achieve the theoretical profile.

An on-line questionnaire, previously adapted to the dental practice and validated according to Cronbach’s alpha, was conducted on October 2016 to 3rd, 4th and 5th year students to evaluate the 19 previously defined skills and student’s profile. At the end of the course, May 2017, we are going to repeat the questionnaire adding a satisfaction survey related to the SMP to 3rd year students. The entire database collected is going to be analyzed using the Statgraphics program.

Results: The 3rd year students competency profile will be analyze along the academic course and compare with the theoretical profile and the control group. Moreover, 5th year mentored students results will be related with the rest of 5th year students. In addition, 4th year student’s results are going to be analyzed.

Finally, we are going to quantify what the SMP has meant to 3rd year students.

Conclusions: The SMP facilitates and promotes 3rd year students integration, helps them to put the theoretical knowledge acquired into practice and seeks to foster a high degree of dental professionalism.
**Theme:** Teaching Methods

**Title:** Knowledge of ergonomics among dentistry students

**Presenter:** Ms Greta Aidukaitė

**Authors:** Berlin VB¹, Pūrienė AP², Chalas RC³, Štangvaltaitė LŠ⁴, *Aidukaitė GA⁵

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**Background:** Many studies show that physical occupational disorders are very prevalent among dentists and that they appear early in dental carrier. Ergonomic knowledge and their application during daily dental practice can help.

**Aims & Objectives:** To evaluate how much dental students know about dental ergonomic requirements and how much they try to follow them in daily practice.

**Materials & Methods:** A piloted questionnaire survey with ethical approval was carried out among 3rd – 5th year dental students from Vilnius University (n=84), the Medical University of Lublin (n=411) and the UiT The Arctic University of Norway (n=105) in 2016. Informed consent was obtained. The study included all the students who had started clinical practice (n=600). Students were asked multiple choice questions about ergonomic working requirements including those with photographs of dentists working in ergonomic and non-ergonomic way.

**Results:** Even 46.9% (n=222) of dental students referred that they were trying to work according to ergonomic principles sometimes and 8.3% (n=39) of them and were never doing it. Only 44.8% were following ergonomic principles often or always. The average score for ergonomic students’ knowledge was high – 9.3 ±1.2 in the Arctic University of Norway, 9.0 ±0.8 in Vilnius University, while students of Medical University of Lublin mean score was 8.4 ±1.3. The difference for ergonomic knowledge between universities was statistically significant (p=0.000). The worst known ergonomic principles were about angle between calves and thighs (8.7±3.4), optimal distance between dentist’s eyes and patient’s mouth (7.2±4.5), instrument tray position (6.7±4.7), right position of the lamp (4.8±5.0).

**Conclusions:** Although the knowledge level about ergonomics in dentistry seems to be moderately high, more than half of dental students do not try to work according ergonomic principles adequately often. Therefore it is not adequate to teach students theory of ergonomics, it necessary to motivate and train them to follow ergonomic requirements in their daily practice.
Theme: Teaching Methods  

Title: Five years of experience teaching preclinical endodontics using the EAL-supported simulation model  

Presenter: Dr Michael Wolgin  

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Background: Preclinical dental undergraduates have limited experience in electrometric methods of working length determination (EAL). However, the implementation of EAL for undergraduates is hampered by the lack of appropriate simulation models.  

Aims & Objectives: The aim of the present concept was to establish a reliable, scientifically based learning tool, helping the students to create a sense of understanding for the issue of EAL. This report presents experiences gathered in the 5-years period after the initial implementation.  

Materials & Methods: Each simulation model is composed of 12 extracted human teeth embedded in self-cured resin along with a conductive medium (alginate). The participants are students of the fifth semester of the phantom-lab course. Training sessions focus on trepanation, electronic working length determination, instrumentation, shaping, and obturation of the instrumented training teeth. While eleven extracted human teeth are intended as training teeth, the remaining single rooted tooth included in the model is selected for the final examination. The implementation of the simulation model was accompanied by several investigations concerning the accuracy of the EAL-supported working length determination achieved during the course and the postoperative integrity of the apical constriction after the use of EAL.  

Results: Since the initial implementation, 450 students have been trained. The EAL-features of the presented model enabled a precise determination of the apical constriction ($R^2=0.0198$), and granted a precise preparation of the apical regions in the vast majority of cases (up to 88%).  

Conclusions: The model is able to implement the EAL, is practicable for undergraduates and yielding high acceptance among students and faculty personnel. This approach has been scientifically underpinned by comparing the accuracy of working length measurements achieved by electrometrical and radiographic methods, and ensures a high accuracy concerning the postoperative integrity of the apical constriction.
Theme: Teaching Methods  
Number: 4

Title: Peer Assisted Learning (PAL), a novel approach for the teaching of pre-clinical and clinical skills?

Presenter: Dr Vivian I Binnie

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Background: Peer assisted learning (PAL), while a common feature in medical and veterinary education, is less well utilised within dental education. PAL can be defined as ‘an educational experience in which one student teaches one or more fellow students’ (Ten Cate and Durning, 2007). A peer assisted learning project was designed using senior (year 5) dental students to teach junior students (year 1).

Aims & Objectives: The aim of the study was to evaluate the experience of PAL for both senior and junior students, with the research question focussing on the educational and social benefits for both student groups.

Materials & Methods: PAL can be used within both clinical and pre-clinical settings. Two topics were chosen, one pre-clinical skill (introduction to handpiece skills) and one clinical skill (impression taking). Qualitative methodology was utilised to evaluate the study. Four focus groups were carried out by independent experienced researchers, following completion of each leg of the study. Each focus group comprised of only peer tutors (senior students) or tutees (junior students). The meetings were audio-recorded and independently transcribed. Data were coded, categorised and arranged into themes.

Results: Two overarching themes were identified, transforming roles and quality learning experience. Transitioning was important for both year groups of students. For the junior students, the issues were around becoming a dental student and identity development, whereas for the senior students, developing teaching skills, as well as graduate attributes such as communication skills were important. A quality learning experience encompassed the giving and receipt of feedback, informality of the teaching environment, and enjoyment of the sessions for both groups.

Conclusions: Peer assisted learning is underutilised in a dental context. Both year groups gained positively from the experience. It can be beneficial in the teaching of simple clinical skills, with utility in facilitating student engagement.
**Theme:** Teaching Methods

**Number:** 5

**Title:** Oral Implant Restorations by Undergraduate Students @ KU Leuven (Belgium)

**Presenter:** Mr Karel Missinne

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**Background:** Implant dentistry is part of dental education @ KU Leuven (Belgium). In order to educate and train students clinically, an educational grant (Nobel Biocare; 2008-current) provides the materials for implant placement and implant restoration for undergraduate students.

**Aims & Objectives:** The aim of the study was to clinically evaluate oral implant restorations, placed by undergraduate students, in terms of function and aesthetics. An attempt is made to answer the following questions:
1) How well do restorations placed by students perform aesthetically?
2) Which complications occurred and what was the solution for the issue at hand?
3) How many students participated in the educational grant and in which way?

**Materials & Methods:** A retrospective observational cohort study was designed. Patients treated in the framework of the educational grant were invited for a follow-up consultation where esthetical and functional evaluation of the restorations, using WES/PES scoring by a prosthodontist (excluding full-arch bridges and removable dentures) and VAS-scoring by the patients was performed. Complications were deduced from the patient’s file. Student involvement was evaluated numerically through hospital records.

**Results:** Between August 2008 and July 2014 (6 academic terms), 251 implants were placed (type Bränemark MKIII) in 113 patients by 155 students. Indications for implant placement varied. 228 of these implants were loaded in 101 patients by 118 students with varying restoration types. For 83 patients, follow-up was performed (2016) and the restorations were scored esthetically (average WES/PES score 18.26). Varying complications were registered in 22.1% of the patients. A major part of the students has been involved in the study, resulting in dental graduates with clinical expertise in implant dentistry.

**Conclusions:** The implant educational grant is a very valuable addition to the dental Master student’s education. Overall, patients were satisfied with their implant-supported restorations. Implant and restorations success rates were conform long-term data in literature.
Theme: Teaching Methods

Number: 6

Title: Restorative skills training outcomes in two learning environments: Simodont vs Typodont

Presenter: Mrs Lisa S. Mohammad Zadeh

Authors: *Mohammad Zadeh S, Serrano CM, Vervoorn JM

Authors’ Affiliation:
Institute of Education, Academic Center for Dentistry (ACTA), Amsterdam, Netherlands

Background: Simulation with Typodont (T) has been the golden standard for skills training in Dentistry, however new learning environments (LE) such as Virtual Reality (VR) have become more popular in the last 10 years. The new curriculum in ACTA has incorporated the Simodont Dental Trainer, a haptic VR simulator, as a LE for skills training parallel to conventional simulation. The aim of this communication is to report on the first outcomes of this intervention.

Aims & Objectives: The aim of this communication is to report on the first outcomes of this intervention.

Materials & Methods: The training of Bachelor 2 students for full ceramic crown preparation was performed in two parallel LE: Typodont (T) and Simodont (S). The students were divided in two groups following different training sequence (T-S and S-T). The outcomes per LE and sequence were compared. This study included n=123 (T) and n=121 (S) preparations. Each crown preparation was tested on five criteria. The assessors were expert teachers, previously calibrated.

Results: See poster.

Conclusions: Bachelor 2 students were examined on full crown preparation in two different LE and sequence. Compared to the Typodont group, only the criteria “enough space for material” showed lower passed outcome in the Simodont group. Students started with Simodont showed an overall higher passed percentages outcome, in favor of group 13-24 (ST).
Theme: Teaching Methods

Number: 7

Title: Method of teaching undergraduate students to perform root canal treatment: its influence on the quality of root fillings.

Presenter: Ms Annemarie Baaij

Authors: Baaij, A.

Authors’ Affiliation:
Academisch Centrum Tandheelkunde Amsterdam, Amsterdam, Netherlands

Background: Many root fillings have been shown to be of inadequate quality. Most root canal treatments are carried out by general dental practitioners, skills of whom were mainly developed when they were students. Thus the undergraduate endodontic education determines, to a large extent, the way root canal treatment is performed in the dental practice.

Aims & Objectives: To assess whether the method of teaching endodontology influenced the quality of root fillings made by undergraduate students.

Materials & Methods: The method of teaching endodontology at our institution was revised. Changes concerned: the programme (i.e. method of clinical training and summative assessment), and the supervision while performing root canal treatment on patients.

An intermediate cohort (N=91) comprised partly students attending the former programme (involving patients) and partly students attending the revised programme (without patients).

After succeeding in the summative assessment, the quality of the first root filling made by the student in a patient under supervision of either a general dental practitioner or an endodontist was evaluated according to predetermined criteria.

Data were analysed using Cohen’s Kappa, Chi-square, Fisher’s Exact, Mann-Whitney and Kruskal-Wallis tests.

Results: Sixty two percent (47/76) of root fillings made by students who attended the revised programme were of good quality, in comparison to 47% (7/15) of those made by students who attended the former programme (p=0.274).

Less complex treatments had better quality root fillings if students were supervised by endodontists (88% (14/16) good quality) than supervised by general dental practitioners (59% (22/37) good quality) (p=0.045). Complex treatments did not differ in quality of root fillings for the supervision-types (p=0.825).

Conclusions: The quality of root fillings made by students who attended the revised programme seems at least as high as that of those who attended the former programme. Higher quality root fillings might be obtained under supervision of endodontists than under supervision of general dental practitioners.
Theme: Teaching Methods  
Number: 8

Title: The impact of a paediatric operative technique course on the confidence of 2nd BDS students.

Presenter: Prof Richard Welbury

Authors: *Siddiqi KA, Welbury R, Smith JR

Authors' Affiliation:  
School of Dentistry, University of Central Lancashire, Preston, United Kingdom

Background: In April 2016 a Paediatric operative technique course was introduced at the University of Central Lancashire (UCLAN) School of Dentistry. It was of two days duration and delivered to 2nd BDS students who had no prior experience of treating paediatric patients.

Taught procedures included:
Restoration of primary molars; Vital pulpotomy of primary molars; Pulpectomy of primary molars; Preformed metal crowns; Split rubber dam; Flexible wire composite splint

Aims & Objectives: To assess student confidence in performing the six taught procedures following the course.

Materials & Methods: A continuous bounded questionnaire with a scaled response was given to the students 6 months following completion of the course. Students were asked to assess their own confidence at the clinical prospect of performing each of the procedures. The paper questionnaire was distributed at the beginning of a lecture and students were given some time to complete forms. Questionnaires were folded and placed inside a paper box for further analysis. Students were able to refuse participation or return uncompleted questionnaires.

Results: Students felt most confident in providing rubber dam to a paediatric patient, and least confident in providing a vital pulpotomy on a primary molar tooth. Confidence was lowest for paediatric endodontics and highest for placing a wire composite splint.

Conclusions: Results suggest primarily that more teaching may be required in endodontic procedures and secondarily on placement of stainless steel crowns.
Theme: Teaching Methods

Number: 9

Title: Guide for the beginning of dental practice for 3rd-year students at the University Dental Clinic

Presenter: Prof Dr Antoni Mª Lluch

Authors: AREALES C, SILVA AMª

Authors’ Affiliation: INtegrated Dentistry Departement, UNiversitat Internacional de Catalunya, BARCELONA, Spain

Background: A Guide for the beginning of dental practice for 3rd-year students was performed.

Aims & Objectives:
1) To help 3rd year students adaptation in their first year in the University Dental Clinic based on work-management.
2) To guide 3rd year students about the timing required in each treatment.
3) To provide detailed description of all the material needed for each treatment.
4) To facilitate templates with the minimum required information needed to be recorded in the dental clinic software.

Materials & Methods: The guide was performed taking into account all the treatments allowed to 3rd year students. Each treatment was divided into different phases, from the material required preparation to the end of procedure, and timing was given for each step. Finally, templates for each treatment were created with the minimum information that must be recorded in the dental clinic software. Pictures and videos were added to the guide.

Results: A decrease and optimization of the working time of each treatment was observed in 3rd year students. Also a better organization at the time to prepare the material needed was detected, avoiding time wasting. Complete clinical reports are being carried out.

The guide has been accepted and introduced to the Integrated Department protocols for the 3rd year student’s dental practice. At the same time, it has been proposed to do the same for the 4th and 5th year students.

Conclusions: The present guide is based on protocols for clinical work-management and covers the following requirements: validity of recommendations, the application in the clinical practice, the flexibility based on guidelines which are free of dogmatisms and their reliability and reproducibility.

Since its clinical application, the effectiveness and organization of both operator and auxiliary 3rd year student improved, leading to an enhancement in the treatment performance, in patient’s care and the performance of the dental clinic.
Theme: Teaching Methods

Title: Teaching and Learning with Touch Technologies in Dental Education

Presenter: Prof Dr Margaret J Cox

Authors: Cox, M.J.

Authors’ Affiliation: King’s College London Dental Institute, London, United Kingdom

Background: Although 10 years of research studies have shown that haptics (the sense of touch) simulators have significantly enhanced the teaching of skills involving touch control and hand-eye coordination in Dental Education, there are few studies to date evaluating the teaching approaches which enable the effective integration of using haptic simulators into the undergraduate dental curriculum.

Aims & Objectives: The aim of this study were to analyse the different laboratory settings and teaching techniques used over a ten-year period for the use of the hapTEL simulators in teaching undergraduate BDS students.

Materials & Methods: Educational Setting: hapTEL laboratory with 6-12 hapTEL Virtual simulators; students working in pairs to remove caries from Class 1 cavities. Student year cohorts ranged from 112 – 124, divided into tutor groups of 24 (2008–2011) to 12 (2012-2017) per session.

Teaching strategies: Varied from 1-hour long lecture followed by 1.5 hours hapTEL session supported by tutors and a technician, to online introductory group tutorial/demonstration followed by one 1.5 hour session (S1) and one 1-hour session, 2-3 weeks apart.

Students working in pairs were taught to trouble-shoot the hapTEL work-station. Their learning progression was measured by pre and post-assessment tests (2008-2011) and log files of caries removed (2010–2017).

Results: The use of the hapTEL simulators was found to be most reliable (fewest technical issues) when the students were taught to trouble-shoot the devices themselves.

The online tutorial/demonstration strategy provided the best preparation for the students to use the simulators.

There was consistent improvement in the students’ fine motor skills and caries removal (% of caries removed, healthy tissue remaining, exposing the pulp etc).

Conclusions: The effectiveness of using haptic simulators will depend upon the teaching and learning strategies used; the most effective being a blended learning approach and maximising the student ownership and responsibility for the learning and assessment tasks.
Theme: Teaching Methods

Number: 11

Title: The experience of dental students’ participation in oral health educational programs among moscow schoolchildren

Presenter: Prof Edit Kuzmina

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Background: To improve oral health and quality of life among the population, training of highly qualified dental personnel with both clinical and communication experience seems to be of high importance.

Aims & Objectives: To improve schoolchildren’s knowledge of oral disease prevention through educational programs with dental students’ participation.

Materials & Methods: MSUMD dental hygienists and second year dental students took part in oral health educational programs for Moscow schoolchildren. One thousand children aged 7-17 years old were previously interviewed using a WHO questionnaire (WHO 2013). Children were examined for dental plaque and gingival bleeding. Two programs for primary and secondary school were developed. They included lectures about risk factors and methods of oral disease prevention, students’ performance followed by children toothbrush training. Overall, the educational program covered more than 300 Moscow school pupils.

Results: Most of the interviewed schoolchildren demonstrated unhealthy dietary habits: frequent consumption of cakes (60%), candies and soft drinks (43%). Fluoride toothpaste and floss were used by 24% and 39% of children, respectively; 15% of respondents were not satisfied with their teeth appearance. During oral health examination dental plaque and gingival bleeding were observed in 52% and 32% of children, respectively. The implementation of oral health educational programs increased schoolchildren’s motivation to prevent oral disease and developed communication skills in dental students. Interiewing of schoolchildren concerning students’ participation in oral health educational program showed positive feedback. Testing (included 50 questions) and assessment of practical skills in preventive dentistry (on a five-point scale) covered students and dental hygenist, participated in program. Mean number of correctly answered questions before and after students’ participation in the school preventive program was 76% and 94% respectively. Mean scores of practical skills increased from 3.9±0.4 to 4.6±0.3 (p>0.05).

Conclusions: Participation of dental students in educational programs contributes to the formation of professional competences in preventive dentistry and promotes improvement of schoolchildren’s oral health.
Theme: Teaching Methods  
Number: 12

Title: Learning Fixed Prosthesis - Classical vs. PREPassistant® Method
Presenter: Dr Carlos F Almeida
Authors: *Almeida CF¹, Rocha P², Vaz P³, Reis-Campos JC⁴, Sampaio-Fernandes JC⁵, Leal C⁶

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Aims & Objectives: The objective of this study was to compare the classic learning method of dental preparations with a new learning method, using models with referrals and learning guides.

Materials & Methods: Thirty students were randomly selected, separated into two groups: group A and group B (control). Duly calibrated models were designed with references and learning guides that were prepared by group A. Group B prepared according to the classical method. The results were read and compared by the PREPassistant® system, according to a pre-designed evaluation.

Results: There were statistically significant differences between groups A and B, with better performance of group A.

Conclusions: The models obtained in CAD and evaluated with PREPassistant® allow a significant evolution in the technique of dental preparation and the learning phase can be faster and intuitive. It was possible to create standardized models for the dental preparation technique, according to the preparation axis and the cervical finishing margin.
Theme: Technology Enhanced Learning  
Number: 1

Title: Which factors influence the uptake of Distance Education Courses?  
Presenter: Prof Dr Brian Millar

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Background: King’s College London has been running distance education courses with face-to-face practical training components in dentistry for almost 30 years. While this mode of learning is increasing in popularity the factors influencing student uptake are poorly understood.

Aims & Objectives: To investigate the factors influencing the uptake of distance education courses by dentists.

Materials & Methods: Data were collected through questionnaires administered in three sequential phases of the study over a four year period with a final collection from 201 professional dentists in India using stratified random sampling using proportional allocations.

Results: The professional dentists who responded included those working in general practices over several regions of India and those working in hospitals and universities. The respondents’ most important considerations when choosing a distance education course were: course topic, recognition of the course by their Dental Council for CPD certification, the status of the course provider, and inclusion of a practical component on the course. Age was the most significant factor with those under the age of 30 years more likely to undertake a distance education course. Female dentists were more likely to undertake a distance learning course than male dentists. Cost, duration of the course, distance of travel, length of course, non-recognition of topics, and non-availability of practical courses acted as barriers to the uptake of distance education courses amongst the study participants.

Conclusions: It was concluded that considering and accounting for the barriers identified, and adopting favourable measures which overcome these during the course design itself would result in a higher uptake for distance education courses.
Theme: Technology Enhanced Learning

Title: Video as a Practice Tool to Enhance Dental Students’ Performance and Foster Reflective Processes, as Part of The UK Dental Foundation Year Interview Process - a Pilot Study

Presenter: Dr Brian R Davies

Authors: *Davies BR1, Chau KK2, Saravanamuttu R3, Blum IR4

Authors’ Affiliation: Integrated Clinical Care, King’s College London Dental Institute, London, United Kingdom

Background: UK dental students during their final year of training undergo competitive and searching interviews as part of a national selection process for Dental Foundation Training (DFT). The components of the interview include (i) clinical communications skills stations with trained actors, (ii) professional, leadership and management skills and a (iii) written situational judgement test.

Aims & Objectives: To evaluate the role of video during the preparation for DFT interviews both as a performance learning tool and a means to foster post performance reflective practice.

Materials & Methods: Thirty representative final year dental students were video recorded during simulated practice DFT interviews. The bulk of the filming was carried out by one teacher to ensure consistency. All 30 videos were analysed and evaluated for body language, articulation of speech, use of dental terminology, clarity of thought process, embedding concepts and skills; improved confidence in communication; and thinking aloud experiences. All participants were invited to complete a structured post video reflective questionnaire.

Results: Completed responses were received from 21 students (response rate= 70%). Thematic analysis of the videos indicate that students were adept at identifying what they perceived as poor performance, being often highly self-critical and more aware of gaps in their knowledge.

Conclusions: Although some students were initially reticent about being filmed all participants reported the process to be hugely beneficial in identifying individual key strengths and weaknesses in their non-verbal, verbal and clinical communication skills. As a learning tool used in a group setting it offers huge potential for developing the reflective, thinking practitioner.
Theme: Technology Enhanced Learning

Title: Evaluation of effectiveness of a live radio broadcasting as a teaching method in learning: a pilot study

Presenter: Dr Domenico Dalessandri


Authors’ Affiliation:
Dental School, University of Brescia, Brescia, Italy

Background: While online seminars continue to be an important and flexible form of education, advances in communication technologies have come to provide alternative delivery options like Radio enhancements.

Aims & Objectives: The aim of this study is to evaluate the difference in increasing the students’ satisfaction by using a live radio broadcast or a traditional on-line seminar as teaching tool.

Materials & Methods: A classroom of undergraduate students in Dentistry (fifth-year) received a traditional on line seminar about a specific topic (Control Group). At the end of the seminar the group answered a questionnaire about the significance and the effectiveness of the seminar. After one year the following classroom of fifth-year students followed a live radio broadcast program about the same topic (Study Group). The live broadcast was of 55 minutes, the first part was dedicated to introducing the topic (15 minutes), during the second part a specialist joined in the topic’s subject (15 minutes), and the last part was dedicated to answering the questions received during the live broadcast by instant message channel (10 minutes). Three minutes of music airtime among each part were planned. At the end of the broadcasting the student answered the same questionnaire answered by the control group.

Results: Evaluation of the data collected with the questionnaire showed a greater effectiveness of live broadcast rather than the traditional online seminar. The topic seems to be better followed during an interactive activity. 100% of subjects of the study group answered positively to the questions about effectiveness, significance and relevance. 72% of subjects in the control group answered positively about the effectiveness of traditional seminar as teaching tool.

Conclusions: Nowadays communication is completely based on the Internet, smartphones and connectivity: the findings of this study showed that a web-radio could increase the student compliance to e-learning and also be successful in holding the audience’s attention.
Theme: Technology Enhanced Learning  
Number: 4

Title: A reproducible approach to model simulated molar occlusal caries for student teaching and assessment using innovative technology

Presenter: Dr Jane Collingwood

Authors: *Collingwood J

Authors’ Affiliation:
Peninsula Dental School, Plymouth, United Kingdom

Background: In recent years, the use of real human teeth for simulation and teaching in the phantom head environment has become more limited. Available alternative typodonts range from a simple tooth with limited realism to more complex, and expensive, models. Recent developments in 3D printing has meant novel approaches to making new training models can be developed. One of these models will be described below.

Aims & Objectives: The aim of this project was to produce an innovative, standardised and cost effective approach to preparing typodonts to be used in phantom heads for the teaching of occlusal caries removal to dental students in a simulated training environment.

Using this approach, the internal structures of the tooth can be reproduced and the resulting simulated lesion more closely resembles a real tooth with a carious occlusal lesion.

The new technique also produces teeth that require no prior preparation allowing staff time to be spent elsewhere. These teeth are all identical, an advantage in teaching and exam conditions.

Materials & Methods: A tooth was modelled using CAD software to produce a lower molar tooth with an occlusal cavity and realistic internal layers.

Once a cavity shape was decided upon, prototypes were printed in a variety of materials using different printers and printing techniques. The tooth and occlusal lesion produced were of known dimensions, the tooth had realistic internal anatomy and the caries and pulp layers had a softer consistency than the “mineralised” layers.

Results: A final cavity shape and 3D printed material combination was chosen based on compatibility with the aims of the project and staff and student feedback.

Conclusions: 3D printing was successfully used to develop an innovative, standardised, adaptable and cost effective approach to preparing phantom head teaching teeth, which can be used in the teaching of occlusal caries removal to dental students in a simulated training environment.
Theme: Technology Enhanced Learning

Title: Motor Skills Improvement utilizing an Augmented Reality Simulator.

Presenter: Dr Samuel Elhadad

Authors: Elhadad SE1, *Hack GH

Authors’ Affiliation: Operative Dentistry, University of Maryland, Baltimore, United States

Background: In dentistry, the acquisition of new manual skills and dexterity correlates directly to the form of teaching used to transfer knowledge and information from the teacher to student.

Aims & Objectives: The purpose of this study was to evaluate how Augmented Reality Simulation (ARS) influenced the students’ acquisition of hand skills related to a Class I amalgam preparation on tooth #19, during the remedial process of thirty D1 students needed additional skills development.

Materials & Methods: In the first session, the thirty D1 students were assessed on their baseline hand skills, and then divided into two groups. Each student performed class I amalgam cavity preparations on tooth 19 in the course of four hourly sessions and their grades were compared. All the collected information was unbiased and provided by the simulator software for consistency.

- GROUP 1 (ARS) used all the simulator evaluation and visualization features to assess their work during the process, and their feedback and grades were derived from the simulator itself.
- GROUP 2 (NARS) had one instructor to guide and provide feedback during the remediation process. All simulator evaluation features were concealed to this group.

Results: Group 1, which utilized the ARS technology evidenced significant improvement in their skill levels assessed by grades as compared to Group participants.

Conclusions: Students from both groups increased their grades from Session 1 to 4. However, in Group 1 (utilizing Simulator), the grades were significantly higher than those in Group 2. Group 1 achieved higher competency in their motor skills using the simulator, while the improvement in Group 2 plateaued.
Theme: Technology Enhanced Learning

Title: Development of undergraduate IV sedation training experience in oral surgery through innovative technology enhanced learning

Presenter: Dr Tarik Shembesh

Authors: *Shembesh T1, Patel J2, Khawaja N3

Authors' Affiliation:
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Background: E-learning platforms that utilise effective pedagogy have the capacity to enhance student learning and outcome1. Action research has been shown as a valid methodology for systematically and empirically attempting to improve practice. KCLDI has developed an innovative training program to introduce undergraduate dental students to intravenous (IV) sedation in oral surgery by blending online and clinical education using a virtual learning environment (VLE) platform. Using a technology enhanced VLE affords building on students’ prior knowledge and supporting clinical & professional skill development making clinical encounters more effective and valued

Aims & Objectives: To explore the student experience of course facilitated by a VLE through student feedback & reflection. Demonstrate the ability of the VLE as a feedback tool to gather and analyse data.

Materials & Methods: 160 4th year undergraduate dentistry students at King’s College London were introduced to IV sedation in oral surgery at King’s College Hospital teaching clinics. Students were instructed to complete an online feedback questionnaire at the end of the course. Electronic certificate of attendance was generated once feedback was completed

Results: Data was collected via KEATS (King’s E-Learning and Teaching Service) platform which is a Moodle operated VLE. Data was automatically analysed with results immediately available for presentation. Learning Type analysed by London Knowledge Lab©-Institute of Education 2013-2016. This systematic method maps the course according to learning types based on design of individual learing tasks to ensure the course is aligned with course aims & objectives: (54.17%) Acquisition, (18.75%) Practice, (10.42%) Inquiry, (8.33%) Discussion & (8.33%) Production 84 responses on course feedback (52.5%) responses with (59.33%) feel more confident.

Conclusions: VLEs can be used to support clinical courses by assessing prior learning, accommodating different learning styles & allowing students to re-enforce learning as needed. Feedback provided a useful insight into the students’ perceptions as well as opportunities for improvements.
Theme: Technology Enhanced Learning  Number: 7
Title: Does haptic simulation training in caries removal demonstrate clinical applicability?
Presenter: Miss Alice Duke
Authors: *Duke AKD, Osnes CO, Keeling AK
Authors’ Affiliation:
Department of Restorative Dentistry, Leeds School of Dentistry, Leeds, United Kingdom

Background: The ability to identify and remove carious tooth tissue is an essential skill for dental students. Current teaching in dental schools utilises extracted human teeth and plastic teeth. These give an appreciation of the nature of carious tooth tissue but do not simulate ‘cognitive’ aspects, such as cavity outline design based on carious spread at the amelo-dentinal junction (ADJ). Virtual haptic simulation is emerging as a viable adjunct to traditional methods, with potential to address these shortcomings.

Aims & Objectives: The objective was to compare the performance of novice and expert clinicians, undertaking a novel haptic caries removal exercise. A difference might suggest there is a skillset that experienced restorative staff can apply to the exercise, confirming validity of the technology.

Materials & Methods: Novel virtual exercises were designed for the MOOG Simodont Dental Trainer simulating pathologically realistic caries growth within a cube of enamel, dentine and pulp. Both study arms completed the same caries removal exercise under controlled conditions. The primary outcome measure was ‘precision’; the percentage of caries removed at the ADJ, minus the percentage of sound dentine and enamel removed. Secondary outcome measures included the percentage of deeper carious dentine removed, the percentage of sound tooth structure removed and the total drill time.

Results: The novice and experienced participants’ mean performance differed on the caries removal exercise with respect to all outcome measures. The experienced study arm defined the cavity outline at the ADJ with greater precision and were more conservative of healthy tooth tissue.

Conclusions: These results are a first step to establishing construct validity of this caries removal exercise. The shift in focus from pure manual dexterity (such as plastic teeth exercises), to cognitive cavity design (based on the spread of disease) may be a useful adjunct in preclinical training.
Theme: Technology Enhanced Learning

Title: Collaborative learning in Evidence Based Healthcare (EBH): A poster on the use of video in dental education

Presenter: Miss Amarpreet K Grewal


Authors’ Affiliation:
King’s College London, London, United Kingdom

Background: We are constantly finding new ways to utilise existing technology for educational purposes, and looking for solutions for shortcomings in order to enhance the learning experience for dental students. As videos, databases and equipment become more accessible, can this technology play a role in modern dental education? Can video analysis maximise student learning and skill development?

Aims & Objectives: Engage in research literature, and develop skills in searching and critically appraising evidence.
Explore evidence on the impact of implementing video in practical skills development for undergraduate students.
Explore evidence from other professions on the use of video in the feedback process.

Materials & Methods: Free text and [Mesh] terms, including Video recording*, Education,Dental*, Teaching/methods. Terms were exploded where appropriate and adapted to each database. Database resources included PubMed, MEDLINE 1950-present, CINAHL 1981-present, EMBASE 1980-present, PsycINFO 1806-present, as well as carrying out a hand search of key bibliography and educational journals. The literature was further evaluated using CASP critical appraisal tools.

Results: Use of video recording has exhibited potential benefits for practical skill development. Furthermore, it has potential in offering more opportunities for self-reflection and receiving constructive feedback from peers and clinical tutors. Research evidence suggests that feedback on video is effective in professional development for dancers, athletes and surgeons, aiding in self and supported improvement. Similarly, studies have demonstrated that dental students found videos of their own procedures, and those of peers to be beneficial in learning, particularly when discussed, ultimately improving practical performance.

Conclusions: Collaborative learning on this project is useful methodology to engage in EBH and develop relevant skills. Utilisation of video technology is useful in practical skill development, largely due to the impact of gaining feedback. However, in healthcare there are several critical issues to consider, such as data protection, patient confidentiality and consent. Further research is imperative to its implementation in dental undergraduate education.
Theme: Technology Enhanced Learning

Title: A low-cost augmented reality system to assist student evaluation of typodont crown preparations

Presenter: Miss Cecilie A Osnes

Authors: *Osnes CA, Keeling AJ

Authors’ Affiliation: Department of Restorative Dentistry, Leeds School of Dentistry, Leeds, United Kingdom

Background: Undergraduate dental students initially learn crown preparations by cutting typodont teeth. Spatial concepts such as two-plane reduction, anatomical occlusal reduction and taper can be a challenge for the novice. A putty matrix can be used to assess tooth reduction, but this allows only for limited, axis-specific inspection, as opposed to an overview of the complete tooth reduction. A 3-dimensional overlay guide may assist learners in self-assessing their preparations and this ability to critique one’s work has been shown to be important in clinical skill development [Curtis et al. 2007, 2008]. A range of digital evaluation software is available, but these require access to costly scanners and licenses and are hence not widely used in the UK. Furthermore, the automated scoring provided by such software has been shown to correlate poorly with scores from staff [Callan 2015].

Aims & Objectives: To develop a low-cost solution to improve understanding of crown preparation by allowing students to visualise the amount of tooth reduction in 3-dimensions.

Materials & Methods: An augmented reality (AR) system was developed for a standard PC and web camera, using the freely available AR Toolkit SDK (https://artoolkit.org/). The student placed their Frasaco tooth preparation in a custom holder and presented it to the webcam. The live image on the screen projected a transparent image of the unprepared tooth mapped onto the preparation, allowing the student to assess the amount, and quality of their tooth reduction.

Results: The user could compare their preparation to the superimposed original tooth. The robust AR system allowed for full rotational freedom, enabling evaluation of the preparation from all angles.

Conclusions: An open-source AR overlay tool is presented for students to self-assess Frasaco tooth preparations in 3-dimensions. Only a webcam is required, making the system vastly more affordable than other 3-dimensional assessment tools. Preliminary feedback from users was positive.
Theme: Technology Enhanced Learning

Title: Evaluation of an electronic marking system for an undergraduate dental OSCE assessment

Presenter: Miss Margaret Jane Wardman

Authors: Hallam JL¹, Yorke YC²

Authors’ Affiliation:
¹Leeds Institute of Medical Education, University of Leeds, Leeds, United Kingdom
²School of Dentistry, University of Leeds, Leeds, United Kingdom

Background: The systems used to mark, record and process OSCE performance data must be robust and efficient to use. Examiners and administrative staff may have concerns that electronic systems are not as reliable as traditional paper formats and about the transition to a technology-based system.

Aims & Objectives: To evaluate the introduction and use of an electronic marking system (Practique, Fry-IT) for an undergraduate dental OSCE.
- To determine the adaptability of, and ease of use for, examiners
- To gain an insight into the experiences of examiners and administrators

Materials & Methods: Training in the use of an electronic marking system (using video and verbal presentation) was provided to all staff who examined a year 4 undergraduate dental programme OSCE when the new system was introduced in 2017. A questionnaire was distributed to all examiners and administrative staff following completion of the OSCE.

Results: 80% of examiners and 75% of administrative staff found the electronic marking system easy to use and were confident in using it. Previous experience with technology, during clinical training and use of it in current job role, was influential in perception of need for further training. 60% of participants who use little technology in their current job role, and at home, indicated that they would require further training to use the system again compared to 10% of staff who use technology on a regular basis. Overall, 90% of examiners and 85% of administrative staff had a positive experience using the system and 100% of examiners and administrative staff would choose to continue using the electronic marking system for future OSCE examinations.

Conclusions: Both examiners and administrative staff adapted easily to the implementation of a new electronic marking system and would choose to use it again. This study may be of interest to other dental schools considering the implementation of technology based OSCE marking systems.
**Theme:** Technology Enhanced Learning  
**Number:** 11

**Title:** Using Virtual Microscopy to deliver an integrated Oral Pathology course  
**Presenter:** Mr Daniel Brierley

**Authors:** *Brierley DJ, Hunter KD, Speight PM, Khurram SA, Farthing PM*

**Authors’ Affiliation:**  
Unit of Oral and Maxillofacial Pathology, The University of Sheffield, Sheffield, United Kingdom

**Background:** Traditionally UK dental students study oral histopathology using light microscopes in laboratory classes. Our oral pathology course was modified by the introduction of virtual microscopy (VM) to create a more integrated and clinically orientated approach to student engagement in histopathology.

**Aims & Objectives:** To describe student views and our experience of introducing VM into integrated oral pathology teaching.

**Materials & Methods:** VM was integrated into 2/7 practical classes and learning activities were supported by a workbook which structured student engagement with microscopic images and relevant clinical images and information. Students had support from tutors and following completion of the exercises, group feedback was given using television screens. Student views were assessed using a questionnaire and focus group. Following the pilot, VM was introduced more widely and a further questionnaire used to assess student views on VM compared to conventional microscopy.

**Results:** Questionnaires were returned by 69% (44/64) students from the initial cohort. Six students attended the focus group. The response was overwhelmingly positive: 95%, agreed VM was “easy to access”; 98% it was straightforward to use and 93% that the quality of images was excellent. 94% were positive about the in-class exercises integrating histopathology and clinical practice; 86% about tutor support and 98% about the end of class review. Students identified several advantages of VM compared with conventional microscopy, including:
- Time wasn’t wasted refocusing conventional microscopes
- Images could be viewed by more than one person at a time aiding learning.
- Students found VM less straining on their eyesight

The key finding from the latter questionnaire was 95% of students agreed that VM was better than traditional microscopes for learning histopathological features.

**Conclusions:** Students are positive about VM and integrated learning which has now been successfully introduced into all aspects of undergraduate and postgraduate oral pathology and histology teaching.
Background: General pathology is a vital part of dental undergraduate education, but students can struggle to engage with the material and to appreciate its relevance to general dental practice. Gaming technology is a rapidly growing area of education development and has huge potential for clinical education.

Aims & Objectives: Here we demonstrate how video game technology can be used to bring core pathology concepts to life and link them to scenarios which are relevant to the future dental practitioner.

Materials & Methods: The "Illness and Wellbeing" course at the University of Leeds teaches general pathology to undergraduate dental students. We aim to take a clinically relevant approach through a series of themed interactive lectures and tutorials based on the core material and learning outcomes. This was supplemented with the creation of a simulation-based "Choose your own adventure" video game. This simulated a range of scenarios and problems which could arise in general dental practice which would require a core knowledge of pathology to solve. The game placed the player in the first person perspective of a recently qualified dentist, navigating through a day of general dental practice. It provided interactive feedback via the in-game characters, whose attitudes and interactions towards the players would adjust depending on their progress and allowed for breaks in the story line where students could reflect on their progress in-game. To provide a sense of realism, the game also implemented a consequence-based system, where the player's actions in-game would affect the outcome of future events, depending on how they handled the scenarios. The game was created using the open source interface Twine.

Results: Student exam performance improved this session after the game's introduction. Student evaluation comments were very favourable.

Conclusions: This innovation demonstrates a fun, engaging and successful way to link pathology teaching material to scenarios which are relevant to practicing dentists.
Theme: Technology Enhanced Learning
Number: 13

Title: Innovative MicroCT Scanning Techniques for in-depth Assessment of Dental Students’ Tooth Cavity Preparation Skills

Presenter: Dr Barry Quinn

Authors: Salmon P¹, Quinn, B.

Authors’ Affiliation:
¹MicroCT Imaging, Bruker, SkyScan, Kontich, Antwerp, Belgium

Background: Clinical skills assessment has traditionally relied on professional judgement. New imaging technology now affords the opportunity for both enhanced qualitative and quantitative assessment.

Aims & Objectives: To investigate the contribution of Micro-CT Scanning of student prepared plastic teeth to determine the accuracy of assessing the performance of clinical cavity preparation skills; trained traditionally versus haptically using a virtual reality simulator (hapTEL).

Materials & Methods: Year 1 students were randomly allocated to learn caries excavation on either (a) plastic analogue teeth (Frasco) (n=96) or (b) virtual teeth using the hapTEL simulator (n=42). The total student n=138.
After 10 weeks of teaching, both cohorts were required to excavate artificial carious tissue from a standardized plastic tooth which replicated caries, enamel, dentine and pulp.
The cavities prepared by every student were firstly assessed and graded by two dental experts (reported previously); and secondly by scanning the teeth using a Micro-CT Scanner (Bruker 1275) to measure precisely the cavities' volume, depth, and surface roughness.

Results: The previous reported expert assessments using visual judgements aided with a scoring rubric was that both cohorts performed equally with no statistical difference.
However, the micro-CT scan results of the teeth showed significant finer variations in the angulation, the roughness and volume of caries and healthy tissue removed. This enabled us to determine which cohort of students (traditional or haptically) achieved the most accurate results removing the highest volume of carious tissue without drilling into the pulp or removing too much healthy tissue.

Conclusions: MicroCT affords a quantitative volumetric analysis of the students’ cavity preparation skills and progression in their learning, which has the advantage of both quantitatively and qualitatively (by visual analysis) measuring the surface roughness of the cut cavities which cannot be achieved through any other presently used assessment method. MicroCT analysis maybe used both summatively and formatively in the assessment of student performance.
Useful Information:

All poster presentation sessions are being held in the Faculty of Philosophy building on Thursday 24th August commencing at 08:00 Hrs.

Delegates are asked to please be seated in the relevant room no later than 07:55 as allotted time is just 1 hour for the session.

Presentation running order will be as detailed in this booklet, with each presenter having their poster displayed on the screen and discussing same for approximately 3 minutes.

If you are presenting in more than one session please look at the running order for the themes in this booklet and progress to the room where you are earliest in the schedule. Once completed progress to your next room. Moderators have been advised that some presenters may not appear as scheduled due to multiple presentations.

While the idea is that delegates will move in and out of these sessions freely we would ask you to please do so as quietly as possible so as to not disrupt those presenting. All rooms are on floor 2 and within easy walking distance of each other.

A certificate of best poster will be awarded for each theme.

<table>
<thead>
<tr>
<th>Theme</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment</td>
<td>204</td>
</tr>
<tr>
<td>Curriculum</td>
<td>205</td>
</tr>
<tr>
<td>Evaluation</td>
<td>206</td>
</tr>
<tr>
<td>Faculty Development</td>
<td>207</td>
</tr>
<tr>
<td>Inter Professional Education</td>
<td>205</td>
</tr>
<tr>
<td>Other</td>
<td>207</td>
</tr>
<tr>
<td>Teaching Methods</td>
<td>208</td>
</tr>
<tr>
<td>Technology enhanced Learning</td>
<td>209</td>
</tr>
</tbody>
</table>