REPORT ON THE FEEDBACK STUDY

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Aim:

The aim of this project is the evaluation of an evidence-based feedback model for 3rd and 4th year undergraduate dental students on clinical sessions namely, Basic Dental Care, Integrated Patient Care and Advanced Restorative clinics.

Introduction;

Within educational settings, students receive feedback in lots of different formats. Feedback can be given in a structured, highly regimented way or in a more unstructured ad hoc manner. Some models of feedback include Pendleton's Model 1984[1], Sandwich model[2] (Praise, criticism and praise), EEC[3] (Example, effect, change/congratulate) and the Chicago model[4]. Feedback models all have advantages and disadvantages but one of the main advantages of using a structured approach or a model is that both student and teachers know what is expected of them during a feedback session; structured feedback provides a framework for the interaction.

At higher education level and in an effort to enhance critical thinking and promote lifelong learning, a good model of feedback should encompass;

- Reflection in learning[5] and development of self-assessment skills[6].
- A Feed-forward[7]focus on longitudinal development of learning. Increasingly in the literature it is emerging that FB must address future activity i.e. feed-forward thus putting the focus on longitudinal development of learning, and supporting learning in higher education and in future learning into employment. With feed-forward, the tutor feedback can be used by the student to inform their efforts in future assessment[8]
- Self-regulation -the ability to regulate the student's thinking, motivation and behaviours during learning[9].
- A Feed-up focus[10]. This is critical in FB process about the attainment of learning goals related to the task or performance
- Dialogue- to help the learner make sense of the learning[11]
- Deliver high quality info to students about their learning[6]
- Encourage positive motivation beliefs and self-esteem[6]
- Provide opportunities to close the gap between current and desired performances[6]

Learners care about their work and they care about how it will be judged. Feedback is widely accepted to be an important part of the learning process and it is an important part of the academic component of a students' life[12].When properly given feedback can greatly enhance the student experience. Feedback is also important in relation to the quality of the education students receive at a given institution, contributes to ranking of universities in global league tables and the attraction of both national and international students. Without receiving feedback mistakes can go unchecked, excellence may not be reinforced and the student may perceive a lack of input as sign that a reasonable standard has been achieved.

To date, in the DDUH the feedback given to the students is primarily unstructured and ad hoc with several different methods being employed by the different clinical supervisors. To be fair and consistent to students this lack of consistency is probably not ideal.

In an attempt to improve the evaluation standard within the DDUH, it is the dean's desire to introduce an evidence-based model of feedback (MOF) within the school. The model (MOF) has been adapted from Nicol and MacFarlane-Dick 2006 [6].

Model of Feedback (adapted from Nicol and MacFarlane-Dick 2006) [6]

1. Learning outcomes highlighted at beginning of the session verbally –student must know what they are setting out to achieve at the start of the clinical session
2. Example of good work- refer to a text book or online material prior to the session- to know what they are striving to achieve or to model good practice.
3. FB to the students incorporating a reflective component, "How do you feel that went? What would you do differently next time?"
4. Clinical Supervisors determines if any issues arose for the student over the session (feed forward)
5. Clinical Supervisors enters into a dialogue with student, highlighting what went well and any issues which occurred over the clinical session, students are advised that they should/could write them down to guide their learning before the next session. (feed forward)
6. Students are asked how they are getting on since last week, any areas of concern from the previous week (feed up)

This evaluation has been undertaken to understand the impact of the introduction of the model of feedback tool within DDUH

Methods/Materials

Description of the intervention

Within the DDUH, on the clinical sessions, a structured new type of feedback (MOF) was introduced to undergraduate dental students who were in the 3rdand 4th years in the academic year 2015-2016. The model of feedback had been previously piloted on a module of study on the CSL May/June 2013 as a change project.

The project was restricted to those who teach Basic Dental Care, Integrated Patient Care, and Advanced Restorative Care clinics in 3rd and 4th years.

This model of feedback is outlined above.

Literature review

The literature for this review was obtained from journals, web-based databases and textbooks on educational feedback with a particular emphasis on feedback in dental education. Internet search engines associated with TCD and RCSI databases were searched as well as international online databases, namely the ISI Web of Knowledge (ISI), Education Resources Information Centre (ERIC), Google Scholar and Pub Med. The search was started by examining the literature on feedback in higher education in its broader context, where keywords, "*assessment, feedback*" and "*dental education*" needed to be present in the abstract. The searches were confined to English language articles in peer-reviewed journals between the years 2005 to 2013. Increasingly refined search criteria were used with the search including "*challenges to feedback practices*" and "*current advances in educational feedback practices in higher education*".

Ethical Approval;

An ethical application was successfully made to the School of Dental Science Research and Ethics Committee.

Training of the Clinical Supervisors;

1. ### Introductory lecture:

All clinical supervisors are mandated to provide student feedback as part of their DDUH role. A presentation "The importance of feedback in student education" was given to Clinical Supervisors at their regular (term) evening meeting in February 2016. Supervisors were calibrated by asking them to keep to the format of the model so that they ask consistent questions of and have a similar dialogue with the students. This feedback between supervisors and students is verbal, and not recorded.

2. ### Calibration of clinical supervisors:

The clinical supervisors were taught the system at the introductory lecture by SD. A PowerPoint was subsequently emailed to all supervisors outlining the 6 steps of the model. They were encouraged to keep fidelity to the model of feedback for as much as possible for the duration (4 weeks) of the study. All supervisors needed to complete and pass (achieving a score of 90%) a brief post survey (Survey Monkey) questionnaire to show they have been through the training and understood the principles. A laminated sheet outlining the steps of the model of feedback was available for use if required on the clinical sessions.

Training the Dental Students

As the new feedback system was a mandatory part of the DDUH education process all students were assessed using the feedback system during the 4-week duration of the study. All students were instructed in using the Model of feedback system in the 3rd week of trinity term via a presentation given to the 3rd and 4th year student group by SD.

Evaluation of the existing and new system of feedback

Evaluation of the existing system

In order to understand current perceptions of the feedback system all students were requested to provide feedback regarding the current feedback system via a survey monkey questionnaire (see Appendix one; Survey Monkey questionnaire 1) which was sent at the beginning of the lecture detailed above. Students received this survey directly before the presentation on their smart phones. They were given 5-10 minutes to complete this. This was a quality assessment of FB processes and was compulsory. In order to preserve anonymity, the questionnaire was anonymous with hidden IP addresses.

Information and consent to participate in evaluation of the new system

The information booklet and consent forms were provided at the presentation. Students were given information regarding the evaluation of the new system, and were asked if they wish to consent. Evaluation consisted of retaking the same survey and partaking in a focus group. Consent sheets were provided at this presentation, students who wished to partake either completed these directly after the presentation if they so wish or returned the signed forms to Division 2 by internal post if they needed more time to reflect on partaking in the study. It was not compulsory for all students to partake in the evaluation process. Students were advised that they could quit the study at any time. No penalties or benefits were incurred by the student if this arose. The phone number and email of the lead researcher was provided if the student required additional support during the study.

Evaluation of the new system of feedback (MOF)
The model of feedback was evaluated both quantitatively and qualitatively. The MOF feedback process was implemented on clinical sessions for 4 weeks in Trinity term (Weeks 4-8).

1. Quantitative Post Questionnaire:

Students received a post change survey identical to the initial Survey monkey questionnaire (see Appendix one; Survey Monkey questionnaire).

2. Qualitative Focus group:

Consented students participated in a 15-minute recorded focus group at a time which was convenient to them to enable further evaluation of the MOF. The focus groups questions were based on the post evaluation survey and can be seen in appendix 2. Anonymity was protected by scribing the data, thus ensuring that no participant was identifiable by voice. BD and AL facilitated the focus groups and were not involved in direct supervision of the students on clinics. Information will be stored on DDUH computer for 5 years. It will only be accessed through a password protected accessible by SD and BD.

Comparison of feedback and assessment on clinical sessions with other Dental Schools

In order to benchmark the process, two other dental schools were contacted to examine how assessment and feedback were given on their clinical sessions. Questions regarding grading systems on the clinical sessions and how teaching and learning was managed on the clinical sessions were asked.

1. Faculty of Odontology, Malmö University, Sweden.

A one-hour Skype conversation took place on 27th October 2016 between SD and BD with Associate Professor Anders Hedenbjörk-Lager, Chief D.D.S. and Programme Director of the DDS Programme at the Faculty of Odontology in Malmö University.

2. The School of Clinical Dentistry, University of Sheffield, United Kingdom.

Dr Brett Duane met with Professor Nicolas Martin and Professor Adrian Jowett in The School of Clinical Dentistry in Sheffield on 21st September 2016. Professor Martin is Professor of Restorative Dentistry & Honorary Consultant in Restorative Dentistry and Head of the Academic Unit of Restorative Dentistry and Director of D Clin Dent Programme in Restorative Dentistry. Professor Adrian Jowett is the Director of Learning & Teaching at the School of Clinical Dentistry in Sheffield. SD was in by conference call at this meeting.

Results
      I.   Literature review.
    II.   Quantitative analysis of questionnaire results.

      III.   Thematic analysis of qualitative data from the focus groups.

      IV.   Comparison of feedback and assessment on clinical sessions with other Dental Schools

I.   Literature Review

Medical educators have stated that feedback is one of the main catalysts required for performance improvement [13]. In higher education, the central argument is that formative assessment (assessment that is specifically designed to generate feedback) and feedback should be utilized to empower students as self-regulated learners [6]. Student dissatisfaction with feedback [14,15] and difficulties in resourcing feedback [16] means that effectiveness of feedback practices have become very important. Furthermore, debates on enhancing student access, retention, completion and satisfaction within a university context have thrown a focus on assessment feedback in higher education [17].

In navigating the literature, it becomes apparent that there are different concepts of assessment feedback [18] and a lack of clarity regarding the meaning of feedback [16]. Some authors regard feedback as an end-product and as a consequence of performance, information provided by an agent regarding aspects of one's performance [10]. Feedback is viewed as a fundamental part of learning [19] and regarded as a supported sequential process [20]. At the heart of these differing definitions is the difference in what authors regard as the key components and purposes of feedback.

Feedback is fundamental to facilitating students' development as independent learners, who have the ability to monitor, evaluate and regulate their own learning and allows them to feed-up after graduation in their professional practice [21]. Feedback in higher education must address future activity that is feed-forward [7] thus putting focus on longitudinal development of learning. These terms feed-forward and feed-up [22] are increasingly apparent in reading the literature on feedback as part of an on-going process to support learning both immediately in higher education and in future learning into employment beyond the higher education environment. Feed-forward is whereby the tutor feedback on a completed piece of work can be utilized by the student to inform their efforts in future assessment [8]. Feed-up is a critical part of the feedback process given to students about the attainment of learning goals related to the task or performance[10]. However, the literature shows that despite the importance of feedback, tutors and student's perception and actions related to feedback have historically received less attention than assessment [23]. Whilst feedback is an essential tool in medical education the process is often difficult for both faculty and learner [24]. The multidimensional performances which are present in assessment in higher education [25] mean that the feedback must match this level of complexity and this can pose challenges to measuring effectiveness.

The aim of feedback is to bridge the gap between the desired learning goal and the actual level of performance [26] and it is only feedback if it alters the gap and has an impact on learning [27, 28]. Good feedback practice is broadly defined as anything that might strengthen the student's capacity to self-regulate their own performance [6] . Self-regulation is the ability of the student to regulate their thinking, motivation and behaviours during learning [9] . It is evident from the literature that students can learn to be more self-regulated [29] . Self-regulated learners can actively interpret external feedback in relation to their internal goals [6]. Dental educators must be able to develop problem solving skills, promote critical thinking and self-directed learning in their students [30].

Self-evaluation is another desired outcome of dental programmes and it may initiate a feedback conversation with the clinical supervisor providing the assessment of the clinical performance with the discussion centring on the differences and common features between the two assessments. Self-assessment is an efficient way to engage a learner in the learning process that promotes the learner's responsibility for achieving learning objectives[62]. Self-assessment in the clinical learning environment can produce students who are actively engaged in the learning process by promoting critical assessment of the outcomes of their performance and not merely checking a grade after a treatment session to see if they have been satisfactory or unsatisfactory. It may also address the issue of the student taking the responsibility for achieving their learning objectives. In a systematic review of the use of self-assessment in preclinical and clinical dental education it was reported how there was a trend for better performing students to underrate themselves and poorer performing students to overrate themselves and for overall for students to score themselves higher than did the academic staff. These authors suggest faculty calibration and use of grading rubrics which should be an essential element of self- assessment[62].

Different views of feedback are present with the most emphasis currently being on a socio-constructivist framework [18]. Within a socio-constructivist paradigm, feedback is facultative and involves comments/suggestions through dialogue enabling students to make their own revisions and gain new understandings without dictating those understandings [20]. A co-constructivist paradigm develops this further where interactions between participants in learning communities lead to shared understandings[31] and the students takes increased responsibility for seeking out and acting on feedback.

The importance of dialogue in feedback is discussed extensively by Nicol [11]. Dialogue is important to allow students to make sense of new knowledge and to help develop conceptual understandings and also there is a need for the student to take ownership of their own learning [8]. What is clear from the literature is that measuring the effectiveness of feedback is not straightforward [16] and assessment literacy of students has been highlighted as key to the evaluation of feedback [32].

Principles of effective feedback

There is a growing body of evidence of what is seen as valuable in terms of principles of effective feedback practice in Higher Education [15]. Effective feedback should be timely, and dependent on the context of the learning and the needs of the learner [21, 33, 34]. To be effective it must be given to the student while it still matters to them on work in progress [6, 35] and also in time for them to use it to feed-forward into their next assignment or task.

Effective feedback is meaningful, purposeful and it should be clear, useful, balanced, specific and compatible with student's prior knowledge and understanding. Students need to be engaged in and with the process [6, 33]. It should enable the development of self-assessment skills [36, 37]. It should not be so specific that it scaffolds the learning so completely that the student does not think for themselves [10].

Effective feedback is personal and individual. It should be a good fit to the student's nature, personality and achievement. Effective feedback should encourage interaction and dialogue with teachers and peers as a way to make sense of the learning [33, 38, 39]. It should encourage students to learn by being supportive in tone, including strengths of the students; discussing weaknesses and giving clear guidance on how to improve in future work. It must focus on how to improve the learning rather than the personal attributes of the learner [10, 40, 41].

Effective feedback should be manageable. Feedback can appear to be an endless task to the providers of feedback and also to the students where, getting too much feedback can result in an inability in being able to discern the important feedback from the routine feedback. Feedback should enhance teaching through involvement of lecturers in continued professional development to promote understanding of feedback processes [35, 42, 43].

Effective feedback is targeted to the purpose of the assignment and the criteria for success [33, 34, 43]. Good feedback should demystify the assessment process by providing explicate guidance in relation to assessment criteria and what quality is and modelling good practice [44,45]. Feedback is part of the whole process and not to be seen in isolation [7, 46, 47].

Types of feedback

Feedback has many forms, it may be a written grade or mark, a written comment, verbal feedback provided in an individual meeting with a tutor who set the work, verbal feedback provided in a group meeting etc. As obvious as it may sound, in order for students to benefit from feedback on their work they must first recognise that the feedback they are given is in fact just that, feedback. Feedback can be formal or informal, individual or group, specific or generic, self or peer[48]. Specific individual formal tutor feedback is the gold standard of feedback. The use of a particular type depends on a number of factors including student body size, time available, funding available, professional requirements of governing bodies.

Challenges to feedback, barriers to effective feedback

One of the great challenges associated with feedback is measuring the effectiveness of feedback. Part of this challenge is the lack of clarity about the purpose and meaning of feedback [16]. For feedback to be effective it must be clear to staff and students what it is trying to achieve otherwise success and evaluation cannot be measured. Accurate measurement of feedback effectiveness is difficult and may even be impossible. Input measures, e.g. timing, quantity, frequency, quality can only measure some of the conditions for effective feedback. Measuring time dedicated to feedback processes can only indicate that feedback processes are being facilitated and not the quality of the feedback. The difficulty in examining effectiveness is in part due to the temporal nature and multiple purposes of feedback thus measuring effectiveness with simplistic approaches can only gauge effectiveness and generally will only provide a partial picture [16]. Another complicating factor is who makes the judgement of effectiveness. If staff and students hold differing views of purpose of feedback, the validity of the measure of feedback effectiveness is questionable. Another challenge is that the learner is often in the best position to gauge the effectiveness of feedback but may not recognise the benefits it provides. More important input measures may be efforts to develop student understanding of the learning process thus enabling them to make informed opinions about the effectiveness of feedback and output measures must depend on the qualitative judgements of the learners and subsequent assessors [16].

Appropriate approaches and communication of feedback can be a challenge with the ability to pitch the message being critical to the process. At the centre of successful feedback process is the relationship between the student and the educator [16]. Gauging positivity and negativity within feedback comments can be challenging as it is judging how the feedback comments are encouraging and motivational on the one hand and on the other a need felt to identify a weakness or justify a mark [6]. A students' ability or willingness to act on the feedback they receive may depend on the emotional impact of feedback according to seminal research by Layder[49] and on their past experiences [50]. Other challenges include engaging students in the feedback process. Dialogue is important [11] to allow student to make sense of new knowledge and to help develop conceptual understandings but increasing dialogue can be a challenge with increased class sizes and increased pressures on tutors to deliver on a number of fronts [8]. The complexity of feedback and its relationship to current constraints in resourcing in the higher educational landscape is also acknowledged. Sadler [51] noted that the desirability of feedback cannot be separated from the practical logistics of providing it, and the natural expectation would be that students will gain from feedback and this should be matched with the effort that goes into producing it.

Overcoming these challenges will require more dialogue between the players in feedback in the higher education process in an attempt to address the biggest challenge associated with feedback namely measurement of feedback effectiveness [16]. Harmonisation between the purposes and the processes and assessment literacy of the students is increasingly seen as a key element in the process.

The dental learning environment is challenging and challenges the roles and responsibilities of the student and clinical teacher alike [52]. John Spencer listed some of the challenges with medical teaching and published in the BMJs ABC of learning and teaching in medicine series [53] which include time constraints, other work demands, difficult to prepare for engaging multi-levels of learners, physical environment not comfortable for teaching and lack of incentives. In the dental learning environment students are required to performed challenging and irreversible procedures while still relatively inexperienced [63, 64]. A high level of supervision and teacher-student interaction is required to ensure this is a safe and effective environment[64]. In spite of these many clinical teachers find ways of circumventing these and excel in their roles as both teachers and clinicians. Timing is important in the provision of feedback and also may contribute to its effectiveness. It seems that immediate feedback is the most effective in the context of skills acquisition and training [54].

Specifically, in relation to dental education, research done in the School of Dentistry at the University of Birmingham (CAFS) [55] acknowledged the impact of the learning environment on learning, where in a busy multi-chair clinic, education can be challenging and reduced to a merely supervisory role and the clinical assessment and feedback system (CAFS) was developed to ensure that educators provided learners with feedback for each clinical session. Students consider and reflect on this feedback and update their reflections with the overall objective being to achieve a higher level of learning. This team believes that this is the future for effective feedback in the clinical environment.

Feedback remains a complex and challenging area but by adopting some approaches of effective feedback practice means that students can be supported in regulating their own learning. It needs to be acknowledged that high level and complex learning takes place over time, involves a dialogue and is integral to teaching and learning. Feedback comes from a variety of sources but if self-feedback and self-evaluation is not developed, students will not

learn to evaluate their own work and will be dependent on others. Students and staff pedagogic literacy need development in the area of assessment and feedback. The complexity of feedback and its relationship to current constraints in resourcing in the higher education sector cannot be ignored. There is a need for stakeholders in Higher Education to bring about integrated change based on research- informed biding principles.

II.   Quantitative analysis of questionnaire results

The questionnaires were completed by 58% of the class (with a sample size of 42). Students completed this survey on their smart phones. (see Appendix one; Survey Monkey questionnaire 1)

1. It is important for me to receive regular feedback on my work

Answer Choices	Responses	
Strongly agree	76.19%	32
Agree somewhat	23.81%	10
Uncertain	0.00%	0
Disagree	0.00%	0
Strongly disagree	0.00%	0
Total		42

2. Are you receiving sufficient feedback on your work at the dental school?

Answer Choices	Responses	
Yes	46.34%	19
No	43.90%	18
I'm not sure	9.76%	4
Total		41

Comments included;

- Most feedback is at the end of the term and if something goes wrong which is already too late
- very hap hazard feedback mostly negative or if an excellent is being given but no feedback on how an excellent could have been achieved if a good grade was given
- Sometimes, not from every supervisor
- Although I'm receiving feedback, I wish I could receive a more detailed/personalised feedback.
- Not all supervisors provide feedback
- I'd like more feedback from clinical supervisor. A general overview.
- Feedback at the end does not always help as much as feedback during the procedure

- I assume no feedback means everything is ok and that I would hear about it otherwise but it might be nice for this to be confirmed!
- Very little if any
- Never on clinic
- Comments beside the grades are given very infrequently

3. Are learning outcomes highlighted at the beginning of each term

Answer Choices		Responses	
Yes		45.24%	19
No		21.43%	9
I'm not sure		7.14%	3
Other please specify	Responses	26.19%	11
Total			42

Comments

- asked what you are doing and sometimes asked what hope to achieve
- Yes for lab sessions, not always on clinics as it is difficult for one supervisor to do this with 8 students before starting to treat patients

4. Does the feedback you receive enhance your performance

Answer Choices		Responses	
Yes		78.57%	33
No		2.38%	1
I'm not sure		4.76%	2
Other (please specify)	Responses	14.29%	6
Total			42

Comments:

- If positive in some way then yes absolutely. Negative feedback can also be useful to ensure that you don't keep making the same mistakes however without some positivity on occasion it can become a very stressful environment.
- Very useful to get feedback in order to improve
- yes it gives confidence and reinforces good technique and gives guidance that one is actually performing well
- Some activities take more experience than others to perform satisfactorily, regardless of the feedback given
- It would enhance performance but it is not really in place
- It enables me to be more aware of things I need to work on or things I need to keep doing

5. Does the feedback you receive enhance your performance?

Answer Choices	Responses	
Yes	78.57%	33
No	2.38%	1
I'm not sure	4.76%	2
Other (please specify) Responses	14.29%	6
Total		42

Comments include;
- If positive in some way, then yes absolutely. Negative feedback can also be useful to ensure that you don't keep making the same mistakes however without some positivity on occasion it can become a very stressful environment.
- Very useful to get feedback in order to improve
- yes, it gives confidence and reinforces good technique and gives guidance that one is actually performing well
- Some activities take more experience than others to perform satisfactorily, regardless of the feedback given
- It would enhance performance but it is not really in place
- It enables me to be more aware of things I need to work on or things I need to keep doing

6. Does the feedback you receive in the session feed forward into what you can achieve the following week?

Answer Choices	Responses	
Yes	80.95%	34
No	2.38%	1
I'm not sure	11.90%	5
Please comment Responses	4.76%	2

Comments included;

Positive or negative comments; I take on board the feedback and try to affect change

Not, necessarily, depending on what treatments I carry out for the following week.

7. What aspects of feedback do you value? Please choose all that apply?

Answer Choices		Responses	
▼	I like to know where I went wrong	16.67%	7
▼	I like to know how I can improve on my work/grade	42.86%	18
▼	I feel feedback from a supervisor who is familiar with my work is more useful.	16.67%	7
▼	I do not value feedback	0.00%	0
▼	Please comment Responses	23.81%	10
Total			42

8. Do any of the following issues limit your ability to get the feedback you need? Please choose all that may be applicable

Answer Choices		Responses	
▼	Time constraints	45.24%	19
▼	I find it difficult to engage with some of the supervisors/academic staff	28.57%	12
▼	I am able to assess my own work	2.38%	1
▼	The environment is not conducive to feedback seeking practices	7.14%	3
▼	Please comment Responses	16.67%	7
Total			42

Comments

- Time is not assigned, it's always a rush to get out of clinics, supervisors are keen to sign notes and rush off, some supervisors stay, take their time and give feedback.
- Too afraid that seeking feedback will highlight negatives and affect my clinical credits
- Difficult to engage with staff and environment not conducive

9. How often do you like to receive feedback?

Answer Choices		Responses	
▼	During and after every clinical session	57.14%	24
▼	Weekly	28.57%	12
▼	Every two weeks	7.14%	3
▼	Monthly	4.76%	2
▼	Twice a term	0.00%	0
▼	Once a term	2.38%	1
Total			42

10. Do you feel able to discuss the feedback that you currently are receiving with your supervisors?

	Answer Choices		Responses	
	Yes		76.19%	32
	No		14.29%	6
	Don't know (please comment)	Responses	9.52%	4

Comments:

- receiving very little
- Sometimes feedback is harsh and not seen within the context of the session itself. Some supervisors are not good mentors.
- It can be difficult with time constraints
- Depends on supervisor

11. How would you prefer to receive feedback?

	Answer Choices		Responses	
	Written		4.76%	2
	Oral		30.95%	13
	Written and oral		61.90%	26
	Please comment	Responses	2.38%	1
Total				42

Comment:

- able to discuss the feedback plus the supervisor gets feedback on their work as a supervisor
- could they have done more to help the student, was it their inaction that lead to the poor performance
- see one do one teach one can be helpful, lots of students would say if I see it done once or at least discuss it, it can help with the performance of the task

12. Would you like to see a comment for the E and G grades on your clinical session?

	Answer Choices		Responses	
	Yes		88.10%	37
	No		2.38%	1

Comments:

- Some supervisors add a comment others use the generic comment e.g. technical skill which doesn't really scrutinise what the student actually did

- I think the whole system of grading at times childish. Work it's either acceptable or not. Shades of fail are confusing.
- For E grades and J grades. I think G grade is average so there is no need for comment except for exceptional circumstances.
- For E grades

13. What do you think of the feedback processes at the dental school?

Answer Choices		Responses	
▼	Very good	2.38%	1
▼	Good	35.71%	15
▼	Just satisfactory	33.33%	14
▼	Unsatisfactory	19.05%	8
▼	Comment Responses	9.52%	4
Total			42

III.   Thematic analysis of qualitative data from the focus groups.

46 students agreed to partake in the focus groups. 6 focus groups were run and there were 6-9 people per focus group. They were facilitated by AL and BD. Thematic analysis of transcribed qualitative data from these focus groups was performed.

1   Validation is sought by a student-

There were three sub-themes in students seeking validation; external validation (frequently with the student wanting positive external validation), technical validation and self/internal validation on work under progress.

External Validation:

Students want positive external validation. There is a strong desire among students, especially if something was done well, to get feedback from the clinical supervisor on this to show them where and what aspects went well on the clinics, so that this can be replicated, repeated and improved on in future clinical sessions.

The student perceives lack of noise from the clinical supervisor that a satisfactory or good standard was achieved on the clinical session. (FG1) "…. you're not actually told, like you think everything was fine and you get a bad grade and you might not even realise it until like a week after you check it…and "none of us have heard from them so that means we're doing good, well, we assume we're in the good books but you're not learning". These comments were added to up by FG2 "they probably wouldn't say anything. Sometimes they don't say anything" and FG3 "If they don't say anything you just take it as being fine and …. you have to go and check your credits…oh they gave me a J then, whereas you should kind of know…". FG2 agreed that positive feedback is "is definitively as important…for me it is"

Technical validation

Students want to know how they can do better in the technical aspects of treatment over the course of a clinical session. They are seeking a feedforward component to their learning on clinical sessions. FG1 suggested that "…you could have done it this way… and the next day maybe try and do this. And there's three points (those three points are points) … you'd walk away with" FG1 agreed "… if they showed us that in the first place… I was struggling for a long time then I was shown how to do it, crazy and then the next day I had it done in ten minutes flat…… so it's a see one, do one, teach one model…"

Internal validation

Students feel that if they critique and point out negative aspects to the treatment session that they will be penalised on the grade. This feedback need can be demonstrated from the focus groups. FG 1 suggested that their seeking out feedback on the clinical session could negatively be reflected in the grade(FG1) "…they think if they're going to get a bad grade if they identify…problems with their work… and that's going to reflect on your grade… So there a tension then between the formative and ……. building on it and perhaps the summative, which is about making judgements which can… affect your grade and your grade…, position. These sentiments were echoed by focus group 3, where students want formative feedback but they have concerns about how this affects the grading on the clinical sessions. FG3; they will "… point out bad stuff and they'll give you a bad grade"

The association that receiving feedback on clinics has negative connotations on the grade is further demonstrated in focus group 2 (FG2) they "… didn't give you feedback spontaneously…but usually if you had a problem or whatever you'd just kind of ask, or if you get something wrong, they would tell you ". (FG6) "…we got very little feedback unless it was kind of something negative that you needed to change"

There is also awareness in asking for feedback in front of the patient as this might reduce confidence of the patient in the student's ability. FG3 "…even so it's quite scary to ask them for … you feel I'm going to get a J for that… so you end up asking your friends instead…" However, FG3 liked the fact that "…one of our supervisors wrote little comments… that was actually really helpful because afterwards you could look in your grades…

2   Quality of feedback: Feedback interventions (when they occurred) showed both positive and negative outcomes or experiences.

The feedback interventions on the clinical sessions, when they occurred, had both positive and negative outcomes or were positive and negative student experiences.

Positive outcomes/ experience

The positive outcomes of this intervention were demonstrated from the focus groups. Focus group 1 suggested that using the model of feedback led to a positive outcome on the clinical session and may enhance the student learning experience. FG1 "…One of the supervisors said to me you know…. You've seen him three or four times now you can just kind of get on with it. That only took two minutes …and next week I brought them straight in…it only takes two minutes… were not looking for a big long discussion and in-depth thoughts and feelings" FG 1 "… If you are told…you did that filling disastrously… but what can I do next time to make it …better" but (FG1) "I don't think people realised … (that we, students) like a real potential of …good feedback".

The use of the model of feedback may have contributed to learning on the clinical session. This was suggested in FG1 re Model of feedback "…supervisor asking those questions… well you could have done it this way… and next day try… and there's three points, I mean you'd walk away with". FG1 "… I think it goes back to the same one where it's what would you do differently …and so the next time I apply that thing"-

The Model of feedback may have spring boarded the use of a short discussion group on some of the clinics. FG1 "…supervisor took some dental mould and passed them around and said what do you think of these? … We all came away learning something from that". FG1 "…(s) he's excellent because you learn… from it, but I think it's a balance between speed and that approach" in relation to discussions on the clinical session. This appears to be happening in the paediatric clinics on each session. Clearly the students find this beneficial; FG1"…in paediatrics we would sit for half an hour beforehand just talking about a topic and you actually learned something from that topic" The benefits of using a model of feedback were also voiced (FG6) "…then at the next session you'll be more aware that this was something you needed to improve on last time…" FG6 said this discussion is…. "Probably worthwhile to do... If it happened" suggesting the Model of Feedback was not always implemented. Students in focus group 6 suggested the implementation of the trial feedback model was worthwhile "I'd say yeah (worthwhile) because we wouldn't have got feedback before this…so because of this we'll be like oh yeah, we really should get, get proper feedback from the supervisors".

Students appreciated positive reinforcement when things went well on clinical sessions; FG4"… I think you got feedback if you did something you weren't supposed to do… but we, you never really got positive reinforcement, whereas now you got both positive reinforcement and they tell you what you can improve on". Focus group 5 adds "I think that type of feedback is very useful because I…actually do use it, because it does help sometimes" and "it didn't have to take long "…time can also sometimes just be an excuse…when the supervisor authorises something, it can let you know, like it doesn't have to be a talk of like fifteen minutes".

Focus group 3 recorded that comments on the grades were a positive outcome from this study and useful in enhancing the learning and student experience on the clinical sessions. "One of our supervisors wrote little comments… it was actually really helpful because afterwards you could look in your grades back…" FG3 added "…everything's all in clinics, you can't like go and practice in your house, you get the comments and you just try to remember it for next time and that's all we can really do"

Negative outcomes/experiences

Negative outcomes were also recorded from the focus groups with Focus group 1 recording a lack of use of the model of feedback. FG1 "There's not enough use of it" (the model of feedback). This was echoed in focus group 5"… it wasn't mentioned at all" and also in focus group 3. "The supervisors generally didn't kind of give you feedback … You know spontaneously".

There was a negative connotation concerning feedback seeking practices recorded in several of the focus groups where the perception of receiving feedback from your clinical supervisor or clinical academic advisor was seen as where something had gone wrong and needed to be addressed by the student. FG1 "If you're getting feedback in this place, you're in trouble…. If your portfolio goes in and your clinical person goes back to you, they're coming back to you because you haven't enough done or something".

Also, a lack of interaction with staff members was perceived as a positive event but may not be contributing to learning. FG1 "…none of us have heard from them, so that means we're good, well we assume we're in the good books but… then you're not learning." FG1 "I was given feedback …it was negative feedback; I was told to go read up on the topic. I came away from the session knowing I did it that way…I did all the steps right, I read all these books and they were all related to what I did and I was there going what was I doing wrong? So sometimes they don't give you proper feedback …you're just not learning from it". FG2 "There was a girl in our module was pulled aside and said her patient interaction wasn't the best I think it happens maybe if there's an issue there, rather than having it on a daily basis" and FG3 "I think they'd only say it if there's a problem".

The feedback students sometimes received were negative experiences as it didn't point out how to improve on subsequent attempts. Focus group 1 recorded this as a lack of knowledge on the supervisor's behalf on what feedback looks like, LINE 161 "They (supervisor) don't even know what good feedback should look like" and more task completion orientated as recorded in focus group 1 "Its more get through it…it's not particularly focused towards actually learning what you're doing". The lack of feedforward which was viewed as a negative experience was recorded focus group 3 "They probably didn't ask you, just told you you did it wrong" and Focus group 3 "I didn't think the comments were that helpful because he would just write like good". This was also recorded in focus group 3 "You're told what you've done wrong but not necessarily how to fix it, like they'll definitely point out if you've done something wrong" and furthermore in focus group 6 "so we got very little feedback unless it was kind of something negative that you needed to change". FG3 "I just don't really think we (get) much … feedback" as dental students.

3 Performance related feedback- pertaining to patient care, treatment plans, technical ability/skill, clinical productivity, time management.

Students want performance related feedback and they find this beneficial in relation to their learning on the clinical sessions. Several themes were recorded in the focus groups pertaining to performance related feedback e.g. dealing with an anxious patient, changing the treatment plan during a treatment session when the patient arrives in pain etc., polishing composite restorations.

4 Patient care

Managing the anxious patient or a challenging patient was recorded in the focus groups as necessitating increased clinical supervisor input. Focus group 2 recorded an appreciation in receiving positive feedback on these sessions "The patient was nervous and you handled it well…" This was also echoed in FG3 "Managing patient … you know they (the Clinical Supervisor) kind of know what we're like anyway so they'd probably keep more of an eye on people who they know are having problems with those kind of things……and if you have a difficult patient like they would come over and help you". This was further recorded in FG5 "If a patient is anxious or anything happened with the patient you're given feedback at the end…next time try this with the patient maybe that would improve the outcome of the treatment… I think that type of feedback is very useful because I actually do use it, because it does help sometimes"

Occasionally differing issues occur on the clinical sessions where a change in course is necessitated by the patients presenting complaint. FG1 "sometimes you'll have in your head that you're going to do a filling… then the supervisor will come along and they'll change tack".

5 Treatment Plan

Last minute changes to the treatment plan seem to be an issue for some students in the feedback they receive after these clinical sessions. FG1 "at the end of the session you get a poor feedback because you're doing a denture when you were preparing for a filling". Students recorded that feedback encompasses the whole of the treatment planning stage of patient management and that

it is of value to them. FG2 "I think for me feedback would be how a supervisor tells me how they think… I performed so I think their feedback, you could be talking about treatment plans and talking about a patient and for me the feedback is on… how you did". However, focus group 1 also recorded a lack of focus on learning and more on getting treatment performed "I think it's more get through it and get the treatment done, it's not particularly focused towards actually learning what you're doing"

6 Technical ability/skills

Focus group 1 recorded the difficulty in learning about a technical skill, actually performing it clinically and the advice/ guidance they receive under clinical supervision. This is recorded in focus group 1 "there's a big difference between reading up on it and having a notion in your head how it's done to actually the real life, because we could do it for an hour… they get up and they do this, this and this" and also in FG1 "What's the skill… to polishing surface right or there's little subtle nuances that they know, but they're not passing them on, some do, some don't"

Some focus groups recorded struggling with technical skills and then once they were shown or received an intervention or demonstration on the clinic that this greatly enhanced their learning. FG1 "If they showed us that in the first place… I was struggling for a long time, then I was shown how to do it, then the next day I had it done in ten minutes flat" and FG1 "…then someone will guide you… you might say this is very time-consuming… (but)… when it comes to my time to do it I can do it properly".

Some focus groups recorded a lack of learning opportunities on the clinical sessions. This is recorded in FG1 "So I think we're missing that, I think we're missing guidance, we're just kind of let off to sort of do it". FG3 tends to agree "You're told what you've done wrong but not necessarily how to fix it" and FG5 "I don't feel like our clinics were like set out to be learning experiences as such it's more like implementing what we've already learned, so if you go in there and make a mistake based on not having some sort of prior knowledge, you're penalised for it in you credits". FG 5 "like you don't go in there to learn anything new, you go in to practice what you've already learned". An element of learning a technical skill by elimination was recorded in focus group 5 "… when you're getting things wrong it's usually you're getting something different wrong every time… it's kind of eliminating the wrong things by changing them to being right".

The students in focus group 3 were recognisant of the fact that they needed to acquire technical skills in the clinic by making their own efforts and not losing the confidence of the patient "…and the teacher does the whole thing and you just stand there and the patient's like she can't do it".

The grading of technical skill without comments was recorded as an issue for focus group 1 where a lack of direction in how to make improvements on the next attempt was acknowledged. "technical skill doesn't really tell you what exactly was wrong with whatever you did technically, it just says somethings wrong with your technical skills"

7 Clinical productivity

Clinical productivity was also a theme in many of the focus groups where the issue of quality and quantity became evident. This was recorded in focus group 1 "I think it's time management, they just expect you to be able to be more productive in the time… rather than doing something better". This was echoed in focus group 4 "…rather than the quantity of patients I think it should be the quality of work you do". Furthermore, in Focus Group 4 the students recorded an uncertainty as to how many patients they should be seeing in the clinical sessions "… It's hard to tell at the moment

what… how many patients you should be seeing and how much you should be able to complete within a session… so maybe if that was a bit more clear"

The feedback in relation to clinical productivity was felt to be generic and lacking direction for further learning. This was recorded in focus group 1 "beside it would be written like clinical productivity… Generic" and "They have generic feedback where it's like technical skills or productivity". Also in focus group 1 "they just expect you to be able to be more productive in the time… rather than doing something better". There were also issues recorded with the estimation of how long a procedure should take a student. This was recorded in focus group 1 "It's not like you can go and ask them… How long do you think I should spend doing this and they'll say well how long do you think you should spend doing this?" This was echoed in focus group 4 "how productive you have to be with your time… how much they want you to be getting done in a session… it's hard to tell at the moment… how many patients you should be seeing…different supervisors have different opinions as well"

Clinical productivity and time usage and management seemed to be conflicting from the focus groups. Some suggestions were recorded in focus group 1 "Historically (DDUH is) seen as a university that has an awful lot of clinic hour(s)…(or) clinical exposure, so whether that clinical time is being properly utilised could be … if they took fifteen minutes off each clinic and had us all meeting up and4. discuss…" "afterwards is tough because everyone is delayed" and furthermore in focus group 1 "If the question is time (well) if we cut back on how much we had to do it would create more time".

8 Time management on clinical sessions

The theme of time management and feedback emerged from the focus groups. Making time for feedback on the clinical session was recorded as being an issue. FG1 "you're meant to have the patient out of the chair by the time, your notes written up by this time". FG1 "…At the beginning, there's no time constraint…" and "…afterwards is tough because everyone is delayed". In focus group 1 "…time for feedback "on a clinical session was recorded as an issue. This was echoed in focus group 2 "It depends on the supervisor… then at the end again it depends on time". This was also recorded in focus group 1 "The question is time…are we being pushed to do so much it's eating into, if we cut back on how much we had to do it would create more time…" where the issue of clinical productivity verses time management seems to be at odds.

Suggestions from the focus groups to manage feedback on clinical feedback suggested that it shouldn't take long and be manageable. This is recorded in FG1"it only takes two minutes and I mean that's all it should be …." With a suggestion that a specific time for feedback is necessary, FG1 agreed "in terms of incorporating feedback unless you have a specific time for it… I don't think… it gets done". Focus group 6 recorded the need for protected time for feedback "I think there's a lot of pressure on us…so when you do have two patients you can be fairly rushed… I think ideally it (FB) would be weekly…definitely every two weeks would be nice… if that was manageable"

The issue of staff to student ratio was recorded as a factor in focus group 2 "It can be a time management thing, a supervisor couldn't go up to each of the eight people and outline what the outcomes are or the goals for that session for each patient... as you need to start treatment them, so, there wouldn't be time…"

9 Appropriate timing of feedback

This issue of timing and time related issues concerning feedback practices emerged on the clinical sessions. This is seen as a major limiting factor to seeking feedback on the clinical sessions. This was observed by FG3 "…it's kind of hard for them because there is such time constraints…such time constraints after the patient has left…we don't have time" and further echoed in focus group 3 "you definitely wouldn't have time in clinics to be doing that". FG1 "I think a big part of it is having time to give feedback…they (supervisors) could turn around and say… there's not time to do it, it's always finished late". FG 5 agrees "with our group we definitely don't have time…and your supervisor doesn't necessarily have enough time to go through with every single student this is what you should do". "Not unless you finish your session early" and "it's just kind of unrealistic after every clinical session". FG4 echoes these feelings.

Some focus groups recorded a desire to have a timetabled session for feedback on work performed on the clinical sessions. This was recorded in focus group 1 "…like have a designated time". "I think they probably…would do it in a very short amount of time… unless you have a specific time for it…" FG6 "I think there's a lot of pressure on us… so when you do have two patients you can be fairly rushed… I think ideally it (FB) would be weekly… definitely every two weeks would be nice… if that was manageable". Focus group 3 recorded that the time lag between the clinical session and receiving the feedback could be a concern "…by the end of the week you (have) had so many sessions you don't remember anything".

Some focus groups recorded suggestions of appropriate times for feedback. FG1 "…I don't think it should be during clinics because you're literally just trying to get in and out… they're going to think badly on feedback… every two weeks you met with a module for twenty minutes outside of it… just had a bit of a chat" FG2 "I don't think it's feasible to have it after each clinical session, everyone finishes at different times".

This issue of operators having differing finish times on the clinical sessions was recorded as posing a barrier to feedback on clinical sessions. FG2 "… we finish at staggered times". FG3 "I don't think it's feasible to have it after each clinical session, everyone finishes at different times" FG4 "I think the student can make time, like …if you finish up a little bit earlier or you've leave your cleaning till after your tutor leaves… it just depends on how important it is to you…". FG6 "You're just trying to get through… trying to get your final radiograph taken"

Focus group 6 discussed a supervisor helping a student in difficulty at the end of the session. "depends on what everybody else in the bay is doing, if someone needs help with something obviously the supervisor is busier with that than giving feedback" This dilemma is seen as a barrier to feedback on clinical sessions. The clinical supervisor being a part-time staff member was recorded as a barrier in focus group 1 "As the year goes on your expected to do more and more in each clinical session… most supervisors are part-time which means they have to get out at a certain time… there's also a limit with that of how often they can give feedback"

Some students recording that they didn't check credits for weeks afterwards…FG1…"so you might not even know, if you did well, you mightn't know until weeks after"

10 Learning outcome issues on clinical sessions

Learning outcome issues on clinical sessions was a major theme with a lack of clarity around learning outcomes on clinical sessions emerging in the thematic analysis. This was recorded in focus group 1" it's not a learning outcome as such is a what's the task…ok its I'm' going a filling today so that's… if that's a learning outcome?" and "it's kind of hard to give learning outcomes". The students in this focus group also went on to identify learning outcomes in certain procedures as recorded in focus

group 1 "so if we go back to your filling, you're learning outcomes would be shade selection, appropriate preparation…" and with regard to competences they recorded that the competences were, in themselves, a list of learning outcomes "we do things called competences… they have a list of things that in themselves are like learning outcomes"

This lack of clarity was also recorded in Focus Group 2"…you can't like standard set, bringing in different people, having different operators, different situations, it's so unpredictable. So the idea of group learning outcomes doesn't; make much sense in the context of clinical supervision it has to be tailored to your own individual needs? Yeah" and "…there's supposed to be a progression in learning here…feedback from one session which feed in to the outcomes for the next session…have you experienced that in terms of the way in which feedback connects to outcomes which leads to more feedback? That'd be ideal. Yeah in theory it's perfect if it happens"

Focus group 3 recorded that they did not feel learning outcomes were relevant on the clinical sessions "set out outcomes… I think that's just not really necessary in clinics, like you know what you're doing for a patient…" and "I don't think there's a definite outcome, It could change throughout the treatment" and recorded suggesting that the treatment plan could be called learning outcomes "…you should have a treatment set out from the first visit…and in a way you could call them your learning outcomes if you want".

Focus group 4 recorded a clarity around learning outcomes when it came to laboratory session "…edentulous state and RPD, it was very clear that we had learning outcomes because there was a specific documented slide on the aims of this course…" but in relation to the clinical sessions they recorded that that was not the case in the clinical sessions. When FG4 was asked if the CS talked about your learning objectives set, FG4 said "…no, no I don't think that happened". Focus group 5 suggested that it could be valuable to have learning outcomes identified on the clinical sessions as it could enhance the student learning experience. Focus group 5 recorded LINE 121 "the learning outcomes have to be mentioned, even if they're showing up a point like they could be helpful, just one or two things that they think, will improve you for that session" and "If they wanted to give you a learning outcome… that would be actually valuable if you wanted to turn it into a learning experience". FG6 "you've finished a certain treatment and they'll say well for the next time you do this treatment your learning outcomes should be this". The need for individual learning outcomes was recorded in focus group 6 "I think that would be the best way of giving learning outcomes for something before doing it on clinics because otherwise it's not really individual".

11 Formative assessment minimal experience of feedback received prior to this/ written feedback

The data records that the students want formative assessment and they are getting summative assessment. This was recorded in focus group 1 "we can do all the feedback, we can do a seminar, I'd love to do that maybe". This was echoed in Focus Group 5 "I think the comment beside the grade is a good idea because it's confidential and I'll use this kind of matrix … and its constructive… eliminates the issue of time because there no need for you to go up to the supervisor after every session…it can always upload that comment afterwards, so you are always getting feedback"

Students said they were happy to receive feedback in focus group 1 "the vast majority of people would be happy to receive feedback" and (FG2) "if a supervisor said to you, you can improve

somewhere, you're obviously going to go and read about it…. So certainly, if you get specific good feedback you will… I would certainly act on it".

Many students recorded that they felt that they had received minimal experience of feedback in their dental education prior to this intervention. This was recorded in focus group 1 "it was minimal" and "I feel our feedback was minimal. You'd get a grade then like one word or something… but it just didn't explain why you were getting a certain grade". Furthermore, a lack of standardisation of feedback practices between supervisors was discussed "the best way to describe it was non-standardised; it really depended on the supervisor…. Would they elaborate on what's a good filling and what's a bad filling? Not really. You might get a G, and like a number four or a number three and then beside it would be written like clinical productivity or…. Generic like". Students in focus group 1 reported that this was akin to learning in a vacuum "you do your own sort of self-directed learning in a vacuum. Yeah" and others reported they understood this as a lack of interest… "the other side is where the lack of interest is for whatever reason" on the behalf of the supervisors.

The desire for written feedback was recorded in focus group 5 "because written… I feel that written is almost enough" and echoed in focus group 6 "Verbal is ok… great… week to week then say… once a term something written". Students in focus group 6 recorded that they had heard of the student progress sheets that clinical supervisors wrote but had never had access to them. We have… "never seen one of these reports that they write"

12 Feedback and dependency issues

The theme of feedback facilitating learning emerged in several of the focus groups on the clinical sessions. In focus group 1 students recorded "…if you're shown the first steps initially and you do them right and work on them… and guided through that, you will get quicker a lot faster whereas there's a bit of trial and error in what… we do" and "…it's not prolonged or it's not detailed. Say you picked a good shade or a bad shade it doesn't necessarily tell you how to pick a better shade". Students in Focus Group 1 wanted to get specific feedback in relation to certain procedures e.g. LA administration "are you doing it right, are you putting it in slow enough or are … there's subtle nuances". Students in focus group 2 recorded wanting positive feedback on situations that went well "the patient was nervous and you handled it well but it should be on how you did it…"

A lack of consistency regarding the differing clinical situations was acknowledged in focus group 2 7 "it's not really consistent…we're not seeing the same thing all the time or you're not having the same clinical situation all the time…" with the recording of feedback facilitating learning being made" …. "if you get feedback, specific good feedback you will… certainly act on it"

Feedback differed from the labs in Focus group 3 in that there was less critical evaluation on the clinical sessions in comparison to the labs "they wouldn't like critique you as much when you're on clinics" this focus group were recorded as acknowledging when mistakes are made "there's not many mistakes you make that you really don't realise at the time"

Focus groups recorded a desire for access to the comments that the clinical academic advisors have so that they could reflect on these in their own time and that might be beneficial in their learning The "Clinical Academic Advisor get spreadsheet with comments… from all our different supervisors… it might be beneficial if we could take our own one home and actually read it ourselves

The issue of dependency on feedback was also recorded in the focus groups where students wanted to be told how long a procedure should take. This was recorded in focus group 1 "… one of the supervisors will be like how long do you think I should spending doing this and they'll say well how long do you think you should spend doing this". Students in focus group 3 recorded a dependency which may be interpreted by the CS by the student being uncertain how to proceed which can result

in the CS performing the treatment "can you show me or help me with this… and if you do ask for help they tend to then just sit down and just do the whole thing" and "…then they would like check it against the patient's mouth, make sure that everything you've got on there is actually implicated or if you've missed anything". This was also echoed in focus group 6 "LA going to put on your rubber dam, going to do your access… are you OK with that, just do this and I'll come over and check you then"

13 Feedback in relation to need/motivation /reassurance/ initiation

The need for feedback on the clinical sessions was recorded in the focus groups. FG1 "I think speed would come a lot quicker if you're shown the steps…I think in dentistry…we don't know what it is we need to learn… until you encounter a situation" and "We're still at a point where we're learning so any little bit of information is taken. And you absorb it quickly". Students also acknowledged they needed interaction with supervisors as they required authorisation of a procedure on the clinical session. FG3 "…because they need to authorise it just with their name"

The motivation for feedback was recorded in focus group 5 as the need to improve on aspects of the treatment performed and on how to improve on the grade "you get a good grade …there would be aspects of why you did well and aspects of where you could improve to get an excellent… that would really help… I think it would be an example of good feedback. "With the feedback I'm given it doesn't really tell me anything about what I have to improve". This was also echoed in focus group 1 "…you get the extremes, so if you did really good, you'll get feedback…if you did really bad you'd get feedback, it's the in-between so say you got an average filling …you're like is that a good filling?"

Feedback seeking practices also occur in response to a reassurance need in the student, reassurance that their performance is good, or that they are doing well when they may not have been in a position to judge for themselves on that clinical session. This was recorded in focus group 2 "… I'd like to see it run is you do your session and afterwards the supervisor comes down and say you could have done this a bit better, that was quite good, you did this well, I think it's realistic in the time frame doing it session by session basis, I don't think you'd fit more in than that" and in focus group 3 "I remember ..(CS)…used to say oh that was good today because…"

The students recorded a desire to have the clinical supervisor initiate feedback in focus groups 1 "if you come up and say… I did this wrong …give her a bad grade. So that/s why students wouldn't do it" this was resonated in focus group 3 "… I personally feel they (CS) should initiate it…with agreement from the rest of FG3... "…Yeah, yeah same"

14 Timing of feedback and issues surrounding current feedback in DDUH (i.e. when feedback is delivered)

Focus group 1 recorded issues regarding current feedback practices at the school and a lack of interaction with the clinical academic advisors "…in theory we have clinical academic advisors that they know us and know our work and in theory are there to provide us (yet) I've never met them…"and "… they're not interested, they don't engage that and again it wouldn't be the done thing for me to just go and approach them like oh, let's talk about my reports"

Again, a negative view of feedback in the school was recorded in focus group 1 "…if you're getting feedback in this place, you're in trouble … if your portfolio goes in and…. goes back to you, they're coming back to you because you haven't done enough or something…"

Time constraints on the clinical sessions in comparison to the laboratory were recorded as a barrier to feedback seeking practices in focus group "in labs… I don't know if it's just that there's more time in labs, but on clinics you wouldn't really get any feedback really unless you ask for it… it's obviously

hard on them as well as there is such time constraints…because there's eight of you in a clinic and one supervisor…" with a rush at the end of the clinical session recorded as a barrier to feedback in focus group 1 "…they're in, they're out, and any feedback that you get is feedback within the confines of the session"

15 Peer feedback issues

An appreciation in the importance of learning from peers and peer experiences was recorded in the focus groups and the benefit that it contributes positively to the student's learning experience was noted. This was recorded in focus group 1"… you learn, you're listening all the time, you're discussing that over and back and then you might say oh, why did you do that… and that'll trigger with you, I could do that. Because you're learning from other people's experiences…". This was echoed in all the focus groups recorded. In Focus Group 2 students recorded in LINE 183 "You remember those kind of things…they kind of stand to you… so it's all a learning experience, you see someone like do something, underachieve and then you try not to do that yourself…" and in Focus Group 3 "You don't like to ask in front of the patient… you end up just asking your friends instead". Furthermore, in focus group "… I share my mistakes with my friends… so they wouldn't repeat what I did…it's sort of helps me not to do the same mistake again." and then in focus group 5 "… I actually do use it …and I share some things with some of the colleagues here… I think it could be really useful because you're not taught everything in labs…you learn through doing clinical work and experimenting as well sometimes…" and Focus group 6 "… you saw tips and tricks; I would usually, usually share…" and "… I think you would do that without thinking about… sharing it as such"

A lack of willingness to approach the clinical supervisor for feedback and a preference in approaching a peer for feedback instead was noted in focus group 3 "…even so it's quite scary to ask them for … you feel I'm going to get a J for that… so you end up asking your friends instead…" and "You don't like to ask in front of the patient… you end up just asking your friends instead"

The supportive value in learning from peers was also recorded in focus group 1 "…you might discuss your own negative sort of stuff, with someone else…like you imagine being like… if it didn't work out or something…" and echoed in focus group 4 "…I share my mistakes with my friends… so they wouldn't repeat what I did…"

The strategic use of learning from peers learning experiences was also recorded in focus group 3 "…if someone got a telling off…that would be discussed amongst the students… you'd discuss things with each other… different cases…" and also "You find out what the person did wrong or what they got in trouble for … so you don't get in trouble for that yourself maybe…"

But peer feedback is not always found useful by students especially if the group has no prior experience of a procedure or experience. (FG1) "…none of my group knew where it went wrong… because they may have never done a …bridge before"

16 Perception that asking for FB reflects negatively on the grade

Students recorded that they felt that asking for feedback could reflect negatively on their performance over the clinical session and might result in their grade being adjusted downwards as a result of feedback seeking practices. FG3 "It's quite scary to ask them… you feel if you ask them I'm going to get a J for that" and "This is the thing, if you ask something that's stupid then it'll be a J" and "You get scared to ask for help… because then you look incompetent"

And yet the acknowledgement was made in this focus group that progress in the clinical environment could not be assessed if a dialogue was not entered. "How do you know that you've improved if no one says…"

The onus on the student to initiate the feedback process was seen as a barrier in focus group 6 with the view that maybe over time this would cease to become the case as it became more the norm on the clinical sessions "Dr D was saying in the first lecture that it's up to us to approach the supervisor but that's like hard to do as a student, if it had been implemented from second year maybe it would have been easier… we're so used to our supervisors"

17 Model of feedback

The students recorded an improvement in the quality of feedback on the clinical sessions during the pilot. (FG3) "one of our supervisors wrote little comments… it was actually really helpful because afterwards you could look in your grades back". (FG4) "I definitely feel more able to approach now with the feedback model, because I feel like it's like an option for us and it wasn't before" and there is "Definitely concentrate more on evidence-based dentistry because part of the model was quote like a book or like a paper you got this information for in order to feed forward so like you would definitely question your sources more and say this is like a dependable source…" "It definitely lets you develop more targeted goals for your next clinic" and also "I think it's good also because they give you more information on where you went wrong, what you can improve on that way for the next session you know where to go, look up and improve the next one". This was also recorded in focus group 5 "Facilitator askes prior to the FB model what did you think of the feedback that we gave you? (And we thought we…) didn't really get any" and "it (the introduction of a feedback model) did (make a difference) with some supervisors….it did make a difference but not with everybody". Focus group 6 recorded an improvement in quality and a desire to receive more use of feedback on the clinical sessions and "he did start giving (feedback) in the next weeks, written comments" and "I did find helpful and more of that would be helpful as well"

Positive aspects of the model of feedback were recorded in Focus Group 2 "It's great on paper. I mean it makes an awful lot of sense"
Suggestions from Focus Group 4 for the feedback comments section to be expanded. "I think if there was a form of diary notes, that the supervisor could have, I know that's the idea with the comments section next to the grade, even if it was just brief where they had to say something about how the session went it could encourage supervisors to provide feedback more often.

Conversely a lack of improvement in the quality of the feedback received on the clinical sessions was also recorded in focus group 1 "Has the quality of the feedback changed?" "No" "with this model" "No there's not enough use of it. Not even on board"

Some students recorded that there had been a failure to implement the model of feedback in Focus Group 2 "I don't think it's been implemented. I haven't noticed a single difference". This was echoed in focus group 5 "I don't think my supervisors implemented it". This was echoed in focus group 6 "…but like there was no change. No change" and "They didn't even mention it"

An appreciation of the intervention was recorded by students in focus group 3 "I thought they were very optimistic at the start… I don't think it really did, in fairness. Like it made you aware of it" and "I feel it started off well and that it kind of started to relax off… it didn't really seem to be there anymore". This was echoed in focus group 5 "I thought they were very optimistic at the start… I don't think it really did, in fairness. Like it made you aware of it"

18 Observation of a senior staff member/qualified dentist

Students recorded a desire to see a senior member of staff performing treatment as they felt this would be a rewarding learning experience. This was recorded in focus group 1 "it would be valuable watching… if there was some way we could go and watch the consultants maybe…"and" someone else doing a more advanced procedure and watch their technique you'd learn from that". This was echoed in focus group 2" things that work for other people… I was watching P___ one day so CS just stepped in and did… it's just something you could pick up on" and "I don't know about peers; I'd rather see a dentist do it."

Some students felt that it would be beneficial to their learning to spend time observing a qualified dentist in a general practice setting something they do in special dental care. This was recorded in focus group 2 "someone qualified with experience, if there was one session a week just spend a morning with a dentist somewhere. We do placements with special needs, it would be easy to organise a general practice placement". This was echoed in focus group 1 "…we don't particularly have an idea of how clinics out in the real-world work"

IV.   Comparison of feedback and assessment on clinical sessions with other Dental Schools

Two dental schools, Malmö and Sheffield Dental Schools, were contacted to facilitate a comparison to be made between DDUH and feedback practices at these schools.

1.   Faculty of Odontology, Malmö University, Sweden.

In Malmö, clinical sessions are four hours in duration. Students come to the clinic (8-8.15am) and set up in advance of the session. There is a fifteen-minute individual briefing session with the clinical supervisors. Treatment is provided for approximately two and three quarter hours (8.15-11am). There is a thirty-minute administration period (11-11.30am) and this is followed by a one-hour feedback session or "clinical hour" at the end of the session (11.30-12.30pm). In this hour, any patient issues which arose are discussed, a short demonstration may be given or whatever is deemed appropriate and relevant to the clinical session discussed. It can be difficult to get the hour as some student operators may be late in finishing and this can delay the feedback session. Assessment on the clinic is either a pass or a fail grade. The clinical supervisor tracks the performance of the student.

1. Development meetings are arranged with the student if necessary where coaching is provided and areas in need of attention are highlighted.
2. These meetings occur once a term approximately midway through the term.
3. As much as is possible this is done with a full-time and part-time member of staff. The student is reviewed before the development meeting and any issues which may be present a plan of action is set in place to remedy these.

Students are provided with written feedback after these meetings and written goals are given also. These goals are based on knowledge and understanding (theory), skills and abilities (hand skills) and values and attitudes (Professionalism, interpersonal skills etc.).

There are issues that students don't see their own weaknesses or take their own responsibility for their learning and some may contest a grade or the feedback received. A meeting at a higher level would be scheduled should this occur with the lead.

Patient evaluations are not recorded at this dental school as it is felt that there would be issues around the validity of this feedback as there is a loyalty of patients to the students treating them.

Issues were also raised with a shortage of dentists to fill roles in the clinical supervisor's posts and problematic attendance of part-time staff at CPD and training.

Student self-evaluation does occur on the clinical sessions, there are criteria for self-evaluation for the students and students are encouraged to compare themselves to these standards and discuss these with their supervisors before they leave the clinics. They are then signed off by their supervisors.

2. The School of Clinical Dentistry, University of Sheffield, United Kingdom.

The system of grading on clinical sessions in this school consists of six levels.

    i. assisted,
   ii. observed
  iii. beginner
  iv. learner
   v. competent
  vi. proficient.

Substantial staff input is required to input grades and add comments on the students' performance on the clinical session.

Students record the treatment performed on the clinical sessions in a paper logbook which is signed off by the clinical supervisor. The paper logbook is transcribed into portfolio by the student and a reflection is added at that stage. This can be added to subsequently which is useful for the student to add a reflection to at a later time. The portfolio is a student-centred tool. The portfolio can be reviewed to see what students need in terms of treatments and what is carried over to next year and this is especially important with the student in difficulty.

Formative assessment through portfolio has been in use for three years at this school, the portfolio tracks and records all clinical treatment provided by the student. The portfolio is a record the student can take to their dental foundation. Its advantages lie in that it provides an opportunity for reflection and support to the student. It is not tied to any platform or device and there is minimal amount of effort required to get buy in. It is an enhancement and extension of the paper workbook whilst also providing an ability to track targets. The portfolio presents a holistic view of the student's learning on clinics.

Online forms are submitted by the students which record aspirations and any issues the student wishes to address with the tutor at their student/tutor meetings

Personal tutor meetings are scheduled throughout the year. Students are met with on entry to the programme and then once a semester thereafter. Tutors are non-academic tutor at pastoral level.

When students are ready to meet their tutor, review forms are submitted prior to the meeting and written feedback is provided afterwards, this is also useful in that it can serve as a reminder to the

tutor what students issues were presented last time they had a meeting and to see if these are persistent issues.

Directors of Education can ensure meetings have taken place and problems which are in need of attention are highlighted in red and as such are readily identifiable. Director of student affairs tracks the student progress. There is an individual who co-ordinates all personal tutors. They identify the issues which may have risen and works with the student in seeking solutions or plans of action to remedy them.

There is clear visibility to both students and tutor which enables them to see if the targets have been met, tracking competencies, which have been achieved and which are still outstanding and also has advantages in tracking complex multistep procedures.

At time of discussion there had been 1,324 users/ staff students with six cohorts of BDS (2 cohorts have graduated) and hygiene therapy (1 cohort has graduated). 618,131 treatments have been recorded. 250,000 patients treated/ 2 million teeth treated. The portfolio also can assist with data collection.

Clinical teachers do a minimum of two sessions a week. It had been found if doing one there was no engagement- two plus sessions a week gave rise to more ownership. The clinical supervisors become more part of the school, they get more out of it and increased job satisfaction. Working groups could be used as this is an ongoing issue which needs input at regular intervals.

There is always a competition between clinical time and productivity and a time for teaching at the end of the clinical treatment sessions.

Discussion and Recommendations:

Feedback is clearly important to students. The completion, attendance and quality of the feedback from both the questionnaires and the focus groups support this. There are a number of areas where students highlighted that possible improvements could be made in the DDUH feedback system.

Recommendation 1; Feedback is important to students and needs to continue

Students value their learning and place a high value on feedback. The evidence of this is clear from the questionnaires with most stating that they strongly agreed with the statement that it was important for them to receive regular feedback on their work. This was also evident in the number of students who were willing to partake in the focus groups on feedback which could be regarded as representative of the classes (with a sample of 46) out of a total of 74 students in both classes. There is evidence from the literature that supports the importance of tutor feedback and student's perceptions and use of feedback [8] and that assessment and feedback are important drivers of how, what and when students learn [56].

Recommendation 2; Feedback needs to be improved within the DDUH

Most students felt they did not receive enough feedback. This evidence is fairly clear, as the sample of students who attended the focus group could probably be regarded as representative of the class (with a sample of 46), equally the questionnaires were completed by 58% of the class. 44% of students who completed the questionnaire said that they felt they did not receive sufficient feedback on their learning. Only 35% of students who completed the questionnaire said that feedback processes in DDUH were good, 33% said they were just satisfactory and 19% said they were unsatisfactory. The desire for feedback and general student dissatisfaction with feedback is also demonstrated in the literature [14] and across all sectors of university education systems [15] and frequently in results of the National Student Survey[57].

Recommendation 3; There should be a balanced mix of positive as well as negative feedback within the clinic so that students can learn from when they did well, as well as learn when they need to improve

Students appreciated a balance and mix of positive and negative feedback on the clinics. They value that they can learn from what went well and appreciate feedback on what they need to improve on. 78% of those who completed the questionnaire felt that feedback they received enhanced their performance. "Negative feedback can also be useful to ensure that you don't keep making the same mistakes however without some positivity on occasion it can become a very stressful environment". These feelings were reflected in the focus groups with students wanting positive external validation. There is a strong desire among students, especially if something was done well, to get feedback from the clinical supervisor on this to show them where and what aspects went well on the clinics, so that this can be replicated, repeated and improved on in future clinical sessions. Additionally, in the focus groups a need for technical validation emerged where students want to know how they can do better in the technical aspects of treatment over the course of a clinical session. This is also reflected in the literature where good feedback practices should encourage students to learn by including strengths of the students; discussing weaknesses and giving clear guidance on how to improve in future work. It must focus on how to improve the learning rather than the personal attributes of the learner [10, 40, 41].

Recommendation 4; The DDUH should consider how it may alleviate the time pressures associated with giving appropriate feedback

Time constraints were identified in both the questionnaire and the focus groups as being the most limiting issue in the student's ability to get the feedback they need with 45% of students surveyed reporting that time constraints were an issue to feedback seeking practices. One student commented "Time is not assigned, it's always a rush to get out of clinics, supervisors are keen to sign notes and rush off, some supervisors stay, take their time and give feedback". Similarly, time management was a major theme in the qualitative analysis of the data from the focus groups with making time for feedback on the clinical session being recorded as being an issue.

This is echoed in the literature where Spencer 2003[53] lists time constraints, other work demands, difficult to prepare for engaging multi-levels of learners, physical environment not comfortable for teaching and lack of incentives as barriers to feedback seeking practices. Timing is important in the provision of feedback and also may contribute to its effectiveness. It seems that immediate feedback is the most effective in the context of skills acquisition and training [54].

Recommendation 5; The DDUH should consider how it can improve the engagement between the clinical supervisors and its students

There can be reluctance on behalf of the students to approach staff regarding feedback as they are worried this might be reflected negatively in the grade at the end of the clinical session. In the questionnaire 28% of students said they found it difficult to engage in feedback practices with their supervisors. This was also evident in the focus groups where students recorded that they felt that asking for feedback could reflect negatively on their performance over the clinical session and might result in their grade being adjusted downwards as a result of feedback seeking practices. The importance of dialogue in feedback is well documented in the literature [11] with the importance lying in the dialogue as a way of making sense of the learning. Dialogue is pivotal in helping develop conceptual understanding but increasing dialogue can be a challenge with increased class sizes and increased pressures on tutors to deliver on a number of fronts [8]. Engaging the student in the process can be a challenge nevertheless at the centre of successful feedback process is the relationship between the student and the educator [16]. Gauging positivity and negativity within feedback comments can be challenging as it is judging how the feedback comments are encouraging and motivational on the one hand and on the other a need felt to identify a weakness or justify a mark [6]. The literature would also suggest that feedback should

enhance teaching through involvement of lecturers in continued professional development to promote understanding of feedback processes [35, 42, 43].

Recommendation 6; Feedback should be at least weekly, but preferably during and after each clinical session

Students would like to receive feedback at the very least on a weekly basis, but preferably during and after each clinical session. This is present in the questionnaire with 58% of students saying they would like feedback during and after each clinical session a further 29% of students reported they would like to receive feedback on a weekly basis. This was further recorded in the focus groups with some focus groups showing a desire a timetabled session for feedback on work performed on the clinical sessions. The literature would suggest that feedback should be during and after each clinical session in order to be effective. The literature shows that effective feedback should be timely, and dependent on the context of the learning and the needs of the learner [21, 33, 34]. To be effective it must be given to the student while it still matters to them on work in progress [6, 35] and also in time for them to use it to feed-forward into their next assignment or task. CAFS[55] was developed to ensure that educators provided learners with feedback for each clinical session. This team believes that this is the future for effective feedback in the clinical environment.

Recommendation 7; Consideration should be given to mentoring and communication training for Clinical Supervisors to improve the feedback relationship between students and their Clinical supervisors.

Consideration should be given to mentoring and communication training for clinical supervisors in order to improve the feedback relationship between students and supervisors. Reassuringly 76% of students who partook in the questionnaire said they felt able to discuss the feedback they are currently receiving with their supervisors. Some comments included that they are receiving very little feedback from their clinical supervisors, and sometimes feedback is harsh and not seen within the context of the session itself. One comment recorded that supervisors are not good mentors. Another comment was that feedback would very much depend on the supervisor. This was also reflected in the focus groups where a lack of interaction with staff members was perceived as a positive event but may not be contributing to learning. Effective feedback should encourage interaction and dialogue with teachers and peers as a way to make sense of the learning [33, 39, 51]. It should encourage students to learn by being supportive in tone, including strengths of the students; discussing weaknesses and giving clear guidance on how to improve in future work. It must focus on how to improve the learning rather than the personal attributes of the learner [10, 40, 41]. The literature would also suggest that students need to be

engaged in and with the process [6, 33] and the importance of dialogue in feedback and learning is also important [11].

Recommendation 8; Feedback should be both oral and written

Students feel that feedback should be in both oral and written forms. 62% of students who completed the questionnaire said they would like both oral and written forms of feedback with 31% saying that they felt oral feedback alone was preferable. Some comments from the questionnaire included one student said they felt able to discuss the feedback with their supervisors and they would like to see the supervisor getting feedback on their work as a supervisor. This was also recorded in the focus groups with a desire for written feedback and oral feedback. This is reflected in the literature where feedback can be formal or informal, individual or group, specific or generic, self or peer [48]. As obvious as it may sound, in order for students to benefit from feedback on their work they must first recognise that the feedback they are given is in fact just that, feedback whether it be a written grade, written comment, individual verbal feedback. Specific individual formal tutor feedback is the gold standard of feedback. The use of a particular type depends on a number of factors including student body size, time available, funding available, professional requirements of governing bodies. Written feedback is recorded and may be reflected on later by the student and may as such promote reflection on learning. A proforma is added in appendix 3 which currently used by the School of Education in TCD. This written feedback is available to the student after they have met with their clinical tutors and can be referred to guide future learning as recommendations are made.

Recommendation 9; Feedback should be given for both the E and G grades

Feedback should be given for students who also receive either the E and G grades. 88% of students who completed the questionnaire said yes they would like to see feedback given for the E and G grades. Some comments arising from the questionnaire included that some supervisors add a comment others use the generic comment e.g. technical skill which doesn't really scrutinise what the student actually did and as a result was not found useful. Another comment included that work it's either acceptable or not and that shades of fail are confusing. Another comment included that for E grades and J grades comments were deemed useful but that for the G grade is average so there is no need for comment except for exceptional circumstances. This is further evident in the focus groups. One group recorded that comments on the grades were a positive outcome from this study and useful

in enhancing the learning and student experience on the clinical sessions. Written comments are a record which may be reviewed at a later period and may help facilitate and develop feedforward component of feedback and reflection on learning. This is present in the literature where feedforward component of learning is important. Feedback in higher education must address future activity that is feed-forward [7] thus putting focus on longitudinal development of learning.

Recommendation 10; There is a need for feedback in order that good performance can be replicated, repeated and improved on in future clinical sessions

There is a need for feedback in order that good performance can be replicated, repeated and improved on in future clinical sessions. Students in the focus groups suggested that there was a need from students to know when they were doing things right, as well as wrong

The students perceived lack of noise from the clinical supervisor that a satisfactory or good standard was achieved on the clinical session whereas this may not be the case and there may be a lag time in checking the grade for the clinical session. This is also evident in the literature where medical educators have stated that feedback is one of the main catalysts required for performance improvement [13]. In higher education, the central argument is that formative assessment (assessment that is specifically designed to generate feedback) and feedback should be utilized to empower students as self-regulated learners [6]. The literature also reports that feedback is fundamental to facilitating students' development as independent learners, who have the ability to monitor, evaluate and regulate their own learning and allows them to feed-up after graduation in their professional practice [21]. Feedback on the clinical sessions must future activity. This component of feedback is called feed-forward [7] and puts a focus on longitudinal development of learning. These terms feed-forward and feed-up [22] are increasingly apparent in reading the literature on feedback as part of an on-going process to support learning both immediately in higher education and in future learning into employment beyond the higher education environment. Feed-forward is whereby the tutor feedback on a completed piece of work can be utilized by the student to inform their efforts in future assessment [8].

Recommendation 11; Feedback should include a balanced content of the technical aspects of the session

Feedback should include a balanced content of the technical aspects of the session. This is evident from the focus groups where students want to know how they can do better in the technical aspects of treatment over the course of a clinical session. Most seek a feedforward component to their learning on clinical sessions. It is also evident from the literature that good feedback practices should encourage students to learn by being supportive in tone, including strengths of the students; discussing weaknesses and giving clear guidance on how to improve in future work and be balanced. It must focus on how to improve the learning rather than the personal attributes of the learner [10, 40, 41].

Recommendation 12; Feedback needs to be forthcoming from supervisors rather than needing to be requested from students

Feedback needs to be forthcoming from supervisors rather than needing to be requested from students. This feeling is recorded in the focus groups where students feel that if they critique and point out negative aspects to the treatment session that they will be penalised on the grade and as a result are less likely to do this.

There is also awareness in asking for feedback in front of the patient as this might reduce confidence of the patient in the student's ability. This is contradicted in the literature where the student should take increased responsibility for feedback seeking practices. A co-constructivist paradigm develops this further where interactions between participants in learning communities lead to shared understandings [31] and the students takes increased responsibility for seeking out and acting on feedback. At the centre of successful feedback practices is the relationship between the student and educator [16]. The literature also supports that good feedback practices should demystify the assessment process by providing explicate guidance in relation to assessment criteria and what quality is and modelling good practice [44,45].

Recommendation 13; Ensure that feedback is balanced, containing positive as well as negative aspects (if indicated) of the students' performance

Students appreciate feedback when it contains positive as well as negative aspects of issues that arose on the clinical sessions. Students appreciated positive reinforcement when things went well on clinical sessions and this was supported by the discussions within the focus groups. This is also evident from the literature where feedback should encourage students to learn by being supportive in tone, including strengths of the students; discussing weaknesses and giving clear guidance on how to improve in future work [10,40]. Effective

feedback should be clear, useful, balanced, specific and compatible with student's prior knowledge and understanding.

Recommendation 14; Feedback is necessary to build students understanding in the technical aspects of dentistry

Feedback is necessary to build students understanding in the technical aspects of dentistry. This is evident in the focus groups where students recorded the difficulty in learning about a technical skill, actually performing it clinically and the advice/ guidance they receive under clinical supervision. Some focus groups recorded a lack of learning opportunities on the clinical sessions.

The grading of technical skill without comments was recorded as an issue where a lack of direction in how to make improvements on the next attempt was acknowledged. This is also evident in the literature where effective feedback should be timely, and dependent on the context of the learning and the needs of the learner [21, 33, 34]. In order for it to be effective it must be given to the student while it still matters to them on work in progress [6, 35] and also in time for them to use it to feed-forward into their next assignment or task[7].

Recommendation 15; Feedback needs to have sufficient detail. When a word such as productivity or technical skill is used; a description should be added

Feedback needs to have sufficient detail. When a work such as productivity or technical skill is used, a description should be added. Clinical productivity was a theme in many of the focus groups where the issue of quality and quantity became evident with the expectation that you should be able to be more productive in the time allocated.

Furthermore, the feedback in relation to clinical productivity was felt to be generic, lacking in direction and contained no signposting for further learning. Medical educators have stated that feedback is one of the main catalysts required for performance improvement [13]. In higher education, the central argument is that formative assessment (assessment that is specifically designed to generate feedback) and feedback should be utilized to empower students as self-regulated learners[6]. This is what the students are looking for from the focus groups.

Recommendation 16; Consideration needs to be given as to appropriate time for feedback to be given possibly in dedicated slots.

Consideration needs to be given as to appropriate time for feedback to be given possible in dedicated slots. Clinical productivity and time usage and management seemed to be conflicting from the focus groups. This issue of timing and time related issues concerning feedback practices emerged on the clinical sessions and was seen as a major limiting factor to seeking feedback on the clinical sessions. Some focus groups suggested allocation of appropriate times for feedback.

The issue of operators having differing finish times on the clinical sessions is recorded as posing a barrier to feedback on clinical sessions.

This is also evident in the literature where effective feedback practices should be manageable. Feedback can appear to be an endless task to the providers of feedback and also to the students where, getting too much feedback can result in an inability in being able to discern the important feedback from the routine feedback. Feedback should enhance teaching through involvement of lecturers in continued professional development to promote understanding of feedback processes [35, 42, 43]. Balanced against this is the fact that feedback needs to be effective and in order to achieve this it must be given to the student while it still matters to them on work in progress [6,35] and also in time for them to use it to feed-forward into their next assignment or task. The group from the School at Birmingham developed the clinical assessment and feedback system (CAFS) to ensure that educators provided learners with feedback for each clinical session

Recommendation 17; Students need to be check their grades and feedback regularly; in order that they can monitor their own performance

Students need to check their grades and feedback regularly in order to monitor their won performance and develop self-regulation in the process. This emerged in some of the focus groups with some students recording that they didn't check credits for weeks after the clinical session. The importance of grades as a quality assurance feedback on work is evident in the literature. The aim of feedback is to bridge the gap between the desired learning goal and the actual level of performance [26] and it is only feedback if it alters the gap and has an impact on learning [27, 28]. If grades and feedback are not checked regularly then the student might perceive as lack of noise from the clinical supervisor as a sign that work on the clinical sessions is satisfactory when this may not be in fact the case. The literature also records the importance of self-regulation in the process. Good feedback practice is broadly defined as anything that might strengthen the student's capacity to self-regulate their own performance[6]. Self-regulation is the ability of the student to regulate their thinking, motivation and behaviours during learning [9]. It is evident from the literature that students

can learn to be more self-regulated [29]. Self-regulated learners can actively interpret external feedback in relation to their internal goals [6]. Dental educators must be able to develop problem-solving skills, promote critical thinking and self-directed learning in their students[30].

Recommendation 18; The DDUH should consider involving an element of student self-assessment or evaluation after the clinical session in the senior years in an effort to promote the learner's responsibility for achieving learning objectives.

Student self-evaluation is actively encouraged on the clinical sessions in the Dental School in Malmö. There are criteria for self-evaluation are available the students, they are encouraged to compare themselves to these standards and they discuss these with their supervisors and be signed off by the supervisor before they leave the clinics. This would be important from a student engagement in the feedback process point of view and also to see if the student recognised when and why a clinical session went well in an effort to replicate success.

The importance of developing self-assessment skills is recorded in the literature. Self-assessment is an efficient way to engage a learner in the learning process that promotes the learner's responsibility for achieving learning objectives[62]. Self-assessment in the clinical learning environment can produce students who are actively engaged in the learning process by promoting critical assessment of the outcomes of their performance and not merely checking a grade after a treatment session to see if they have been satisfactory or unsatisfactory. It may also address the issue of the student taking the responsibility for achieving their learning objectives.

Recommendation 19; It would be useful prior to and post session that Clinical Supervisors discuss what the student hopes to take away from the session (i.e. individualised learning outcomes)

It would be useful prior to and post clinical sessions that the clinical supervisors discuss what the student hopes to take away from the session (i.e. individualised learning outcomes). This was recorded across all of the focus groups where learning outcome issues on clinical sessions was a major theme with a lack of clarity around learning outcomes on clinical sessions emerging in the thematic analysis.

Some students felt that they did not feel learning outcomes were relevant on the clinical sessions. Nevertheless, the importance of learning outcomes is evident in the literature where feed-up in feedback is related to the attainment of learning outcomes related to the task or performance. Feed-up is a critical part of the feedback process given to students about the attainment of learning outcomes related to the task or performance [10]. The multidimensional performances which are present in assessment in higher education [25]

mean that the feedback must match this level of complexity and this can pose challenges to measuring effectiveness.

Recommendation 20; Clinical Supervisors need to be cognisant of the fact that students want detailed feedback in order for them to develop their skills as dental professionals

Clinical Supervisors need to be cognisant of the fact that students want detailed feedback in order for them to develop their skills as dental professionals. This is recorded across the focus groups along with a desire for written feedback.

The need for detailed feedback is also recorded in the literature. Feedback in higher education must address future activity that is feed-forward [7] thus putting focus on longitudinal development of learning. These terms feed-forward and feed-up [22] are increasingly apparent in reading the literature on feedback as part of an on-going process to support learning both immediately in higher education and in future learning into employment beyond the higher education environment. Feed-forward is whereby the tutor feedback on a completed piece of work can be utilized by the student to inform their efforts in future assessment [8]. The literature also states that effective feedback is meaningful, purposeful and it should be clear, useful, balanced, specific and compatible with student's prior knowledge and understanding. Students need to be engaged in and with the process [6, 33]. It should enable the development of self-assessment skills [36, 37]. Very importantly, it should not be so specific that it scaffolds the learning so completely that the student does not think for themselves [10]. This may foster dependency.

Recommendation 21; Consideration should be given to more peer to peer discussion of cases perhaps led by Clinical Supervisors

Consideration should be given to more peer to peer discussion of cases perhaps led by clinical supervisors. The value and use of peer learning was recorded in the focus groups. An appreciation in the importance of learning from peers and their experiences was recorded in the focus groups and the benefit that it contributes positively to the student's learning experience was noted. The supportive and emotional value in learning from peers was highlighted by students.

There is evident in support of peer feedback in the literature where significant educational gains can be demonstrated through peer feedback systems[58, 59, 60.] Peers are very accessible and involved members of the learning experience. They are in a position to provide effective

additional feedback to the learner). Learners can learn more themselves from the act of giving feedback; the greater cognitive gain is usually from the peer tutor [61]. In order to optimise the positive benefits from peer feedback it is important that all staff understand the theory of how to give and receive appropriate feedback and act as models to the learners. Often learners don't know that they didn't know something. Dialogue about their performance and knowledge with peers gives rise to opportunities about what they are learning and how this links to performance and knowledge. Peer based feedback does not come from a supervisor, who often has evaluative power over the learner, which can impact learning greatly. Students may not want to reveal a lack of knowledge and performance weaknesses to the clinical supervisor [12]. This was also evident in the focus groups. In focus groups 1 "if you come up and say… I did this wrong …give her a bad grade. So, that/s why students wouldn't do it" this was resonated in focus group 3 "… I personally feel they (CS) should initiate it…with agreement from the rest of FG3... "…Yeah, yeah same". This was also recorded in focus group 3 "…even so it's quite scary to ask them for … you feel I'm going to get a J for that… so you end up asking your friends instead…" and "You don't like to ask in front of the patient… you end up just asking your friends instead"

Conclusion

The dental clinical learning environment is stimulating and dynamic and it has the potential to be a very powerful environment but it is not without its challenges. With time constraints and high student to supervisor ratios there can be a tendency for learning to be reduced to purely supervision which may be detrimental to learning. Whilst it is acknowledged that this environment is challenging in that students are required to perform irreversible procedures on patients while still relatively inexperienced, a high level of supervisor dialogue between the student and supervisor is necessary to promote a safe and effective learning environment. Feedback is at the heart of all learning and it does remain a complex and challenging area but by adopting some approaches of effective and evidence based feedback practice students can be supported in regulating their own learning. The recommendations included in this report attempt to address this and enhance the learning on the clinical sessions and it is hoped that this will further enhance the student learning experience.

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- **Appendix one: Survey Monkey Questionnaire**

1. It is important for me to receive regular feedback on my work.

○ Strongly agree

○ Agree somewhat

○ Uncertain

○ Disagree

○ Strongly disagree

2. Are you receiving sufficient feedback on your work at the dental school?

○ Yes

○ No

○ I'm not sure

○ Please comment

_____

3. Are learning outcomes highlighted at the beginning of each term

○ Yes

○ No

○ I'm not sure

○ Please comment

_____

4. Are the learning outcomes outlined for each clinical session

○ Yes

○ No

○ I'm not sure

○ Please comment

[   ]

5. Does the feedback you receive enhance your performance?

○ Yes

○ No

○ I'm not sure

○ Other (please specify)

[   ]

6. Does the feedback you receive in the session feed forward into what you can achieve the following week?

○ Yes

○ No

○ I'm not sure

○ Please comment

[   ]

7. What aspects of feedback do you value?
Please choose all that apply

☐ I like to know where I went wrong

☐ I like to know how I can improve on my work/grade

☐ I feel feedback from a supervisor who is familiar with my work is more useful

☐ I do not value feedback

Please comment [   ]

8. Do any of the following issues limit your ability to get the feedback you need? Please choose all that may be applicable

☐ Time constraints

☐ I find it difficult to engage with some of the supervisors/academic staff

☐ I am able to assess my own work

☐ The environment is not conducive to feedback seeking practices

☐ Please comment

[   ]

9. How often do you like to receive feedback?

☐ During and after every clinical session

☐ Weekly

☐ Every two weeks

☐ Monthly

☐ Twice a term

☐ Once a term

10. Do you feel able to discuss the feedback that you currently are receiving with your supervisors?

☐ Yes

☐ No

☐ Don't know (please comment)

Other (please specify) [   ]

11. How would you prefer to receive feedback?

☐ Written

☐ Oral

☐ Written and oral

☐ Please comment

[   ]

12. Would you like to see a comment for the E and G grades on your clinical sessions?

☐ Yes

☐ No

☐ Don't know (please comment)

Please comment [   ]

13. What do you think of the feedback processes at the dental school?

☐ Very good

☐ Good

☐ Just satisfactory

☐ Unsatisfactory

☐ Comment

[   ]

14. Would you like a change in the feedback you receive on the clinical sessions?

☐ Yes

☐ No

☐ Not sure (please comment)

Comment

- **Appendix two: Focus group questions**

Aim of the focus group will be to evaluate if the students found the model of feedback enhanced their learning

Questions to guide the focus group (15 mins approx.)

I   Evaluation of the use of the model of feedback weeks 4-8.

1. What are your thoughts on the model of feedback implemented weeks 4-8?
2. Would you say you were satisfied with this model?
3. If so what is going well, why is that?
4. If not what didn't go so well, why is that?
5. How about the aspect of reflection highlighted in the model? What do you think of that?
6. Are there things you are dissatisfied with feedback that you want changed?
7. Do you think this is a valuable tool and something you would like to see continued?
8. Did your supervisors use the model? Were there any issues with this?
9. Are there other recommendation or suggestions you would like to make?

II   Beliefs about feedback

1. What does good feedback look like to you?
2. Do you have a role in the feedback process? If so, what is it?
3. Do you ever actively seek out feedback, when and why?
4. What specific feedback needs do you think you have and why?
5. Do you ever have to give feedback to others?
6. If yes, to question 5, does giving feedback to others enhance you own understanding of the work at all? If so how and why?
   Has feedback helped you to make progress? Give examples.
7. Are you able to self-assess your own standard of work? Explain your answer

III   Type of feedback given and its appropriateness for your learning?

1. Who gives you feedback on your work?
2. Whose feedback matters most to you and why? (Lecturer, peer, family friends?)
3. Which one mode of feedback or combination of feedback (written, email, text, audio, is most valuable to you and why?
4. What form of feedback (oral v written; written v typed) is most valuable and why?

5.   Do you have a preference for a specific type of feedback e.g. (final comment v integrated comments throughout work; pointers on what you need to improve v comments on what you did well?

6.   Would you like to see comments on your clinical grade included on your evaluation?

III   Experiences of giving and receiving feedback

1. Do you have to give feedback to your peers?
2. Is giving peer feedback useful? Why? Why not?
3. Is receiving peer feedback useful/ Why? Why not?
4. Should peer feedback be part of summative assessment of your work? Explain your answer?
5. Do you feel able to challenge the feedback you are given?
6. Do you need training in how to manage and give feedback? What type of support would be valuable to help you to develop your skills in these areas?

Appendix three- Proforma in use in School of Education, TCD.

University of Dublin   Trinity College   School of Education

Professional Diploma in Education: Teaching Practice Assessment

Student _____ School _____	Very poor	Poor	Good	Very good	Excell -ent
General					
Lesson begun and completed on time	☐	☐	☐	☐	☐
Aware of students with special needs	☐	☐	☐	☐	☐
Knowledge of subject matter	☐	☐	☐	☐	☐
Planning					
Objectives are clear and directed to students' learning	☐	☐	☐	☐	☐
Students made aware of learning objectives	☐	☐	☐	☐	☐
Content appropriate to the age/ability group	☐	☐	☐	☐	☐
Teaching and class management Positive relationships with students	☐	☐	☐	☐	☐
Discipline maintained	☐	☐	☐	☐	☐
Positive atmosphere for learning established and maintained	☐	☐	☐	☐	☐
Students engaged with content of lesson	☐	☐	☐	☐	☐
Incidents (if any) dealt with appropriately	☐	☐	☐	☐	☐
Presentation of content well-paced	☐	☐	☐	☐	☐
Use of open and closed questions	☐	☐	☐	☐	☐
Practicals/activities conducted safely	☐	☐	☐	☐	☐
Perception/awareness of classroom dynamics	☐	☐	☐	☐	☐
Use of group work (where appropriate)	☐	☐	☐	☐	☐
Students kept actively involved in lesson	☐	☐	☐	☐	☐
Students praised/encouraged for their contributions and work	☐	☐	☐	☐	☐
Homework appropriate and set in good time	☐	☐	☐	☐	☐
Emphasis given to understanding (rather than just recall)	☐	☐	☐	☐	☐
Awareness of students' misconceptions and difficulties	☐	☐	☐	☐	☐
Use of range of resources (appropriate to the subject matter)	☐	☐	☐	☐	☐
Link content to issues beyond school/classroom/laboratory	☐	☐	☐	☐	☐
Set high expectations for student work and behaviour	☐	☐	☐	☐	☐
Reflection Reflection on previous lessons and teaching in general	☐	☐	☐	☐	☐

Summary grade for lesson: PASS   BORDERLINE   NOT PASSABLE
Strike through two options, leave one.
Supervisor's comments:
(a) Main positive aspects of the lesson
_____
_____
_____
_____
_____

(b) Main points that need improving
_____
_____
_____
_____
_____

Signed: Supervisor _____ Student _____
Date on which this form was completed _____

Note: (i) The top sheet of this form should be retained by the student, the second sheet returned to the Registrar.
      (ii) The student's signature serves only to confirm that she/he has read and received a copy of this form.