An exploration of feedback given to undergraduate dental students in the clinical environment

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Abstract

This study aimed to explore whether dental students at one UK dental school were reflecting on the feedback they had been given on clinic, and how the feedback process could be improved by professional development of staff.

Mixed methods were used including qualitative analysis of feedback comments written by tutors on an iPad, interviews of both students and tutors, and observations of the feedback process in place. An intervention was carried out during a staff training day followed up with a focus group of participants.

A lack of reflection emerged, with students appearing to be unsure of how to use their feedback, and staff unsure of how to give feedback. Written feedback comments were found to be of poor quality. Issues uncovered included poor student reaction to feedback, lack of time, and feedback viewed by both tutors and students as a passive process, focussing more on assessment than development.

This study highlights the need to improve the quality of written feedback recorded, and the need to provide training for tutors to help them achieve this through developing a coaching approach. Feedback given separately from grades would help students to focus more on the developmental aspect of feedback, but students also need further training to help them become feedback literate and to use reflection to set goals.

Keywords: Reflection, feedback, dental students, assessment

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1 Introduction

1.1 Introduction and Overview

This piece of research aimed to explore how student learning can be improved by reflection on clinical feedback, and to consider how to support both students and tutors to provide a productive feedback experience. Results can be used to inform staff training, and make recommendations to support students in their use of feedback.

The study took place at a dental school in the UK, referred to as the Dental School throughout the thesis. Undergraduate dental students are given feedback at every session that they are on clinic where they work with patients supervised by a tutor, so each time is an opportunity for the student to reflect on how they can improve. In order to do this effectively they need to know how to reflect, and the feedback needs to be high quality. My research aimed to look at how feedback is given by the tutors and used by the students in one dental school in the UK. I wanted to explore the attitudes of both tutors and students towards clinical feedback, what they thought the purpose of it was, what they considered to be good feedback, and the problems faced on the clinic when giving or receiving feedback. For the students, I also wanted to know how they used the feedback. This also involved finding out about reflection during this process.

It was noted by senior tutors that feedback was not always of the type required, with anecdotal evidence that tutors were giving poor quality feedback, and written comments that were not helpful to the students, for example, 'a temporary filling was done today' which described what the student did but was not useful to their learning.

The study was mainly qualitative and a constructivist approach was used throughout, to build up a picture through written comments analysis, interviews, observations and a focus group, of the current way in which feedback is given via LiftUpp (Longitudinal Integrative Fully

Transferable Undergraduate to Postgraduate Portfolio), on an iPad, across the Dental School (further details on LiftUpp section 1.3).

1.2 The Researcher and Research Environment

I am a lecturer in dentistry and most of my time is spent in the clinical environment teaching the students to treat child patients. On all clinics, tutors are overseeing several students treating patients at any one time so it can sometimes be difficult to give lengthy, good quality feedback to students when tutors are being called to see other students' patients.

I am in a unique position to carry out research involving feedback given in the clinical environment, as I am one of the tutors who give feedback and I am aware of how the process currently works. I am fully aware of the context in which the feedback is given, have experienced various different reactions by students to their feedback and had discussions with other tutors about giving feedback. This is an advantage as I understand all the procedures, the issues involved, and the way feedback is given and recorded, and how much information and training tutors are given. However, I undoubtedly bring my own bias to the research, which I will discuss later in section 6.5.

I was curious about how other tutors coped with giving feedback on clinic, if they have the same issues that I was encountering, and if they were managing to give good feedback via the written comments section on LiftUpp despite the issues. From conversations with senior tutors I began to understand that the written comments were of varying qualities, with many not giving good quality feedback that would help the students improve.

1.3 Background

In the UK, dentistry is a five year degree leading to the award of Bachelor of Dental Surgery (BDS). In the second year of this degree the students begin to work on the clinics to see and treat patients. The approach at the Dental School is constructive curriculum alignment (Biggs,

2012) for the five years of study. This should mean students being involved in reflection, explaining and analysing to produce deep learning rather than surface learning (Wang et al., 2013).

Feedback on clinical performance is given to dental students at the Dental School via an iPad app known as LiftUpp which is a digital education platform used to collect and analyse data for work-based development in clinical training, that has the ability to link and assess work flows, skills and assessment (Oliehoek et al., 2017). It is used to give feedback to students on the clinic to aid their development. In dentistry, much of the assessment is work based, as they are being observed providing treatment for real patients. LiftUpp is used to collect data on performance by the students on various procedures which are observed by the tutors.

All of the competencies required by the UK governing body for dentistry, the General Dental Council (GDC), are mapped on to LiftUpp. The rest of the BDS programme learning outcomes are included also (a total of 165 learning outcomes). This allows for a record to be kept of progress of the students in terms of covering the competencies and learning outcomes, to ensure they are all covered by each student by the end of their degree.

LiftUpp allows for assessment (including exam setting), collection of data (via the iPad) and analysis of collected data to allow students to view their progress. This involves data collection of assessments of observed procedures (such as giving an injection) and behaviours (such as time keeping, professionalism). A six point scale is used to assess each individual procedure or attribute being assessed (see appendix 4). These points are described as developmental need indicators (DNIs).

Each student will receive an average of 18 DNIs per clinical session, which means they will have approximately 5000 DNIs by the time of graduation. It is difficult to obtain objective

assessment in this context, which is why having so many tutors may help to balance any bias from individuals.

At the end of each clinical session each student is asked to sign out on the iPad after looking at the DNIs they have received and reading any associated written comments. Each DNI that is given has a space for an associated written feedback comment. The idea of these comments is that they will be developmental. However, there is no requirement to make any comments at the end of the session, so tutor comments vary between several long, detailed comments and no comments at all.

In 2014, there was a General Dental Council inspection of the Dental School, where it was mentioned that they would like to see more evidence of student reflection (GDC, 2014), and that "Inspectors noted that written feedback seemed to be provided in the event of under-performance only and they felt it would be useful if the School could provide written feedback across the range of performances" (GDC, 2014).

This comment, together with concerns raised by senior tutors over feedback quality, suggested a need for an exploration of feedback being given, in order to make recommendations for improvement and options for student reflection.

The General Medical Council (GMC) and General Dental Council (GDC) of the UK both now require evidence of reflection during professional training and as part of professional development for revalidation (GMC, n.d, GDC, 2015).The General Dental Council (GDC) of UK, during their most recent inspection of the Dental School, praised the school for producing triangulation of student progress and tutor feedback but also stated that they required evidence of reflection to improve quality of work (GDC, 2014). As this is currently lacking, how to encourage reflection and reflexivity is one of the issues that my research aims to investigate. The main aspects which I chose to focus on in my research were how students

were using their feedback, and what could be done in terms of staff development to help students use their feedback for reflection.

1.4 Reflection on Feedback

Reflection is required by the GDC, but is also important for other reasons. The theory 'reflection as epistemology of practice' (Ng et al., 2015) suggests that new knowledge is created through reflection. Reflection also helps students to self-assess and move towards a position of autonomy (Mckimm, 2009) which they will require throughout their working lives, and it encourages them towards a self-directed approach to learning (Bond, 2007) and away from being driven by assessment. However, in order for successful reflection to take place there needs to be good quality feedback to reflect on.

1.5 Quality of Feedback

High quality feedback is required to help students self-assess, improve and understand their own level of achievement. Whilst there is a move to shift the focus away from summative to formative feedback (Qvortrup & Keiding, 2015), Biesta (2015) argues that institutions, tutors and students still have a focus on the qualification aspect of higher education, with the award of the final degree being the prize that everyone is interested in.

As well as senior tutors noting the lack of quality written feedback comments, there were also comments made in the Staff Students Liaison Committee meetings suggesting feedback on the clinics could be improved. I wanted to find out more about how the students felt about their feedback, and how they used it. I was also interested in exploring the tutors' perspectives, as I had my own ideas about what made it difficult to give good feedback, and wanted to compare these with those of other tutors.

1.6 Use of Feedback Data

LiftUpp provides some opportunity for analysis of data. DNI data is analysed to provide each student with a personal account of their own level of consistency which is presented as barcodes and graphs. For example a student can see their consistency of gaining a DNI of 4 or above. It is also possible for students to see their consistency rate compared to other students in their cohort (see appendix 4).

LiftUpp can also be used for calibration of tutors. Ideally tutors should use the full range of DNIs from 1-6 but some tutors may only ever give 4s or 5s. Data to look at the differences in the way that tutors give DNIs can be analysed by LiftUpp and used for staff training.

The LiftUpp system is a method for keeping a record of progress for students relating to the competencies and learning outcomes required, but can also provide formative assessment through written comments which are given via the iPad at the same time as the DNIs. The quality of the comments and the actions of the teachers giving the feedback via LiftUpp will affect how useful the data is to enable student learning.

One of the limitations of the data analysis by LiftUpp currently is that only quantititave data (the DNIs) is analysed and not the written comments. Little is currently known about the written comments except that tutors vary considerably in their approach and use of written comments. I thought it would be useful to analyse these comments to create a better understanding around current practice and to inform development and training of tutors

I was interested to discover how students used the written feedback, and to help improve their learning by exploring how feedback can be improved. I also wanted to explore if they were given any other feedback on the clinic, as I suspected that a lot of verbal feedback was given that is never recorded. It would be useful to understand how the written and verbal feedback complemented each other.

1.7 Overview of Thesis

The remainder of the thesis is divided into 5 chapters. Chapter 2 is the literature review. In it I will describe and analyse previous research into reflection, feedback, and use of learning data, all of which are relevant to this study. Chapter 3 is the research methodology section in which I discuss the underlying philosophy of the research, and the research methodology and methods used in this study. Chapter 4 is the findings section, which includes many quotes from both tutors and students that were interviewed as well as an analysis of written comments, and notes from observations and a discussion of an intervention carried out. Chapter 5 is the discussion section, divided into answering the three research questions, considering feedback for reflection, and staff development for giving feedback. In it I provide an analysis and synthesis of data and literature. Chapter 6 is the conclusion section, which contains limitations of the study, and recommendations for future practice and further research into feedback, in addition to conclusions from the study.

2 Literature Review

2.1 Introduction

My research will look at how feedback given on the clinic can be used to improve reflection amongst undergraduate dental students to inform future training, so my literature review mainly looked at reflection and feedback. Analysis of learning data can help educators to understand current trends and inform training needs so I looked at this also.

Biesta (2015) describes three aspects of education: qualification (learning to do something specific); socialisation (becoming a part of the social structure); and subjectification (learning to become the subject of initiative and responsibility). Too often tutors and students are focussed on the qualification aspect of education, to the detriment of socialisation and learning to become responsible and self–reliant. At the Dental School we want to encourage all three aspects of learning, through reflection and feedback

There are two educational theories that I consider to be relevant to the teaching approach at the Dental School and I will use these as a theoretical underpinning for my research, as one of the aims of my study is to encourage reflection, both as a way of constructing knowledge, and a way of developing self-determination within students. The first is 'reflection as epistemology of practice' (Ng et al., 2015; Kinsella, 2010) and the second is self-determination theory (ten Cate, Kusurker & Williams, 2011). Using these theories means that I will be considering reflection as a way for students to create and construct their own new knowledge and also considering ways in which intrinsic motivation can be encouraged in the students. My research also looks at how LiftUpp can be used by tutors to give appropriate feedback that encourages both intrinsic motivation in and reflection by the students.

The theory of 'reflection as epistemology of practice' suggests that new knowledge is created through reflective practice, in alignment with the constructivist theory of learning. Reflection

for learning requires the individual to challenge assumptions and traditional (and tested) ways of doing things. The aim of my research is to encourage reflection amongst students to enable them to create their own knowledge that can be adapted to different situations, and to have the confidence to challenge the status quo. New knowledge is built by reflecting on what is already known and assimilating new information and concepts into this. This process may require a change in the way of thinking or even replacing old knowledge.

The self-determination theory (ten Cate, Kusurkar & Williams, 2011) suggests that intrinsic motivation is required to promote deep learning, better performance and emotional well-being. For clinical students it is important that deep learning occurs, as they need to retain and reconsider their knowledge and be able to apply it throughout their whole career. Deep learning requires an ability to constantly re-assess what you have already learned, in order to allow processing of new, sometimes contradictory concepts (Ohlsson, 2011). The requirements for enabling intrinsic motivation are described as autonomy, competence and relatedness (ten Cate, Kusurker & Williams, 2011). In this case, autonomy means being able to make their own decisions and take responsibility; competence refers to the students' ability to perform at the required level; and relatedness refers to their level of involvement within the clinic. It is therefore important that these requirements are covered within the clinical learning environment, including within the process of assessment and giving of feedback.

Orsini, Evans and Jerez (2015) carried out a systematic review to look at how self-determination theory can be used in the clinical teaching environment. From this review they have produced a collection of the main themes supporting the three basic needs; autonomy, competence and relatedness. Autonomy is critical for students to learn how to take responsibility for their actions.

Orsini et al. (2015) suggest that to support autonomy, it is important to identify what the students want, to provide different learning experiences and choices, to promote freedom and active participation, and to give value to uninteresting tasks and to avoid external reward.

To support competence, Orsini et al. (2015) suggest optimal challenges, structured guidance, valuing students' work, and giving positive and constructive feedback; and to support relatedness, respecting students, giving emotional support, and acknowledging students' expressions of negative affect.

In the clinical environment the tutors will have a considerable impact on the above factors. It is dependent on the tutors whether students feel respected and valued and are given emotional support. Educational alliance between tutor and student is discussed further in section 2.3.4.

2.2 Reflection

2.2.1 Introduction.

Reflection is much written about and defined in many different ways within the literature (Gordon & Macleod, 2009; Ng et al., 2015; Sanders, 2009; Hodges, 2015; Chaffey, de Leeuw & Finnigan, 2012; Nguyen et al., 2014).

Dewey (1933) was amongst the first to describe reflection, as a consideration of supposed knowledge or belief. Schön (1991) later developed the phrase 'reflective practice' which along with 'reflective practitioner' are terms aspired to today for those working in healthcare. Mezirow (1996) was another influential author in developing reflection in practice, bringing into being the term 'transformative learning' which is the change in the way a person acts after reflection on a particular experience.

 Boud (1999) describes reflection as learners making their own meaning within a community of professional discourse, while Sandars (2009) describes reflection as either a metacognitive

process (thinking about thinking), or a way of developing a greater understanding of self and situations, to lead to informing future action. Mann, Gordon and Macleod (2009) split reflection into either 'iterative' (which is similar to Sandars' approach of a new understanding that leads to new action, both perhaps informed by Mezirow's transformative learning) or 'vertical' describing the different levels of reflection ranging from descriptive to critical synthesis.

Reflection is now seen as an important part of maintaining standards in clinical practice (Murdoch-Eaton & Sandars, 2014), and McKimm (2009) highlights the importance of reflection by students on their feedback, as this can help students to self-assess their performance, leading to a self-directed, more independent approach, and helping their development as a professional practitioner. My research will consider whether it is necessary to give the students some guidance on how to reflect.

From their systematic review of the use of reflective practice in medical education, Mann, Gordon and Macleod (2009) conclude that reflection is something which successful practitioners engage in. Since the 1980s there has been an emphasis on professional students not only learning the knowledge and skills required to practice their profession but also learning to learn to be a professional (Boud, 1999). Reflection means exploring what they are doing and why, and how that impacts on self and others. The abilities to think critically, self-assess, and to take action for future learning are all part of the international competency movement in health care, and reflection is now seen as a necessary part of professional development, as mentioned in the introduction.

2.2.2 Reflection for competency.

It appears that there is currently an emphasis on demonstrating that reflection is taking place, suggesting an audit approach, rather than considering what it is for, that might lead to a

deeper level of engagement in the activity (Hodges, 2015). Gadbury-Amyot and Draper (2016) found that authors define the hallmark of a competent individual as the ability to accurately self-assess, which will lead to reflection on their performance. In a dental school the assessment focus is on tutors evaluating whether a student has the required competencies. An increase in a reflective focus would lead to teaching students to evaluate their own competency (Nguyen & Ikeda, 2015). However, this would still mean that in order to be able to reflect on their performance they need a tutor to show them where they are in terms of the standard they need to achieve and how to get from where they are to where they need to be in terms of learning outcomes (Gadbury-Amyot & Draper, 2016) and give them something concrete to reflect on (Nguyen & Ikeda, 2015). It will become necessary to find a balance between relying on tutors to assess students and encouraging the students to self-assess in order to become independent practitioners. Much of the literature appears to demonstrate attempts by educators to introduce or improve reflection by students, without deep consideration of the depth of reflection required.

2.2.3 Types and levels of reflection.

 Schön (1991) describes reflection-in-action as thinking about what you are doing whilst you are doing it, in contrast with reflection-on-action where reflection takes place after the event. There is a significant difference between thinking about something that has happened already and being able to reflect in the midst of the action taking place. Reflection-in-action requires use of previous knowledge and the ability to be able to adapt that and relate to the current circumstances.

Reflection can take place on many levels. Tosey, Visser and Saunders (2012) describe how the concept of triple loop learning came into being, following on from Argyris and Schön's (1974) definition of single and double loop learning. Single loop learning occurs when an

error is found and corrected, without any consideration of, or making any changes within, the underlying system. Double loop learning involves correction of the error, only after consideration and alteration to governing variables. Triple loop learning goes one step further and considers why the governing variables are as they are, and questions the underlying values behind them, with a view to creating new values. This involves a reflexive response, considering one's own underlying values and how they may be affecting action.

Ng et al. (2015) add a further layer as they describe two orientations of reflection: epistemology of practice, and reflection as critical social inquiry. The authors suggest that reflection should provide a theoretical framework for research. They suggest the aim should be building theory round reflection rather than trying to measure reflection. It is the 'reflection as epistemology of practice' orientation which underpins my research (section 2.1).

There are many different points of view on reflection, which complicates the task of supporting students in clinical settings and makes it difficult for those involved in educating clinical students to know and understand which definition they are using, and which type of reflection they are trying to facilitate. Most authors seem to concentrate on reflection as confession (Ng et al., 2015) which is not particularly helpful to the student.

Ng et al. (2015) and Hodges (2015) talk about the importance of considering the underlying philosophies of reflection before asking students to engage in reflection, in order to avoid unintended consequences. Hodges (2015) asks how many educators have actually tried to understand what reflection is, when so many have embraced the concept and invented ways to introduce it to their clinical course. As mentioned previously reflection is now required in many clinical courses by their governing bodies, so for many educators it becomes a

necessity to demonstrate they are incorporating reflection into their course, whether or

not they consider what it means and why they are doing it.

Nguyen et al. (2014) devised their own definition after conducting a review of the literature,

encompassing all the relevant aspects of reflection. Their aim was to bring together and unify

the ideas by other authors to try and get rid of the problem of lack of consensus on

definition:

> "Reflection is the process of engaging the self in attentive, critical, exploratory and
>
> iterative interactions with one's thoughts and actions, and their underlying conceptual
>
> frame, with a view to changing them and with a view on the change itself" (Nguyen et
>
> al., 2014, p.48).

This definition seems particularly useful because it describes reflection as an iterative thought

process but, above all, it suggests that it is criticising one's own thoughts and actions that is

the important point. This makes it a more individualised approach than some of the other

definitions above, and an approach that will encourage a greater understanding of one's own

reactions, which has been highlighted as one of the main benefits of reflection by some

authors (Branch & Paranjape, 2002; Sargeant et al., 2008). There is no mention of interaction

with the thoughts and actions of others, an important concept in the communities of practice

theory (Lave & Wenger, 2000).

There is a difference between reflection on practice and reflexivity or reflexive practice

(Sriprakash & Mukhopadhyay, 2015; Mortari, 2015) which requires a feedback loop. Holland

(1999) describes how reflexivity involves an extra layer of analysis, whereby the individual

is required to understand their own internal landscape first, before considering thoughts

and/or actions of others. How they perceive and interpret others is limited by their own belief

system. Thus, a reflexive practitioner or researcher must understand their own way of thinking, and how this will affect the way they interpret events and the actions of others.

On the GMC website (n.d) students are reminded that they are required to reflect on their practice and advised that

> "reflection is thinking about what you've done, what you did well and what you could do better next time. Reflection also means responding constructively to feedback from your teachers, trainers and colleagues".

The GMC has a very simplified approach to reflection compared to the authors above, perhaps because this is written by clinicians rather than educational theorists. Maybe the simplicity of this definition is why educators on clinical courses do not concern themselves too much with deep reflection on the different possible meanings of reflection and just introduce appropriate activities for students to think about how they could do better next time.

2.2.4 Purpose of reflection.

Inconsistencies in the purpose of reflection are found within the literature (Chaffey, de Leeuw & Finnigan, 2012) but surely one of the most compelling reasons that educators want to incorporate reflection into their teaching is that in many professions it is a requirement for training:

> "The provider must support students to improve their performance by providing regular feedback and by encouraging students to reflect on their practice" (GDC, 2015, p7).

However, there are many other reasons suggested in the literature for introducing reflection into courses for clinical students. Personal development, including better relationships with

patients and tutors, is posited as a major reason by many authors (Chaffey, de Leeuw &

Finnigan, 2012; Mann, Gordon & Macleod, 2009; Sandars, 2009; Sargeant et al., 2008;

Branch & Paranjape, 2002). Other reasons include contextualisation of practice (Sandars,

2009; Tricio, Woolford & Escudier, 2015; Chaffey, de Leeuw & Finnigan, 2012) and

improvement of clinical judgement (Chaffey, de Leeuw & Finnigan, 2012; Sandars, 2009).

Perhaps it would be helpful for programme developers and educators to consider which of

these outcomes they aspire to, before considering which tools they will use to implement

reflection into their course. Current trends in implementation of reflection into healthcare

professional courses include reflection as a tool, for example, for recording competencies or

learning outcomes, a focus on self, reflection as assessment and reflection as confession,

where students write down or tell their thoughts for a confessor (Ng at al., 2015). This is a

simple approach to set up but may have limited usefulness due to the lack of freedom

imposed upon the students, restricting their creativity and restricting what they write as they

know someone will read it. It depends whether educators are trying simply to do the

minimum required by governing bodies or if they are looking for particular outcomes as part

of students' engagement with reflection. One of the main aims of studies into reflection by

students is to discover how effective it is, but studies vary in what they mean by 'effective'

and in what ways efficacy is measured.

2.2.5 Efficacy of reflection.

There are conflicting results about the efficacy of reflection in the literature, with some

studies claiming improvement in clinical care (below). However, one literature review found

no evidence that reflection changed clinical behaviour or patient care (Mann, Gordon &

Macleod, 2009) and another concluded that there is very little empirical evidence about how

effective methods of facilitating reflection are, and no evidence that reflection improves

clinical skills (Chaffey, de Leeuw & Finnigan, 2012). One of the problems could be the breadth of the construct of reflection as studies were using different reflection techniques and were often looking at different outcomes.

Other studies claimed to find evidence that better reflection (based on awareness, understanding and future action) led to better case solving (Koole et al., 2012), improved clinical performance (Embo et al.,2015) and other competencies (Koole et al., 2013).

However, Larsen, London and Emke (2016) introduced daily written reflection to medical students, and claimed some improvement in perceived clinical performance by students but produced no objective evidence. A study by Wetmore et al. (2010) also showed no improvement in critical thinking following reflection.

In the above studies, quantitative measurements were used to evaluate reflection. As Ng et al. (2015) suggest it is difficult to measure reflection so it is not easy to interpret the results of such studies. Therefore, it is no surprise that results do not agree. Whilst Embo et al. (2015) and Koole et al. (2012) claimed to find evidence of improved clinical performance after reflection, Chaffey (2012) and Mann, Gordon and Mcleod (2009) failed to find any evidence.

There has been little research on student perception of reflection and even less on tutor perception, but one such study (Bulman, Lathlean & Gobbi, 2012) concluded that for both students and tutors, reflection seems to be teamed with desire to do better and move on, with equal value placed on feelings as on an intellectual approach.

It is claimed that there is no difference in the amount of reflection between males and females, but younger students reflect less than older students and those without an earlier degree reflect less than those who have a degree already (Tricio, Woolford & Escudier, 2015). It would seem that the benefits of reflection are perhaps only understood after several years of participating in a clinical environment. It might be a case of the more

one learns, the more one realises how much more there is to learn, and reflection allows a student to take a step back and think about where they are in regards to their learning journey. Perhaps it is impossible to measure reflection with a quantitative study, which is one of the reasons I undertook a qualitative approach to understanding whether and how students were reflecting on their feedback.

One benefit of reflection could be to help students look at their own emotional response to learning, and change their mindset where necessary. Mindset is described as how students perceive their abilities to learn and can affects levels of achievement and motivation (Dweck, 2015). Students can change from a fixed mindset, where they believe they have a fixed level of intelligence, to a growth mindset, where they believe they are able to improve their intelligence, so students need to learn how to do this. Reflection on their own current mindset would be beneficial, but they would need guidance around how to achieve this, including new strategies for learning and how to ask for input from tutors.

2.2.6 Reflective activities.

Boud and Walker (1998) looked at what makes reflective activities effective and suggest that there are a lot of poor practices in universities being labelled as 'reflection'. This may be due to excessive use of instruments to provide evidence for reflection taking place (Murdoch-Eaton & Sandars, 2014). Baernstein and Fryer-Edwards (2003) also suggest critical incident analysis as a way of introducing reflection, which could be useful after mistakes have been made. In the healthcare profession reflection has been implemented using journals, logbooks, diaries, portfolios, blogs, and reflective statements (Tsingos, Smith & Bosnic-Anticevich, 2014). Perhaps, as Chaffey, de Leeuw and Finnigan (2012) suggest, the method used is less important than the guidance provided. Such a diverse range of reflective activities makes it

difficult to compare studies, however there are some studies which have demonstrated benefits from student reflection, which are discussed below.

2.2.6.1 *Reflection through writing.*

 Reflection through writing is a common method used (Larsen, London & Emke, 2016; Stark et al., 2006) but Nielson, Stragnell and Jester (2007) suggest that writing needs to start by being very prescriptive with sections to fill in to guide students in their reflection. As students get more experienced they should then be allowed more freedom to write in their own way. Portfolios have been used to attempt to encourage reflection (Ramey and Hay, 2003) but Ryan (2011) suggests that students do not generally use these for reflective activities.

Some mixed methods have also been described for capturing reflection, such as writing followed by discussion (Dahl & Erikse, 2016; Donaghey & Morss, 2007) but Baernstein and Fryer-Edwards (2003) found that discussion alone was just as good for getting students to reflect. However, the definition of successful reflection by Baernstein and Fryer-Edwards (2003) was how many critical incidents were mentioned and no actual definition of reflection was given.

It seems that writing can be a useful form of reflection. However, it appears that initially students require guidance on how to begin to write reflectively and can be given greater freedom as they become more experienced. As discussed later, the main problem with reflective writing is how to ensure that it is being done, without stifling student freedom to write what they want.

2.2.6.2 *Group reflection.*

Some alternative strategies for reflection have been used such as learning circles for group reflection (Walker et al., 2013), mentor groups (Koole et al., 2016) and watching themselves back on video (Ab Murat, 2006). Some success has been suggested with these strategies, and

working as a group allows students to share experiences and doubts with others which could help them to better understand their own reaction to events on clinic. Unlike writing down reflection, it is not easy to record group reflection, and therefore difficult to prove it has taken place.

2.2.6.3 *Online reflection.*

Blogging could lead to a deeper level of reflection, than writing a journal (Hanson & Alexander, 2010) because it is more interactive and other students can comment, prompting the author of the blog to think again in order to respond. Other studies looked at use of blogs (Chretien, Goldman & Faselis, 2008; Makoul et al., 2010) and found they were a good way for students to share experiences, but as they were usually anonymous there was no way of recording that a student had engaged in reflection. Recording reflection is an issue but it is not only finding effective ways to record reflection that is the problem.

2.2.7 Problems with reflection.

In order for students to take reflection seriously and carry out the task it needs to be assessed (Chaffey, de Leeuw & Finnigan, 2012; Mann, Gordon & Macleod, 2009; Branch & Paranjape, 2002; Donaghy & Morss, 2007; Koole et al., 2013; Hodges, 2015; Ng et al, 2015) which suggests that reflection is not considered to be important as a practice in itself. Many studies have claimed to assess reflection in order to demonstrate a correlation with one of the competencies (Koole et al. 2012; Embo et al., 2015) but Ng et al. (2015) argue that the philosophical basis of reflection is that it is not a measurable construct, that is, reflection is personal to an individual and the way in which reflection occurs for each person will be different. Similarly, the benefit they receive from reflection will differ, so it is not possible to measure this. Ng et al. (2015) suggest reflection should be considered as a way of being rather than another competency to be measured.

As reflection is often assessed and can also be very highly structured it can prevent free thinking (Mann, Gordon & Macleod, 2009; Boud, 1999). However not enough guidance can lead to no reflection at all (Boud, 1999) and forcing students to reflect could lead to reflection fatigue (Coward, 2011). There is a difficulty for medical educators who wish to demonstrate that reflection is occurring. There may be some very good effective reflection taking place between students or between tutors and students or by an individual student alone which is never documented. Equally many documented reflection episodes can be assessed but may be worthless. Branch and Paranjape (2002) note that lack of time is often cited as the reason for tutors not helping clinical students to reflect, but they suggest the real reason could be the reluctance of tutors to engage in any conversation which could be uncomfortable.

Another potential difficulty with encouraging reflection is when it is attempted as a purely intellectual exercise. Boud (1999) may well be correct in claiming that it is not possible to truly reflect without feelings being involved. Perhaps, as Sandars (2009) suggests, students' lack of motivation to reflect is because they do not understand the goal of reflection. From the above literature it would appear that educators are also unclear about the goals of reflection.

2.2.8 Conclusion.

There are so many definitions, types and purposes for reflection that students may not know why they are being asked to reflect and educators may not fully understand the outcomes they hope to gain by implementing reflection in their courses. Reflection is a complex construct that appears to have different meaning to different people. Some of the evidence above points to students embracing the opportunity to collaborate with others, either online or in groups, and finding meaning in this as a way to begin reflection.

Many educators are using writing as a way of encouraging reflection. This may be because it is easy to collect the evidence that reflection has taken place. The problem with this approach is that students may not feel sufficient freedom to reflect in a way that is meaningful to them, especially if they know that someone is going to read what is written. If educators need to avoid assessment, it is difficult for them to demonstrate that reflection has taken place. This leads me to conclude that when considering how to implement/improve reflection by students on their clinical feedback, it is necessary to first choose which definition and outcome are most relevant in order to devise a relevant tool.

Within the Dental School, reflection could be used as a means for goal setting, in order for students to set their own goals for how they will improve in the areas that they need to improve. I wanted to find out whether students were using reflection for goal setting, and whether both tutors and students considered reflection to be an important part of feedback. Students may need help with their reflection, working out what they need to improve and what goals they need to set to achieve this. In this way, good quality feedback can be a stepping-stone for a student to begin reflection. Apart from the benefit that students can derive from reflection, evidence that it has taken place is required for the GDC.

2.3 Feedback

2.3.1 Introduction.

There has been a recent shift in emphasis from summative to formative assessment in higher education (Foti & Ring, 2008; Qvortrup & Keiding, 2015) but some students, teachers and institutions still tend to prioritise summative assessment over formative, and there is a danger that students, teachers and institutions consider a competency to be 'ticked off' as done, if they consider it to be a summative assessment (Sinclair & Cleland, 2007). A student then believes that they are competent in that skill or procedure and may not consider that it is

important for them to continue to improve, and that they may even lose the skill completely if they do not continue to practise it.

According to social constructivist theory, when students are learning their knowledge is shaped by the social interactions they have within the setting they are in. Students may also reflect in different ways according to the setting they are in and the social connections they have within that setting. Students will have a different experience every time they set foot into the clinic, as they will see different patients, and work with different students, nurses and tutors, the actions of whom will influence their learning. Each time there will be a different social dynamic. Students may not realise that this affects their clinical experience and also the way they perceive it. It would be useful for students to reflect on the actions of others as well as their own, and to consider how these actions influence each other. The context is continually changing which makes questionable the idea of assessing a competency as though it was a fixed attribute. In an outcome-based curriculum it may have been noted that a student can perform a particular procedure, and it is therefore assumed they are now competent in carrying out this procedure. However, they may not be able to perform it in all circumstances. An example of this would be a student who is capable of performing a particular procedure on an adult patient, but unable to perform the same on a child or an anxious patient.

An outcomes-based curriculum is required by the GDC for a dental curriculum (General Dental Council, 2012) as dental students are required to have acquired a list of skills as specified by the GDC upon graduation, in order to be considered minimally competent to practise dentistry. They are expected to have the knowledge and the experience to carry out a procedure, but not in all situations; like a novice driver who is able to drive alone, and on all roads, but is not yet fully competent. In an outcomes-based curriculum, standards can be compared nationally and internationally, and all stakeholders understand what is to be achieved. Such a curriculum is part of a shift away from a teacher-centred approach (Tam,

2014), towards the constructive alignment approach (Biggs, 2012) of delivering learning activities and assessment based on the outcomes. Disadvantages of an outcomes-based curriculum can be that there is a loss of the holistic approach to a subject (Tam, 2014) and there are then some areas that may be missed, such as assessing a student's ability to integrate skills.

Authentic assessment is assessment that replicates activities carried out in a setting as close as possible to the real world and the feedback given as part of these should allow for improvement (Svinicki, 2004). Competency-based assessment and work-based assessment are forms of authentic assessment, in that real-world skills are tested, but Govaerts and Vleuten (2013) argue that these are not truly authentic as they are looking to assess a competency as a fixed attribute rather than something that a student might be able to do adequately at one point in time, but not be able to reproduce in a different context.

By the time students qualify they need to be able to self-assess their work and understand what they can and cannot do. A newly qualified dentist needs to be aware of their own limitations and understand when the treatment is too complex for them to carry out and needs referring to a more experienced or specialist colleague. In order to prevent students qualifying who are overconfident and underperforming, good quality feedback is essential to help them improve. Torre et al. (2005) note that receiving feedback is an activity highly valued by students, as part of high-quality teaching. The literature relating to feedback given in clinical settings looks at how effective different types of feedback are, and the issues faced giving and receiving feedback.

2.3.2 What is feedback?

There is a high degree of consensus in the literature over definitions of feedback. Van de Ridder et al. (2008) define feedback as "specific information about the comparison between a

trainee's observed performance and a standard, given with the intent to improve the trainee's performance" (p.193), and Archer (2010) suggests "effective feedback may be defined as feedback in which information about previous performance is used to promote positive and desirable development" (p.101).

Authors agree that feedback relates to how the gap is acknowledged between where a student needs to be and where they are, and advice given on how to reduce the gap (Fernando et al., 2008; van de Ridder et al., 2008; Archer, 2010; Hattie & Timperley, 2007). Feedback is often described as goal-related, and Hattie & Timperley (2007) define three steps: where am I going? (what is the goal?); how am I going? (what progress is being made toward goal?); and where to next? (how to achieve the goal). They also describe the importance of context. Recognition of the improvement required and goal-setting seem to be a requirement set by most authors, but Fernando et al. (2008) also suggests useful feedback should highlight strengths as well as weaknesses.

Theorists view feedback in different ways, with behaviourists seeing feedback as a way to modify behaviour and cognitive theorists seeing it as a learning catalyst highlighting gaps in knowledge (Archer, 2010), while others see it as a social interaction. This could be based on Vygotsky's socio-cultural approach, where knowledge is constructed between a more and less knowledgeable individual (Shabani, 2016). Most contemporary authors are more concerned with the effectiveness of different types of feedback (de Beer & Mårtensson, 2015; Tekian et al., 2017; Plakht et al., 2013). Archer (2010) suggests there is a lack of theory relating to feedback in medical education literature. Perhaps, like reflection, most clinical educators just believe they need to give it, and do not concern themselves with the theory relating to what kind of feedback will give the best results. Effectiveness of feedback could be considered, in part, in terms of whether it encourages reflection. Helping students to engage in reflection could be valuable in addition to them receiving feedback on how to

improve, as learning how to assess themselves can encourage students towards a more self-directed learning approach, allowing them to take ownership of their learning (Bond, 2007; McKimm, 2009). This was discussed earlier in the reflection for competency section (2.2.2)**.**

2.3.3 Feedback in clinical settings.

Learning by clinical students is underpinned by a social constructivist approach, which suggests that students are constructing their knowledge through the activities they are undertaking. Their learning also involves the 'communities of practice' model where new practitioners learn from the experts, as they move slowly to the centre of the community of practice and become an expert themselves, as suggested by Hara (2009) and Lave & Wenger (2000). This process fits with social constructivist theory because learners learn through building knowledge as part of a community, acquiring a situated understanding in a social context, rather than the cognitivist approach where knowledge is something that is acquired regardless of context. Social constructivists believe that knowledge is related to the context and environment, and without relating it to this, it is meaningless. Although much of what clinical students learn is fact-based, such as anatomy, and physiology, they also need to be aware that, once they are working with real patients, clinical judgement is required, which will necessarily be context-based. Students are learning constantly by watching and listening to the 'experts' within the communities of practice, as well as by being given feedback on the work that they have been doing themselves.

There are lots of opportunities for informal feedback in the clinical environment, as tutors engage with students in conversation during and after treatment of patients (McKimm, 2009). However, this type of feedback may not be considered as feedback by the students because it is not being labelled as feedback (Al-Mously et al., 2014; Bowen, Marshall & Murdoch-

Eaton, 2017; Clynes & Raftery, 2008). If feedback is not written down or given in a formal setting, it appears that students simply do not recognise it as such. Al-Mously et al. (2014) also found within their own study a lack of specific instruments for giving feedback.

It is important that students are given feedback at the most beneficial time for them. This could be when they are in the middle of treating a patient. It could be too late for a good patient outcome to give them feedback once they have completed the procedure. So verbal feedback can be more appropriate than written at times, even if the student is not aware they have been given feedback. What matters is that the feedback is effective.

Many students feel they are not getting feedback of sufficient quality to facilitate their learning (Moss et al., 2012; Lefroy et al., 2015; Embo et al., 2010), and Peacock et al. (2012) in their literature review point to a lack of understanding and engagement by students regarding feedback. Students often don't realise that feedback should involve dialogue and think of themselves as passive recipients of feedback, often not even knowing how to ask for feedback (Milan, Dyche & Fletcher, 2011). Students vary in whether they are able to ask for feedback, with high performing students more motivated to ask for feedback (De Jong et al. 2017).

Asking for feedback could also be related to confidence. Junior students are more passive in getting feedback, with senior students more active in asking for feedback and more likely to see it as a two-way process (Bowen, Marshall & Murdoch-Eaton, 2017). It could also be that some tutors are easier to approach (Milan Dyche & Fletcher, 2011) and that some students don't want to ask for feedback for fear of criticism (Bowen, Marshall & Murdoch-Eaton, 2017). Some students appear to view feedback as a negative experience, claiming that it only focusses on what they have done wrong, not on telling them how to improve, and they avoid re-reading the negative comments as it undermines their confidence (Embo et al., 2010).

Teaching students to be involved in the feedback process by initiating and engaging with their feedback is therefore an important part of the process.

Quantitative feedback, such as grades, helps to increase the amount of feedback given to satisfy students, but is not formative, as it does not give ways to improve or set goals (Tekian et al., 2017) but feedback based on qualitative analysis could lead to more meaningful feedback (Uhm et al., 2015).

The relationship between the tutor and student is crucial for giving and receiving feedback Wilson (2013), and the culture within a particular clinical environment will have an important effect on the way that feedback is given and received (Al-Mously et al., 2014; Hauer & Kogan, 2012).

These areas are highlighted in the importance of 'relatedness' within self-determination theory. However, the clinical environment is not able to accommodate the preferred timing and delivery method for each student (Al-Mously et al., 2014; Peacock et al., 2012, Clynes & Raftery, 2008).

Moreover, it appears that staff and students have different ideas about feedback. (Ozuah, Reznik & Greenberg, 2007), so it is important that staff are made aware of the effect their feedback has on students (Weidinger, Steinmayr & Spinath, 2016). Tutors think that they are giving useful feedback, when students are not even aware that it is feedback, for example when verbal advice is given. This would suggest that students need to be trained to receive feedback (Burgess & Mellis, 2015).

Several authors suggest that many clinicians have no training as educators and therefore do not know how to give good feedback (Clynes & Raftery, 2008; Bush, Schreiber & Oliver, 2013; Tekian et al., 2017; Hesketh & Laidlaw, 2002). Perhaps many tutors are unaware what good feedback consists of. Improvements need to be made in the following areas: feedback

being too generalised; inconsistent feedback provided by different staff; and not explaining how to rectify issues when things have not gone well (Hesketh & Laidlaw, 2002). There is also a lack of feedback based on direct observation, and more time spent on assessment than on giving feedback (Burgess & Mellis, 2015).

Fear of upsetting students is also cited by several authors as a reason that tutors do not always give accurate feedback (Hesketh & Laidlaw, 2002; Bush, Schreiber & Oliver., 2013; Burgess & Mellis, 2015) and tutors may have a tendency to give lower grades when they write grades down without speaking to students (Colletti, 2000). When tutors come face to face with students, they may want to avoid negative feedback, which can lead to grade inflation. Human emotions are clearly an important factor in the giving and receiving of feedback. Some of the negative aspects of feedback given by tutors are described as taking the moral high ground, burying and fudging negative feedback, minimising, and colluding (King, 1999). Written feedback can be superficial and over polite and tutors need to move away from tick box exercises to meaningful conversation (Tekian et al., 2017).

Many authors describe student resistance to feedback (Hesketh & Laidlaw, 2002; Perrella, 2017; Grover et al., 2014; Klaber, 2012) including blaming, denial, rationalisation and anger (King, 1999). Perrella (2017) cites reasons for student resistance as insecurity, inadequacy and emotional responses of students to protect their own self-image, whilst Grover et al. (2014) suggest one of the issues is that the millennial generation, those born between 1983-2003, come to university with high expectations from education, and have been raised with lots of praise and struggle to accept criticism, which could explain why some students do not take always accept feedback.

Reflection is considered to be an important aspect of feedback and learners need to be engaged in the evaluative process, otherwise feedback is meaningless (Strachan, 2015). Feedback is too often one way. Blatt et al. (2008) used verbal interaction analysis to look at verbal feedback and found that 65% of talking was by tutors.

Most studies have looked at feedback given by the experts, the tutors or senior qualified clinicians. However, is there a place for peer feedback or self-assessment without expert feedback? Several studies compared the expert feedback to peer feedback or self-assessment, all using video playback of student performance with a patient (or simulated patient) and suggested the level of improvement in communication skills was the same for expert, peer or self-assessment (Phillips et al., 2017; Krause et al.,2017; Hecimovich, Maire & Losco, 2010). However, Plakht et al. (2013) suggests that students need outside feedback to help them understand how they are performing relative to where they should be, so that they are not comparing themselves inappropriately to more experienced students. In the studies above, improvement in communication was shown to be no different between those receiving expert or self or peer assessment. This is unsurprising as communication is a generic skill, unlike a complex clinical procedure which is more likely to require expert input.

There is a suggestion in the literature that clinical students are not happy with the quality of their feedback (Moss et al., 2012; Lefroy et al., 2015; Embo et al., 2010). However, this could be because they do not know how to use feedback, and they are not engaging with the tutor to form an alliance where they are both looking for the same outcome such as setting goals to enable improvement in learning for the student. It seems that tutors are not aware of the impact that their feedback has on students and students do not appear comfortable to engage in dialogue to make the feedback into a two-way process.

2.3.4 Feedback as an educational alliance.

Traditionally most feedback has been unidirectional (Denny et al., 2019) but there has been a recent shift in education towards a learner centred approach, with feedback considered as a process rather than a product (Henderson et al., 2019). A shift in attitude is required by all stakeholders away from the teacher centred approach (Molloy et al., 2019) and this is particularly important for healthcare students as a unidirectional approach has limited effect in clinical settings (Noble et al., 2019).

There has previously been an assumption that feedback was the responsibility of the educator (Boud et al., 2018) which led to attempts at improving feedback by trying to improve the tutors without looking at the interaction with the students' actions (Noble et al., 2019). Many examples of how to give good feedback have been written but the emphasis was on feedback as something that was being given. Henderson et al. (2019) argue that these generic lists of good feedback practice might not work for every individual.

Educators are affected by their own experiences and beliefs about feedback (Winstone & Boud, 2019) which is why many still perceive feedback as a one-way process (Noble et al., 2019). Assessment has previously been of learning rather than assessment for learning, and has been set by organisers of courses rather than educators (Boud et al., 2018).

In recent years there has been a suggestion that there should be a move to a dialogic approach in the feedback process (Noble et al., 2019) and to move away from worrying about the quality of feedback given, to discovering whether students are engaging in the feedback for learning process (Winstone & Boud, 2019; Molloy et al., 2019). It has been posited that the main determinant of feedback effectiveness is learner engagement (Winstone et al., 2017a).

'Proactive recipience' is the new term used to describe how well the student receives, digests and acts on feedback (Nash & Winstone, 2017). However, it is suggested that it is difficult to

know the level of engagement of students (Winstone et al., 2017b). Whilst this is true for written feedback on assignments, in clinical settings the tutor is usually present when feedback is given to student so the tutor may be aware of the level of engagement at the time.

Carless and Boud (2018) describe how we need to develop 'feedback literate' students who are able to take the required steps to improve their ability to self-evaluate, maintain emotional stability when given critical feedback, develop ways of asking for feedback, and create strategies for improvement based on the feedback given. This requires support by tutors to enable students to be able to process their feedback. Becoming feedback literate leads to being better able to cope with emotions. Evaluation of the feedback, being able to ask 'Is this feedback correct?' or 'Is it useful feedback?' provides an emotional buffer for the students as they can see the feedback as a formative process rather than an assessment of them (Noble et al., 2019). How students act is a combination of emotional maturity, self-efficacy and motivation, and their cognitive processing is affected by emotions (Pitt & Norton, 2017) so it is important that they learn how to respond to feedback. Students need to be taught early on in any educational programme how to become feedback literate, and feedback literacy needs to be a core component of the programme rather than just added on as an extra (Henderson et al., 2019; Molloy et al., 2019).

There are many barriers to student engagement with feedback, including student awareness, lack of knowledge of how to ask for and engage with feedback, and students having a fixed mindset (not believing that skills are modifiable through effort). Students on the periphery of a clinical environment may not feel comfortable to ask more qualified people for feedback (Noble et al., 2019). On a busy clinic there can be a lack of time for lengthy discussions, as the patients' needs will always come first (Noble et al., 2019)

Training can overcome some of the issues that students may have and help them become more confident in taking an active role in the process. Noble et al. (2019) described how once students had been given permission to view feedback as a two way process they described this as an 'awakening', and a shift in perspective that left them feeling empowered. After students received training they understood they should ask for specific feedback, make collaborative relationships and had a greater appreciation of the educator's role. The act of asking for and analysing the feedback helps to make students less emotionally challenged, as they begin to view feedback as a developmental process rather than an assessment. (Noble et al., 2019). Students could also consider asking for feedback from others such as patients, other clinical staff present and other students. Once learners have been given permission to seek feedback they feel empowered (Allen & Molloy, 2017) but they will need support to ask for feedback initially (Henderson et al., 2019).

Pitt and Norton (2017) suggest students want more engagement with the person who is giving feedback, and then feedback becomes a social negotiation (Telio et al., 2016). There is a big advantage for clinical students as they are with the tutor when feedback is being given and therefore might have the opportunity to engage if they wish, unlike students of many other non-clinical subjects where feedback is written at the end of an assignment.

If students are anxious this will reduce their academic motivation (Pitt & Norton, 2017) and maybe there are particular tutors who make them feel this way. The relationship between the student and tutor, however brief, is therefore important. When the feedback process is seen not to be working well the students blame tutors and suggest they need to give better feedback and the tutors blame the students for undermining the process by only being interested in grades (Nash & Winstone, 2017).

Nash and Winstone (2017) suggest that students are beginning to expect more from tutors and want to be given the feedback rather than have to make any effort themselves, because of a rise in the consumerist approach to higher education caused by rise in fees. This may not be as relevant in clinical settings as there is a very strong hierarchy within the health service with students being at the bottom of the ladder, so they are perhaps more likely to respect and listen to their tutors than other non-clinical university students.

Poor relationships are a barrier to feedback as learners need to feel valued (Henderson et al., 2019) and to trust the tutor giving them feedback (Allen & Molloy, 2017) and

Henderson et al. (2019) suggest that the emotional response by the student to the feedback could be related more to the relationship between the educator and learner than it is to the actual feedback. Perhaps learners are more willing to receive negative feedback with the understanding it is for improvement rather than attack (Denny et al., 2019) from a tutor who they respect and they believe has respect for them.

The changing trend towards feedback becoming a two-way process means that an education alliance is required between the giver and receiver of feedback so the feedback becomes the responsibility of both parties. The learner needs to believe that there is a mutual understanding of the goal of the relationship and an agreement about how to work towards it (Telio et al., 2016).

With a high quality alliance learners will feel happier to reveal inner feelings and have an earnest discussion, and their future behaviour will be influenced in a positive manner (Telio et al., 2016). With a weak alliance, students will be unwilling to disclose, unreceptive towards feedback, and may start to avoid that particular tutor (Telio et al., 2016).

Factors which can affect an educational alliance include previous feedback experiences of both learner and educator, mutual respect, resilience of the feedback receiver and the desire

by both to make a difference (Denny et al., 2019). For learners the credibility of their tutor is an important factor in whether or not they will form an education alliance with them. (Noble et al., 2019).

Credibility of the tutor as an educator, is based on whether the tutor is perceived to be aware of and interested in the students, and the feelings they demonstrate towards the students, such as trust, respect and even fondness (Telio et al., 2016).

Students also make a judgement of the credibility of tutor as a clinician and will be more willing to listen to them in the areas of clinical work they perceive them to be particularly skilled in (Telio et al., 2016).

The level of student maturation is important as this will affect the ability of a student to manage affect, feelings, emotions and attitudes towards feedback (Noble et al., 2019). It is important for students to be able to reflect on their reaction to feedback as well as on what the feedback says (Nguyen et al., 2014).

Perhaps it is easy to form an education alliance with a tutor that you spend a lot of time with, but many clinical students are taught by an array of different tutors, some of whom they might only meet on one occasion, which will make it difficult to form such an alliance.

In order to increase active engagement by students in the feedback process, educator attitudes need to be changed, (Allen & Molloy, 2017) and a targeted programme to teach feedback literacy is required (Noble et al., 2019). Each course curriculum needs to be designed to encourage proactive recipience with a joined up approach getting buy in from course designers, educators and students (Winstone et al., 2017b).

There is currently limited information available for educators on how to change student behaviour from passive to active (Winstone et al., 2017b) so more information and research is required. Future research in the area of feedback as an active process requires work to be

done looking at how feedback literacy can be embedded in the curriculum when preparing for practice (Ajjawi et al., 2017). Research looking at how the effects of feedback can be detected would also be very useful (Winstone & Boud, 2019).

2.3.5 Types of feedback.

Plakht et al. (2013) suggest that high quality corrective feedback (what needs to be improved) was associated with accurate self-evaluation, whilst high quality positive feedback (or confirmative, that is what has been done well) can cause students to overestimate performance. However, from their study, both corrective and confirmative, improved performance. In contrast, De Beer and Mårtensson (2015) found that students receiving only confirmative feedback (compliments) did not show as much improvement as those receiving corrective feedback. Blatt et al. (2008) looked at verbal comments given on clinic and found most comments were neutral (46%), followed by positive (33%), then corrective (21%).

Removal of grades when giving feedback helps students to feel more confident (Lipp et al., 2017) and it is the comments that students find useful to aid improvement. Perhaps grades given with comments take the focus away from the comments, and it could therefore be advantageous to give comments without grades.

Feedback should ideally involve a coaching approach, with students being given the opportunity to make judgements, and to ask for feedback rather than waiting for it to be given to them. For coaching to take place the following are required: feedback as a two-way dialogue to help encourage feedback literacy of students, students being asked to self-evaluate, and learning activities which specifically involve students discussing their feedback (Carless & Boud, 2018). A dialogic approach gives the student ownership of the feedback,

along with the opportunity to check if they understand what the feedback is saying (Kogan et al., 2012).

Olms, Jakstat and Haak (2017) devised a checklist for feedback for specific procedures based on all the steps required for a procedure, which allows tutors to give elaborative feedback based on whether each step had been completed correctly. It is reported students found this approach beneficial; it could also be useful to reduce the differences between tutors in feedback given. However, some authors, such as Henderson et al. (2019) would argue a checklist detracts from the opportunity for an individualised approach to the feedback process based on a unique interaction with each individual student. A study carried out by Schüler, Heinrich-Weltzien and Eiselt (2018) demonstrated differences in effectiveness of feedback from different tutors, which could be related to their ability to form an alliance with the student to give individualised feedback.

Much of the feedback given on clinics to students is in the form of written comments, and this can be very useful, as students can refer back to them. Specific written comments are more effective than vague, either encouraging or corrective comments (Shaughness et al., 2017; Bösner et al., 2017). Perhaps whether comments are written or verbal is not as important as whether they are good quality as determined by students (Tayebi et al., 2017), including specific advice on how to improve rather than vague statements. It is important, therefore, that tutors understand how to give specific comments, rather than vague praise such as 'that was good' or criticism such as 'poor communication', that have very little meaning for students and do not tell them how to improve.

Bussey & Griffiths (2017) categorised written comments on clinical sessions into mentor, examiner or administrator types and suggest that they want to encourage tutors to give mentor-type comments as the most effective, coaching style. Administrator-type comments

simply describe what had been done, for example 'temporary filling placed' which is not really a useful comment for the student as they know what procedure they were doing. An example for an examiner-type comment would be 'good restoration' where the tutor is making a judgement, in this case the students knows whether they have done a good job or not, but if not done well, they are not given written advice about how to improve it. Mentor-type comments such as 'ensure you face patient to improve communication skills' are far more useful as they help the students understand what they need to do in order to improve. Three quarters of the comments they looked at given to surgical trainees were administrator type and 5 % examiner, only 20% were the mentor type that is preferred.

2.3.6 Conclusion.

Authors suggest that specific feedback is important, and it should be corrective, that is, state what has been done wrong, and what needs to be done to improve, as mentioned in the definitions above (De Beer & Mårtensson, 2015). Confirmative or positive praise appears to be less effective in some studies, but some authors suggest it is an important part of the process of giving feedback as it helps to improve students' self-esteem (Fernando et al., 2008; Plakht et al., 2013). Authors agree that dialogue is important, making feedback a two-way process, and self-assessment is a good way to start this. For a two-way dialogue to take place, more time would be required at the end of the clinic session.

The literature highlights the many difficulties that present themselves with the giving of feedback to learners in clinical situations, including unidirectional approach to the feedback process, student resistance to feedback, reluctance of tutors to give negative feedback, variation between tutors, lack of time on clinic, and lack of training for those giving feedback. Improvements are required in terms of how tutors give feedback, which could be delivered via staff training, and how students receive and use feedback. A section on

how the literature informed my research can be found in the conclusion of this chapter (section 2.5).

2.4 Use of Learning Data to Improve Learning

2.4.1 Introduction

This section is about use of learning data as a tool to improve learning, and Learning Analytics is the approach most discussed currently in the literature. LiftUpp is a tool which gathers data about students' learning for a specific purpose; to analyse the data to assess students' progress, and a secondary use of collecting the comments from tutors to be able to assess the quality of the comments, so although LiftUpp may not be a full Learning Analytics system, there is an overlap in its functionality.

Learning Analytics are described as the

> "measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and the environments in which it occurs" (Siemens & Gasevic, 2012, p.1).

Learning Analytics systems can provide powerful tools within higher education for developing meaning from actions (Fournier, Kop, & Sitlia, 2011) and are a relatively new concept in clinical assessment. Analysis and subsequent use of the written feedback comments made on the LiftUpp app could be considered a form of learning analytics because these comments can be analysed to find out what different types of written comments are being given and to decide which ones are most useful for future learning. LiftUpp data relating to DNIs was already being analysed, but there has been no formal analysis of the written comments, which might provide a deeper understanding of the learning process.

Learning Analytics and the use of data to visualize student progress are tools that have recently been introduced internationally in higher education to help administrators, tutors and learners understand more about the participation and activity in the educational process (Mettiäinen, 2015). Initially Learning Analytics were used to look at the data for whole cohorts rather than for individual use (Verbert, Duval & Manouselis, 2012) which might be very useful for administrators to get an overview of performance. However recently attempts are being made to use them for a more individual approach (Mori et al., 2015; Jahan et al., 2013). Learning Analytics can be used to give real time personalized feedback to encourage self-regulation of learners (Oliehoek et al., 2017), and can help to identify at-risk students (Avella et al., 2016).

 As Learning Analytics highlights something that has happened, the emphasis is on outcomes, and students might need guidance to help them understand and make use of the data produced within Learning Analytics applications, and the feedback that they are given (Slade & Prinsloo, n.d.; Clow, 2013). Learning Analytics can help to avoid assessment of individual competency as a one-off performance, and allow for continual longitudinal measurement in real time, allowing for triangulation of data, for example 'grade given' along with written comment by tutor on many separate occasions by different tutors.

2.4.2 Benefits of Learning Analytics and tools with similar functionality in education.

Advantages of using Learning Analytics systems include personalised learning, allowing students to log in when they want to see data, and staff being able see how often students log in (Avella et al., 2016). Data is collected and available permanently for students to use for self-reflection (Roberts, Howell & Seaman., 2017). Feedback can be given in real time which is valued by students (Schumacher & Ifenthaler, 2018; Avella et al., 2016; Roberts, Howell &

Seaman, 2017). Learning Analytics allows monitoring to show progress and offer intervention when required. This is useful for encouraging self-regulated learners, as they still need expert opinion and feedback to help them know where they are in terms of progress in relation to where they should be (Schumacher & Ifenthaler, 2018).

There is a considerable amount of data available for research in institutions of higher education, which can be used to help improve learning outcomes (Avella et al., 2016). Comments and grades written by tutors can be analysed, to enable their giving of feedback to be improved, and Learning Analytics can also help to identify trends and problem areas which can be useful to allocate resources and improve curricula (Avella et al., 2016).

2.4.3 Challenges of Learning Analytics in education.

It would seem that students are not sure about whether they would like to be shown their progress relative to their cohort or not (Schumacher & Ifenthaler, 2018). Students who are not doing well have a mixed response, with some saying they would be de-motivated and want to give up if they were behind their fellow students, and others suggesting it would motivate them to work harder (Roberts, Howell & Seaman, 2017). There is also an ethical dimension to data tracking. One issue is how often students would be expected to log in to look at their data, and another whether data can be shared with other institutions (Avella et al., 2016) and even within the institution itself. It is important that institutions are transparent about how they will be using data collected (Schumacher & Ifenthaler, 2018).

It is simple to look at and analyse numerical data, but a much more complex issue to analyse text such as written feedback comments. It is predicted that up to 80% of data collected via Learning Analytics systems would be unstructured and difficult to categorise if analysed, as it is mostly generated by people and very messy to interpret (Fiaidhi, 2014).

Most work done on Learning Analytics to date has been quantitative (Schumacher & Ifenthaler, 2018). To gain a deeper insight, qualitative analysis would be more appropriate as it allows for a level of understanding that quantitative analysis cannot provide. Quantitative data gives such information as how often students log in to a Learning Analytics panel, and how much time they spend looking at it, which can be useful information, but, in order to find out about student reaction, a qualitative approach is required (Park & Jo, 2015). As I am interested in the student reaction to feedback, and how and whether that leads to reflection on feedback, a qualitative approach is the most appropriate.

LiftUpp captures a large amount of data so it is important to think about which data is useful to analyse. Information such as what time students are logging on to look at their data can be viewed, but perhaps it is more important to know what the students are doing with the data, and how they feel about it, which requires a qualitative approach that not only counts numbers but also interprets text.

Previous research has mainly been in controlled settings with control and experimental groups, to consider usability and perceived usefulness of the Learning Analytics dashboards themselves (Verbert et al., 2014), or for predicting performance and learner behaviour (Verbert, Duval & Manouselis, 2012). However, Verbert et al. (2014) suggest that most research does not really look at how Learning Analytics can be used to solve issues such as the real needs of the students and tutors, which require a deep probing approach, needing qualitative research. I aim to use a qualitative approach to consider the quality of the written feedback captured on LiftUpp.

Fenwick (2014) suggests traditional evidence-based practice could stifle flexible and critical thought as it relies on standard protocols. Students are expected to learn a huge amount of their curriculum by learning right or wrong answers for exams, which does not help them to

question 'why?' and 'what if? Perhaps an opportunity for reflection could be incorporated into LiftUpp to encourage a more questioning approach from students.

Dentistry is a professional degree program, and as such there are requirements for passing professional competencies, unlike purely academic degrees. These competencies can be collected through use of dashboards such as LiftUpp, and could be considered a form of authentic assessment because much of the data is recorded during real world activities, that is, seeing patients (Benson, Samarawickrema & Connell 2009) and it is important for students' self-efficacy that they are involved in the process of recording their progress. Gadbury-Amyot and Draper (2016) suggest that the most important aspect of student development into a professional is the student's own self-appraisal and reflection showing what they have learned and what they need to do in order to improve.

2.4.4 Data collection in Learning Analytics.

 The ideal vision for Learning Analytics is to integrate quantitative data (grades) and qualitative data (text) to provide customised content for the students, and to provide an opportunity for students to reflect on this, perhaps by adding their own comment.

Qualitative data is messy but can be very useful for analysis, as numbers only provide so much information. For example, in LiftUpp, developmental need indicators (DNIs) can tell you how students are progressing in terms of carrying out a specific procedure. A comment will put this into context, and allow much greater detail to be recorded, including what particular aspect could be improved and how to improve.

The use of a constructivist approach to looking at data could complement the positivist approach currently used in systems such as LiftUpp. Although it was intended that LiftUpp could be used to give formative feedback, this feedback is not currently analysed in the same

way as the numerical DNIs. This is not a surprise as numerical data is much easier to collect than qualitative data.

2.4.5 Summary of use of Learning Data to improve learning.

The use of learning data for individuals is a relatively new concept, compared to use of learning data for cohorts (Verbert. Duval & Manouselis, 2012; Mori et al., 2015). Personalised comments can be given to individuals to help them improve their work via apps such as LiftUpp. Currently LiftUpp only allows for entries made by tutors, combining a mixture of quantitative 'grades' and qualitative comments. Qualitative analysis of specific feedback comments given via LiftUpp has not been done before at the Dental School and would therefore be a useful study as it could determine the quality of the comments being made to help inform staff development.

2.5 Literature Review – Conclusion

Reflection has been shown to be a problem for educators in higher education who are required to demonstrate that students are engaging in reflection. In order to show that reflection has taken place to ensure high quality self-directed learning, it may be necessary to take away the students' autonomy over their reflective activities which could potentially remove the usefulness of the reflection as they are not reflecting in a way that is meaningful to them.

Within the literature there are many issues highlighted regarding giving of feedback in clinical settings, including feedback being too generalised, not enough feedback being given, lack of student understanding as to what constitutes feedback, lack of dialogue between tutor and students, and poor reaction of students to feedback. Use of data collection dashboards can help to capture some of the instances of qualitative feedback being given but does not in itself address the problems listed. However, analysis of feedback data captured on a

dashboard such as LiftUpp, and an understanding of tutor and student perceptions, can be used to gain a deeper understanding of some of the issues, with a view to informing positive changes.

My original plan was to look at the quality of feedback given to undergraduate dental students on the clinic. I thought of this as written comments given on the LiftUpp app and verbal comments given by the tutor to the students. After undertaking a literature review I began to understand how I should not just be looking at how tutors give feedback and what students do with it afterwards, as this represented a teacher centred approach (Molloy et al., 2019) but should be considering how the feedback process could be more collaborative. Section 2.3.4 describes how the trend is now moving towards feedback as an educational alliance, and therefore my research needed to consider how this approach could be brought to the Dental School. I therefore wanted to look at not only the quality of verbal and written feedback given, but at the feedback process as a whole.

The written comments were a record that I could use that were not influenced by my research, as they had already taken place. I wanted to look at quality of feedback, as it appeared that many students did not feel that they were getting good quality feedback (Moss et al., 2012; Lefroy et al., 2015; Embo et al., 2010). I decided to use a similar approach to Bussey and Griffiths (2017) for looking at written feedback, by splitting the comments into categories (section 3.4.2) to help understand which were the most useful.

There were many problems with feedback highlighted in the literature, so I wanted to see if these applied to the tutors and students in the Dental School and to ask them if there were any solutions that would work in this particular context. Some of the issues highlighted which were important to explore included: not enough time on clinic to give good feedback (Clynes & Raftery, 2008; Al-Mously et al., 2014), lack of training for tutors in education and giving

feedback (Clynes & Raftery, 2008; Bush, Schreiber & Oliver., 2013; Tekian et al., 2017; Hesketh & Laidlaw, 2002), poor reaction to feedback from students (Hesketh & Laidlaw, 2002; Perrella, 2017; Grover et al., 2014; Klaber, 2012), and student priority of grades over feedback (Nash & Winstone, 2017). I also aimed to consider the level of student engagement, which is difficult to know (Winstone et al., 2017b), to find out if staff are aware of the effect their feedback has on students as it is important for them to know this (Weidinger, Steinmayr & Spinath, 2016), and to discover how the engagement between tutors and students could be improved (Pitt & Norton, 2017) and could help them to build educational alliances.

I was interested in understanding whether students were engaging in reflection (at any level) either the simple GDC definition 'how can I do it better next time?' (GDC, 2015) or Nguyen's more in depth description (Nguyen et al., 2014) which suggests students should be reflecting on their own emotional response to their feedback as well as responding to the content of the feedback. Ideally, from the review of the literature I thought it appropriate to explore whether reflection was taking place at the level described by Nguyen's definition (section 2.2.3) as this level of reflection will allow students to increase their feedback literacy by understanding their own reaction to feedback and their relationship in the educational alliance formed with the tutor.

I was interested in discovering whether a dialogic approach was being used by some tutors, as this is considered to be the best approach for the feedback process in terms of effectiveness (Noble et al., 2019). I could do this by asking students and tutors, but this may not accurately reflect what was happening. I thought it would be useful, therefore, to engage in observation of the feedback process on the clinic to see what was actually happening (section 3.4.4).

I decided that it would be worthwhile to discover what could be done to change to an educational alliance approach with teachers using coaching. I decided to disseminate my

findings to tutors as part of a staff training day (section 3.5.1) followed by focus group to see

which aspects were helpful (section 3.5.2).

3 Methodology

3.1 Research Aims and Research Questions

3.1.1 Aims.

This research project aimed to gain an understanding of the best support mechanisms for dental students during their clinical practice to provide high quality support and feedback to students in their clinical practice in order to improve learning and encourage reflection. It also aimed to gain an understanding of how students currently use the feedback given to them through LiftUpp, and how staff give the feedback, as these will help to inform future staff training to support staff to use the LiftUpp system in a way that allows formative assessment alongside summative.

I aimed to look at how feedback can be improved both in written and verbal format and whether and how reflection can be encouraged through feedback, and how students and tutors can be encouraged to form educational alliances. In order to consider what high quality feedback would look like I wanted to consider the ideas of both staff and students. Analysing written data and interviewing students would help to understand which types of feedback they found most helpful, and how LiftUpp can be used to make feedback more effective. I intended to explore with both students and staff the issues that they have around feedback in order to make recommendations to address such issues and to improve student support. The results from the literature review helped me to form the research questions.

3.1.2. Research questions.

Main question: How can feedback to undergraduate dental students in the clinical environment be improved?

1. How can reflection be improved through giving high quality feedback, and what is meant by high quality feedback?
2. What professional development of staff could improve the feedback process?
3. How can data collection and analysis be used to improve the feedback process?

3.2 Research Paradigm

Within my research I wanted to find out how feedback can be improved to inform reflection by students and how LiftUpp can be used to help with this. My research involved exploring perceptions of both staff and students and therefore a constructivist approach would seem appropriate. Constructivism suggests that knowledge only exists as a construct that has evolved within a personal or social context, and this constructivist way of thinking appears to tie in with the ways in which students interpret their DNIs (developmental need indicators) and feedback, that is, they all construct their own ideas around their LiftUpp data.

Considering the complexity involved with the giving of feedback (Grover, Hayes & Watson, 2014; Wilson, 2013), this level of personal response would suggest that this is such an individual concept that a constructivist approach is most appropriate. These responses and students' general reaction to how they deal with and use feedback are not 'universal truths' that can be approached within a positivist tradition, but an interpretation of a combination of factors related to their learning experience.

DelMonte (2012) argues that reality is perceived differently by every individual along a continuum. This fits with an epistemology of interpretivism: knowledge is constructed and

developed through interpretation, and there are different concepts of knowledge but only one reality. Obviously there are some aspects of knowledge, such as anatomy, that simply have to be learned as facts, but even these change; the way that people viewed the body several hundred years ago was very different from how we view it now, and as technology progresses, in the future it is likely that there will be further advances in human understanding of the body. Likewise, students have to understand how to perform a certain technique correctly, but there may be differences in the ways that various experts perform such a technique, and techniques will change over time as progress is made. Constructivists favour narrative and discursive approaches over statistical and experimental ones, because the researcher is looking into the story of the participant rather than looking for facts (Moses & Knutsen, 2007). As I am looking for perceptions of students and tutors, a narrative approach is more appropriate as I will be talking about some of the experiences of the participants, as constructed by themselves.

There are further suggestions in educational literature that the concept of feedback is a complex area to research, affected as it is by human relationships, value judgements and emotions. Pring (2012) argues that educational research deals with individuals and their perceptions, values, and relationships which affect their learning. One could argue that a constructivist approach prioritises how students interpret and use data (Murdoch-Eaton & Sargeant, 2012). Perhaps how the students interpret feedback will determine how they relate to their role on clinic and to the 'community' that they are working within.

There is a tension between my positivist evidence-based clinical education and the epistemologies associated with qualitative research, similar to that described by Ward, Hoare and Gott (2015). Evidence-based practice, firmly based on a positivist premise, was widely deemed the gold standard for clinical practice. Assumptions are made that there is a truth that

can be discovered by experimentation or survey. Clinical students traditionally did not question that there was a universal truth.

In the 1990s there began a movement within clinical occupations to also include qualitative research into patients' experiences and perceptions to improve outcomes for patients. Clinical students now acquire much of their learning through action in professional practice settings, where they move from the periphery of the professional community to the centre under the supervision of an expert, as in the 'communities of practice' model (Lave & Wenger, 2000), giving a situated perspective to the knowledge that they are gaining.

A combination of two approaches is required for learning a subject such as dentistry; the students are required to learn particular things which are standardised such as a particular drug that is used to treat a particular condition, but these should be presented to the students in such a way that they understand that some areas of their learning might be open to interpretation. These might be for example the factors involved in prescribing the drug such as side effects, other medical conditions and medications of the patient that might affect the efficacy of the drug, patient allergies, patient wishes, family history of reaction to the drug, availability, cost, and drug resistance.

Making these decisions could be considered to involve a constructivist approach. A clinician will make decisions about prescribing a drug based not only on what he was taught at medical/dental school, but also by combining this knowledge with his own personal experience, and experience of colleagues and of patients. These experiences have led to a constructed knowledge, based on interpreting what he has seen over his years working with patients and prescribing that particular drug. This account of decision-making by clinicians has a clear fit with a constructivist, interpretivist approach.

Having established an ontology and epistemology (in this case constructivism and interpretivism), the next consideration is the methodological assumption (Waring, 2012). In this study, the interaction between myself (the interviewer) and the participants will allow for a joint interpretation of the subjects, feedback and reflection. The methods, discussed in detail later, are chosen as being the most appropriate to answer the research questions, and also fit well with my own ontological and epistemological perspectives. For example, using a semi-structured interview will allow for my own interpretation to be fed into the joint interpretation through the dialogue taking place. As the questions are looking to uncover perceptions of both staff and students, interviews will provide the opportunity for an in-depth exploration of these. As well as asking staff and students to reflect on feedback and reflection, I am aware of my own layer of interpretation, and the way in which I interpret the results. This will involve reflection on my own ideas and values as I interpreted them through my own lens. I will therefore be a reflexive researcher.

I have framed my methodology with a reflexive narrative in order to uncover the data through a process of narrative writing. Writing can be a way of discovering what aspects of the self are the most important filters, with an analytical component, looking at memories to make sense of things. Reflexivity is now a normative methodological approach in educational research, with the researcher reflecting not only on the knowledge constructed through the study, but the relations between the researcher and the participants (Sriprakash & Mukhopadhyay, 2015). This reflection forms part of the research process. It is important as it aims to recognise the input of self and 'other' into the research process and involves examining one's own subjectivities as well as those of the participants involved.

3.3 Research Methodology and Research Design

I considered the options for describing the research methodology and concluded that a description of 'mixed methods' best fitted my research. The research design is independent of the data collection and analysis methods and a mixed methods approach is not actually a type of research design, more of a pragmatic approach. Gorard (2017) suggests that naming the research methodology is less important than getting the correct data collection and analysis to best answer the research questions. When researching any topic it is natural to use a variety of data sources, such as interviews, written text and observations. My research involved a few different sources for data collection including text, interviews, observations and focus groups, but also involved an intervention which was then followed up by a focus group

 I analysed text from LiftUpp first (written comments) in order to give me a basis for the interviews. These are the comments that are written on the iPad via LiftUpp app by the tutors at the end of the clinical session. I assigned each comment to a category (described in section 3.4.2) to get an idea of the frequency of use of the different types of comments. Analysis of the text helped me to decide what questions to put in the interview protocol. I chose to carry out semi-structured interviews to allow for exploration of issues that a survey or questionnaire would not allow, since the participant may introduce issues that are not mentioned in the interview protocol.   I wanted to interview both students and tutors to explore what type of feedback tutors thought that they were giving, and whether the students' perception of feedback given differed from the tutors.

It is important to do a pilot interview first to check whether questions are easy to understand and answer. After initial pilot interviews with both a student and a tutor, changes were not deemed necessary as the interviews were semi-structured and allowed for development of discussion to introduce any new themes desired by the participant. Both the tutor and the

student stated that they understood all the questions and felt they had the opportunity to expand on any of the subjects or introduce new ones.

In order to verify some of the claims made by tutors about the verbal feedback that they gave, I carried out observations of tutors on three different clinics. Following from the interviews it was clear that an intervention was required, which is why I became involved in the staff training day to share my results to date. The final part of my research involved a focus group to follow up after the staff training day. In this way I was able to collect several different types of data, which allowed for a rich exploration of the way feedback is delivered, how it can help to encourage reflection, and the part which learning data can play in this.

The study was not strictly a case study as no one single case was looked at. Nor was it action research, as an initial problem was not identified by a group of people to be analysed, and then acted upon. The term mixed methods would be more appropriate.

Whether qualitative or quantitative research is taking place will not affect the actual research design, but will affect what data is collected and how it is analysed. I used a mainly qualitative approach for my study as this is the most appropriate method when looking at people's opinions, perceptions and beliefs, particularly where the context is important (Denzin, Lincoln & Giardina, 2006). A qualitative study focuses on meaning and understanding, with data collection through interview, observations, and documents, with richly descriptive findings based on themes and categories (Merriam, 2009). Qualitative analysis can provide a useful insight into how students interact with their feedback, and their opinions about it, including the level of reflection on feedback undertaken. It also allows for a deep understanding of the issues faced by students and staff surrounding the giving of feedback via LiftUpp.

Although the majority of my research involved qualitative work because I was interested in perceptions and experiences, it was also useful to carry out a descriptive analysis of the current comments being given on Liftupp at the time of research taking place. For the analysis of the written comments, I first used a qualitative approach to categorise the types of comments given and then I attempted to assign each comment to one of the categories to give an indication of the percentages of certain types of comments given. This analysis helped to feed into the results from the interviews. If tutors claimed to give certain types of comments I was able to check what percentage of the written comments actually fitted in with this.

I am an insider and a potential issue this raises is that as an insider researcher it is possible to represent a biased view (Coghlan & Brannick, 2014), therefore a reflexive approach is required. 'Bracketing' (Tufford & Newman, 2012) can be used to help diminish the influence of a researcher's underlying perceptions; this involves the researcher examining their own beliefs and ideas, in order to maintain self-awareness and the effect of their own input into the research. This self-analysis can be done before research begins, but is particularly important during analysis of data, and ideally it would be useful to constantly re-assess throughout the different processes of the study. I used this approach myself by continually considering the results in terms of whether they were what I was expecting, and assessing at each stage whether I was bringing my own bias to the analysis.

Reason and McArdle (2004) describe how *co-operative enquiry* involves a group of people with a common concern developing and implanting an action to address the issue. Within my research, although the first part of my study was carried out as part of my thesis, the results were used by myself and colleagues to create a faculty development intervention to improve feedback and reflection, after which I carried out the second part using a focus group. The research on the intervention was done by myself, so it would not be described as co-operative

enquiry, but the intervention has been, and the follow up will be, done by myself and a group of colleagues, so again this fits into a mixed methods approach.

Another challenge presented for my study is the lack of generalizability possible, as it takes place within a bounded system, and internal validity could be questioned as the researcher processes this through their own lens of perception (Verschuren, 2003). However, thick descriptions, as described by Stake (1978), provide an in depth account of the circumstances of the study to allow individuals to decide whether the results would be useful/applicable in their own settings.

3.4 Data Collection

3.4.1 Introduction.

Data was collected through a variety of methods, after which the data was analysed and then triangulated. I collected data that would demonstrate the type of comments that tutors were giving, and observed some of the tutors giving feedback, so I could consider these in the light of what the students and tutors believed to be happening. This data could help to understand how the perceptions of the students and tutors related to the reality of feedback given on clinic.

Initial data was collected from written comments on the LiftUpp app. Further data was collected by interviewing individual students and tutors, and by observing tutors giving feedback. The final data was gathered by holding a focus group of tutors, following a staff training day in which I participated as instructor to present my research to staff. The results of this could then be used to consider whether tutors thought that this particular intervention had an impact on the way that they give feedback, and whether they can now give feedback in a way that will encourage student reflection. Six months after I presented my research to tutors

at the training day, I interviewed the director of programmes to look at recent changes made in response to some of the issues highlighted.

3.4.2 Data from LiftUpp.

The first step of data collection that I chose was looking at existing LiftUpp data to find patterns in the feedback given. I decided to collect this data first as it would give me a basis for questions and discussion topics during interviews. I was given access to the anonymised data of the LiftUpp application, which contained all written feedback comments given on all clinics, and clinical seminars throughout the Dental School for the whole of February 2017, by every tutor who wrote a comment on LiftUpp during that time period. This amounted to a total of 1902 comments. The results from this analysis were then used later in the study to help identify what students and tutors considered to be the features of feedback, and to try to discover what type of feedback would foster reflection and active engagement in the feedback process by students. They were also used to develop staff training. The analysis of this data is discussed later in the data analysis section. It was difficult to assign some comments to a particular group but I wanted to split the comments into discrete groups in order to explore which types of comments the students found useful. The written comments were split into the five groups shown in Table 1.

Table 1	
Type of comment	Description
Developmental	Every comment that gave advice on how to improve performance, whether there was an assessment element included or not
Assessment – appreciative:	Comments which were only assessment of the appreciative/ praise type
Assessment – critical:	Comments which were only assessment of the critical type
Assessment- both:	Comments where both an appreciative and a critical remark were given within one written comment
Administration:	Comments that were neither developmental nor assessment, but merely stated fact

Table 1 Analysis of Written Comments

Some comments contained both assessment and developmental elements, but I analysed how many comments explained to the students what they could do to improve, as this is what the comments are intended for, so I put any comments that mentioned how to improve in the 'developmental' section even if they also had an assessment or admin remark also. Then 'assessment only' comments were divided into three groups, the rest were administration

comments such as 'student arrived late' or 'temporary restoration carried out'. This resulted in five mutually exclusive groups.

3.4.3 Interviews.

The second set of data collection consisted of interviews. I used semi-structured interviews to research perceptions about experiences with LiftUpp from the students and perceptions around giving feedback, including difficulties encountered by the tutors, in order to collect rich data.

This is the main aim of a research interview, to carefully listen to what the participants have to say, to gain knowledge about their perspective of the issue being studied. Ideally questions should be neutral, open ended, sensitive and easy to understand (Gill et al., 2008).

Student interviews aimed to explore how students related to and reflected on feedback and issues that students have with feedback with a view to making recommendations and interventions for improvement as required. Interviews of tutors explored the issues that tutors had in giving both written and verbal feedback on clinic with a view to making recommendations for staff training and support.

Another research method is to work with focus groups to uncover themes on which I could have based questions for individual interviews. Pedersen et al. (2015) and Burnard et al. (2008) used this technique because there was insufficient relevant literature to allow them to develop themes for interview questions. However as there is a wealth of literature regarding feedback, I was able to create questions based on previous issues raised, whilst keeping the individual interviews informal to allow for new themes to be introduced.

Initially the questions that I wanted to ask the students included finding out what they thought was the purpose of feedback, what they thought good feedback was, how they used feedback and how it made them feel. After analyzing the written comments, which I categorized into

different types, I added some questions relating to the type of written feedback, and how they responded to each one. Similarly, for the tutors I added interview questions relating to the types of written feedback comments they gave, after the analysis of the written comments collected from February 2017.

I based many of the questions around two theories: 'reflection as epistemology of practice' and the self-determination theory (see below). Interview protocols are in the appendix.

The theory of 'reflection as epistemology of practice' (Ng et al., 2015) suggests that new knowledge is created through reflective practice, in alignment with the constructivist theory of learning. My study aimed to encourage reflection amongst students to enable them to create their own knowledge that can be adapted to different situations. I therefore asked questions about how feedback was used by the students to find out whether they were using it to reflect. I also asked them for instance how often they looked at written feedback, and whether verbal feedback was useful. I also asked them whether they felt they needed help looking at feedback.

Self-determination theory (ten Cate, Kusurkar & Williams, 2011) suggests that intrinsic motivation is required to promote deep learning, better performance and emotional well-being. Deep learning is required by students to help them retain their knowledge for life, and better performance is a major reason for giving feedback. Emotional well–being is essential for all students. Within the Dental School, we therefore want to encourage intrinsic motivation, and to supplement extrinsic motivation such as grades. We would like students to perform well because they want to perform high quality dental work, rather than because they want to get a good grade. Deep learning involves a constant re-assessment of what has already been learned in order to process new ideas (Ohlssen, 2011).

The requirements for enabling intrinsic motivation are described as autonomy, competence and relatedness (ten Cate, Kusurkar & Williams, 2011). I explored how feedback given on clinic could contribute to these concepts. One systematic review of how the self-determination theory can be used in the clinical teaching environment (Orsini, Evans & Jerez, 2015) created a collection of the main themes supporting these three basic needs; autonomy, competence and relatedness. These three themes were considered when exploring what is happening on the clinic in terms of how feedback is being given.

The themes supporting *autonomy* include responsibility, decision making, freedom and active participation. I used these themes to frame questions around how students used their feedback and how they were involved in the process, as I thought it was important that they took responsibility for how they used their feedback and took an active role in the feedback process.

For *competence,* Orsini, Evans and Jerez (2015) suggest the following are important: provide optimal challenges, provide structured guidance, value students' work, and give positive and constructive feedback. These themes guided me to ask questions about the types of feedback given (did it tell the student what they needed to do to improve their performance?), and whether students felt their work was valued (was praise given for good work?). I asked both tutors and students what they felt the purpose of feedback is, and what makes good feedback. I also asked what training tutors had had in giving feedback, as this would be important in making recommendations to improve feedback.

To encourage *relatedness*, Orsini, Evans and Jerez (2015) suggest: respecting students, giving emotional support and acknowledging students' expressions of negative effect. For this theme I asked questions to both tutors and students relating to the tutor-student relationship on the clinic. For the students I wanted to know how this affected their performance on clinic. I wanted to further ask tutors whether they had any issues with students accepting feedback.

Examples of interview questions for students and tutors:

What do you think is the purpose of feedback?

What is good feedback?

How does the Dental School use the feedback?

For students:

How do you use your feedback?

Do you prefer written or verbal feedback?

For tutors:

How do you think the students use their feedback?

What issues do you have giving feedback?

What training have you had in giving feedback?

Student interview questions are in appendix1, and tutor interview questions in appendix 2.

Throughout the research process I have been aware of possible interviewer bias. One option to eliminate this bias is to use an independent interviewer (Ashworth et al., 1997). However, Holstein and Gubrium (2004) argue that interviewing is always active, and that the interviewer will always have a part to play, however neutral they might try to be. As I carried out the interviews myself I was aware that I needed to avoid leading questions, and to allow the conversation to stray to issues that the interviewee thought were relevant. I also needed to be engaged in bracketing (Tufford & Newman, 2012), that is, constantly checking in with my own underlying preconceptions to ensure that I could eliminate these as much as possible.

3.4.4 Observations.

In order to gain further insight into the process of giving feedback I observed three tutors giving feedback to students on and after clinical sessions. For this I took field notes. This allowed for further triangulation of data and gave the opportunity to consider verbal feedback as well as written.

Observation is a data collection technique that was originally linked with ethnography, with an aim to understand someone else's view of the world (Williamson, 2000). The data is usually collected by taking field notes (Baker, 2006). During observation, the researcher may have to fill one or more roles, ranging from complete observer, observer as participant, participant as observer, to complete participant (Williamson, 2000; Baker, 2006). Although I was acting as a complete observer, I do share some of the issues that are faced by complete participants, in that I work in the same environment and give feedback in the same way as the tutors that I observed. There are some advantages to this, in that I did not have any issues with gaining access to the environment, and completely empathized with the issues that the tutors have, such as time constraints and students' reactions. This required a reflexive approach in order to acknowledge my own bias in the process, and I needed to remain detached enough to collect data (Baker, 2006).

Following the interviews, I engaged in unobtrusive observations where I was not involved at all. Aspects that can be observed include: settings, facial expression, reaction, language used, time spent, physical space used (Baker, 2006); all of these were relevant to my research. Detailed records are required in order to write a narrative reflection of what occurred, that contains the details most relevant to the study, which I did.

3.4.5 Sample and sample size.

It is suggested in the literature that saturation point (the number of participants required to ensure no new themes are raised) can be reached during interviews with between six and twelve participants (Dahan & Bedos, 2010; Fugard & Potts, 2015). I therefore aimed to interview at least six students and six tutors. Although it is not really possible to set a saturation point unless you are analysing the data whilst doing further interviewing I intended

to use six as a guide for an absolute minimum number of participants for each strand of interviews.

As I teach many of the students at the Dental School and am involved in giving them feedback on clinic it would not have been appropriate for me to interview these students. I therefore asked for volunteers from students amongst years that I do not teach on clinic in addition to recently graduated students. Seven students volunteered to be interviewed, six third years, and one recently graduated. For tutors, the sample contained representatives from different groups of tutors that work on the clinics, both full and part-time, senior and junior, those who only work for the university, and those who also work in other settings (such as dental practice), those who have completed further training in education, and those who have had no training in education. In terms of numbers these were not necessarily a representative sample for each group, but again it was not easy to find volunteers amongst tutors who have very busy timetables. Thus I interviewed tutors who were willing and available, ensuring that each of the groups above was covered by at least one tutor, to make sure each group was represented. A total of eight tutors were interviewed.

As I transcribed the interviews myself I was beginning to gain some understanding of the perceptions of students and tutors before all the data had been collected. I did not start formal analysis until all data was collected and transcribed but listening to the interview helped me to gain a deeper understanding of the data I was collecting.

3.5 Intervention

Following analysis of the results, an intervention was implemented. This involved a training day for tutors followed by a focus group several days later to evaluate the training. Its aim was to improve feedback given by equipping tutors to provide coaching-style feedback to students.

3.5.1 Staff Training Day.

A staff training day took place in July 2018 for all dental tutors to attend. Approximately 50 tutors were present, all university-employed tutors who were working on that day. The main aim of the day was to improve feedback given by tutors to students in the clinical environment. Two members of staff from the psychology department in the university facilitated the day. The schedule is show in table 1.

Introduction- The learning cycle
Talk 1: What our research data shows
Talk 2: Feedback, know what you are giving, know what you are getting
Exercise 1: Evaluation , and the difficult conversation
Talk 3: Coaching conversations; what are they for, how do they work?
Exercise 2:Coaching for serious play
Lunch
Talk 4: Your Quintax profile: What is it for?
Talk 5: An introduction to supporting student self-regulatory behaviour
Talk 6: Supporting student and staff development through some changes in LiftUpp

Table 2 Training Day Schedule

As an introduction, a senior member of staff started by describing how feedback fits into the learning cycle (Figure 1, below) and explained that if the feedback is not of sufficient quality for students to reflect, then the learning cycle breaks down very early on, so the feedback is crucial to their development and learning.

Figure 1. How feedback fits into the Learning Cycle

(Dawson,L, personal communication March 20 2017)

As the intervention aspect of my research, I presented a brief overview of some of the findings from my research analysis of written comments and interviews with tutors and students. Most tutors had no prior knowledge of my research, apart from the email requesting volunteers to take part. As a junior lecturer I have no particular status, which could be an advantage when talking to my fellow tutors as I would be considered 'one of them' rather than a senior authority figure.

This talk I gave set the scene for the rest of the day which was delivered by a member of the psychology department.

Talk 1: I described how the written comments could be broken down into three groups, administration, assessment and developmental, giving examples of each. I explained how the senior staff would like tutors to try to give more of the developmental, coaching style

comments as this type of comments is the most useful for students to help them improve their work and administration and assessment comments will not lead to student reflection.

I also described the results from the student interviews which were relevant to the tutors attending the training day. Firstly, I highlighted the difference between the use of feedback by students with some using it for improvement (growth mindset) and others using it purely as assessment (fixed mindset) (Dweck, 2015). I talked about how much variation there was in the quality and amount of feedback given between tutors, and how much students valued approachability of tutors.

I also highlighted issues that tutors had while giving feedback (including poor student reaction, inconsistency between tutors, time pressure) and explained what tutors thought the purpose of feedback should be.

The conclusion of my presentation was that students varied in their use of feedback according to their mindset, and that they wanted more feedback, and for it to be more specific. The main points highlighted from the tutor interviews were: variation between tutors, student resistance to feedback, and tutors wanting more training.

The purpose of the programme delivered by the psychologists was to give a deeper understanding of how the feedback process works to enable tutors to increase their confidence in creating their own way of giving feedback to facilitate learning. It was also the intention to help tutors understand their own response to feedback, as if they have a greater awareness of feedback responses they will find it easier to deal with poor responses from students. The point was to help tutors understand perceptions, interpretations and the values of both sides. The talks and exercises delivered by the psychologists can be found in greater detail in appendix 7.

3.5.2 Focus group.

Five days after the staff training day a focus group was conducted to evaluate the usefulness of the training day and to explore next steps required. Six tutors were interviewed as a group which was facilitated by myself. This was audio recorded, and transcribed by myself after the event to allow for analysis of data. A focus group was considered a good way to explore how the tutors responded to the training, as a focus group is useful for exploring perceptions and feelings, which is in keeping with the constructivist approach to the study. As there is interaction between the participants this can lead to further issues being unearthed and could bring up new ideas that might not surface if individual interviews were used. Tutors are extremely busy, and it was difficult to get a group together even at lunchtime, as many have meetings, journal clubs or are running late on clinic. I therefore took a pragmatic approach, similar to the sampling of the interview participants, that is, interviewing whichever tutors were available but ensuring that there was at least one representative from senior and junior tutors, from those who have done further education training and those that have not, and from part time and full time staff.

In order to attain a focus group situation rather than a group interview, I ensured that I played a moderator role rather than interviewer (Stalmeijer, Mcnauhton & Van Mook., 2014). In this way I was able to encourage active participation and genuine interaction between the tutors participating to gain an understanding of their perceptions of the training day. I was interested to find out whether they would change the way they gave feedback following the training day, how they felt that it would help them to encourage students to reflect, and what further training they felt they required. The focus group protocol is included as appendix 3.

The discussions I encouraged included how useful they felt the training day was, what further training they felt was required, and what the issues were still remaining regarding giving feedback on clinic after the training had been given.

3.6 Data Analysis

Both qualitative and quantitative analysis were used for analysing the written comments, and then qualitative analysis only was used for interviews and focus group.   Thematic analysis was used as this works to generate themes and is a fairly general analysis technique which works for most studies using qualitative data. It can answer most types of research questions, accepting that researcher bias will occur (Thornberg, 2012). The analysis consists of identifying themes, then refining and condensing them (Abayomi, 2017). It does not intend to lead to a formal theory; however the 'knowledge' created could prove useful to others in similar situations (Lorelei, Mathieu & Wendy, 2008). Thematic analysis requires interpretation of data by the researcher, is flexible and has an inductive approach (Guest, MacQueen, & Namey, 2012) but as Thornberg (2012) explains, the main objective is to describe how individuals feel and think in a particular context, rather than to develop theory. I therefore used thematic analysis because I aimed to identify themes according to my chosen theories, from an initial read through of the data which was then coded and analysed in greater detail.

In choosing the most appropriate data analysis method, I gave importance to two main qualifiers: the theoretical underpinning of the research and the best 'fit' with the research methodology and methods. I wanted to look at staff written comments that are given via LiftUpp as well as talking to students and tutors, considering their perceptions in light of established theories. The theories I used to underpin my research were 'self-determination theory', and 'reflection as epistemology of practice' as explained in the literature review section 2.1.

Analysis of written comments on LiftUpp allowed me to discover the nature, quality and types of comments given by tutors prior to staff training. I analysed these according to how useful the comments would be to enable the student to improve their clinical practice, and to encourage reflection by the student, using a mix of quantitative and qualitative analysis. Qualitative analysis was used to categorise the types of comments, and then quantitative analysis of these comments was used to assess the percentage of each type of comment dividing into categories based on mentor, examiner, administrator (Bussey & Griffiths, 2017).

It was particularly informative to talk to both tutors and students in light of these comments to gain an understanding of their perceptions. This was useful when interviewing students to find out how they react to these different types of comments, and when interviewing staff to find out why they give comments in the way they do. Ryan (2011) looked at master's students and their use of portfolios to document what they had done throughout a course, using thematic analysis to look at the data elicited from the focus groups. He found that staff and students highlighted similar issues, such as the need for greater clarity in what is required. From this study I noted there was a similar approach to my ideas for research and concluded that thematic analysis would be an appropriate method for my study.

3.7 Ethical Issues

Ethical issues are most often found when dealing with qualitative data (Blaxter, Hughes & Tight, 2006). Within my design I needed to consider ethical issues including confidentiality, consent, bias, and ownership of data. I carried out an in-depth research project within the Dental School where I work so anonymity was important. As Williams (2009) suggested, in a small department it is very easy to guess who might have been involved in the research. If I publish opinions of senior members of staff it might be possible for others to guess whom I

am talking about. I asked for volunteers from the student body, recently qualified students and staff members, and avoided using participants that I am currently teaching on clinic to avoid ethical issues. Informed consent has been gained from all participants.

All interviews were recorded on audiofile and transcribed for data analysis. All data will be kept for five years on a secure password protected university server. Ethical approval was gained from the University and an approval letter was written by the Head of the Dental School.

Bias cannot be completely eliminated from a study, especially with only one researcher involved: however if that researcher can take a reflexive approach to identify their own bias, be aware of it and disseminate this, then bias is much less of an issue (Rossman & Rallis, 2010). Bracketing (Tufford & Newman, 2012) was useful to help me consider my own bias before creating interview questions. For each issue considered I examined how I thought the students and tutors would react so that I was able to understand whether they were giving the answers I expected or not, which allowed me to acknowledge and mitigate my bias.

Triangulation of data was achieved through collection of a variety of different data sources, including automatically collected data (to look at quality of written comments), interviews (to gain an understanding of tutor and student perceptions around feedback and reflection) and observations (to see what was actually happening in terms of dialogue in the feedback process). This was followed up by an intervention (staff training day) and focus group to discuss staff training needs.

4. Findings

4.1 Introduction

One of the aims of my research was to be able to make suggestions about how to improve feedback given in a clinical environment using LiftUpp. Through the research interviews I was able to get both tutors and students to consider what the purpose of feedback is, and how they thought that the school uses it. If tutors do not know what the feedback is for then they cannot be expected to give appropriate feedback.

I was also interested to find out whether students were using their feedback in the way that tutors thought they were, and to understand more about the experience of giving and receiving feedback on clinic. As a tutor myself I understand the issues involved with giving feedback, but I am only seeing it from my perspective so I wanted to explore what other tutors thought, and also to know how the students perceived the experience, and how useful it is for them at the moment.

I wanted to look at the written feedback, and to look at different types, as some of the senior staff at the dental school had expressed concerns that many of the comments did not appear to be helpful to students. Following on from interviews, when several tutors said that they gave a lot of verbal feedback but very little written, I arranged to observe three tutors on clinic to see if this was true.

The results are an analysis of data, from interviews of both tutors and students, and a focus group of tutors. An analysis was carried out of all written comments given in a clinical environment during the whole of February 2017, which totalled 1902 comments. This was followed by individual interviews of eight tutors and seven students. The final part consisted of a focus group after the staff training day, consisting of six tutors. Six months after I

presented my research to tutors at the training day, I interviewed the director of programmes to look at recent changes made in response to some of the issues highlighted.

4.2 Analysis of Written Comments

Following analysis of the written feedback comments from LiftUpp, all comments from February 2017 across all departments in the Dental School, the feedback was categorised into different types of feedback, administration, assessment and development.

4.2.1 Administration.

There were many comments of an administrative nature, mere statement of fact, perhaps describing what the student was doing in terms of what procedure they were carrying out, or which clinic they were on. Examples include 'temporary dressing only' or 'difficult patient to manage'. Is this useful? It could be helpful if, for example, they say that this is the first time this particular procedure has been carried out by this student: it might make the student feel more accepting of a lower DNI. Maybe staff are justifying a low DNI. 'Due to kit not being put away in correct way' coupled with a DNI of 2 is an obvious justification of the low DNI. Another justifying comment was 'assistance needed'. This could be a more useful comment if coupled with a developmental style comment explaining how they could improve on their next attempt.

Comments such as 'very quiet' or 'please contribute more' could be descriptive but also could have a negative connotation. For a student who struggles to take part in a discussion because they are shy, this kind of comment is very unhelpful. Comments such as 'Please talk more - what you say is well informed' is more encouraging. 25% (471/1902) of the comments were of the administration type.

4.2.2 Assessment.

Assessment type comments described how well the student had carried out the task they were doing, in terms of saying whether the work was good or bad, that it didn't go well (critical) or it was a job well done (appreciative). There were more appreciative comments than critical and some of the assessment type comments gave both a positive and negative comment together.

Examples of critical assessment include: 'Wrong size plate selected' 'Inability to remove the GP at the apical third'. A critical comment will help a student to understand what they have done wrong, but unless it is coupled with comments on how the student can improve what they have done, it is not very useful to the students and will not help them improve. It can also make a student very upset and, in extreme cases, feel like they are not good enough and will never be able to do it well.

Critical assessment comments might be made by tutors for justification of a low DNI, similar to some of the admin comments above. Twenty three percent (439/1902) of the comments were of the critical assessment type.

Examples of appreciative comments can be vague, such as 'good result', or specific, such as 'excellent knot tension'. Appreciative comments alone can be encouraging for students, but students have commented that they like to know what it was specifically that they did well, so vague appreciative comments are not helpful. Students commented about how sometimes they have done something well, and the tutor has given them a good DNI but they didn't feel it went well, and would like to be told what was good about it. Twenty one percent (408/1902) of the comments were of the appreciative assessment type.

Examples where a negative comment has been paired with a positive comment: 'Good plan, a couple of details missing' coupled with a DNI of 4. This would suggest that the student had not done a particularly good job but the tutor wanted to make them feel better.

Five percent (88/1902) of the comments contained both an appreciative and a critical assessment

'Need to make the finish a little smoother but overall shape good' breaks the task down to parts, some which have been done better than others. This would be helpful, as the student knows where they need to improve. It would be even more helpful if the student was told how to improve. Perhaps they were told verbally, but there is no evidence available.

4.2.3 Developmental.

A developmental comment is preferable in that it will help the students to move from where they are, to where they need and want to be. This is what the teaching leads would like to see and is what they believe to be the purpose of written comments. I wanted to discover whether the students agreed with this. Developmental style comments all gave advice in some format. Some were very specific such as 'Check carefully for ledges and overhangs and eliminate as required'.

Some were more generic advice to use at all times:

> "Although this particular case was difficult, try to look objectively at each complication or difficulty you encounter, and try to think through solutions to each problem. This is a skill that you will need to use in practice soon."

Some gave practical advice about how they are carrying out treatment: "Make sure that when you assess lateral guidance on mandibular movement that the patient's teeth are in occlusal contact."

There were very few which gave a whole paragraph explaining exactly what the student needed to do differently to improve:

"The finished denture was not seating fully - evident by the spacing between the palatal elements of the denture and the palatal tissues. There was also a rock. Firstly it is necessary to eliminate any interference caused by acrylic on the guide surfaces so the denture should be adjusted in these areas. As this did not improve the fit, it was concluded the casting was not fitting correctly and this required new second impression with a view to recasting the framework."

This is clearly useful to the student to reflect on and is there to look back on. I wanted to know if students wanted more written comments like this or if they were happy with verbal coaching.

Twenty six percent (496/1902) of the comments were of a developmental style, giving some advice that was helpful for the student to improve.

4.3 Results from Interviews

The results from interviews of both students and tutors are presented together, grouped into themes. I considered reporting the findings of tutors and students separately but this became very repetitive, and I wanted to compare and contrast responses from tutors and students for each issue. In order to understand how tutors give and students use feedback I first wanted to explore their understanding of the purpose of feedback.

4. 3.1 Perceptions of the purpose of feedback.

The main purpose of feedback, as suggested by both tutors and students, was improvement, explaining where a student was in terms of development for a particular procedure, and explaining what they needed to change to make it better next time. This is what I expected to

hear and is encouraging because it is what the school wants the feedback comments to do. However, from analysis of the written LiftUpp data only 26% of the written comments analysed contained suggestions of how to improve.

"I think it kind of gives students a meaningful understanding of how they performed on the clinic in terms of both technical and non-technical kind of soft skills, and hopefully guides them, and provide them with the opportunity to develop and improve for their next clinical session."

Tutor 2

"I sort of take what I have been given and use that as a marker to improve on, and I think that is the sole purpose of what the feedback we are given is. It is mainly to give as improvement so we can actually become better at what we are doing."

Student 5

Although both tutors and students considered the purpose of feedback to be to improve the students' performance, there were very few who mentioned reflection on the feedback in order to achieve this. I did not specifically use the word reflection as I wanted to discover if it was something that tutors and students considered to be a purpose of feedback, and if students were engaging in some form of reflection. Most of the students did not seem to give any importance to reflection, but one tutor and one student mentioned it:

"It also probably gives them an opportunity to kind of more formally self-reflect on how they have done on that particular treatment session. I think it is probably a helpful exercise for them to think about what do they think went particularly well, what do they think didn't go so well and then kind of compare that to how their tutor feels they performed on that session, which will help kind of guide development and help them improve professionally."

Tutor 2

"If you get feedback, especially if it is written it helps you reflect on it, and then next time you don't make the same mistakes, so it helps you get better at doing things."

Student 3

Although only one tutor and one student mentioned reflection, some of the others did talk about looking back at feedback and using it to help them do better next time which does suggest an element of reflection. As the word 'reflection' was not specifically mentioned by myself I was looking to see if any of the students described any actions that could be described as reflection, such as going back to look at their feedback and using it to set goals for the future, which a few students did describe, or even reflecting on their reaction to feedback, which none of them described.

Engagement of the students with the feedback is important, so feedback should involve a conversation rather than information or instruction being given by the tutor to the student, with the student taking a passive role. Two of the tutors mentioned the process of giving and receiving feedback as a two-way process.

"Yeah, it helps to build a dialogue with them. If you give them a comment they will then ask further questions and feel like they can also get involved with the feedback process."

Tutor 3

"The purpose of verbal feedback is to be able to engage with the students and also to try and learn from them what they learned from the session and how I thought about the session, generically for development as well, but obviously in an individualised form for each student."

Tutor 5

None of the students considered dialogue to be an essential part of feedback. One tutor mentioned dialogue relating to verbal feedback, and one tutor mentioned the idea of it in conjunction with written feedback comments. Feedback was not being considered as a two-way process at all by students and not in many cases by tutors. Most tutors and students thought of feedback as a one-way process, something that is given to the students by the tutors, with the students having an entirely passive role. This is very much in contrast with the 'coaching' role of feedback identified as desirable by senior staff.

The main purpose of feedback as defined by tutors and students was for improvement, with a few tutors talking about the importance of student engagement through reflection and dialogue. Tutors and students both tended to think of improvement in terms of being able to perform a procedure to a better standard in the future.

4.3.2 Perceptions of good feedback.

I wanted to find out what the tutors thought was required for good feedback, and how that related to both the literature and what the students described about the feedback they

perceived that they are getting. Six of the tutors considered that good feedback should mean explaining to a student exactly what it is they need to do differently. Some tutors have had training sessions and are aware that these types of comments are required, but not all.

> "I like to put something like 'next time you do this' or 'ensure that you revise this' so it is not just a justification of the indicator it is actually giving something, a take home message to actively go and pursue . . .You are backing up the written with the verbal. Otherwise something you might think is really obvious, could be misunderstood, I am sure there are comments that I have given in the past that if I looked at them now I would probably think 'what did I mean by that?' so it is trying not to be ambiguous, but trying to be supportive and offer some kind of nugget that they can go away and build on."

> Tutor 3

Not surprisingly, as students and tutors had agreed that the purpose of feedback was to improve, six out of the seven students also mentioned how good feedback should show you how to improve:

> "I think as long as a tutor takes the time to explain to you what you need to improve or why something has gone wrong, or why you were good at something, then that would be good feedback."

> Student 4

Students mentioned the idea of feedback being specific more than tutors, who did not say the word 'specific' at all. However the way some of them described how they think feedback

should be given gave a specific instruction to the student about what they need to do differently.

> "Good feedback gives the students encouragement and clear directions for what they need to improve so rather than just say you did well, to actually contextualise what they have done well today, and what they can improve on, so "what you were doing with that elevator , the rotation you were doing was really really good."
>
> Tutor 6

> "Generalised is ok but I prefer specific because I can look back and be like OK this is a specific thing that can help me improve, whereas if it is just like really quite generalised, your filling looks good, that doesn't actually help me that much, or if it is overfilled, how was it overfilled, how can I improve on that?"
>
> Student 5

As with the purpose of feedback, students did not associate good feedback with a two-way process, and only one tutor brought up dialogue whilst discussing good feedback.

> "It is the understanding between a student and a staff member that the both parties understand what is being said, and it can be dialogue rather than a tutor telling a student to do this or do that. It should be constructive and I feel as though you should form a relationship with the students rather than the students can't question or ask why something has been said or why a certain indicator has been given."
>
> Tutor 5

Four tutors suggested that letting students know what they had done well was just as important as letting them know what they had not done well. They acknowledged the importance of telling students what it was they had done well.

"Good feedback should I feel have, like, things that have been done well, examples of you did this well, this was really good, because, and then perhaps highlight an area to be improved."

Tutor 1

"Rather than just say you did well, to actually contextualise what they have done well today."

Tutor 5

The students said they thought good feedback should include appreciative comments.

"I think when someone says well done, it is really rare but it is a nice thing for them to do. If you have a 5 it would be nice if they put why you got that. They only tend to write a comment when it is a negative comment."

Student 1

"So yeah, it's really hard when you have had a hard day, and someone just sits and tells you everything you did wrong, and they don't really appreciate, there are some things that you did ok actually. It's nice if feedback is positive and negative, even if the tutor really doesn't think you have done anything right."

Student 3

Appreciation or praise was mentioned a lot more than dialogue by both students and tutors. Students wanted praise, and tutors seemed to understand the importance of this to students, as tutors thought students could become despondent without sometimes being told that they are

doing well. No one mentioned linking praise to developmental comments to help students improve and move to the next level.

Good feedback for the students interviewed meant specific instruction as to what they needed to do differently to improve, with praise when appropriate.

4.3.3 Use of feedback by the Dental School.

My research questions involved looking at how to improve feedback, so I wanted to understand whether students and tutors understood how the Dental School used their written feedback comments on LiftUpp. I thought that there may be some misconceptions amongst both tutors and students. Two main themes came up: first, all tutors and students were aware that the Dental School uses the feedback comments, combined with all other LiftUpp data, when they are considering student progress; and second, some of the tutors but none of the students were aware that the comments can be analysed to look at the how they are written. I personally was unaware of the second use which was to look at the way tutors were giving feedback, so this was interesting to explore. Two of the tutors that I interviewed were senior members of staff who were able to tell me exactly how the Dental School uses the data.

Both students and tutors were aware that the written feedback comments are looked at for every student in an assessment role. Students were particularly aware that their feedback could be used to decide whether they are recommended to progress to the next year, and for final examinations. This was confirmed by the senior tutors that I interviewed.

> "I know they collate it, and then obviously at the end of each term they check whether or not you are progressing at the level that they want you to, in CAP (Clinical Assessment Panel) and things like that."

Student 3

"They triangulate all the data don't they? So they can form an overall picture of how that student is performing. Is that student at a particular level to be able to progress onto the next year? And then I think the more qualitative feedback comments are particularly helpful if there's areas where a student isn't doing as well as they should be, the qualitative feedback would be able to give people that weren't present on that clinical session a better idea of is this a real concern or is this something we are not too bothered about type thing."

Tutor 2

Not all tutors were fully aware of how the comments are used for student progress though, so further staff training across all tutors is clearly required.

"I don't know how it is used with the actual students though. I have not had any meetings that would indicate to me how it is used."

Tutor 5

There was a perception amongst tutors that the written feedback comments are collected and analysed to check that tutors are giving feedback correctly and that they are consistent with each other.

"They use it to ensure that we are calibrated with other staff, if someone stands out for good or particularly bad reasons, make sure that we are using the tools, LiftUpp, properly and that we are using it as it was devised."

Tutor 1

A senior member of staff described how the written feedback can be used to look at what tutors are doing, in terms of the type of feedback they are giving.

"It uses it in terms of looking at what feedback has been given to see if we are giving the right feedback at the right times. It also looks at the individual staff members and sees if they are an outlier for the feedback that has been delivered for instance is someone consistently behaving as a hawk, is somebody consistently giving different feedback to people for a reason which is not apparent maybe to them."

Tutor 4

Not all tutors were aware of exactly how their comments were used by the Dental School, so this was an area that needed to be covered in staff training. Tutors knew that the comments might be used for student progress but only some were aware that senior tutors might look at the comments to consider the quality of comments and how useful they are for students in terms of advising them how to improve the quality of their clinical work.

4.3.4 Student use of feedback.

One area of themes in the findings was the perceived difference between how tutors thought the students use their feedback and what the students actually do.

4.3.4.1 *How do tutors think that students use their feedback?*

All of the tutors thought that feedback is for improvement, so how did they think the students use it to improve? Tutors were varied in their ideas of how the students use the feedback, but they were not very optimistic, and tended to suggest that students were not really looking back at their feedback. Only one tutor thought they used it to reflect, and two tutors thought that students worried about their feedback, two thought they only looked back at the numerical indicators, and two thought that some students looked at their feedback a lot and used it effectively, but that there were other students who rarely or never looked at it. Most of them did not feel it was very likely that a student would spend time reflecting on their written comments. This could be a reason why tutors gave a lot of verbal feedback, but did not write

much down. It is not possible to know from my research if there are tutors who never write comments as the comments that were analysed were anonymised, but one of the students told me that there is a big difference between tutors in terms of how often they give comments and how much they write. Two of the tutors expressed concern that students were not taking a lot of notice of the written feedback comments:

"I hope they look at it, at the time, and then are able to reflect on what happened in that particular episode of activity and why they did well, why they didn't do so well, but I worry that if they don't look back on it at that time, and there is a sort of time lapse of weeks or months when they come back and look at it again if actually, they can't rationalise what that feedback is in relation to, and whether that has the same meaning for them or not I don't know"

Tutor 1

"I imagine there are some students who don't ever look, or maybe when they have CDMP (Clinical Development Monitoring Panel) or an academic advisee meeting."

Tutor 3

Two of the tutors were also concerned that some students might be spending too much time looking at their feedback and worrying about it, in a way that might not be helpful.

"The times they have gone on LiftUpp evenings and weekends, I know they do ruminate over the feedback that they have got."

Tutor 5

"And are they using it in a way that they are reflecting and thinking in the forward or are they just looking at the negatives, "I'm terrible, I'm terrible!" I don't know"

<div align="right">Tutor 6</div>

"I think they just look at the numbers, the DNIs, I don't know whether they take the DNI and comments and put them together in context. There's a difference between ruminating and reflecting, and your ability to reflect is probably based on things like your mindset and your experience, and your ability to be self-critical and the info you have been given on how to improve. If you are the kind of person who can only be told you have done something well, kind of fixed mindset, it becomes catastrophic, then I don't know if you can reflect in a helpful way, I think you will ruminate. I think a lot of our students are very good at worrying about things but not necessarily good at figuring out the strategy, and that is where the feedback is really, really vital because if you have given them pointers, to figure out the strategy they can reflect on that, and say ok well the next time I need to try this. It does depend on the type of person that they are."

<div align="right">Tutor 8</div>

The above comment from tutor 5 suggests that tutors think that students might be looking back at feedback, but most of the tutors did not seem to think that students were using written comments in a positive developmental way. They thought they either did not use them or they worried about them, and used the term 'ruminate' to denote unproductive worry rather than positive reflection, I was interested to find out from the students whether this was true.

4.3.4.2 *How do students say they use their feedback?*

As to be expected, there was a wide variation in terms of how students used their feedback, perhaps due to their mindset as suggested by one tutor above, and how often students

accessed their written feedback after the clinical session when it was given. Some students said they checked their feedback every day and some said they left it until the end of term when they had to speak about their progress with an academic advisor. This contrasts with the beliefs of some of the tutors in the above section. Perhaps the tutors are being overly pessimistic in their assumption of how students are using their feedback

> "I think most people probably check like every day cos you are checking your timetable anyway so you can go on and have a look. I think you are either obsessed with it, or check sometimes or never check."

> Student 1

One student used it in a particularly defensive manner:

> "It's more towards the end of term or before an academic advisor meeting, so I better check what I am doing. I don't want to walk into a bit of an ambush. But sort of events and like the feedback meetings. That is when I would go back and check and look for trends, or if I was doing a procedure that day I would look at last time I did it and see where I could improve, or what I did well."

> Student 2

Others suggested they did not use it to look back on.

> "I don't go back and use them but I do find it helpful when you are signing out and you see the comment, you can read through and bear it in mind so, I guess yeah, in a sense verbal comments could fulfil that, could do that for me."

> Student 7

If they are doing well, however, they may not need to go back and look at feedback. Feedback comments may be valued more by students who are struggling. Some students

viewed feedback as something that could help them to improve, which ties in with what they said was the purpose of feedback. Two students talked about using the feedback to help them improve, and one of them specifically mentioned goal setting:

"I know that I have done something and it wasn't right, and they have given me feedback, I will look at it again and go over the feedback. At the end of the day if it is practical the only way you can really improve it is if you go onto clinic and do it, but by reading it you sometimes makes you really think about specific things you can do to make it better."

Student 3

"For me I am looking back, ok I got this on my crown prep, next time I do this I want to get this. I mean, of course it might not happen, but it is always nice to have that target in your head, I will get my skill levels, it might not be next time, but the time after that, but I will get my skill levels. It helps motivate me along. It's good to set goals, especially if they are small and achievable, as long as it is an improvement"

Student 5

It is encouraging that a student described goal setting, but this was only one student, and senior tutors expressed concern that many students did not use feedback for improvement but were fixated on the assessment side of the LiftUpp data.

As there is such a variety in the way that students used their feedback it would be impossible for the tutors to be aware of how they used it, and there is a need to educate students to receive feedback, as much as there is a need to educate tutors to give better feedback. It appeared that students were looking back at feedback more than tutors thought they did.

4.3.5 Types of feedback.

I asked questions about different types of feedback given on clinic. Students found verbal and written feedback useful for different reasons, and tutors suggested that they used written comments to provide feedback in a different way from verbal comments.

4.3.5.1 *Verbal or written.*

From my own experience on clinic I am aware that there is much more verbal feedback given than written, as verbal feedback is happening anyway without the tutor even thinking about whether they are giving it. This was confirmed during my observation. Unfortunately, this can mean that the students are not aware that they are being given feedback as it is given as part of conversation or in front of the patient. I asked the students which they preferred, although I was aware they probably do not appreciate quite how much feedback they get.

Some of the students suggested that written feedback is good because it is there forever and you can always go back and look at it. There is some level of appreciation by this student that they are being given verbal feedback, just that you can't remember that several years later.

> "I think it is helpful for sort of a refresh, sometimes because we get so much feedback for everything we do that sometimes you can't remember the specifics and that is just going to vastly improve the more cases we have, so as you go onto 4th year and 5th year you are not going to remember back in 3rd year, so I think probably writing it down, although it would take a bit longer for the tutor it is probably going to be helpful in the long run for the students"

Student 1

One student described how students are currently fixated on the assessment element, and that the written feedback is currently overshadowed by the fact that students are looking to see

what DNI they have received which might feel more relevant to them at that particular moment. Rather than looking at the feedback to see how they can develop, they were looking for an assessment grade to reassure them they were on track.

 "I think written feedback is helpful definitely, and it is solid evidence that you have done something good, or you need to improve, but I think that cos everything is centred around the numbers people get a bit caught up in the numbers, and maybe the written feedback is not used as much as it should be."

Student 4

Students are different in their preferences and learning styles, and some students said that they preferred verbal feedback

"I think verbal feedback for me sticks with me a lot more, because if I remember when I did something wrong, I tend to remember those rather than when I did things really well, and what staff said to me at the time tended to stick with me, so next time I would try not to do the same thing again."

Student 4

One of the downsides of verbal feedback is that, if you are not concentrating, there is no opportunity to visit it on another day. This can be a problem for those students who maybe were too focussed on the assessment side and are not thinking about what they could do next time.

"I do like, I do appreciate the verbal feedback, but sometime, especially with negative feedback, when someone says something to you, you don't really take it in, cos you know it went badly and it just goes right over your head."

<div align="right">Student 3</div>

Tutors were aware that written feedback is constantly available and therefore should be encouraging and helpful, by trying to get the students to think about how they can improve rather than making it about what went wrong.

"The written feedback needs to be something that when they look back on it they feel they get a positive experience so you want it to be a developmental comment, a something that perhaps says for next time remember to do this, or try and do this rather than explaining what went wrong because I think I have become mindful that students can look at the written feedback any time, during the day or night, and you want them , in whatever kind of frame of mind they are in at the time when they look at it, for it to be something that is helpful."

<div align="right">Tutor 1</div>

Tutors recognise that they used verbal and written feedback in a different way. With verbal feedback there is a lot more opportunity to go into lots of detail, and to encourage the student to engage in dialogue, to ask them how they thought the procedure went and to encourage them to reflect. As there is not much time for written comments tutors describe how this is often a summary of the verbal feedback.

One tutor explained that they knew what type of feedback is required but did not have time to give coaching feedback via a written comment, so they spent time giving coaching style verbal feedback, with shortened written comments.

"I think I'm more of a coach in my verbal feedback . . . but I think to improve my feedback, I probably need to take a bit more of a mentor approach in my written comments but often it's quite hard to know, I mean there's so many things that we're giving feedback on, across LiftUpp, I think with time constraints on a busy clinic, I think the mentor type comments are obviously going to be longer to write down, and time makes it more difficult to give meaningful mentor type feedback."

Tutor 2

"Definitely a summary, cos in that there will have been whiteboard diagrams, models, a whole host of things that we have talked about and then there will be a small summary of that."

Tutor 6

"I tend to give a lot of verbal feedback during the clinic and during the procedure with what they are doing."

Tutor 5

"I suppose I think what you just do is talk around it you know written feedback is just a summary of what you have said and I think the verbal feedback is just talking them round it you probably on some areas, because if you try and write feedback in every single area on the iPad you're not going to have time to do it so I think you pick the ones that are written, I said 'your learning points for today are...' And I'll write the ones that I think are appropriate for those ones, whereas you might talk about other things that happened around it"

Tutor 7

One tutor described how she tried to use a coaching approach in her written comments also.

"I do try to do coaching, because I am trying to give them something that next time they can work on, and next time if they are in the exact same situation. I do consciously try to make it coaching because I hope to think if they were logging on to LiftUpp and looking at their feedback that there would actually be some guidance in there."

Tutor 6

A mixture of verbal and written feedback appeared to be what was given, and students seemed to appreciate having both. Although they didn't mention dialogue, some students preferred verbal feedback, which would have very likely involved a conversation and in which they would have had more involvement, than with a written comment which is very much a one-way communication. An opportunity to be involved in the feedback through a verbal discussion, followed by a written comment that acts as a reminder, would seem to offer the best of both worlds.

4.3.5.2 *Different types of written feedback comments.*

To find out the influence of the types of messages on how feedback was perceived, I explored what the tutors and students thought about these different types of written feedback. I thought that most had probably not considered it before. When I was a new tutor I was under the impression that the comments written on LiftUpp were there to assist the Dental School in making decisions about progression of students (which they are) and did not realise that a comment was required that would also act in a coaching/developmental approach to help the students improve. So it was interesting for me to find out whether other tutors realised this. Once it had been pointed out to me how the assessment comments were not helping the student to improve, it seemed obvious but I wondered how many of the other tutors had not

thought about this. I knew that some tutors had had training sessions relating to feedback, so I expected there to be a mixture of responses.

Tutors were aware that their comments would be looked at during progress meetings and, as such, are a justification of why a certain DNI is given but this does not help the student to improve. Some were also trying to give developmental comments for the student to understand what they needed to do to improve. Two tutors described a change in their approach, perhaps due to a training session, or an individual conversation with a senior member of staff.

> "I think there was a thought initially that we should justify why we were giving a particular number because that justification was needed when it got to CDMP or CAP and I think that mindset was changed a little bit, so I then changed . . . I do where possible try and put developmental comments, like 'for next time try and' or 'remember to' or 'ensure that . . .' If I can I try not just to say what went wrong because I don't think that is particularly helpful for them."

Tutor 1

> "Initially I was much more 'I have given a 2 because you did this wrong or poorly' and then I started to add in 'and next time you should do this.'"

Tutor 3

Most of the tutors declared they were aware that they should be giving developmental comments in order to make feedback meaningful for students, although some admitted they struggled to do this, perhaps due to time, or concentrated on giving meaningful, coaching verbal feedback with just a few words of written comments as a summary, or as an assessment for progression. It was interesting to explore what the student perspective was, and whether they felt they were being given any coaching style feedback. The students felt

that tutors concentrated too much on the justification aspect of writing comments, as they gave more comments for lower DNIs.

"If you have a 5 it would be nice if they put why you got that. They only tend to write a comment when it is a negative comment."

Student 1

"A 5 is more like 'well done' without a comment being written, but generally the lower the number the more feedback you get."

Student 2

Students suggested from their interviews that developmental comments were not as common as the senior staff would like them to be, which ties in with only 26% of all comments from secondary data analysis:

"Yeah, I find it useless when someone gives you a number and they haven't explained it, even when they give you a good number, and they haven't actually said why. I actually appreciate if someone says I have given you this because that was really good, because, sometimes someone gives you a 4 or a 5 or something, and you are like ok, that was good, but actually what was it that made it good, and then you can't necessarily repeat it just cos it was good the first time."

Student 3

"I think that in general the feedback that I got was always quite short and to the point and it was either like a praise or a next time you need to do this . . . very rarely on LiftUpp did I get quite hefty paragraphs as feedback."

Student 4

Some of the students perceived it to be important that they get given some positive feedback, as mentioned earlier, although they claim this didn't happen very often. Looking at the comments analysed from the whole month of February, around 21% of the comments were appreciative. Appreciative feedback means that they are being treated as human beings and that someone cares about them and their needs. Obviously, there may have been many appreciative verbal comments given but this is not recorded and students cannot look back on these. Students who were anxious about their work and worrying about how they were doing rather than concentrating on what they could do to improve would probably not remember their positive comments given verbally, but a written comment might help them to have less negative thought patterns around how they are performing.

> "It's a massive boost of confidence when you get a nice comment. If you have got low feedback anyway, I think with good feedback it is always nice to have a record of what you have done well, and just like something to try and remember it by, like 'you did this well, because…' this makes you look back and think I will make sure I do that again, when I get a similar scenario."

Student 1

Some tutors deliberately gave appreciative feedback to make students feel better about themselves.

> "I don't know if it's necessarily performance that I am worried about when I put a praise comment in, I think it is more their emotional state."

Tutor 1

"I feel like I need to try and dilute what has been a really bad session, and still have something positive come out of it."

Tutor 6

"We should be saying you did that beautifully, the more positive comments they have the better they will feel about themselves. If we never recognise when somebody does well, they are just trudging through life waiting for something to be picked up that's wrong. So I have started writing down good job, excellent, you did that beautifully."

Tutor 8

However, one tutor felt it wasn't helpful to give praise for no reason.

"I wouldn't just give comments just to boost someone because personally I don't think it is helpful, and I don't think I've ever wanted someone to say something positive to me if I don't feel as if I deserve it."

Tutor 5

Students suggested that developmental comments were the most useful type of comments, but they also appreciated getting comments that involved praise as this helped to increase their confidence. Sometimes it was just as important for them to be given help in identifying what they had done well as it was to identify what needed to be improved.

4.3.6 Issues on clinic.

There were a variety of issues highlighted which demonstrated areas of difficulty in giving feedback in a clinical environment.

4.3.6.1 *Tutor variation.*

Both tutors and students highlighted the inconsistency between the tutors. Senior members of staff suggested that some tutors do not give the low DNIs they think are deserved for fear of upsetting students. There are other tutors who consistently gave low DNIs and could be considered to be harsher than other tutors.

"A lot of tutors have different opinions on how you should do certain things so you can take on board someone's feedback and they can say well next time you need to do it like this, but you can present that to a different tutor and they will say no, that's not right."

Student 4

"Failing to fail, some of them it's a lot easier with the students give them all nice marks and the students will think you are lovely."

Tutor 7

Students reported a variation between tutors in the amount of feedback given.

"Like some tutors write a lot, and some it's just like sign out."

Student 1

"I guess it does vary between tutors, some will give quite detailed feedback in certain areas whereas some don't give any comments, and it does vary, some might just write well done or this was done well, whereas others might give a reason as to why you were given this score and what can be done in the future, so it does vary."

Student 7

However, there was some appreciation amongst students that they were getting constant feedback every time they are on clinic.

> "Compared to other courses we get a lot more feedback. I talk to lot of medics and they wish they got as much feedback because it helps to improve."

<div align="right">Student 5</div>

Several of the students suggested that some tutors were not always approachable. This could cause problems for some students because they would avoid asking questions of tutors they did not feel comfortable with, which could mean they were not always doing the best thing for the patient. Students were more likely to ask questions of a tutor that they felt was sympathetic towards them:

> "Some of them can be quite patronising, and that doesn't help. They can see you are upset, and they just don't show any sympathy towards you. It's just like 'just grow up and get out'. If I have certain tutors I will ask loads of questions, whereas some tutors you will be like I am not going to ask anything today, it does hold you back sometimes."

<div align="right">Student 1</div>

> "Sometimes you just kind of, I think if you know the tutor is a bit more relaxed and just talks to you a bit more rather than, I feel a bit more relaxed, rather than if you are thinking I am too scared to make a mistake here, you are a bit more uptight and you are just, you are not going to do as well."

<div align="right">Student 6</div>

4.3.6.2 *Time available.*

Seven of the tutors suggested that they would be able to give better feedback if they had more time. The amount of available time varied daily depending on how many students the tutor was looking after, and how busy the clinic was.

"I don't always feel that I can write what I want to though, cos there is too much time pressure. The time really, it's so time consuming to give them really proper good constructive feedback, and from the staff, my perspective it is incredibly tiring to do it really well."

Tutor 1

"If someone, even one student mildly disagrees with the feedback you have given that can take 5, 10, 25 mins then you get a queue and you are rushing."

Tutor 5

4.3.6.3 *Focus on assessment.*

Comments from some of the students agreed with the tutor's concerns about students concentrating on the assessment element rather than thinking about how they could improve by using their feedback:

"I remember I got quite sad about it cos the number of 2s, when you get a 2 it is really disheartening."

Student 1

"I think the numbers is what everybody focuses on because that is what the criteria is and you would always feel a bit rubbish if you came out of clinic and you got a 2 or a

3, whereas if you got a 6, you would feel really happy. I think even if you have got a low mark, and a tutor said look you were good, you just, these are the areas that you need to work on, I think the numbers stays with you more than the feedback."

<div align="right">Student 4</div>

"I think the verbal feedback can be a bit lost, say if you are a bit stressed over the mark."

<div align="right">Student 2</div>

Dental students are used to being high achievers and have often never failed anything throughout their school life. As they are used to doing well at school, they can find it very difficult to cope with low DNIs. They think of this as having failed at something and can become very upset, rather than realising they will not be good at a new practical skill on the first day and need to use feedback as something to help them improve. They are given a lecture explaining how they should expect low DNIs when they start as they cannot expect automatically to be good at a practical procedure the first time they do it. However, that did not appear to stop them being stressed about it.

"I think the type of person who does dentistry is used to being top of the class throughout their whole time before coming, and you kind of think "I am performing worse relative to everyone else" so you kind of judge yourself off what other people have got as well. Like it kind of worried me that I was lagging behind. I think the verbal feedback can be a bit lost, say if you are a bit stressed over the mark, and things like that."

<div align="right">Student 2</div>

However, one student did demonstrate a level of understanding that having experienced failure is good, as it helps you realise that you can improve:

> "I did get a D at AS level and then re-took and got a better grade so I have had that massive hit so it is helpful, failing actually is a massive way of, cos if you fail earlier on you are like 'oh I can , I know that I can improve on it', but if you have never failed before to then get a low mark can be quite catastrophic even though of course it is not like that at all in this, you are going to get more practice, and you are going to improve."

<div align="right">Student 5</div>

One tutor suggested that students were more accepting of a low DNI if there was a lot of feedback to tell them how to improve, rather than just a comment telling them what was wrong. If there was only a comment telling them what went wrong it could feel like criticism with a punitive DNI, but a low DNI with an in-depth explanation of how they could improve could help the student to feel supported.

> "The problem with that is if the member of staff writes it down as a justification then that's when the student feels they need to be defensive, whereas if the member of staff writes it down as make sure, next time, ensure, alter this then the student sees it as they are trying to help them get better rather than justifying why I should fail."

<div align="right">Tutor 7</div>

> "It's usually the number, the more feedback the more justified it feels"

<div align="right">Student 2</div>

Senior tutors also expressed concern about students avoiding practising certain procedures in case they got marked down, which was borne out by one of the students' comments:

"In second year in the practice sessions you have people think I am not going to do this type of filling in case I get a bad score. They will choose to do something easier cos they know they can do it."

Student 7

4.3.7 Student reaction to feedback.

Negative reactions of students have been encountered by most of the tutors trying to give feedback including crying, refusing to accept feedback, walking off, not listening, and generally defensive behaviour.

"Yeah, we get tears, almost arguments, storming up to the assistant head of school, yeah. But I think when you are starting as a new staff member they want to see where your boundaries are. Will she back down, will she change her mind if I push her a little bit?"

Tutor 1

"I've had students challenge me about what I have written and they do get quite defensive sometimes and kind of state their opinion about what they think should be written, so they do get a bit upset."

Tutor 2

Students have other things going on in their lives, which can cause negative reactions to the tutor giving feedback.

"Yeah, I have had students crying, but half the time is something underlying or
personal."

<div align="right">Tutor 5</div>

"Some of them just struggle with the fact of being anything other than being perfect
because the students can't cope with failing and so if they are getting anything,
especially the younger students when they first get onto LiftUpp. But yes it's them
learning to deal with failure. Let them realise failure is about learning rather than the
self-esteem issue."

<div align="right">Tutor 7</div>

"I think that there are a lot of people now growing up for whom negative emotions are
intolerable. Everything is fear of missing out, you only live once. I am not sure
students are good at dealing with frustration or disappointment. Disappointment in
your ability to do something is part of life, the first time you try anything you are
unlikely to be successful at it."

<div align="right">Tutor 8</div>

There was a mixed range of responses to feedback by students, it depends on the individual:

"With a spectrum running between those who will be over devastated with any
negative aspect, and seem to change their behaviour immediately sometimes going to
the opposite side of the pendulum swing without balance, to those who have already
got a fixed mindset and just want you to go away. Some will agonise for ages, and
will come later on and ask for inappropriate level of detail, about how they could have
got it better, when it has been a comparatively minor suboptimal thing. And some will
stonewall and heal their psyche about a major cock up, and you wish you hadn't said

don't worry it will be alright cos they go alright fine. Some people say 'I am doomed, I have got to re-sit it'. There are some people who have got their own belief set, and it doesn't bear any relation to anything else, so you trigger the tripwire and that's it."

Tutor 4

4.3.8 Staff training.

It was relevant to find out what staff training opportunities tutors had had regarding giving feedback on the clinic to assess how training might influence feedback given. I expected this to vary between tutors as they all have different contracts: some work for the NHS and some for the university, some work part time, some work full time, and different departments often have their own training days. As I expected there was a variation in what training input tutors had had. Only one of the tutors who was studying for a postgraduate certificate in education, had had any formal training in how to teach and how to give feedback. The rest of the tutors had had informal training by observing others or engaging in conversations in departmental meetings

"I had an informal session when I was saying I was finding it a little bit hard to give feedback. There were some documents in the training folders but there wasn't really any formal teaching."

Tutor 1

"You get a session on LiftUpp when you start, so I had that when I very first started but not too much."

Tutor 2

"I think we became more aware of what other members of staff were doing, at staff meetings"

Tutor 3

One of the senior members of staff explained that not all tutors knew exactly what type of feedback comments they should be giving:

"I suppose the biggest training issue, and what we didn't bring in initially is 'what is that feedback for?' Some of the staff initially thought it was just a comment of what they did. Other staff think it's a justification of the grade. There does need to be more training."

Tutor 7

It was recognised amongst the tutors that they have had different levels of training and would appreciate more training.

"In an ideal world we would have some online resources, video based thing where you get people together and ok what would you give? Why? Play it out, talk about it, thrash it all out, go through the different aspects of it."

Tutor 4

"I think we need consistency as a school, I think we are poorly calibrated, and we need the students to be more on board with the feedback so we need to, for them to see it with the same eyes as us, so rather than a test of pass or fail they can see the benefit as well."

Tutor 6

One of the main issues around giving feedback on clinic was the students' perception of the whole feedback process as assessment rather than developmental, with many becoming overly stressed about the DNI number, and not taking in their feedback at the time. Other issues were approachability and inconsistency of tutors. Students placed a high degree of importance on their relationship with the tutors and found it difficult that tutors had different approaches to giving feedback. Tutors, also, sometimes struggled with the negative reactions by students to feedback that they did not like. Tutors had had varied exposure to training, and most seemed keen to have training around what kind of feedback they should be delivering and how to deliver it. As expected, having enough time to give good quality feedback was suggested as an issue for tutors.

4.3.9 Suggestions for future improvements.

I asked students and tutors for suggestions for improvement of the way feedback is given on clinic. One of the tutors and one of the students suggested it might be useful if students could write their own comments after they have been given feedback.

> "If they wrote a passage of self-reflection after the clinical session on what they felt went well, what they felt went not so well, and you could then kind of approve that at the end. I think that would definitely help. Because sometimes I verbally ask them that, but sometimes they say something very short and then we move on, but if you formalised that at the end of the session I think that would help the reflection, because it's never very, I find if I say what do you think went well, what do you think went not so well, I often find it is not a very in depth discussion."

> Tutor 1

"But maybe we could kind of input our own comments on that, maybe if we get a bad mark we should be made to comment on it."

<div align="right">Student 2</div>

One student felt it would be helpful if someone could explain comments to students.

"Maybe if the academic advisors could go onto your LiftUpp, read some of your comments and then chat to you about it in those meeting, and then, unless they were the person who has given you all the poor feedback , but then it is a bit more like objective rather than it being all at once so maybe incorporating that into academic advisor meetings, cos I think if you get a bad mark on clinic you feel a bit upset or sad, but if you had to speak about it with somebody else, your perspective would change, and it would probably alleviate any frustration or anything you had."

<div align="right">Student 5</div>

Several tutors suggested they would like feedback to staff on how their feedback is received.

"Maybe at your PDR to be told if your feedback comments align in such a way."

<div align="right">Tutor 2</div>

"What I would like to know is more feedback for the feedback that I have been giving and whether it is appropriate or not, and what I can do. I feel as though if I was receiving my feedback I would feel happy with that."

<div align="right">Tutor 5</div>

4.4 Observation

4.4.1 Introduction.

I observed three tutors giving feedback on the clinic in order to gain an understanding of how much feedback was delivered verbally compared to written on the iPad. From my interviews, tutors suggested that they give a significant amount of their feedback verbally, with written comments kept to a few lines of writing. As someone who works on the clinic, giving feedback myself, and often seeing other tutors on clinic I am aware that tutors spend a large proportion of their time on clinic explaining things to students. From analysing the written data I am also aware that the written comments are often very short and of the administrative or judgemental type mentioned earlier, rather than the developmental type required.

This made me carry out observations to confirm that tutors were giving as much verbal feedback as they claimed. I observed three tutors in three different departments, in order to see a range of different teaching environments. I had consent from all tutors and students and remained as a passive observer, standing near enough to listen but out of the way. In hindsight this could have been recorded so that it would be easier to analyse afterwards and could have been played back to participants for reflection on the process. This may have been difficult in terms of hospital policy as recording is not permitted in areas where there are patients, and if we had moved to a different area and started filming or audio recording the tutor and student may have acted differently. I was able to be fairly unobtrusive as I stood a little distance from the tutor and student and they are used to people moving around in the clinic, but I think recording would have made them feel quite self-conscious.

4.4.2 Department 1.

On the first department where I carried out observation, I observed three students receiving their feedback at the end of the session. The tutor on this clinic spoke separately to each

student away from the other students. At the beginning of each conversation she asked each student what they learned from today's session. From the very beginning she was making the feedback into a dialogue. Then for each student she discussed the particular patient and procedure they had been carrying out, asking lots of questions about what they had been doing such as 'why did I go down to bone?' (referring to a tooth extraction technique), and 'how did I find the spot to incise?' She continued to ask questions of this nature, explaining where necessary. The tutor also asked every student at the end if they felt they would be able to do the exact same procedure on their own next time. To finish off with each student, she asked if they had any further questions.

The first student asked questions such as 'How do I know when I am down to the bone?' demonstrating that he felt comfortable to ask questions that would help him to understand the technique better. The tutor explained the answers to all the student's questions and spent time looking at the x-ray for further clarification. She also offered to send the student a journal article related to their discussion.

The second student was a bit less confident than the first and did not ask questions. The tutor managed to engage the student in dialogue by asking lots of questions about the medical history of the patient, and then getting her to talk through the procedure that she had carried out. The tutor had intervened in this procedure, taking over and doing the sutures for the student. She asked if the student understood why she had done this. The tutor praised the student for all the parts of the procedure that she had managed to do and explained that safety is paramount and sometimes it is necessary for a tutor to carry out part of the procedure. The student seemed to feel unhappy that she had not managed to carry out the procedure herself but was reassured by the tutor that she had been doing the right things, however due to various patient factors it was necessary for the tutor to take over. The feedback given to this student involved reassurance and a conversation about a complicated medical history. The

tutor spent some time explaining the relevant factors to the student. She ended this conversation by telling the student that she had done really well.

The third student was also asked lots of questions by the tutor about how and why she carried out the procedure and what she used. The student was unable to answer most of the questions, so the tutor explained to her the benefits of different materials, and some more details about the procedure. The tutor asked the student if she felt she should know more about the procedure and materials, and if she was going to go away and learn it.

4.4.3 Department 2.

In department 2, only one student was observed receiving feedback as there was only one student who was on the clinic that morning. The tutor started the feedback session by asking the student what she thought had gone well about the patient appointment. The student answered by listing all the things that she had done wrong. The tutor then explained to the student what she had done well, before talking about how she could have improved what she had done. The tutor showed the student what to write down in the notes and how to structure it. She praised the student for her communication skills, but then the student was unable to answer questions about blood tests and it was suggested that she needed to go and learn this. She advised the student where to find the information she required. The student then asked a question about getting blood tests done. At the end the tutor told the student that she should learn how to set out the structure of her findings for the next time she would be on this clinic. She concluded the feedback session by asking if the student had any questions.

4.4.4 Department 3.

For the first student, to start the feedback session the tutor talked about what the student did well, and then asked them whether they felt the appointment went well. As in department 2, the student talked about the things that went wrong. The tutor then discussed the difficulties

encountered by the student. This was a child patient and the co-operation was very poor which made it difficult to carry out treatment. The tutor explained why she stepped in to take over one aspect of the treatment. When filling in the DNIs on the iPad she explained why she had given the particular DNIs that she had given, a low DNI for 'moisture control' because she said that, although it was a difficult patient, this needed to be improved, and a low DNI for 'time management' because the student arrived late on clinic. The student did not comment on this, just said 'ok'

For the second student, the tutor started the feedback to this student by giving advice about how to write in the notes. She showed the student which forms to use and explained how to use them. The student explained that he had asked a lot of questions during the session because it was the first time he had taken out a tooth on a child patient and was anxious. The tutor praised him and said that it had gone well, and that he had kept calm. The student asked some questions about the use of local anaesthetic in children.

4.4.5 Summary.

All three tutors observed engaged in dialogue with the students as part of the feedback process. This is interesting because this appears to be something that tutors were doing naturally. In the interviews, dialogue did not feature as a purpose of feedback, or as a requisite for good feedback. Using observation as another data collection technique allowed me to uncover actions that would not have been discovered by self- reporting alone. Interviews and surveys are based on an individual's own perception of what has taken place. By observing it is possible to pick up actions that the individual has not realised are happening. Obviously, it cannot be assumed that all tutors give feedback in this way as only three tutors were observed. However, it does confirm that at least some of the tutors give most of their feedback verbally, with only a small proportion of the feedback given at each

session being written. Another interesting finding was that when students were asked what went well, they immediately started talking about what didn't go well, focussing on the problems rather than looking at the positive aspects. This could be because they view the feedback process as an assessment, or because failure is a more intense emotion than expected success, or it could be that they want to focus on the future and what they need to improve.

4.5 Focus Group Results

The focus group took place five days after the staff training day to capture the thoughts and feelings of tutors who had attended, soon after the event, near enough so that they still remembered but not straightaway so that they had time to reflect.

The purpose of the focus group was to explore how useful the staff training day had been for tutors, which aspects they had found most useful, whether anything they had learned on the day would change the way they gave feedback and what further training they felt would be useful.

4.5.1 Useful learning from the staff training day.

The tutors were in agreement that the staff training day was useful for them, that they had all taken away useful information from the day, and that it had made them think about how they deliver feedback. It was a way of getting people to reflect on what they were already doing and whether it was appropriate, whether they needed to consider changing what they do or how they could do it.

> "I think just thinking about the way that you do stuff has got to be useful, having somebody from outside say, 'have you thought about doing it this way?' "

Tutor 1

During the training day I presented some initial findings relating to the type of feedback that was given, the type required and the results from my student interviews. Tutors found it useful to understand the type of feedback they should be giving. Not everyone was aware of this and it helped to make them consider how they give feedback. Tutors were really interested to find out what the students thought about the way feedback is delivered, and how they use it. The main learning from the day was in understanding the coaching type of feedback which was required, an introduction to coaching, and how to have difficult conversations.

The tutors agreed that the day was very useful but was more of an introduction which gave them the opportunity to reflect on what they were currently doing, in contrast to what the School would like them to be doing. In terms of learning how to do this, they felt that coaching and having difficult conversations would require more in-depth training.

"I think it was very interesting to find out what the students think about what we do, you know how people respond to it. I thought that was quite useful."

Tutor 4

"Coaching for me is the tricky bit, to not interrupt, which I think a lot of people found, wasn't it, so I think it is just stopping yourself , letting them speak, so that was good , that reinforced that for me, that was very valuable lesson."

Tutor 6

"There was a whole section on difficult conversations. It was useful in taking it from how different people might respond, so how you may have females, they may just get

more upset and you may have males who may just get a bit more angry, and I thought it was just useful just to try and know where the other person is coming from."

<div align="right">Tutor 3</div>

4.5.2 Changes to the way tutors deliver feedback.

One of the useful aspects of the day was how it made tutors think about their own feedback, and some said it would make them change how they give their feedback. Tutors were inspired to think more about making suggestions for how a student could improve, as well as attempting to take a more coaching style approach to giving feedback. Although tutors recognised the value of a coaching approach, allowing the students to work out for themselves how they can improve, they also recognised there are many situations in the clinical environment when this is not the most appropriate approach. For example, when guiding a student through taking out a tooth on a patient, they need to tell them what to do, rather than to encourage them to think about options when they have the forceps in the patient's mouth.

Coaching is the preferred option for feedback given after the patient has left, asking questions about what went well, what could have gone better, what could have been done differently. Tutors recognise this to be an appropriate and useful approach for delivering feedback at the end of a session:

> "I think in your presentation you were talking about how we are quite good at writing comments whenever students don't do something very well, but we are not very good at writing comments whenever they do something very well, and that is something that I would probably want to try and think about."

<div align="right">Tutor 1</div>

"I think it will change how I write my comments . . . I don't think that perhaps I go into enough detail of how to improve, maybe say 'remember to . . . definitely will change how I go about delivering feedback and things and I think maybe trying to take more of a coaching role."

<div align="right">Tutor 3</div>

4.5.3 Further training required.

Having agreed that coaching is a worthwhile approach and is a way of encouraging students to reflect, tutors admit that they do not feel equipped for this approach. The tutors felt that the teaching on the day involving coaching was very good, but more is required to get them to where they need to be:

"I think she touched the tip of the iceberg, and I think a lot of people don't know what it is. I think there will be a peak small improvement that won't sustain without more behavioural change and support."

<div align="right">Tutor 2</div>

"I have to hold my hands up and say that I feel that it is not something that I am natural at doing. And I probably need a bit more support, a bit more training to be a really good and effective coach."

<div align="right">Tutor 3</div>

Similarly, tutors feel that having difficult conversations was a useful subject to be talked about, but feel they need more training in this area.

"I think difficult conversation is separate, and it is very good and it helps everybody and the trust should get on board with it as well cos it helps them too."

Tutor 2

"Having the difficult conversations. I have actually never done a training course on that."

Tutor 3

Training days are not easy to organise as this means cancelling all clinical activity, so it is not possible to have them very often. Also this particular training day was only attended by tutors who were available on that particular Thursday. There are a large number of tutors who work part time and were not available to attend the staff training day. For this reason it would be really useful to have training material available online that could be accessed at any time; this would be particularly useful for new tutors, but also as a refresher for more experienced tutors, or for part time staff:

"The problem with these sessions you do them once then you have 6 or 7 new members of staff starting in September and they don't get it, so having something online can be quite helpful."

Tutor 4

It was also noted that students need some training. Tutors need training in the best way to deliver feedback and students need training in how to receive feedback and how to use it:

"I also guess that the students might need a little bit of training from both sides. I encouraged a student about how she manged the patient, how she gave local anaesthetic, what she did, all the way through, verbally and she said *but you didn't give me any feedback.*"

<div align="right">Tutor 4</div>

One of the tutors present is involved in developing the roles of academic advisors and suggested they will be playing a role in helping students to reflect:

"The new academic advisor meeting record wants the student-led reflection of what went well and what didn't go well from their comments, and that is going to carry forward to CAP."

<div align="right">Tutor 2</div>

4.5.4 Group meetings.

One of the most useful things for tutors was meeting up with other tutors and having the opportunity to reflect as a group, to share ideas, and practices.

"I think being able to communicate with other people within this building is really important, I don't think we get together as a big posse often enough. There can be good practice even within the building, to be able to share all of that stuff is really important and people do get siloed away."

<div align="right">Tutor 1</div>

"I think as well, maybe, a bit more sharing of good practices, sometimes you are doing the same thing you have always done and actually sometimes you can pick up some useful things from other people and the way they approach certain situations."

Tutor 3

4.5.5 Other issues.

There was a conversation about how the written feedback comments on LiftUpp really have two purposes, assessment for progress and comment for how to improve. Tutors need to be aware that although their written comment may be used when discussing the progression of a student, the comments also need to help the student understand how they can improve. I hoped that my presentation would help to get this message across.

"A lot of people just think 'I gave you the indicator, I have told you what you need and then I am going to tell you to do this next time', or sometime people feel that they need to reinforce what went wrong, while what you more or less want is what went well, what didn't go well, how can you improve. At the moment we only have one box to write, we need both, don't we, when we do the clinical assessment panel and the CDMP we need both. The students need how to improve and we need to know what went wrong to find out if the same things keep repeating itself, or if the student is acting on the feedback, because you gave them feedback."

Tutor 4

4.5.6 Suggestions for the future.

To encourage a coaching approach to giving feedback, one tutor suggested it would be useful to have prompt questions on the iPad to use whilst giving feedback.

"You need a bit more on the iPad maybe. You need those actual questions cropping up to guide conversations, can you not have that? Can you not have them appear? What could you have done better? What could you have done differently? What went well? "

<div align="right">Tutor 2</div>

Another suggestion was to film tutors giving feedback so they could review themselves.

"One of the things I find useful, earlier on in clinical training was being filmed or taped doing something so you can play it back, and go 'oh, did I really do that?' "

<div align="right">Tutor 6</div>

4.6 Summary

There was a general consensus that the purpose of feedback was for improvement, and students stated that good feedback would provide specific advice on how they could achieve this. There was a mixed use of feedback by the students, but seemingly little reflection by the majority of them. The students' response to feedback may depend on whether they were regarding feedback as part of an assessment process or as a way of improving their performance. Students did not seem to view feedback as a two-way process. Some tutors suggested that many students see feedback only as an assessment process, and therefore do not think about it afterwards. It is something done to them, in which they do not play a part. Comments from the students supported this belief. Students described how upset they became when they got what they considered to be low DNIs. Both tutors and students described this obsession of students with the numbers they are given, often meaning that they do not consider the comments. Students had been given a lecture explaining how they should expect low DNIs when they start, as they cannot automatically expect to be good at a practical procedure the first time they do it, but that did not appear to stop them being stressed about it.

However, some students did describe how they would use their feedback to look back at so they could improve the next time they carried out that particular procedure.

Students also varied as to whether they preferred verbal or written feedback. Even those who preferred verbal feedback did not describe it as a two-way process.

Students suggested that they wanted praise, as this prevents them becoming demoralised, and they wanted it to be specific rather than a vague 'well done'. It was just as important for them to be told exactly what they had done well, so they could replicate it, as it was to be told what had not gone well and how to improve. Students felt that tutors concentrated too much on the justification aspect of writing comments, as they gave more comments for lower DNIs, and did not give enough comments giving specific advice on how to improve.

From analysing the written data I am also aware that the written comments were often very short and of the administrative or assessment type mentioned earlier, rather than the developmental type required.

Tutors were not all aware of how the written feedback comments were used, or the types of comments they should be giving. Tutors need to be aware that although their written comment may be used when discussing the progression of a student, the comments also need to help the student understand how they can improve. It would be helpful if tutors knew how their comments were used for progression, and if they were also aware that their comment needs to help the student understand how to improve.

Those who were aware cited time as an issue that prevented them from giving the written comment they considered to be ideal. Some tutors said that they gave more coaching-style comments through verbal feedback, as they didn't have sufficient time to write this type of comments. This was substantiated by observations, where clearly tutors were spending time explaining to students how they could improve.

Improvements suggested by tutors included provision of staff training and making available online resources about feedback to refer to. Tutors preferred the option of face to face training but felt that online resources would be useful for those unable to attend, or for reference. It was felt that training was specifically required on coaching and having difficult conversations. It was also suggested that students should be trained to be able to use their feedback productively and should be provided with help reflecting on their feedback by their personal academic advisors. Some tutors and students felt it would be helpful if students were also required to write a comment before they signed out. This would force a degree of reflection to take place.

Other suggestions included giving students audio recordings of their comments, having prompt questions on the iPad to prompt tutors to ask coaching-type questions, and filming tutors so they can see themselves giving feedback.

4.7 Changes Made

Since I completed my data gathering and analysis changes have been made which address many of the issues described above. I interviewed the director of the BDS programme six months after the staff training day to explore what changes had taken place.

There were two main areas to be addressed: poor reaction to and use of feedback by students; and variability of quality of feedback given by tutors.

Steps have been taken to improve student reflection on feedback. A member of staff from the Psychology Department has been working with students, looking at different types of feedback comments, to explore which types are most useful to them. He has also been working with them to encourage a shift towards a growth mindset and thinking of feedback as a means to improve, rather than viewing it purely as assessment.

In order to direct the focus of LiftUpp away from assessment and towards development, the DNIs are no longer visible to the students. All that they now see on the interface is a colour, white or blue, instead of a number. White means that they have yet to develop to the appropriate standard expected for a student in their year for that specific procedure, and blue means that they have achieved that standard. It is hoped that the removal of numbers means that the students will focus on the written comments instead.

There has also been an overhaul of the academic advisor system, so that now all students are required to write reflections, based on their progress reports on LiftUpp, with the help of their academic advisor. The director of the BDS programme has also written a document for students about using feedback, which encourages them to reflect on their feedback by making their own notes in their own private notebook after they have been given feedback, enabling them to put their written comments into context when they look back on them. My research has helped to identify the problem of lack of student reflection, but my intervention was not targeted in this area, and this could be a future research project. The intervention part of my research targeted the quality of feedback given, with an aim to improve this.

The staff training day began to address some of the issue of variability of quality of feedback given by tutors by explaining what was required and providing training in coaching. It also addressed the issue of how the relationship with the tutor affected the students' approach to receiving feedback, and a session was delivered which focussed on having conversations with students. Further training is required to help tutors form educational alliances with students to make the feedback process into a two-way dialogue. The director of the BDS programme has also devised a training document, available online to help tutors to understand what is required of them when giving feedback. Further staff training days are planned for the future.

5 Discussion

5.1 Introduction

The aim of my research was to discover how tutors were giving, and how students were using feedback and what professional development was required for tutors to help bring about an improvement in student reflection on clinical feedback and to help understand how a more collaborative approach could be encouraged.

This was a small-scale study with small numbers interviewed, but I was able to gain rich data by triangulation of data collection methods. Because I had already studied the written comments before the interviews, I was able to ask both tutors and students about the different types of comments made. I was also able to follow up tutor claims about the type of verbal comments they gave by observing several tutors giving feedback on the clinic. A staff training day took place to address some of the issues uncovered, followed by a focus group to elicit further staff training needs. This mixed methods approach allowed a deep exploration of the issues faced on both side of the feedback process, and the development of ideas to improve the process. I have divided the discussion into sections based on the research questions.

5.2 How can Reflection be improved through giving High Quality Feedback, and what is meant by High Quality Feedback?

An important factor in assessment is whether the students view feedback as a formative or summative process (Eva et al.,2016) and many students and tutors place more emphasis on the summative purpose (Sinclair & Cleland, 2007). Some of the students interviewed were placing all their emphasis on the DNI they received, viewing feedback as summative assessment rather than feedback for their own development, and were therefore not reflecting on their feedback.

Perhaps students are unaware that they should be reflecting, and it is likely they do not know how to do it. As Boud (1999) suggests, students do not reflect unless they are shown how to do it. Most of the tutors that I spoke to were unaware that they should be encouraging students to engage in reflection. However, there was some evidence of students going back and looking at feedback in order to use it to improve next time, so there was some type of reflection occurring, depending on the definition of reflection.

Reflection can be useful to help students build new knowledge and question new concepts based on the knowledge they already have, as described in the theory of 'reflection as epistemology of practice' (Ng et al, 2015; Kinsella, 2010) and reflection on both self and others could be important in the construction of this knowledge.

Biesta (2015) suggests that there is a focus on the qualification aspect of education both by students, tutors and the institutions alike, which suggests the students are motivated by grades and qualifications and are therefore externally motivated. In contrast ten Cate et al. (2011) suggest that most individuals naturally want to develop themselves and grow, suggesting intrinsic motivation is the natural state. Perhaps this desire is driven by context. If students are in an environment where grades and exams are what they are judged by it is unsurprising that their focus will turn to this. If external rewards (in this case DNIs) are removed it would be likely that extrinsic motivation would move some way towards intrinsic motivation. Biesta (2015) describes the other functions of education as subjectification (the individual growing as a person and taking responsibility and initiative) and socialisation (becoming familiar with the culture and profession). If the external rewards are removed and qualification becomes less of a focus for students then perhaps the individual begins to become more responsible, less focused on getting a good grade and more focused on learning and doing something well for the sake of it, i.e becoming intrinsically motivated.

The students that I interviewed were not engaging in reflection to aid them in the self-assessment of their performance, which is a major reason to reflect (McKimm, 2009). It is important for students to be able to evaluate their own competency, to help them judge efficacy and to set their own goals (Nguyen & Ikeda, 2015). But students at the Dental School appeared to be relying entirely on their tutors to tell them whether they had done something correctly and did not appear to be interested in autonomy. They appeared to be missing out on many of the benefits of reflection for self-assessment, which are crucial in order to allow subjectification (growth of the individual) as described by Biesta (2015). In much of the literature, reflection is described as something that is done after the feedback has been given, but the contemporary emphasis on a dialogic feedback process (Molloy et al., 2019; Denny et al., 2019) suggests that reflection could take place as part of the feedback process, aided by the tutor. The student needs to reflect in order to know what feedback to ask for, so they need to be reflecting before the feedback process as well as during and after.

Students need to be taught these skills early in the course they are studying for and it should be an integral part of the course (Henderson et al., 2019; Molloy et al., 2019).

5.2.1 Engagement with feedback.

As well as reflection being important for self-assessment, it is also required for deep learning as through a constant re-assessment of prior knowledge processing of new ideas will be allowed (Ohlssen, 2011). This questions how students that are not currently using reflection as a tool for self-assessment or learning can be encouraged through feedback to engage in meaningful reflection.

Milan, Dyche and Fletcher (2011) suggest that students think of themselves as passive in the feedback process, which was confirmed by the student responses in my interviews. Only two of the tutors commented that they thought dialogue was one of the purposes of feedback. If

tutors don't think of feedback as a two-way process then it is not surprising that students don't either. Some authors suggest that this approach is being replaced by a shift in focus, away from the unidirectional teacher centred approach of the educator giving, and the learner receiving the feedback (Henderson et al., 2019). It appeared that this unidirectional approach was the way that tutors and students viewed the feedback process. Students need to understand that they can take an active role in the process and thus of the importance of dialogue in terms of being able to ask for the feedback they need, and to clarify issues they do not understand. It is also helpful for the tutors in terms of checking that the student understands their feedback.

A two-way dialogue with the tutor can help the student move from the periphery of the dental learning community to the centre. Although both tutors and students seemed to regard feedback as a unidirectional process, this was contradicted in the observations, where some good examples of coaching conversations were witnessed. Only a small number of tutors were observed, but they all displayed a dialogic approach. Perhaps this was not alluded to in interviews because feedback was thought of as the written or verbal comments given by the tutor to the student, and the conversation between them was not thought of as feedback because the unidirectional aspect of feedback is so deeply entrenched in people's way of thinking. Winstone and Boud (2019) suggest that educators base their ideas of feedback on their own experience, so it is not surprising that the unidirectional approach to feedback endures. Unless otherwise educated, tutors will continue to pass on this approach to students. For this reason, staff development and education of students to think of feedback as a collaborative process, is required.

The students that I spoke to were in their third year of studying, having only just started working on the clinic (dentistry is a 5 year course in the UK). This could explain why they did not approach feedback as a two-way process, as Bowen, Marshall and Murdoch-Eaton

(2017) suggest that senior students are more willing to ask for feedback than junior students. However, senior tutors suggested that more experienced students did not often ask for feedback either.

To encourage more active engagement in the process leading to student autonomy there needs to be a two-way process of feedback, but this cannot be done purely through written comments because there is not enough time for tutors to engage in written dialogue and students are not required to respond to the comments on LiftUpp.

However, from the observations I noticed that some tutors are engaging in dialogue through their verbal feedback, asking important questions, such as "What have you learned today?" "What would you do differently next time?" "Could you do that without help next time?" It is not possible to know how widespread this is across all tutors. One of the tutors complained that students were not aware that they were being given feedback, not counting a detailed conversation about what they need to do differently as feedback.

The BDS programme director talked about how he wanted tutors to encourage students to work out for themselves what they needed to do differently and why. He talked about how written comments should be used as an aide-memoire of the coaching conversation that would ideally take place. This conversation should encourage the students to reflect on where they are, where they need to be and how they can get there. Ideally they will work this out for themselves. Initially they will need more help working this out, but as they progress they will become better at reflecting and working out for themselves what they need to do differently.

5.2.2 Reflection on feedback.

As Nguyen and Ikeda (2015) point out, students need to have something concrete to reflect on about how they can improve. Plakht et al. (2013) suggest that students need help understanding whether they are performing at a level where they should be, so they do not

compare themselves to more experienced students. If students do not know what they have done wrong reflection alone may not be enough: they might need an expert to tell them where they are and what they need to do in order to get to where they should be in terms of learning outcomes (Gadbury-Amyot & Draper, 2016). Carless and Boud (2018) suggest that there is now a perception amongst students that they are consumers and they think it is up to the tutor to tell them what to do to achieve well. If this is the case, students are missing the point that they will benefit from being more involved in the feedback process and learning how to work things out for themselves. However, the students interviewed did not give this impression, and it seemed unlikely that this is the reason that these particular students have a passive approach to feedback. It would appear to be more related to the fact that they are approaching feedback as an assessment, that is, if they have done something inadequately they expect to be judged on that and told what they should do differently next time. In order to change this approach from the students it is necessary to change the approach from the entire institution.

Initially coaching was not something that I considered when looking at feedback given. However, this emerged through conversations with the senior tutors and the programme director as the approach which would be most appropriate for staff to take. It appeared that the majority of tutors were not aware of this. The idea of the coaching approach was introduced by the psychologists who came to teach tutors on the staff training day and was a new approach for tutors. Coaching is a way of encouraging students to engage in reflection on their performance, and to consider how they can improve with the support of the tutor (Carless & Boud, 2018). However, clarity is required on what level of reflection is being encouraged and how exactly reflection is being defined.

It is difficult to say whether reflection is taking place, as it is not even easy to define reflection. Ng et al. (2015) question how to measure reflection. From my research there is **some** evidence of **some** level of reflection taking place by students, even if they are unaware

that they are reflecting. This was only measured by students self-reporting based on their recalled actions after receiving feedback. Some of them appeared to be thinking about their feedback, how they could use it to improve, and some even about how they were reacting to their feedback. This gives an indication that although it is difficult to measure reflection as Ng et al. (2015) point out, it is possible to establish that there has been some level of reflection taking place.

Both tutors and students suggest that one of the main purposes of feedback is improvement, which is in line with the wider literature (Fernando et al., 2008; van de Ridder et al. 2008) but some students failed to realise that the improvement would come through understanding and using the feedback, reflecting on what they could do better next time, rather than just looking at their grade (DNI). It appears that currently, written comments in LiftUpp are not providing students with ideas for reflection, as most comments are purely administration or assessment with only 26% telling students what to do to improve. More than half of the written comments were of a purely assessment type, which corresponds with the belief by some tutors and students interviewed that feedback is a form of summative assessment.

5.2.3 How to improve reflection.

One way of changing the focus away from assessment could be removal of 'grades' and since my research was carried out the external 'rewards', in this case the DNIs, are no longer visible to the students to encourage them to focus on the written comments and discussion with the tutor. Some of the students were very upset by the DNIs and perhaps would benefit from seeing the feedback without grades. One recent study would back this up, as it found that students were more confident when grades were removed and only comments given (Lipp et al., 2017). Further research will be required to understand the impact of removing the DNIs from the LiftUpp interface.

The literature suggests that it is just as important for students to reflect on their emotions which can lead to a greater understanding of oneself (Branch & Paranjape, 2002) as it is for them to reflect on how to improve (Sargeant et al., 2008). In relation to this research it is therefore important that students are reflecting on their emotional response to feedback. This would suggest the need for a form of reflexivity. From what the students told me about how upset they sometimes became over what they considered to be a bad assessment, the opportunity to reflect on their feelings could prove very helpful. However, it is not known how tutors would cope with giving this level of emotional support to students, and they may require further training for this. Bulman, Lathlean and Gobbi (2012) posit that tutors could also benefit from reflection on their feelings, and that the feelings of students and tutors should be given just as much attention through reflection as the creation of knowledge. Tutors reported incidences where they felt uncomfortable with a student's response to feedback and may need training with how to deal with difficult conversations.

As Noble et al. (2019) suggest however, it may be not very effective to improve the actions of tutors without looking at the actions of students as the feedback process involves a symbiotic interaction between the two. An educational alliance, where both tutor and student feel they are working towards the same goal could help to remove uncomfortable feelings on both sides. Telio et al. (2016) suggest that a quality alliance, based on mutual trust will allow students to discuss their inner feelings with tutors. This is something that many tutors might view as an alarming prospect, currently, but with further training they might be able to use this to move forward productively with a deeper understanding of the students' needs.

Sandars (2009) suggests that students may not understand the goal of reflection and my study would confirm this. Clearly, clarity on the goal of reflection is important for tutors to be able to guide students in reflecting. As previously mentioned a deeper level of reflection is required to allow students to reflect on all aspects of the feedback process as well as how to

improve their performance, and to help them to set goals. Tutors have had a training session on giving feedback and training sessions have since been introduced for the students to help them to understand how they think about feedback, and to encourage a deeper level of reflection on a par with the definition by Nguyen et al. (2014).

One suggestion from the interviews was that students could be asked to write a reflection on their feedback. If thoughts are written down we can say that the student has written a reflective piece and are able to read what they have written, but if they say verbally that they have reflected, it is difficult to know whether they mean they were reflecting constructively or just worrying about their performance. However, written reflection used in assessment has limited use; if it is read by a member of staff it becomes an act of 'confession' (Ng et al., 2015) and the student loses the ability to write freely. It is not possible to reflect without involving feeling (Boud, 1999) and students may benefit from knowing their reflection will not be looked at by someone else. It is important for students to reflect on their feelings, particularly if they have had a negative reaction to feedback, but if students know their reflection will be read it will affect what they write and they may not be truthful. Similarly, reflection that is assessed or too highly structured will prevent free thinking (Boud, 1999).

The suggestion by the BDS programme director that students should make their own private notes following feedback conversations with tutors would be a good compromise. Steps are being made to encourage reflection by students with training by a psychologist and greater academic advisor involvement. These interventions will address student engagement and reflection with feedback, but one might question how the feedback itself can be improved.

A coaching approach is what is required to encourage autonomy in students, otherwise they will never be able to assess for themselves when they have carried out a satisfactory procedure. Orsini, Evans and Jerez (2015) described the important aspects of autonomy

relevant to feedback, as responsibility, decision making, freedom and active participation. It helps if they can be a part of the process and be able to recognise whether something has gone well or not, and to set their own goals for improvement.

5.2.4 High quality feedback.

When analysing my data it became clear from the themes that some of the data resonated with aspects of self-determination theory (ten Cate, Kusurker & Williams., 2011) which suggests that intrinsic motivation is required to promote deep learning, better performance and emotional well-being. Deep learning is required by students to help them retain their knowledge for life: better performance is a major reason for giving feedback; and emotional well-being is essential for all students. Within the Dental School, we therefore want to encourage intrinsic motivation, and to supplement extrinsic motivation such as grades. Students should want to perform well because they want to perform high quality dental work rather than because they want to get a good grade. Motivation alone is not enough to promote deep learning, the context in which the students is working will also be a factor. For this reason, a quality alliance between the tutor and the student is important so the tutor can help the student process information and new ideas within the particular clinical environment they are working.

Deep learning involves a constant re-assessment of what has already been learned in order to process new ideas (Ohlssen, 2011). As already mentioned, it appears that the students interviewed were driven by extrinsic motivation (external reward of 'grade' and ultimately, qualification) and may not have stopped to think about how they are improving in performance and growing as a person and as a trainee dentist.

The requirements for enabling intrinsic motivation are described as autonomy, competence and relatedness (ten Cate, Kusurkar & Williams., 2011). Autonomy and competence are both

concepts that can be encouraged through high quality feedback, autonomy through greater involvement in the feedback process (ideally a dialogic process with formation of a quality educational alliance between tutor and student), and competence through feedback that tells the students specifically how to improve. Relatedness (engagement with the process) is discussed under section 5.3.2 on professional development of staff.

Orsini, Evans and Jerez (2015) in their investigation of how 'self-determination theory' can be used in the clinical environment suggested that providing optimal challenges and structured guidance, valuing students' work, and giving positive and constructive feedback will help to improve competence. All of these aspects can be addressed through feedback but the feedback needs to be good quality to be useful. Students mentioned the importance to them of having their work valued, and felt praise was a hallmark of good feedback. In an outcomes-based curriculum, where the students are aware they have to reach the level of a 'safe beginner' to qualify, good feedback is important to give the student an understanding of their ability to perform at a required level. The emphasis needs to be on how they can improve, rather than leaving them thinking that they cannot perform a certain procedure. This is what will lead them to become better dentists.

The students interviewed said that they wanted specific comments, which is suggested in the literature as being important for improving performance. (Shaughness et al., 2017, Bösner et al., 2017). Some authors suggest that good feedback should highlight strengths as well as weaknesses (Fernando et al. 2008) and students interviewed wanted comments telling them why something was good as well as how they could improve. They also wanted some comments giving them praise to prevent them from becoming despondent.

One study (De Beer & Mårtensson, 2015) found that most feedback comments were critical, in agreement with the students interviewed. Interestingly, there was actually very little

difference between the two in the written comments that I analysed, with 21% of the written comments appreciative, 23% critical, and 5% containing both appreciative and critical assessment within one comment. It would seem that students remember the negative comments more than the positive, perhaps because they have a greater emotional response to the negative. The students I interviewed were self-reporting their reactions, so they might be remembering how they felt differently from how they actually felt at the time. Perhaps LiftUpp could be altered to give prompts such as 'what you did well' and 'what you could do differently' so that it directs tutors to give more useful comments.

Students want appreciative comments and tutors also feel it is important for students' self – esteem but there is disagreement over the usefulness of this type of comment. Whilst Embo et al. (2010) suggest that lack of appreciative comments can lead to students viewing feedback as a negative process, De Beer and Mårtensson (2015) claim that those receiving appreciative comments did not improve as much as those receiving corrective, critical comments, and Plakht et al. (2013) suggested that positive feedback, confirming what had been done well, could lead to students overestimating their performance. A balance is required to ensure that students do not become despondent through lack of confirmative feedback but do not become overconfident through too much praise. It is likely that each student will respond differently so this balance is difficult to achieve.

High quality feedback is therefore specific and encourages students to be involved in the process of working out how they can improve, and to reflect on their performance and their reaction to their feedback. My research leads me to agree with Tekian et al. (2017) who suggest that feedback should move away from tickboxes and formal polite comments to meaningful conversation.

5.3 What Professional Development of Staff could improve the Feedback Process?

Some of the tutors appeared unsure about what was expected of them in regards to giving feedback, and wanted further training. I also discovered the importance for the students of their relationship with the tutor, and how the human touch and the emotional responses play a large part in the interaction that informs the feedback process.

Clinical students are believed to learn in a 'communities of practice' model (Lave & Wenger, 2000) which fulfils the socialisation aspect of education (Biesta, 2015). The social interactions that they have on clinic with patients, other students, dental nurses and tutors all contribute to the learning of the students, so the way in which tutors act on clinic is really important. As well as clinical skills and academic knowledge, dental students also need to learn softer skills such as communicating with patients and other members of the clinical team. Tutors need to be good at these skills so that students can learn from them. Some tutors do not seem to be aware of the impact they can have on students so this needs to be built into staff development also. Tutors also need to understand the importance of forming an educational alliance with the students, uniting to form a common goal so that good feedback becomes the responsibility of both tutor and student.

5.3.1 Tutors learning to use a coaching approach.

It is not surprising that the tutors interviewed were unsure of the expectations for giving feedback as it is common for clinicians to have had very little or no training as educators, so they cannot be expected to know how to give good feedback (Clynes & Raftery, 2008). The tutors that I interviewed thought they were giving feedback that told students how to improve but some students did not feel that this was what they were getting. It has been noted that there can be a difference between what a tutor thinks they have given as feedback and what the student thinks they have received (Ozuah, Reznik & Greenberg, 2007). This suggests a

need for a dialogic approach so there can be clarification of feedback given, and the opportunity for students to ask for the specific feedback that they want. Perhaps it would be useful for students and tutors to watch their own feedback session so they could analyse it afterwards. Tutors also suggested that their written feedback was a summary of their more extensive verbal feedback. This was not reflected in the analysis of written comments, however, as 74% of comments were either administration or assessment type comments with no suggestion of how to improve. One of the aims of the training day was to help tutors understand how the written comments are used, and to explain what is required from them in terms of giving feedback. During the focus group, tutors commented that they had found my presentation useful, which led me to understand that tutors were not aware of how students were using their feedback or of exactly how they, as tutors, should be giving the feedback. Tutors seemed to be unsure of how the assessment element fitted with the feedback for improvement. This was actively discussed in the focus group, with tutors agreeing that in reality both were required: an element of assessment for the progression board meetings; and an element of what the student needs to do to improve. They agreed this was difficult to do in a short comment, which is why staff training is so important.

At the staff training day, coaching was covered, and tutors in the focus group afterwards discussed the need to be engaging in coaching style feedback. Previous to the training day, most had been unaware that this approach was required. This was most likely because they had always viewed feedback as a unidirectional process, because that was how they were taught. Tutors suggested that there wasn't time to write a long comment that encourages reflection by asking coaching-type questions. This issue of time was reflected by tutors in the interviews. On some clinical sessions there may be almost no time at all if other clinical issues need to be resolved, and other times, when the clinic is very quiet, a tutor might have

plenty of time to discuss feedback in great detail. However, there is not really another option for the daily feedback to be given at any other time.

Teaching tutors how to use a coaching approach gets to the heart of all issues related to feedback and reflection and gives tutors a clear approach to work with. Boud & Walker (1998) suggest there is a lot of poor practice in education which is labelled as reflection, so there is a need to educate tutors as to what the goals are for student reflection. The guidance provided is more important than the method used for reflection (Chaffey, de Leeuw & Finnigan 2012). Students are relying on the tutors to guide them in how to reflect, so extensive staff training is required. Baernstein and Fryer-Edwards (2003) found with medical students that an interview alone was as effective at getting students to reflect as was writing followed by an interview. This fits with the coaching approach taught on the staff training day but tutors need to understand how this coaching conversation can be related to the written comments required. Further training is required to help tutors work out an approach to this.

5.3.2 Tutor student relationships.

Several of the students interviewed highlighted the effect of the relationship between the tutor giving and the student receiving the feedback, which is important in terms of efficacy of feedback (Wilson, 2013). They even suggested that their performance could be affected merely because they had a tutor on the clinic who made them feel nervous. In some cases students were reluctant to ask for help and advice for fear of criticism. Similar claims are made in the literature (Bowen, Marshall & Murdoch-Eaton, 2017) but tutors are not aware of how their demeanour can affect the students. Some tutors are perceived by students as easier to approach than others (Milan, Dyche & Fletcher, 2011), and this was confirmed through my research. Again this strengthens the argument by several authors recently (Telio et al., 2016; Denny et al., 2019) that a strong alliance between the tutor and student is important in the

feedback process. In the interviews, students talked of tutors whom they were too scared to approach, and they would sometimes ask another student if they were not sure about a procedure rather than speak to the tutor. This would not only be bad for the student, but also could have a detrimental effect on the patients being treated. Students talked about how they were able to ask some tutors lots of questions and would learn much more from an approachable tutor, and how they appreciated the emotional support given by some tutors. Another important element of staff training should be the pastoral support element of being a tutor. Students were confirming the importance of an educational alliance to them.

Although the clinic may not be the ideal place for giving feedback (Peacock et al., 2012) there are many opportunities for informal feedback whilst working on the clinic (McKimm, 2009). However, students may not appreciate that informal feedback in a conversation is actually feedback (Clynes & Raftery, 2008) so students also require training in receiving feedback and acting on it. The Dental School has since set up sessions for students with a psychologist learning about how to use their feedback to reflect.

Orsini, Evans and Jerez (2015) describe how tutors can encourage relatedness (engagement with the process) by respecting students, giving emotional support and acknowledging students' expressions of negative effect. Trust is required between the students and the tutor and the relationship between them is an important element of this, as is the opportunity for the student to reflect in a way that is most beneficial to them, supported by the tutor. Trust is the basis for a successful educational alliance, and this is often based on the perceived credibility of the tutor by the student (Noble et al., 2019).

Some tutors struggle with the interaction with the students. Fear of upsetting students is a reason suggested for tutors not always giving the accurate feedback they feel a student deserves (Hesketh & Laidlaw, 2002). This is unsurprising, as poor reaction to feedback by

students is highlighted in the literature (Hesketh & Laidlaw, 2002) and was mentioned by the tutors interviewed as another problem that they encounter with giving feedback.

Interestingly, in my research tutors interviewed felt they were giving fair feedback to students but students often thought it was very negative, or even punitive. It did not appear that many tutors were aware of the emotional impact on the students of the feedback they were given, although some did mention students reacting poorly to feedback they considered to be negative. Having difficult conversations was another issue that was addressed at the training day. Telio et al. (2016) suggest that students are more willing to take a critical comment from a tutor who they believe to be credible and whom they trust, so it is important that tutors realise that their willingness to form an alliance with students has a direct effect on how well students will respond to feedback.

One of the issues addressed in the staff training day was how to have conversations with students, and this was confirmed as being useful by the participants of the focus group.

It was suggested that online training for tutors would be useful as it would be available to everyone but the face to face discussions were preferred as tutors could share issues to come up with solutions. Tutors highlighted the importance of coming together with tutors from other departments that they rarely had the opportunity to speak to, as they all shared the same experiences regarding giving feedback to students. It is clear that further training is required in specific areas, both online for reference and face to face training, to allow tutors to engage in discussion.

In summary, professional development of staff is required to help tutors understand what is required of them in terms of giving feedback and to help tutors understand the impact of the feedback on students and the effect of their relationship with the students. Learning how to coach students and how to form an alliance with students should be at the forefront of staff

development. A programme is required to raise awareness of these issues, with ongoing training of specific subjects both via training days and online resources. However, it is not sufficient to train tutors. In order for a new dialogic approach to the feedback process to be more widely used, it is important that students are also trained in this approach early on in their course and that their training is considered to be an integral part of the course (Winstone et al., 2017b).

5.4 How can Data Collection and Analysis be used to improve the Feedback Process?

At the Dental School, LiftUpp is used for qualitative and for quantitative data storage and both are used to help with progression decisions. It is very helpful to have the written comments (qualitative) to qualify students' low DNIs (quantitative) on clinic so that those at progression meetings can decide whether the DNI reflects a one-off problem, or the same problem continuing, or if it describes something serious where an intervention is required. The students are aware of this use for LiftUpp data and this feeds into their anxiety relating to LiftUpp data and feedback. However, the main purpose of the written comments is to act as a developmental aid for the students.

LiftUpp could also be used by the Dental School to find out what kind of feedback tutors are giving to students. This is the only way the Dental School has of knowing what kind of feedback the students are being given, unless tutors are observed giving feedback. There is some peer observation that takes place, but that can be in any of the educational settings, lectures and seminars as well as on clinic and the information is not stored and analysed but given privately to the individual observed for their own personal use and benefit. So the only information collected by the Dental School about feedback given is via the LiftUpp app. This data is then readily available and can be analysed to see the types of feedback comments that

are written. This has not been done previously, which is why I wanted to do this to complement the information I was collecting through interviews.

There was anecdotal evidence that senior tutors at the Dental School were not happy with the written comments given, believing that many of the comments were not really helpful to students, and comments have been made in the Staff Student Liaison Committee meetings about poor quality feedback in some areas. This was also confirmed by the low number of developmental type comments found in my research. I wanted to further explore how data collection tools such as LiftUpp could be used to help improve the quality of the feedback given on clinic.

Most research into use of learning data so far has been quantitative (Schumacher & Ifenthaler, 2018) as this is much more straightforward to carry out but does not really enable exploration of the issues faced by the students and tutors (Verbert, et al., 2014). I wanted to gain a deeper insight by looking qualitatively at the feedback given via LiftUpp and analysing the written comments to provide a deeper understanding of the process and following this up with interviews.

Avella et al. (2016) suggest that the analysis of comments by tutors can be used to help improve feedback by informing staff development. This was one of the things that my study aimed to do. As Fiaidhi (2014) comments, qualitative data is messy and more complicated than quantitative data to analyse and this was something that I found when looking at the written comments.

Although my research was mainly qualitative, when looking at the written comments I also looked at the number of each type of comments as it was useful to understand what percentage of comments were developmental (26%), the type of comment most useful to the students interviewed.

I was interested in comparing my results with other studies looking at types of written comment used for training clinicians. Bussey and Griffith (2017) in their research into written comments given to surgical trainees split their comment types given by the doctors they were working with into three groups according to how the doctor had acted; mentor (similar to my 'developmental' group), examiner (similar to my 'assessment' groups) and administrator. They found 19.8% of the comments they looked at were what they labelled 'mentor' type comments, which was not far off from the 26% 'developmental' within my research. However, they differed greatly with their examiner, only being 5.5%, compared to 49% for my 'assessment' groups joined together and their administrator being 74.7%, whilst my administration group was only 5%.

One difference between the studies was that I was looking at undergraduate students, compared to Bussey and Griffith's qualified young doctors who were undergoing further training. This would perhaps account for the fact that the tutors in my group felt they should be acting in an assessment capacity. This could also be because tutors and students at the Dental School associate feedback with assessment rather than development. It was interesting that there was a similar percentage acting in a mentor/developmental role. In both groups this was much lower than desired. As Bussey and Griffith (2017) comment, the main purpose behind the written comments is to give the students/trainees something to reflect upon, and therefore there needs to be a big increase in the number of these types of comments.

Another study that looked at different types of written comments was carried out by Shaughness et al. (2017) who looked at undergraduate medical students. They used a different approach for considering different types of comments and split their groups into either corrective or encouraging (praise), and specific or vague.

91% of the feedback was encouraging, and 34% corrective, 81% non-specific and 20% specific. The results were not mutually exclusive as some comments contained more than one type of remark. They have analysed the comments in a different way from my analysis, so it is not easy to compare directly but it can be seen instantly that they have a much higher rate of encouraging (appreciative) comments than the comments that I looked at.

The students in Shaughness et al.'s (2017) study chose which procedures to ask for feedback for, so perhaps the high percentage of encouraging comments was because they were deliberately asking for feedback on something they had done well, which defeats the object of developmental feedback. Perhaps they only want feedback that they know will tell them they have performed well to boost their self-esteem. It would seem that students need training to receive feedback (Burgess & Mellis, 2015) in order to help them understand that it is for development, and that praise, while nice to receive and maybe helpful for self-esteem, does not help students to develop and improve. Not surprisingly, Shaughness et al. (2017) found specific comments to be more useful, which was something that student participants in my study also said.

Shaughness et al. (2017) commented on how they did not know what verbal comments were given, similar to my own study, which was why I decided to carry out observations. Perhaps there are ways of using data collection systems such as LiftUpp to record verbal comments given on clinic as this would help create a record of these. Another comment made by Shaughness et al. (2017) which was also mentioned by the tutors that I interviewed was that the brevity of a written comment would prevent a very detailed description of how to improve. The tutors interviewed described how the current LiftUpp usage suggested that only a short comment, maybe a sentence or two, was required.

In my study the quantitative element, the percentage of developmental comments, can be looked at and compared, for example before and after a training day, to check whether there has been an impact in terms of increasing the number of developmental type comments.

Data analysis can be useful to look at the different patterns of feedback comments. The data can then be fed back to tutors so that they know exactly what is required of them; that is, to give written feedback that is developmental. Having the percentage of developmental comments given in a particular time period can be useful to illustrate to tutors to what extent developmental comments are being given. It was useful to explain to tutors during the training day that when the data was collected they were mostly giving assessment type comments and to discuss why this was happening.

The Dental School would like the students to focus on the comments pointing to improvement rather than the DNIs, but currently there are not enough of this type of comments. Now that DNIs have been hidden from students, perhaps students will focus more on the comments, so these need to be of good quality. Since my research, there is now a prompt on LiftUpp in the area where the tutor gives a comment, saying 'please give feedback to aid development'. It will be interesting to see whether these two changes will improve the quality of written comments on LiftUpp and further research is desirable.

My research was carried out before a coaching approach had been taught to the tutors and before I had presented my research explaining the types of comments that were required, so it would be useful to continue the research and look at comments again to see how they have changed since then.

Addressing affective issues is one of the challenges of using technological applications, in this case the LiftUpp application, to improve how students feel about the feedback they receive, and how they subsequently act upon it. Technology in itself creates a distance that

needs to be bridged by human interaction. Carless and Boud (2018) posit that there is a risk that technology-assisted methods like LiftUpp encourage a one-way approach. Therefore it is crucial that a way to integrate the human touch into the process is developed. There could also be a potential to consider audio recordings of feedback to be stored on LiftUpp. The comments can then be used both as a reflection tool for students and as a quality control tool for the institution to look at the quality of comments by tutors and the comments made by the students and to use this to inform staff training.

5.5 Conclusion of Discussion Chapter

Students can be encouraged to reflect, but it is important that they have something to reflect on which will guide them in a developmental manner. Ideally they will engage in a deep form of reflection, not only reflecting on how they can improve their performance, but also on how they are reacting to feedback, so that they can begin to develop other valuable skills such as self-awareness. It is recommended that they need training to reflect appropriately, and to help them understand their part in the feedback process, ideally being able to form a quality alliance with the tutor to help them set goals.

Tutors were aware that they could be giving better feedback and were keen to have training so they could achieve this, as there was a general consensus that they were not really sure what was expected of them. A staff training day was found to be a useful approach to deliver information to tutors about the type of feedback being given at the time and to help them understand what was required, that is, a coaching approach. It is recommended that further training, both face to face and online is provided for tutors to help them understand how they can form an educational alliance with the students to improve the feedback process.

Staff development, in terms of a deeper understanding of the feedback tutors are giving, and its effect on students, and training in how to give high quality feedback, is key to the

successful use of analysis of written data to encourage reflection, as the quality of the feedback is crucial. In turn, analysis of written feedback comments can assess the quality of feedback and inform further staff development.

Ten Cate et al. (2015) suggest the natural state of a learner is intrinsic motivation, but Biesta (2015) posits that extrinsic motivation has taken over due to qualification being perceived to be the most important aspect of education currently. Although there may be many students who do have intrinsic motivation, it is likely that focus on grades due to the perceived importance of qualification as a function of education, will result in a higher level of extrinsic motivation than if there were no grades available. It would seem likely that intrinsic motivation and a desire to do well, and improved performance because it is the right thing to do when treating patients, would take priority if grades were removed. Without grades the students would be able to increase their focus on reflection, both on how they could improve and on their own reaction to their feedback.

In Ng's 'reflection as epistemology of practice theory'(Ng et al., 2015) it is suggested that students are developing knowledge through reflection that questions assumptions and frames or re-frames situations and considers the way forward. In order for this to occur they need to be reflecting on their performance and on their own feedback literacy. At the time of research student were not receiving the guidance they needed to be able to do this and were focusing on grades. Removal of grades alone would not be sufficient to enable students to engage in deeper reflection, even if it did increase their intrinsic motivation. They need help from tutors, which is why tutor and student training is required to help form quality alliances where the feedback process becomes the responsibility of both tutor and student.

Figure 2 (below) shows how I have linked my results to the theory of reflection as epistemology of practice (Ng et al., 2015), self-determination theory (ten Cate, Kusurker &

Williams, 2011) and Biesta's (2015) theory that the current focus in higher education is on qualification rather than subjectification and socialization. Although there is an apparent tension between ten Cate's suggestion that individuals have an innate desire to improve, and Biesta's belief that students are mainly motivated by grades, this can be used to come to the conclusion that removal/less reliance on grades would allow students to return to a more natural state of self-improvement for its own sake.

The top layer of the model represents the theories, with the second and third layers focusing on how my research relates to the theories, the fourth layer giving the related findings from my research, and the fifth layer, related recommendations.
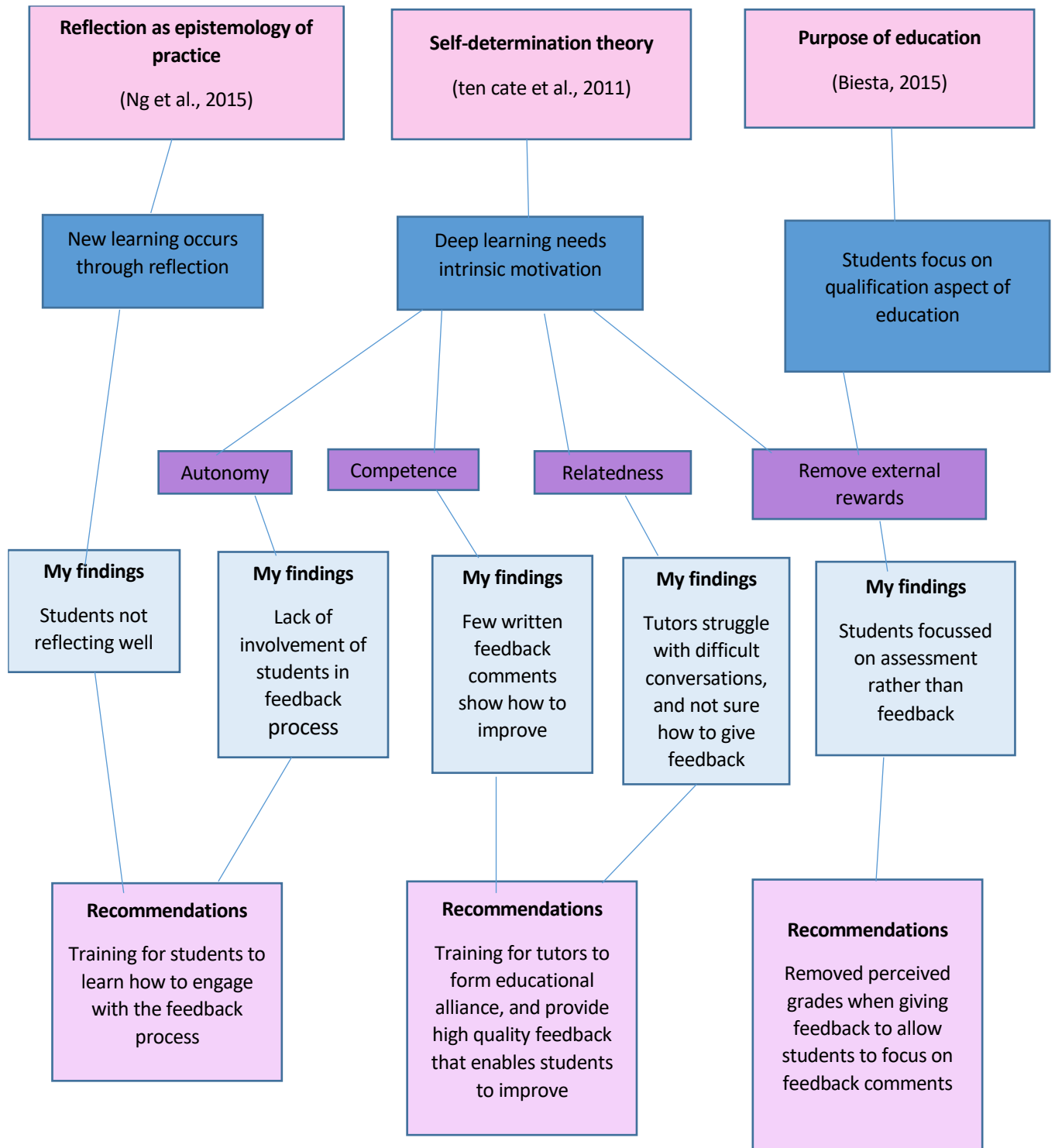
Reflection as epistemology of practice

(Ng et al., 2015)

Self-determination theory

(ten cate et al., 2011)

Purpose of education

(Biesta, 2015)

New learning occurs through reflection

Deep learning needs intrinsic motivation

Students focus on qualification aspect of education

Autonomy

Competence

Relatedness

Remove external rewards

My findings

Students not reflecting well

My findings

Lack of involvement of students in feedback process

My findings

Few written feedback comments show how to improve

My findings

Tutors struggle with difficult conversations, and not sure how to give feedback

My findings

Students focussed on assessment rather than feedback

Recommendations

Training for students to learn how to engage with the feedback process

Recommendations

Training for tutors to form educational alliance, and provide high quality feedback that enables students to improve

Recommendations

Removed perceived grades when giving feedback to allow students to focus on feedback comments

Figure 2. Recommendations for improved feedback based on results from my study linked to educational theories

6 Conclusion

The focus of the study was to make recommendations on how feedback can be improved in terms of how it can be used to encourage reflection. These recommendations are made in terms of staff and student development.

6.1 Key Contribution to New Knowledge

My research highlighted the very low percentage of developmental comments given via the LiftUpp app to undergraduate dental students on clinic, and demonstrated a need for staff development in this area. One of the original aims of the LiftUpp app was to provide developmental comments, but at the time of this study many tutors were not giving comments of this nature. The study also uncovered the fact that many of the tutors felt they wanted and needed more training for giving feedback, and some viewed feedback as unidirectional rather than an alliance.

My research also demonstrated that some of the undergraduate dental students at the Dental School were not reflecting on their feedback and did not consider feedback as a two way process, rather something that was given to them. As the students seemed to be more interested in their grades (DNIs) it was concluded that this assessment approach was reducing their feedback literacy and preventing them from viewing feedback as a dialogue.

From my study I would conclude that training for both tutor and students would be beneficial, to develop a dialogic approach to feedback, with a move away from the perception that feedback is mainly for assessment purposes to the belief that it is developmental.

My main contribution to new knowledge is to highlight the lack of quality written comments given as feedback in one dental school, and the reason behind this, that is more training is required. This needs to be built on by looking at other dental schools as it is likely that there is a similar pattern. This can help to build up a picture of training needs of dental tutors which

can lead to an improvement in training. An improvement in training of tutors is required not only in the quality of the written comments, but also to improve their relationship with students to form a better alliance to help students reflect and set goals.

My research also demonstrated the strengths of using different data sources (section 6.4).

6.2 Findings Compatible with other Authors

One of the most important findings compatible with other authors is the overarching tendency for students (and some tutors) to think of feedback in terms of assessment rather than of personal development (Sinclair & Cleland, 2007) in line with the current belief held by many that the predominant reason for education is obtaining a qualification (Biesta, 2015). In the minds of the students it appeared to be difficult to separate feedback from the assessment. The study confirmed that students think of themselves as passive in the feedback process (Milan Dyche & Fletcher, 2011), and will need encouragement and training to help them become more involved (Burgess & Mellis, 2015).

My interviews also confirmed that clinicians are not well prepared for teaching, giving feedback and having uncomfortable conversations with students (Hesketh & Laidlaw, 2002) and more training is required for them to give more developmental feedback, and to develop an alliance with students to help enable a coaching two-way approach to giving feedback. Students and tutors interview findings aligned with the literature (Fernando et al., 2008; van de Ridder et al., 2008; Archer, 2010; Hattie & Timperley, 2007) that feedback should tell students how to improve and be specific (Shaughness et al., 2017).

Tutors also need training to learn how to take the improvement required that is elicited through dialogue, and to put this in writing, so that the written comments reflect the conversation had with the students and act to remind the students what they need to do to improve.

6.3 Personal Reflection

If we look at Ngyuen et al.'s (2014) comprehensive definition (below) then perhaps the students are not reflecting as deeply as we would like them to, as they do not suggest they are reflecting on the way they think about feedback:

> 'Reflection is the process of engaging the self in attentive, critical, exploratory and iterative interactions with one's thoughts and actions, and their underlying conceptual frame, with a view to changing them and with a view on the change itself' (Nguyen et al., 2014, p.48).

In terms of my own reflections having completed the thesis, I think this is exactly the type of reflection that we want to encourage, as we want students to reflect not only on what they did and whether it can be improved, but also on how they respond to feedback given, how to ask for feedback, and how they can contribute to the feedback process themselves.

The above definition is an all-encompassing definition, and it is helpful for tutors to know whether they are expected to attempt to bring students to this level of reflection. It could be argued that this level of reflection leads to reflexivity (Holland, 1999), that is a deeper level of reflection taking into account one's own previous ideas.

However, if we instead take the GMC's definition of reflection (below) then we could say that students are reflecting if they are taking note of the feedback given to improve their performance next time, which some of the students said that they did.

> "Reflection is thinking about what you've done, what you did well and what you could do better next time. Reflection also means responding constructively to feedback from your teachers, trainers and colleagues" (GMC, n.d)

I concluded that Nguyen's definition of reflection would be a more appropriate definition when considering the student level of reflection, as it goes beyond them just improving on their performance and encourages reflection on their involvement with the feedback process.

By taking a qualitative approach to the study, I was able to carry out a deep exploration into perceptions that a quantitative approach would not have elicited. Interviews and focus groups with the tutors gave me an insight into how other tutors deal with the issues that I am faced with on a daily basis, so this was highly relevant to me and my day to day work. Interviews with students allowed me to see how feedback was perceived from the students' perspective, which was useful as I now have a better understanding of the impact that my feedback has on students.

My research findings were used to raise awareness amongst tutors and this was built on by the staff training provided, where a coaching approach to giving feedback was introduced to tutors. I was able to follow this up with a focus group to gain an understanding of what training tutors thought was relevant, which as a fellow tutor was something that was highly relatable for me. At this point being an 'insider' was highly useful as I could empathise with all issues raised. It was also interesting to notice the effect that my research had on the department where I work, as discussions that I had with different people about the research meant that changes were already beginning to be implemented.

For me as a researcher this study enabled me to understand the advantages of triangulation of data, and to become familiar with each of the methods used. It has also allowed me to immerse myself in the issues surrounding feedback and to understand these from the perspectives of my colleagues and the students. The findings of the study will affect the way in which I interact with the students and how I give feedback to them on clinic, now that I have a deeper understanding of what is required and how the students relate to their feedback.

6.4 Reflection on Research Methodology

One of the strengths of this study was the use of a variety of sources including self –reported (interviews), observation and automatically collected data (written comments) which meant that I was able to triangulate data collected. Observations were really useful to explore verbal feedback given but participants may have acted differently because they knew they were being observed, so it cannot be assumed that they always give feedback in this way. Perhaps the verbal feedback could be considered to be examples of the best feedback being given for this reason. In contrast the written comments were a true reflection of the feedback given at the time as these were looked at retrospectively, with no pressure on tutors to be giving their best performance. Interview data is subject to recall bias and to influence by the interviewer, which is why it was important for me to be reflexive in my data analysis, checking my expectations around answers to interview questions and being aware of how my own experiences would affect the way I interpreted data.

The methods used allowed for collection of three different types of data in terms of influence by the researcher. I had no influence on the written data as this had already been done before the research started. The interviews gave me opinions but not what was actually happening, these opinions cold have been influenced by my questions, and were only opinions, not what was actually taking place. Observations allowed me to see what was actually happening in terms of level of tutor and student engagement, and quality of feedback being given, although these conversations may have been affected by the fact that I was observing.

Semi-structured interviews were an appropriate tool to use for this research as they allowed a deep exploration of the perceptions of both students and tutors into many of the issues around feedback given on clinic. They allowed the interviewee to introduce new ideas that were relevant which I could then follow up with further new questions, probing deeper into issues

that they felt were important such as the obsession with the assessment element of DNIs. It was important for me to understand how this could detract from students looking at feedback in a constructive manner.

I found thematic analysis a good way to analyse the written data, as I was able to create themes from looking at the literature already available. When analysing the interview data, I drew inspiration from the literature and from my research questions to identify relevant themes. A focus group proved to be a really useful way to get people talking in a relaxed manner. It was interesting how the conversation took off, and I managed to remain uninvolved, just prompting with relevant questions. The observations were important also for triangulation of data, and to allow me to ascertain the type of verbal feedback given by tutors to see if it correlated with how they described the feedback they were giving.

Having completed the research and reflected on the methodology it has made me think that I could change some aspects if I were to do the same study again.

I could have administered a survey to all students to gain their perspectives on feedback, rather than interviewing a small group. However, I do not think this would have elicited such rich data. All of the interviews lasted at least half an hour and many were longer: this gave me the opportunity to ask questions about the comments they were making. A survey would not have allowed this interaction, and the understanding that I gained of the issues would not have been as deep. It is possible that I might have missed some issues by not including all students but I think that saturation was reached as the same themes were repeated several times and by the last interview no new themes were appearing.

After the training day it might have been useful to distribute a tutor satisfaction survey to all participants of the training group, to provide additional data on the training day. The focus group was a mix of tutors from different departments, including senior and more junior staff,

so I felt they were a good representation of the tutors, but a survey might have added to my understanding of issues such as how many tutors were unaware of how the LiftUpp data was used. In this case, however, I do not think numbers are important. If even one tutor does not understand a particular issue or would benefit from a particular area of training, then training should be provided for everyone.

6.5 Limitations of the Study

There were several limitations including the relatively small numbers interviewed and the fact that the only students interviewed were ones that volunteered, due to ethical considerations. It is difficult to know whether this group who volunteered for interview are representative of the whole student body at the Dental School where the study took place. As small numbers were interviewed not all students and tutors were represented, but I got very detailed descriptions from them. It appeared that the data was saturated as no new themes were emerging by the time I spoke to the last tutors and students. The study is not generalizable, as this was based only at one UK dental school, but thick descriptions were collected (Stake, 1978) so for other researchers it is easy to see whether the study will be relevant for other dental schools. For example, it is likely that the focus on the qualification aspect of education is widespread (Biesta, 2015) and it might make others think about the effect of additional feedback and reflection to enhance student learning.

The written comments on LiftUpp were analysed from one month only, but these totalled 1902 comments and were collected from all clinical areas representing all tutors across all departments. Again, this was from only one dental school so cannot be considered to be generalizable to other dental schools, as it is likely that tutors in different schools will have had different levels of training.

My bias, as an insider researcher, may have affected my analysis of results. As I work in the environment that I was researching, that is on the clinic and I am personally involved in giving feedback, I have brought my own ideas to the research. To combat the effect of this I tried to be reflexive and constantly ask myself if the results were as I expected and engaged in bracketing (Tufford & Newman, 2012), that is constantly checking in with my own underlying preconceptions to ensure that I could eliminate these as much as possible. On the other hand, this was also an advantage of the study as I have insider knowledge that was valuable for the research.

As the person who carried out the thematic analysis I may have been slightly biased in the themes that I chose. I tried to base my themes around the interview questions I had asked such as how the Dental School uses feedback, perceptions of good feedback, and how students use feedback. However, as I devised the questions there could be a bias here. I tried to develop the interview questions based on the research questions, involving issues raised in the literature, anecdotal evidence from senior tutors at the Dental School and my analysis of the written comments, and the questions that I devised for interviews and focus group were appropriate to answer the original research questions that I wanted to explore, based on feedback for reflection, use of analysis of feedback data, and how staff development could improve feedback.

A proper evaluation of the staff training was beyond the scope of this study. This type of evaluation would be difficult because it would be difficult to distinguish between the effects of the staff training and interventions done with students to encourage them to engage better with feedback.

6.6 Recommendations

From the study it was clear that there was a lot of anxiety around the DNIs and students were placing too much emphasis on these, being the assessment component, to the detriment of absorbing feedback given. If the DNIs were hidden it might help students to focus more on the feedback given. Since I carried out the research the DNIs have been changed so that students no longer see an assessment number, only a colour, white for 'not achieved the necessary level required for their year' or blue for 'have achieved the necessary level for their year'. This removes the extrinsic reward of achieving a high 'grade' replacing it with the opportunity for the intrinsic reward of doing the job well, and hopefully adding to the absorption of the feedback given.

The research clearly showed that further training is required for both students and tutors. Students require training in how to ask for and receive feedback to improve feedback literacy, how to reflect on feedback and how to set goals. Since my research, a psychologist from the university has started working with the students to achieve these outcomes. A way needs to be found for students to reflect freely and constructively. There is a contradictory issue between finding a way to record that reflection has taken place, and others seeing this, with giving them free rein in their reflections (Boud & Walker, 1998). The research also indicated that tutors require training in forming educational alliances with students to enable them to create a dialogic feedback process that encourages a coaching approach. The training day was a good start but further ongoing training is required.

Technology is very good at gathering data using a quantitative tick box approach to record what level or what competency has been achieved. However human collaboration is much harder to record using technology but is required for problem solving and dealing with emotional issues. Dentistry is a profession that involves treating other humans so there will

always be an emotional involvement as well as the technical procedures being done. Without recording the feedback given, currently done by tutors writing down written comments, management is not aware of the standard of feedback given and students do not have a permanent record to look back on. The tutors that I observed were giving good feedback, and were sometimes taking a coaching approach, but it is not known if this is widespread across the Dental School. It would be useful for management if a way of recording the verbal feedback given, such as audio recording or dictation, could be incorporated into the LiftUpp app. This could also be helpful for students to remind them of advice they have been given.

However, training of tutors and students will not be sufficient to bring about a change in feedback practice to encourage an education alliance approach. This approach needs to be embedded within the curriculum and feedback literacy and forming educational alliances need to be taught as core subjects from very early on in all courses (Noble et al., 2019; Winstone et al., 2017b).

6.7 Future Research

More research is required into written comments given to dental students in the clinical environment to understand if comments given in other dental schools have a similar number of developmental type comments, and more of a focus on assessment type comments. It would be valuable to carry out a comparable analysis of written comments in other dental schools.

Analysing recent written comments from the Dental School could help to see whether there have been changes since the training day, particularly in terms of whether there are now more developmental type comments, since some training has been provided to tutors.

In addition, research in the impact of removing the numbers of DNI competencies on the students, their learning and their wellbeing would be helpful to advance this research. Other

future research following from this project could be an investigation into how a coaching approach could be recorded on LiftUpp through particular prompts for tutors for giving feedback that students then can use to support their development.

Further research is also required into what kind of training is appropriate for tutors. Tutors interviewed found the face to face training to be most useful, as they were able to share their difficulties with others, but ongoing training is also required. Also, there is a need to overcome issues of how to provide training to everyone when not all tutors work fulltime. This might suggest that a blended approach might be more achievable.

Although I confirmed training needs for both tutors and students in terms of giving and receiving feedback my intervention only targeted the quality of tutor feedback. Improving reflection by students is a multi-factor problem and development of student use of feedback would be a separate research project.

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Appendix 1 – Student Interview Questions

What do you consider to be the purpose of feedback?

What do you think is good feedback?

How do you think the Liftupp data is used by the school?

How do you use your feedback?

How often do you look at your feedback?

Do you prefer written or verbal feedback?

Do you always understand your feedback?

(After explanation of the 3 types of written feedback identified developmental, assessment or administrative)- Which types of written feedback do you get and which do you find useful?

Is it important to you to get praise when you have done something well?

Do you ever get upset by your feedback?

Is there enough time on clinic for you to get feedback?

What could be done to improve feedback?

Appendix 2 Tutor Interview Questions

What do you consider to be the purpose of feedback?

What do you think is good feedback?

How do you think the feedback on Liftupp is used by the school?

How do you think the students use the feedback comments?

How does your verbal feedback differ from your written feedback?

(After explanation of the 3 types of written feedback identified developmental, assessment or administrative)- Which types of written feedback do you think that you mainly give?

Do you think it is important to praise students when they have done something well?

Do you have enough time to give the feedback you would like to give on clinic?

What issues do you have giving feedback on clinic?

Do you ever feel uncomfortable giving feedback?

How do students generally respond to written feedback?

Do students ever get upset after you have given them feedback>

Have you had training in giving feedback?

Would you like training in giving feedback?

What could be done to improve feedback?

Appendix 3 Focus Group Protocol

1. Explain goal of focus group – to explore thoughts of participants about the training day, what was useful and what changes, if any, they will make to the written feedback they give and to the to the conversations they have with students.

2. Gather initial thoughts about the training day

3. Global attitude- was it useful?

4. Specific attitudes:

- Which activity/ lectures from the training day will change the way in which you give feedback to students on clinic? (Verbal, written)
- How will you give feedback differently?
- How will what you learned in training day help you to help students to reflect?
- How will you have 'difficult conversations' differently?
- What further training do you think is required?
- What specific training would you like?

5. Follow up on new threads of conversation, as they arise
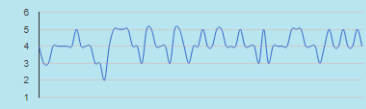
6. Summarise the conversation, ask for final comments

Appendix 4 LiftUpp Developmental Need Indicators and Screenshots

Developmental Need Indicators:

DNI	Description
1	UNABLE to do this. Has caused harm or does not seek essential guidance.
2	UNABLE to do this independently at present. Largely demonstrated by tutor.
3	UNABLE to do this independently at present, but able to complete to the required quality with significant help, either procedural or by instruction.
4	ABLE to do this partially independently at the required quality, but requires minor help with aspects of the skill, either procedural or though discussion.
5	ABLE to do this independently at the required quality. This may include confirmatory advice from the tutor where the student seeks appropriate assurance.
6	ABLE to meet the outcome independently, exceeding the required quality.

Example of Analysis on LiftUpp app-Consistency of each student reaching a threshold of 4 (example of 4 different students):

Graph	Barcode	Consistent	Clinics <= Threshold	All <= Threshold	Longest Run
		29%	50	284	4
		27%	52	291	4
		29%	48	301	3
		27%	53	331	2

LiftUpp Interface as seen on clinic:

Liftupp interface with feedback comment at the bottom of page

Appendix 5 Ethics approval

UNIVERSITY OF LIVERPOOL | ONLINE PROGRAMMES

Dear Amanda Roberts			
I am pleased to inform you that the EdD. Virtual Programme Research Ethics Committee (VPREC) has approved your application for ethical approval for your study. Details and conditions of the approval can be found below.			
Sub-Committee:	EdD. Virtual Programme Research Ethics Committee (VPREC)		
Review type:	Expedited		
PI:			
School:		Lifelong Learning	
Title:		Exploration of dental student use of a learning analytics dashboard for development of individual learning	
First Reviewer:	Dr. Lucilla Crosta		
Second Reviewer:	Dr. Morag Gray		
Other members of the Committee		Dr. Marco Ferreira, Dr. Josè Reis Jorge, Dr. Kathleen Kelm	
Date of Approval:	29/06/2017		
The application was APPROVED subject to the following conditions:			
Conditions			
1	Mandatory	M: All serious adverse events must be reported to the VPREC within 24 hours of their occurrence, via the EdD Thesis Primary Supervisor.	

This approval applies for the duration of the research. If it is proposed to extend the duration of the study as specified in the application form, the Sub-Committee should be notified. If it is proposed to make an amendment to the research, you should notify the Sub-Committee by following the Notice of Amendment procedure outlined at http://www.liv.ac.uk/media/livacuk/researchethics/notice%20of%20amendment.doc.

Where your research includes elements that are not conducted in the UK, approval to proceed is further conditional upon a thorough risk assessment of the site and local permission to carry out the research, including, where such a body exists, local research ethics committee approval. No documentation of local permission is required (a) if the researcher will simply be asking organizations to distribute research invitations on the researcher's behalf, or (b) if the researcher is using only public means to identify/contact participants. When medical, educational, or business records are analysed or used to identify potential research participants, the site needs to explicitly approve access to data for research purposes (even if the researcher normally has access to that data to perform his or her job).

Please note that the approval to proceed depends also on research proposal approval.

Kind regards,

Lucilla Crosta

Chair, EdD. VPREC

Appendix 6 Consent form

UNIVERSITY OF
LIVERPOOL

Committee on Research Ethics

PARTICIPANT CONSENT FORM

Title of Research Project: Exploration of dental student use of a learning analytics dashboard for development of individual learning

Researcher: Amanda Roberts

1. I confirm that I have read and have understood the information sheet dated May 2017 for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.

2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason, without my rights being affected. In addition, should I not wish to answer any particular question or questions, I am free to decline.

3. I understand that, under the Data Protection Act, I can at any time ask for access to the information I provide and I can also request the destruction of that information if I wish.

4. I understand that confidentiality and anonymity will be maintained and it will not be possible to identify me in any publications.

5. I understand and agree that my participation will be audio recorded, with my permission, and I am aware of and consent to your use of these recordings for the following purposes

6. I agree for the data collected from me to be used in relevant future research.

7. I understand that my responses will be kept strictly confidential. I give permission for members of the research team to have access to my anonymised responses. I understand that my name will not be linked with the research materials, and I will not be identified or identifiable in the report or reports that result from the research.

8. I understand and agree that once I submit my data it will become anonymised and I will therefore no longer be able to withdraw my data.

9. I agree to take part in the above study.

| _____ | _____ | _____ |
| Participant Name | Date | Signature |

| _____ | _____ | _____ |
| Name of Person taking consent | Date | Signature |

| _____ | _____ | _____ |
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Appendix 7 Training Day Talks and Exercises lead by Psychologists
(Information provided by Forsythe, A , private communication March 12 2019)

Talk 2 The psychologist explained to the tutors that their intentions impact on how they think about how conversations go, and how people assume that they know the intentions of others but they don't know because they are invisible, but people infer the intentions of others from their behaviour.

It was explained to the tutors that if the students can learn to experience and manage a full range of emotions (negative or positive) they will have greater resilience. The importance of preventing over-dependence was also described, and the importance of the student –tutor was highlighted as feedback can never happen in a context free environment,

Exercise 1: An exercise to highlight the importance of tutor-student relationship, and how easy it is to make assumptions, was carried out, looking at written examples of conversations around feedback and example assumptions made by both the tutor and the student for the different examples. This consisted of an example of what was said by the tutor (along with what they actually felt) and what was said by the student (along with what they actually felt). These comments and assumptions were discussed in small groups so that tutors could begin to understand that they often make an assumption about how a student is behaving or thinking which may not be based on reality. The aim of this was to improve the conversations with students around feedback.

Talk 3: It was explained that a coaching approach is the best way to teach students, and explained what this entailed. The best way for tutors to understand this was to have a go themselves so an exercise was undertaken.

Exercise 2: The tutors worked in small groups to undergo a construction exercise with pieces of lego (small plastic building bricks). Several of the group would carry out the task whilst the rest of the group acted as facilitators, each taking on a different role, for example one only gave praise, one asked coaching questions such as 'how could you do that differently?' or 'what do you need to do next to get to where you want to be?', one only gave explicit instructions, and one stated only what was being done wrong. After they had finished their constructions the members of each group discussed which approach was most helpful, concluding that it was a questioning approach. There was then a wider discussion across all groups discussing how this approach could be useful to help students become more independent.

Talk 4: Psychological profiles Prior to the day all tutors had been asked to fill in a psychological profile consisting of many questions about their working style and preferences (such as preferences about working alone or in a group, completing tasks early or leaving them until the last minute). That speaker explained that this had been done partly for them to understand how they worked, and partly for them to feel what it was like to be given feedback on themselves. The results of these profiles had been given out on arrival and tutors were able to look at them during the day. The speaker pointed out the different responses, some people opened them straight away, other did not, some people read them privately, whilst others discussed their results with their colleagues. The speaker explained that this is what it is like with students, they all react in different ways to receiving feedback and tutors need to be aware of this.

Exercise 3: The tutor then spent some time looking at their own profiles, thinking about their own responses to the results, and choosing whether or not they wished to share any of their results with their colleagues.

Talk 5: One of the psychologists explained the new module to be introduced to the undergraduate dental curriculum 'Personal Development and Wellbeing' (PDW). Part of this would involve students learning how to engage with feedback and how to understand their own response to feedback in order to be able to react to it in a positive way. It would also be used to teach students how to reflect on feedback to set goals.

Talk 6: A senior member of staff explained the upcoming changes in the LiftUpp platform; students would no longer be able to see the DNI when they sign out of the iPad or when they look on the LiftUpp site. Instead they would see blue for appropriate level for their cohort or white for not yet reached appropriate level for their cohort. If the number is removed it was intended that students would focus more on the written feedback comments.