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| General Dental Practitioners’ Perceptions of a Change in Confidence Following a Five-year Part Time Master’s Programme |
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**‘I, Peter D Fine confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.'**

**Signed:…………………………………………………………………..**

**Date:……………………………………………………………………..**

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# Glossary

**ADEE** Association for Dental Education in Europe

**CPD** Continuing Professional Development

**CME** Continuing Medical Education

**GDC** General Dental Council

**GDP**  General Dental Practitioner

**GP** General Medical Practitioner

**GMC** General Medical Council

**HEI**  Higher Education Institute

**IADR**  International Association for Dental Research

**RDP** Restorative Dental Practice

**RPSGB**  Royal Pharmaceutical Society of Great Britain

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# Publications and Presentations

**Publications of an Educational Theme:**

1. Koole S, Fine PD, De Bruyn H 2015. Using discussion groups as a strategy for implant dental students to reflect. Euro. J Dental Educ.
2. Fine PD. A Mixed-Methods Investigation into General Dental Practitioners’ Perceptions of the Influence of Postgraduate Dental Education on Dental Practice. Sage Research Methods, Education December 2016
3. Fine PD, Louca C, Leung A. The Impact of a Postgraduate Learning Experience on the Confidence of General Dental Practitioners. Dentistry Journal. February 2017.

**Poster Presentations of an Educational Theme:**

1. General Dental Practitioners’ Expectations Prior to Postgraduate Education in Restorative Dental Practice. Fine, P, Louca, C, Eder, A, Blizard, R. International Association for Dental Research, 2010
2. Perceived Effectiveness of a One-Year Course in Restorative Dentistry. Fine, P, Louca, C, Eder, A, Blizard, R. International Association for Dental Research, 2011
3. Evaluation of a Full Time Masters Programme in Endodontics. Fine, P, Louca, C, Gulabivala, K. World Universities Network Conference, 2011
4. Evaluation of a Postgraduate Course in Endodontics. Fine, P, Louca, C, Reel, R, Blizard, R. Association of Dental Educators in Europe, 2011
5. The Role of Reflection in Postgraduate Dental Education. Fine, P, Duhs, R, Louca, C. Association for the Study of Medical Education, 2012
6. The Introduction of Reflective Learning into a Postgraduate Dental Programme. Fine, P, Duhs, R, Louca, C. Association of Dental Educators in Europe, 2012
7. Analysis of Qualitative Data Following a Postgraduate Course in Restorative Dentistry. Fine, P, Louca, C. Association of Dental Educators in Europe, 2013
8. Dental Practitioners’ Perceptions of a Part Time Master’s Programme. Fine, P, Leung, A, Louca, C. International Association for Dental Research, 2014
9. Qualitative Analysis of Dental Practitioners’ Perceptions of a Part Time Master’s in Restorative Dentistry. Fine, PD, Leung, A, Louca, C. ConsEuro Conference, London 2015 (First Prize- Education).
10. Qualitative Data Analysis Following a Part-time Master’s Programme. Fine, P, Bentall, C and Louca, C, Leung, A. Association of Dental Educators in Europe, 2016

**Oral Presentations of an Educational Theme:**

1. Practitioners’ Perceptions after Two years of a Restorative Dentistry Programme. International Association for Dental Research Conference (IADR), 2012.
2. An Investigation into General Dental Practitioners’ Perceptions of the Influence of Postgraduate Dental Education on General Dental Practice. Society for Research in Higher Education (SRHE), Annual Conference, December 2014.
3. The Importance of Confidence in a Long Term, Part Time Master’s Programme. Society for Research in Higher Education (SRHE); Study Day, May 2016.
4. An Investigation of Feedback to Students in Postgraduate Dental Education. International Association for Dental Research Conference (IADR), 2016.
5. General Dental Practitioners’ Perceptions of Confidence Following a

Masters’ Programme. International Association for Dental Research Conference (IADR), 2017.

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1. Alpha Omega award for Research Studies, 2014
2. First prize at ConsEuro Conference 2015, Poster session - Education
3. ADEE 40th Anniversary Award for Educational Research, 2016

# Abstract

**Aims:** The aims of this study are to investigate: i) How changes in confidence influence the learning experience of General Dental Practitioners (GDPs), ii) To what extent pedagogical learning interventions impact on general dental practitioners’ perceived confidence following a Master’s programme, and iii) In what way do changes in perceived confidence have an impact on clinical practice. The study tracks two cohorts of postgraduate students participating in a five-year part time Master’s programme in Restorative Dentistry (RDP).

**Methods:** Quantitative and qualitative data were collected through questionnaires, focus group discussions, interviews and field notes. Questionnaires were designed, piloted and hard copies delivered to two cohorts of students (2010 and 2011), before the programme, at the conclusion of year 1, at the conclusion of Year 3, and conclusion of Year 5. Quantitative data was analysed using SPSS Software (Version 21). Focus group discussions occurred during year 1. Personal interviews were organised at the completion of the programme. Field notes were collected throughout the study.

Qualitative data were transcribed verbatim, organised thematically, and analysed phenomenologically.

**Findings:** 144 GDPs (2010, 72 and 2011, 72) started the RDP programme. 25 (17.4%) successfully completed the five-year Master’s degree. The quantitative data reported small increases in confidence throughout the programme. There was little statistical difference between the age, gender or number of year’s clinical experience of individuals or the cohorts. Qualitative data revealed a significant number of GDPs attending the programme to improve confidence, the teaching pedagogy was fundamental in increasing confidence, as confidence grew so motivation to continue the programme was evident and increases in confidence were reflected by a perceived improvement in clinical performance.

**Conclusions:** As the GDPs become more confident, their motivation for ongoing learning was enhanced. Small group, peer learning, and hands-on practical sessions were perceived to have a positive impact on confidence. Case based discussions and teaching via evidence based protocols increased confidence. Increases in confidence had a significant impact on clinical dentistry with GDPs becoming comfortable to undertake more complex treatment, achieving better treatment planning resulting in improved patient responses and satisfaction.

Chapter 1

# Introduction

## Introduction

My study considers the effect and impact of changes in confidence on General Dental Practitioners as they progress through a part time Master’s programme.

In this first chapter, I set the scene for my research project. I outline the rationale for the study; introduce myself as the researcher, as well as the participants who took part. I contextualise the study in terms of its roots in continual professional development and introduce the three research questions that underpinned it. I conclude this chapter by outlining the structure of the study.

This is a longitudinal study focusing on the perceptions that General Dental Practitioners (GDPs) have about the impact of a long-term Continuing Professional Development (CPD) programme on their confidence. This study used a mixed methods approach, including questionnaires, focus group discussions, interviews and field notes to draw its conclusions. The longitudinal nature of the study allowed me to follow the participants over a five-year period rather than the traditional CPD course of a few hours or days. By drawing attention to the impact on general dental practitioners’ confidence, self-efficacy ([Bandura, 1977](#_ENREF_8): 191-215, [Bandura, 1986](#_ENREF_11): 390-453) and ability to learn in a small ‘community of practice’ ([Lave and Wenger, 2003](#_ENREF_114)), during and immediately following a research Master’s degree, the study makes a significant contribution to postgraduate dental education ([Ward and Dixon, 2012](#_ENREF_190)). By understanding the concept of confidence in relation to a learning experience, how different teaching methods impact on confidence and how a change in confidence influences clinical practice, it is possible to improve the postgraduate learning experience of GDPs in the future, by enhancing the individual’s self-confidence, self-efficacy and self-esteem.

## 1.1 Rationale for the study

As the pace of change increases, healthcare practitioners are required to meet the expectations of both patients and professional regulatory bodies. In the case of the dental profession the introduction of mandatory continuing professional development in 2002 by the General Dental Council (General Dental Council, 2008) has resulted in a marked increase in the provision of postgraduate education. However, little is known about the long term influence of postgraduate education on general dental practitioners (Eaton et al., 2011) and in particular how confidence impacts upon a learning experience, how a particular teaching pedagogy influences confidence and the perceived effect of confidence on clinical practice.

This study adds to the currently limited literature reporting on the influence of longer (over three months) and more substantial postgraduate dental courses on the confidence of GDPs by investigating how perceived changes in confidence impact on GDPs. There are significantly more publications that have addressed the influence of short (less than three months) postgraduate courses on clinical practice in general (Bullock et al., 1999, Bartlett et al., 2001, Young and Newell, 2008; Bullock et al., 2009), but little or no evidence of literature on the role that confidence has to play with respect to GDPs in particular.

Research into the impact of a learning experience on confidence is not a new area of enquiry (Dogan, 2012; Stankov et al., 2012). Dogan (2012) showed how confidence changed in a group of mathematics students before and after a learning experience. Stankov et al., (2012. See 2.2) reported that confidence was based on previous experience that the individual had reflected on. Bandura (1977, see 2.2.1) discussed the difference between confidence and self-efficacy and the importance of understanding the distinction.

Previous research has incorporated aspects of the time span of the study period (Moriarty and Manthrop, 2014; Best and Messer, 2003; Biswal et al., 2014; Young and Newell, 2008; Bullock et al., 1999). Moriarty and Manthrop (2014) considered the improvement in knowledge and confidence of social workers but admitted little was known about the long-term effects on confidence beyond the limitations of the study period. Young and Newell (2008) explored the potential impact of a three day (short course), interactive learning experience with clinical participation courses on dental hygienists and concluded that moderate to high gains in skill and knowledge occurred, but failed to report how long these changes lasted in the clinical environment. Work undertaken by Bullock et al., (1999) was a multi-centred approach that looked at the impact of short courses on GDPs but from a cost effective and evaluative viewpoint rather than how the individual participant perceived their confidence. Confidence and postgraduate training in healthcare workers has been widely researched (Mason et al., 2016; Bullock et al., 2013; Hecimovich et al., 2014). Bullock et al., (2013) looked at a longitudinal study about dental therapists and reported the increase in confidence following attendance at a postgraduate course compared with undergraduate training, by using three methods of data collection. Hecimovich et al., (2014) considered the use of scales of measurement of confidence in order to be able to track the relationship between confidence and competence in health professionals; chiropractic, osteopathy and physiotherapy fields (see 2.2). Confidence and training outside healthcare workers was considered by Schunk and Mullen (2012) who in looking at the self-efficacy of teachers reported their confidence being dependent on motivation, goals and social factors (see 2.2.2 and 2.2.3). There are studies that have varied the method of data collection (McKillop et al., 2016; de Jong et al., 2016; Ward and Dixon 2012). McKillop et al., (2016) used online questionnaires and focus group discussions to gain data, but failed to answer the question of changes in confidence in their cohort of nurses. Ward and Dixon (2012) ventured into the research master’s degree journey to understand the process from the students’ perspective but with a small sample size of seven teachers. Different learning activities including lectures, either face to face or online, simulation and practical skill sessions have been investigated (Watters et al., 2015; Yeardon-Lee and Hall, 2013; Hammond, 2006). Watters et al., (2015) looked specifically at how simulation as a teaching activity increased confidence and self-efficacy.

The context of my research is a Master’s degree in dentistry. Extensive searches of the literature have failed to reveal research concerning the perceptions and nature of the research master’s experience (Ward and Dixon, 2012) and even fewer specifically looking at the impact of a learning experience on the confidence of GDPs. Bridges et al., (2014), investigated teaching and learning experiences and their impact on confidence. Whilst re-designing the dental curriculum for “deeper student learning” it was reported “significant differences across items over time indicating learning improvements, attainment of university aims and the positive influence of redesign. Students perceived the enquiry-based project as stimulating and motivating, and building confidence in operative techniques” (Bridges et al., 2014: 170).

Studies looking at confidence in dentists have been limited to Vocational Dental Practitioners. For example, Bartlett et al., (2001) recounted that early career Vocational Dental Practitioners (VDPs) reported a low level of confidence particularly in orthodontics, endodontics and some surgery, which was improved following the completion of the Vocational Training year. The perception of an improvement in the VDPs confidence was also perceived by their trainers (Bartlett et al., 2001).

The studies cited above do consider aspects of confidence and its potential impact on the individuals concerned. They focus on the short-term aspect, a particular method of data collection, specific teaching activities and a superficial look at the impact of confidence on the study subjects. Despite the recognition that confidence is essential for the continuation of learning ([Koo et al., 2014](#_ENREF_110); [Leigh, 2008](#_ENREF_117); [Shochet et al., 2013](#_ENREF_173). See 2.2), little has been written about it, particularly in the field of postgraduate dental education. Outside the dental profession, Norman and Hyland (2003) emphasised the diversity of factors that lead to dispositional barriers to confidence and the impact that confidence had on lifelong learning. They followed a cohort of teachers and reported that “a crucial aspect of such dispositions in the learner's confidence, and its role as an inhibitor or facilitator of learning” (Norman and Hyland, 2003: 261) indicating the importance of confidence in ongoing learning.

My study aims to combine the longitudinal aspect of research with a detailed insight into confidence in general dental practitioners, using various methods of data collection and analysis, following two cohorts of GDPs through a multi learning activity approach to postgraduate dental education. I report on the impact of changes in confidence on the ongoing learning of individuals, which learning activities influence confidence the most and the impact on clinical practice of changes in confidence.

Due to the multi-factorial nature of confidence (Norman and Hyland, 2003), the importance of the longitudinal nature of my study adds to the literature. Previous studies, have only followed participants for a maximum of 12 months (Best and Messer, 2003), and thereby have not observed GDPs in such close proximity and have never incorporated a university accredited master’s degree programme in this way.

Initially I aimed to address the general perceptions that GDPs had about their postgraduate dental education over the duration of the five-year master’s programme. However, it became clear from an early stage that the concept of confidence and its link to the learning experience were seen as having a major impact and were common themes throughout the data. Therefore, the study proposed to focus on these aspects.

I was a former student of the RDP programme in 2000 and I was involved in the department as the external assessor for the programme for some years prior to the commencement of this study (2003-2008), I chose this postgraduate training opportunity for my study, because of: i) my familiarity with the programme and the department, ii) my past experiences of receiving and delivering postgraduate dental education and iii) my desire to understand all aspects of the programme. My intimate knowledge of the programme, the teaching protocols employed and the overall philosophy of the department proved to be invaluable during the period of the study. Due to the positive impact that the RDP programme had on my personal confidence, I was motivated to explore the role that confidence plays and the impact that postgraduate dental education in general, has on clinical dental practice. I wanted to explore this in a setting, such as the RDP programme, as the teaching centred on small group tuition, hands-on practical sessions, the encouragement to go away and practice newly learnt skills and the opportunity to discuss problems following a period of reflection. This teaching/learning environment had always seemed to me to be most conducive to learning and to offer the most likely opportunity for improvement in knowledge, skill and confidence.

## 1.2 The Structure and Format of the Restorative Dental Practice Programme

In this section, I consider the longitudinal nature of the study, the setting and the philosophical basis for the programme. My longitudinal study follows two cohorts of GDPs through a five-year, part time Master’s in Restorative Dental Practice (RDP) at UCL Eastman Dental Institute, London. Restorative dentistry is concerned with the repair and replacement of damaged and missing teeth and is practiced by the vast majority of GDPs in their everyday work. Whilst not a recognised specialty restorative dentistry lends itself very well to be the focus of this longitudinal study as the participants continue to practice restorative dentistry during the period of continuing, part time education.

The RDP programme was conceived over 20 years ago as a CPD course to improve GDPs clinical knowledge and skills. The programme enables participants to engage with CPD, which is mandatory, and develop as lifelong learners, which is a part of the aims of the profession. It has evolved from a one year continuing professional development certificate course into a university accredited, five- year, part-time master’s programme consisting of three elements: certificate (1 year), diploma (2 years) and master’s (1-2 years). Students attending the programme are primarily from the UK but it is not unusual for students from Europe to travel to London to attend. This programme is available to all general dental practitioners registered with the General Dental Council in the UK or European counterparts.

A fundamental aspect of the teaching on the RDP programme is to encourage randomly selected small groups to study together, so-called peer learning (Dewey, 1931). The RDP programme has a philosophical basis for teaching, which encourages understanding of the relationship between the mix of theoretical and practical elements in the curriculum; the relationship between theory and practice concepts; and enhancing the theoretical and practical reasoning to the workplace (Guile, 2014). The re-contextualising of theory, knowledge and skills to the workplace is an essential part of the philosophy.

The setting for this study lends itself to peer group learning and therefore can be considered as an example of what Lave and Wenger (1991) called ‘situated learning’. Their model of situated learning proposed that learning involved a process of engagement in a ‘community of practice’ ([Lave and Wenger, 1991](#_ENREF_113), [Wenger, 2008](#_ENREF_192)).

The RDP programme is underpinned by theories of learning; the constructivist (Lave and Wenger, 1991; Wenger, 2008), the design based theories ([Collective, 2003](#_ENREF_42), [Collins, 1992](#_ENREF_44)) and humanism ([Kolb, 1984](#_ENREF_109)). It also uses a variety of teaching activities, such as lectures, practical skill sessions, clinical teaching and discussion groups. These provide opportunities for ‘situated learning’ (Lave and Wenger, 1991) and a development of a community of practice amongst the participants. I consider the relevant learning theories within the context of my study (see 2.4) and their potential impact on confidence within the setting in which the RDP programme takes place.

## 1.3 The Participants

The participants in my study are all self-selected General Dental Practitioners who have perceived a need to enhance their knowledge, skills and confidence in restorative dentistry. I recognised that the GDPs who are the subject of this study are self-selected participants and therefore not necessarily representative of GDPs generally. They came together as a cohort to study for their postgraduate qualification. The cohort was further randomly divided into small learning groups, who occasionally came together as the larger cohort during the five-year programme. The participants are essentially part of several ‘communities of practice’ (Lave and Wenger, 1991). They are part of the large community of practice that is the dental profession; they are part of the smaller group of participants who have embarked on a learning process and they are finally part of their individual peer-learning group, with whom they spent the first year, at least, studying on the RDP programme. It is not unreasonable to expect that these same participants are members of communities of practice within and away from their professional lives, for example social clubs, school parent associations or hobbies. All participants are qualified dental practitioners who are registered with the General Dental Council (GDC) to work in the UK.

## 1.4 The Research Questions

My research questions are designed to contribute to filling the gaps in existing research on long term CPD within dentistry, particularly the impact of such programmes on confidence and the link between confidence and learning. The research questions are:

• How do changes in confidence influence the learning experience of general dental practitioners?

• To what extent do specific learning interventions have an impact on general dental practitioners’ perceived confidence during a master’s programme?

• In what way do general dental practitioners perceive changes in their confidence have an impact on clinical practice?

## 1.5 The structure of the study

Following this introduction, I develop a conceptual framework in Chapter 2, which I use later in the thesis to analyse the data collected. I develop this framework within a constructivist perspective and draw particularly on the work of Lave and Wenger on communities of practice (2003), Knowles andragogy (1970) and Bandura’s work on ‘self-efficacy’ (1986).

Chapter 3 discusses the methods used to collect data for this study and my approach to data analysis. I discuss the advantages and disadvantages of questionnaires, focus group discussions, personal interviews and field notes and indicate how the choice of these methods influenced the study. Chapter 4 illustrates both quantitative and qualitative findings, presenting the findings in terms of the themes that emerged from the study in relation to the research questions. In Chapter 5, I discuss the findings, their impact on the participants and the limitations of this study.

Chapter 6 draws together the answers to the research questions. I conclude with some thoughts about the participants of the study, by offering my own revised definition of confidence following reflection and by highlighting the importance of social learning.

## 1.6 Summary

This thesis: (i) contributes to the limited field of professional learning on confidence and its implications, (ii) illustrates how confidence affects GDP’s current and future learning experiences and (iii) explores the perceptions that general dental practitioners have of the impact that a long-term postgraduate training programme has on their confidence in their clinical practices.

In chapter 2, I explore the literature surrounding the notion of confidence and the learning experience.

# Chapter 2

# Literature Review/Towards a Conceptual Framework

## 2.1 Introduction

In this chapter, I consider the previously published literature that relates to the research questions:

* How do changes in confidence influence the learning experience of general dental practitioners?
* To what extent do specific learning interventions have an impact on general dental practitioners’ perceived confidence during a master’s programme?
* In what way do general dental practitioners perceive changes in their confidence have an impact on clinical practice?

Initially, I define confidence, including defining notions of competence, self-efficacy, motivation, setting goals, the individualistic nature of confidence and the antecedents and attributes of confidence, drawing particularly on the work of Bandura (1977, 1986). Then I look at the links between confidence and learning. The next section deals with how specific learning interventions (teaching approaches) influence confidence and finally I consider the evidence around the impact of confidence on professional practice. This literature review draws on literature from the last 30 years, with the inclusion of some historical references where relevant I also consider literature within healthcare education where literature on dentistry is lacking.

I undertook this literature review by using PubMed, British Educational Index, Google Scholar and Medline as principle search engines. The terms entered into those search engines included: lifelong learning, confidence, self-efficacy, continuing professional development, postgraduate dentistry, continuing education, learning experience, adult learning and self-directed learning.

## 2.2 Defining confidence

In this section, I investigate what is meant by the notion of confidence. I consider several key concepts that are involved in confidence: competence, self-efficacy, motivation, setting goals, individualistic nature of confidence, and antecedents and attributes. I consider each key concept of confidence in turn and look at its influence on the overall notion of confidence.

According to the Oxford English Dictionary (2013) confidence is “having strong belief, firm trust, or sure expectation; feeling certain, fully assured, self-reliant, bold; sure of one-self and having no fear of failure”. The notion of confidence has a long history associated with psychology, dating back to the nineteenth century ([Stankov et al., 2014](#_ENREF_177)). In order to evaluate personal confidence, the individual is obliged to reflect on and appraise the learning experience immediately after an activity. Stankov et al., (2014), whilst emphasising the immediacy of past behaviour, do acknowledge that judgements of confidence may be supported by historical performances and experiences. Closely associated with confidence is the term self-efficacy, a term coined by Bandura (1977) to define individuals’ judgements of their ability to organise and undertake tasks required to achieve a desired outcome; the two terms occasionally, incorrectly being used synonymously (Bandura, 1969).

In addition to the definition of confidence, the feeling of confidence, together with the notions of self-concept, self-efficacy and anxiety, has been shown to be a reliable indicator of academic achievement (Stankov et al., 2014). The study by Stankov et al. (2014: 25) reported that, “findings about high simultaneous validity of confidence combined with the generality of the confidence factor indicate the very strong role that confidence may play in predicting academic achievements”. Confidence and self-efficacy require the participants to express self-assurance that they can solve problems (self-efficacy) or have provided the correct solution (confidence). There are certain factors that point to confidence being a generalisable aspect of learning whereas there are also situations where confidence is quite specific to a particular context (Norman and Hyland, 2003).

The concept of confidence has received only minimal attention when research in allied medical professions has been undertaken ([Mason et al., 2016](#_ENREF_132), [Watters et al., 2015](#_ENREF_191)). Mason et al (2016) highlighted that whilst certain elements of junior doctors well-being e.g. anxiety and depression worsened during training in an emergency department, their confidence, motivation and competence improved compared to when they attended other specialties. It would appear that the price the junior doctors had to pay for improved confidence was an increase in anxiety, depression and reduced extrinsic job satisfaction. Watters et al. (2015) showed that the use of simulation training in a cohort of nurses resulted in improved self-efficacy (an individual’s belief that they can be successful when undertaking a task) (see 2.2.2) in the group, as well as improvements in communication skills. The role of confidence of medical and nursing professionals in the improvement in patient care has been studied in their respective fields ([Koo et al., 2014](#_ENREF_110); [Leigh, 2008](#_ENREF_117); [Shochet et al., 2013](#_ENREF_173)). In a qualitative study, the inter-professional learning experience of nurse practitioners and final year pharmacy students was investigated (Koo et al., 2014). It was reported that students’ levels of self-efficacy might have affected their ability to complete the simulated activities. In the focus group discussions used to elicit data, students reported an increase in confidence when completing the simulation activities, as it allowed them to learn in an environment where they could work as a team and have hands-on experience with simulated patients. These findings were consistent with an earlier study, which reported that only when student nurses were confident in their own ability could they shift the focus of needs to their patients and not on their own failings (Leigh, 2008). It is important to remember that a perceived increase in confidence may not correlate to an increase in competence and a positive clinical outcome. The increase in the participants’ confidence may also arise from their ability and opportunity to communicate clinical information not only from participating in the simulation of a clinical scenario but also from observation of peers (Koo et al., 2014). The study by Shochet et al. (2013) considered confidence from the general medical practitioner (GP) perspective by looking at the impact of training of undergraduate medical students in communication skills, which enabled GPs to answer spontaneous questions posed by patients in a confident and competent manner.

### 2.2.1 Competence

Confidence and competence are terms, which are often used synonymously but which are not identical concepts (Morgan and Cleave-Hogg, 2002). Competence is the ability to perform a task. The term can be used in both a praiseworthy context and as a sense of adequacy of a task. Competence may also be used as a measure or form of assessment of one’s ability to perform that task, often reported by another person. Confidence is a self-perceived notion and competence is often a measure of ability. However, it would also seem logical to assume that with an increase in an individual’s level of competence, their confidence will also increase but this is not necessarily the case (Morgan and Cleave-Hogg, 2002). It is tempting to link clinical experience with confidence and competence, particularly in the form of performance assessment. In a study to determine whether or not breadth of clinical experience and undergraduate medical students’ levels of confidence were indicators of competency, Morgan and Cleave-Hogg (2002) reported that clinical experience and level of confidence are not able to predict performance assessment.

### 2.2.2 Self-efficacy

Self-efficacy has been described as “peoples’ judgements of their capabilities to organise and execute courses of action required to attain designated types of performance” (Bandura, 1986: 391). It is therefore a judgement of one’s ability to perform a skill that one possesses rather than the skill itself. Self-efficacy can be viewed as the confidence that people have in their ability to do the things that they try to do ([Pajares, 2000](#_ENREF_148)). The concept of self-efficacy comes from four areas: mastery experience, vicarious experience, verbal persuasion and physiological states (Bandura, 1977). These four areas reflect the significance that each has in determining its impact. Mastery experience occurs as the individual becomes more proficient and competent at a given task, whereas vicarious experience has been shown to occur through observation and other person’s behaviour (Bandura, 1969). Verbal persuasion by another individual about their experience is a less predictable or effective mechanism for the individual to develop self-efficacy, but an individual’s physiological state can be influential in developing self-efficacy. Self-efficacy can be considered to follow four aspects: cognitive process, motivational process, affective process and selection process (Bandura, 1993). The cognitive process underpins self-efficacy by the individual’s thoughts on a task. Motivational processes determine the individual’s determination to persevere with the task in hand, whereas the affective process is supported by how the individual perceives their progress and finally the selection process is reliant on the individual’s ability to select the appropriate task for their learning needs.

There are three different levels at which perceived self-efficacy operates as an important contributor to academic development: students’ beliefs, tutors’ beliefs and faculty beliefs. Students' beliefs in their efficacy to control their own learning and to master academic activities govern their aspirations, level of motivation, and academic accomplishments. Teachers' beliefs in their self-efficacy to motivate and promote learning affect the types of learning environments they create and the level of academic progress their students achieve. Faculties' beliefs in their collective instructional efficacy contribute to their schools' level of academic achievement. As academic confidence springs from self-efficacy it is likely to have the same four sources ([Sander and Sanders, 2002](#_ENREF_165)). Therefore, a combination of all four influences self-efficacy.

An individual’s personal efficacy may be considered a consequence of different modes of influences, which alter the ability to cope with creating and strengthening expectations of self-efficacy. The individual’s choice of activity and the environment in which that activity will take place constitute consequences of their self-efficacy. It may follow that individuals who avoid enriching activities and challenging environments fail to develop their true potential. Self-efficacy can be considered to be an influence, though not the sole determinant of behaviour (Bandura, 1977). Humans will reflect, to a greater or lesser extent, in order to boost or undermine their efforts by beliefs about their performance capabilities. As well as a personal efficacy, collective efficacy can be seen in attempts to change humans’ approaches to dealing with disease. Various methodologies have been tried; from scaring people to become healthy, to rewarding them to become healthy, to equipping them with the self-regulatory skills to manage their health needs, to shoring up their habit changes with reliable social supports. Combinations of these have all been suggested as helpful to humans to manage their health needs. A social cognitive theory addresses the socio-structural determinants of health as well as personal determinants (Bandura, 1986).

Beliefs in self-efficacy can have an impact on the progression lives take by influencing the choice of activities and challenges (Bandura, 1993). The implementation of new knowledge and skills is linked to the degree of self-efficacy demonstrated by the participants who will assess their self-efficacy at the start of an assignment and during the initial phase of learning. On completion of a task, the participants reflect on their degree of success with the task and this mastery experience will reinforce their beliefs when they take on the next task. As the participants move forward towards the next task they can set a new goal to achieve, which will be based upon their self-efficacy, which can be adjusted according to their achievement so far. By setting realistic goals, motivation to complete a programme will be maintained ([Ritchie, 2015](#_ENREF_158)). The interaction of self-efficacy and behaviour of learners influences achievement behaviours such as task selection, persistence, effort and adaptation of learning strategies. As a student realises their learning progress, self-efficacy and motivation for continued learning is generated. Social cognitive theory puts forward the concept based upon the individual’s role within the group but there is evidence to suggest that the so called ‘collective agency’ would indicate people’s shared beliefs about what they can achieve as a group ([Schunk and Mullan, 2012](#_ENREF_171)). In the group scenario it is apparent that the vicarious approach of self-efficacy comes into play as individuals naturally compare themselves with others ([Bandra, 1977](#_ENREF_6)). It is unlikely that people in general live their lives in isolation and so the degree to which we need to develop a sense of group efficacy is enhanced (Bandura, 1986).

Whether as group or individually students who believe in their ability and have a high level of self-efficacy for accomplishing a task participate more readily, work harder and persist longer when they encounter difficulties (Schunk, 1994). Success generally raises efficacy and failure lowers it, although a strong sense of self-efficacy is unlikely to be affected by the occasional setback (Schunk, 1994). There is an assumption that learners feel efficacious enough to overcome some difficulties, embracing some doubts as to whether one will succeed may activate effort and effective use of strategies better than feeling excessively confident. Schunk (1994) expressed a need for further research about efficacy in a longitudinal study, as long term studies require alternative forms of data collection to quantitative data.

### 2.2.3 Motivation

The next concept to consider in defining confidence is motivation. Motivation is one’s enthusiasm for undertaking a task. The motivation to embark on a long-term programme of post-compulsory education requires a different degree of enthusiasm to that of the child attending school. Motivation in the post-compulsory learner can either be intrinsic or extrinsic (Laurillard, 2012). Intrinsic motivation focuses on the process and content of learning in order to develop an understanding of the topic. Extrinsic motivation focuses on the rewards, either vocational or social, that result from the learning experience. Self-efficacy also plays a major role in the self-regulation of motivation and as such has a direct impact on confidence. Most human motivation is cognitively generated. People motivate themselves and guide their actions following a period of reflection on their needs (Bandura, 1993). The motivation of the individual participant to attend any learning intervention can be attained from different viewpoints (Bandura, 1991). These include a desire to gain knowledge following a period of reflection, because of peer pressure, to satisfy professional standards and ensuing parental/spouse pressure. Self-motivation relies on “both divergence production and reduction and requires proactive control as well as reactive control” (Bandura, 1991: 157). People initially motivate themselves through proactive control by setting themselves respected performance standards that create a state of imbalance and then mobilising their effort based on anticipatory estimation of what it would take to reach them. Reactive feedback comes into play in ensuing adjustments of effort expenditure to achieve desired goals. After people attain the standard they have been pursuing, those who have a strong sense of self-efficacy generally set higher standards for themselves. The adoption of further challenges creates new motivation divergences to be mastered. Passing on standards is more likely to raise aspiration than to lower subsequent performance to reduce uncertainty by conforming to exceeded standards. Self-motivation thus involves a dual control process of recognising an imbalance followed by resolving the discrepancy (Bandura, 1991).

Having defined motivation, I now consider the external forces that have an impact on motivation, including the impact of peers following self-standards and teachers. Monitoring one’s own performance will enable the individual to influence their motivation and actions, which allows one to set realistic goals and evaluate progress towards them (see 2.2.4). Self-observation can provide important self-diagnostic information, for example recurrent patterns of behaviour, allowing for behavioural changes where indicated and a continuous process of reflection. Standards can be determined through direct teaching as well as through the evaluative process of others towards one’s behaviour. The observation of teachers’ standards and their reaction to the student’s response to their standards can be positive when the student fulfils the standard and negative when the student falls short. These personal standards are constructed after a period of thought and reflection and result from multiple sources of direct and vicarious influence. The significance of personal standards is linked to the idea of comparison with one’s peers and can have a substantial impact upon motivational forces. This impact is generally a positive effect on motivation but in the case of a student with low self-efficacy and low expectations, it will have a negative impact and could result in that student leaving the programme before its conclusion (Ward and Dixon, 2012). Bandura emphasises the importance of self-efficacy and its central role in people’s beliefs about their capabilities to function to a given standard and to generate sufficient motivation to move to the next level. These motivational beliefs influence how much effort they use, their aspirations, and how long they persevere in the face of difficulties and their level of stress. Personal motivation can be challenged by fluctuations in an individual’s belief in their capabilities and high stress levels and self-doubt can also impact on their willingness to experience threatening or challenging situations. Motivation to continue challenging oneself and develop further is realised by a sense of achievement, self-efficacy and confidence in attaining personal goals. However, if the goals we set ourselves are unattainable then de-motivation may ensue.

Teachers can have a positive and negative influence on motivation, particularly in relation to the course curriculum and the student. There is a complex relationship between the teacher’s design of the course and what the student is prepared to bring to the teaching sessions. Hannon et al. (2002), emphasised the amount of care a teacher showed to students was influential in the students developing self-motivation and so the emotional impact of caring for students created good motivation from students. This places further pressure on the teacher to deliver the course content but in a caring way (Hannon et al., 2002). Teachers can further influence motivation by encouraging individuals to set themselves realistic goals that inspire them to develop a strong sense of self-efficacy and set themselves new, more challenging targets.

It is conceivable that the participants in postgraduate education have a different type and level of motivation than that of young people in compulsory (school) education. By introducing the term andragogy, Knowles (1970) suggested that the motivational factors driving adults in education were likely to be different to that of children. The rationale of confidence seems to be a motivating factor for adults whereas it is a consequence of education for a child. Adult learners will generally have more control over their learning than children will, which is emphasised by adults recognising the importance of ‘self-directed’ learning, where the learner has some control over their own education (Kaufman, 2003). Whatever motivates an adult to embark on a new learning experience, the individual needs to have a degree of confidence in their knowledge, ability and self-efficacy in order to subject themselves to the potential stress and anxiety of a learning experience (both face-to-face and self-directed learning).

### 2.2.4 Setting Personal Goals

In this sub-section I consider how setting attainable goals can impact on an individual’s confidence and how setting goals is linked to confidence through motivation and self-efficacy. By setting and attaining realistic goals motivation can be enhanced through self-efficacy and self-evaluation (Bandura and Cervone, 1983). Goal setting allows participants a greater opportunity to progress and to attain a higher academic level of success ([Morisano et al, 2010](#_ENREF_143)). The use of goals enhances performance only when combined with a personal standard and feedback that confirms the achievement of the goal. By simply adopting a goal, whether easy or challenging, without knowledge of how one is doing, has no lasting motivational impact (Bandura, 1991). Neither the goal alone, nor the performance feedback alone, effects changes in the motivational level. Goal attainment is linked to the feeling of well-being ([Brunstein, 1993](#_ENREF_31)), and can be used as a predictor of a participant’s achievement level. By setting goals an individual will appreciate their personal level of success ([Zimmerman et al., 1992](#_ENREF_198)). The higher the perceived self-efficacy of students, the higher the goals they set for themselves. Not only does self-efficacy influence the setting of academic goals but also the achievement of the goals (Zimmerman et al., 1992). When individuals pledge themselves to clear standards and/or goals, perceived negative inconsistencies between what they achieve and what they seek to achieve creates self-dissatisfaction that serves as a motivational incentive for greater effort. How one measures the success of individual participants can be a function of confidence (Sander and Sanders, 2003). A classification of different motivational forces include: goal orientated learners, activity orientated learners and learning orientated learners ([Houle, 1961](#_ENREF_90)).

The link between motivation and goal setting is fundamental in the development of confidence. The perception of self-efficacy to achieve motivates academic attainment directly and indirectly by prompting personal goal setting (Zimmerman et al., 1992).

At the beginning of a learning activity, the participants have goals such as improving knowledge and skills and attaining grades. During the programme the participants observe, judge and react to their perception of progress towards their goals. The belief that one is making progress during a learning experience means that goals incorporating specific performance standards are more likely to enhance learning and activate self-evaluation than general goals. Specific goals specify exactly what is needed and therefore self-efficacy is more easily judged and the attainment of those goals results in an increase in confidence (Schunk and Zimmerman, 1994).

### 2.2.5 Individualistic nature of confidence

In this sub-section, I discuss the individualistic nature of confidence and highlight the contextual nature of confidence. Confidence varies amongst individuals in similar situations and people have differing levels of confidence in different contexts. An individual who is highly confident in familiar surroundings, for example, may feel less confident in an unfamiliar, more challenging context. Therefore, when deciding to embark on a learning experience in the relatively unfamiliar surroundings of a university department it is unlikely that the environment in which the participants choose to study will change, consequently the participants need to be willing and able to adapt in order to feel comfortable and to affect behavioural changes that may be appropriate (Bandura, 1969). Similarly, an individual’s self–belief is linked to the availability or quality of training, which if not available then there is little opportunity to improve a student’s self-belief (Stojan et al., 2015).

Much of the research on confidence has been linked with the individual learning of postgraduate education of teachers. Student teachers are reported to interpret confidence in a variety of ways including cognitively, emotionally and performance components (Norman and Hyland, 2003). In order to illustrate the cognitive components student teachers were asked to substitute the word confidence in a sentence; alternative words such as ‘know’, and ‘convinced’ were commonly suggested. The emotional element was evident by substitution with words such as ‘comfortable’, ‘happy’. The performance component was expressed by word substitution including ‘able, ‘effective’ and ‘competent’.

Individual variations in confidence were expressed in the study by Premadasa et al., (2008); individuals conveyed confidence in their ability to perform clinical tasks that they had never previously attempted and therefore had not had the opportunity to practice. This apparent anomaly may be due to either inadequate explanation about the linear scale on which confidence was recorded or the individuals’ lack of understanding about what was meant by confidence. This highlighted the limitation of recording perceived confidence on a linear scale. Premadasa et al., (2008) emphasised the individual variations in recording confidence, based on self-evaluation following a study looking at medical interns undergoing basic training. An individual’s self-evaluation in their ability to perform a task relies on: i) their initial appraisal of the task in hand and ii) an estimation by the individual as to their ability to perform the task ([Handel and Fritzsche, 2015](#_ENREF_81)) based upon previous experience (Bloom et al, 1956). Following completion of the task, the individual’s ability to critique their performance is an essential factor in self-regulated learning and development of confidence. The relationship between being able to perform a task and confidence, in the individual who is over-confident, can lead to the task being more challenging. The gifted, under-stated individual is more likely to minimise their confidence. Some individuals are naturally more confident than others so it is unsurprising that using different confidence measures in terms of scales will result in a diverse set of measures being recorded ([van Vaerenbergh and Thomas, 2012](#_ENREF_187)). The diversity within a mixed cohort will inevitably result in a diversity of confidence measurements.

Confidence levels have been reported to be different depending on the gender of the individual (McCarty, 1986; Mouatt, 1991). In the business world, McCarty (1986) reported that women were more likely to express lower levels of confidence if feedback was not provided, but if provided then suitable feedback enhanced the confidence of women to be equal to that of their male counterparts. Mouatt (1991) indicated in looking at the impact of CPD prior to it becoming mandatory, that female dentists were less confident than their male equivalents. Both these studies are of historical interest, as since 1986 more women occupy significant positions in business and the proportion of women in dentistry has risen to over 50% of the profession. Many women have developed the confidence to run their own dental practices, to undertake postgraduate degree courses and to occupy senior positions in academic dentistry and to equal their male colleagues.

The individual’s ability to develop confidence is dependent upon recognition of their current cognitive ability, understanding new learning, application of new knowledge and skills, and then reflecting on how this new knowledge influences their future learning needs. By recognising and understanding their current level of cognitive ability, an individual can develop their future knowledge and skills by applying their current skills, analysing the success or shortcomings of those skills, evaluating the results, and moving forward (Bloom et al, 1956). Bloom’s taxonomy falls within the ‘constructivist theory’ of learning and provides a basic sequential model for dealing with topics in the curriculum. Constructivist theory of learning includes a descriptive theory of learning; the way people learn or develop and a prescriptive theory, which could be described as the way people should learn. Building on a progressive pyramid of initial knowledge, understanding, application, analysis, synthesis and evaluation, following a learning experience, the individual should have gained, ’new skills, knowledge and/or attitudes’ (Bloom et al., 1956), which results in greater confidence.

The cognitive taxonomy deals with mental skills i.e. knowledge; the affective taxonomy relates to growth of feelings and emotions i.e. attitude and confidence and the psychomotor taxonomy deals with physical skills. Therefore, it is possible, depending on cognitive skills, to use this taxonomy to whatever level is needed.

The notion of confidence would therefore appear to be very subjective, personal and individual. What one individual will report as a feeling of confidence will be regarded by another as lacking in confidence. There is a subtle distinction between a lack of confidence, confidence and arrogance. Confidence would appear to be a perception of how comfortable the individual is to take on a task. The perception of one’s confidence is a matter of self-judgement, which leaves these measures open to a degree of miscalibration ([Maclellan, 2014](#_ENREF_121)). A low perception of self-confidence by an individual may be due to a low miscalibration, where the learner doubts their own ability, talent and skill as well as the equipment, working environment and guidance. If the individual’s judgement of their confidence is higher than objective accuracy, the miscalibration will indicate overconfidence (Maclellan, 2014). Overconfidence can result in learners feeling that they are less motivated and less likely to spend time studying. MacLellan (2014) suggests that the difference between ‘over’ or ‘under’ confident is not really an issue, since both appraisals are non-realistic and rooted in subjective feelings of competence. It is more important that the difference between the individual’s perception of their confidence and accuracy be as near to zero as possible, thereby interpreting a realistic appraisal of confidence. The role of teachers/tutors in the accuracy of self-judgement of confidence is essential, particularly with respect to feedback and the way it is delivered. Positive feedback having more impact than negative.

An individual’s confidence and self-belief stem from positive thinking, talking to other people, practicing techniques and in some cases, training. Although we aspire to have more of each, we often struggle to find them. Confidence and the belief we have in ourselves can show in many ways - our behaviour, our mood and the way we carry ourselves. Individuals who lack self-belief and self-confidence will often find that certain areas of their lives will be affected. Relationships, career, lifestyle and state of mind can all suffer unless some action is taken to improve these qualities. Participants undertaking a long term (or short term) learning experience may lack self-belief about some of the tasks that they will be asked to perform ([Sanders-Reio et al., 2014](#_ENREF_166)). By looking at the apprehension and anxiety about writing, Sanders-Reio et al. (2014) support the possibility that self-beliefs about writing could have an influence for teaching students to write and therefore addressing the apprehension and increasing self-belief. All the participants in my study have undergone some form of formal training as well as some informal postgraduate training in many cases and have used that experience to appraise their individual level of confidence. This prior experience, termed antecedents, may have an impact on future confidence. In the same way as attributes can be considered to influence their choice of postgraduate training.

### 2.2.6 Antecedents and attributes

In this sub-section, I consider the influence of antecedents and attributes on confidence, which include: a) knowledge and skills, b) personal goals, c) the readiness to learn and d) an individual’s role or situation. I also consider the influence of age, gender and number of years’ experience as attributes of confidence.

Antecedents can be interpreted as something existing or happening before a current activity, especially as the cause or origin of something existing or happening later.

Before confidence can be realised some knowledge and skills need to have been accrued either formally or informally (Perry, 2011). As discussed in section 2.2.1 self-efficacy (Bandura, 1986) has a direct impact on confidence and should facilitate the feelings and subsequent actions of individuals. The inbuilt feature of all organisms is to move forward and achieve their potential (Rogers, 1980), which I consider in section 2.4. Previous experience of setting goals will impact on confidence; goals that have been successfully achieved being more likely to enhance confidence than goals that have not been realised (Bandura 1986). The familiarity shown by experienced teachers compared to novice teachers, was indicative of previous knowledge, experience and confidence in their own ability (Tschannen-Moran and Woolfolk Hoy, 2007). Readiness to learn is one of several principles that differentiate the learning of adults as opposed to children (Knowles, 1970). The adult is able and capable of deciding what and when they need to learn and are therefore more likely to be motivated and gain confidence from the learning experience, which they have chosen. The role an individual occupies or coverts is reliant on antecedents by driving the individual to develop their knowledge and skills.

Not all educational experiences have a positive effect on confidence (Hammond, 2004). Immediate impacts of learning “upon psychosocial qualities; self-esteem, self-efficacy, a sense of purpose and hope, competences and social integration” ([Hammond, 2004](#_ENREF_80): 551), can be assisted. These psychosocial outcomes of learning may promote attitudes, practices, confidence and life circumstances that are conducive to positive health outcomes. The adoption of future cognitive processed ideas can form present antecedents, which promotes action and adds to motivation (Bandura, 1986).

Attributes can be defined as a quality or characteristic that someone or something possesses and are regarded as resulting from a specified cause; considered as caused by something indicated. The strategic attributes of confidence include emotional intelligence, resilience and cognitive ability (positive); depression, doubt and uncertainty (negative). Emotional intelligence is the ability to monitor one’s own and others’ thinking and actions (Abraham, 2004) and is therefore a positive attribute, which allows competency. Resilience is a robust attribute of confidence and is the basis of self-control (Abraham, 2004). Cognitive ability is the ability of the brain to process, retrieve, and store information. Depression, doubt and uncertainty may cause an individual to perceive a reduced level of confidence. An individual will either trust or doubt their own doubts, which leads to a degree of uncertainty that will negatively impact on confidence (Wichman et al., 2010).

The age of the participant, their previous clinical experience, their previous educational experience (undergraduate and postgraduate), their previous knowledge, their physical and emotional state and gender can also influence the attributes of confidence.

Attributes can be considered to be part of the learning programme or the individual. When considering the attributes that a learning programme has the teaching environment is fundamental ([Flott and Linden, 2016](#_ENREF_63)). The physical space, psychosocial and interaction factors, the organisational culture and teaching and learning components are considered as attributes that would often determine achievement of learning outcomes and student self-confidence ([Flott and Linden, 2016](#_ENREF_63)). In addition to these attributes, the significant part that tutors/teachers play in supporting and encouraging students should not be underestimated. Tutors/teachers can be considered as attributes by both the students they teach and their employers.

The individual’s attributes including age, gender, number of years’ experience can influence confidence and can be affected by “mental toughness” (McGeown et al., 2016: 96). McGeown et al. (2016) explored resilience, confidence, self-efficacy and motivation and reported that mental toughness was found to be a good predictor of performance. In the past mental toughness has been associated with elite sport, but the concept has become more appropriate in educational environments recently with studies looking at the relationship between mental toughness and self-belief (Bull et al., 2005), motivation (Gucciardi et al., 2008), goal setting (Clough et al., 2002) and the ability to deal with setbacks (Clough et al., 2002). Confidence is also considered to be a similar trait to motivation and attitude and is linked to attainment (McGeown et al., 2016), which overlaps with mental toughness in abilities rather than interpersonal confidence.

Student teachers reported that confidence “had an impact on their well-being and involvement in the learning processes” (Norman and Hyland, 2003: 267). Their lack of confidence was caused by a variety of factors including: newness of the task, self-doubt, fear of not being accepted and a feeling of inferiority and perceived knowledge deficit (Norman and Hyland, 2003). Factors increasing their confidence included learning to relax and enjoy what they were doing, familiarity with a task, accepting that they do not know everything and feeling secure as they received positive feedback. Normand and Hyland (2003) reported a reduction in stress factors, which had a positive impact on confidence for individual students and their cohort of students. The creation of an environment that is conducive to learning can remove the uncertainty of individual variations. It is entirely conceivable that the opportunity for an individual to practice clinical skills in a conducive environment leads to an increase in their confidence with those clinical skills ([Premadasa et al, 2008](#_ENREF_150)), which may be absent in a more chaotic environment.

Although it is important to consider the individual, most learning experiences involve learning in a social group environment. However there are occasions when the individual learner, who is satisfied learning in isolation most of the time, may dip into the group environment to satisfy a particular learning need ([Brookfield, 1984](#_ENREF_28)). Part of their independence is that they follow their own learning needs not because they want to be awkward but because they perceive that a particular way of learning is appropriate to them. In fact, one could argue that it is the role of higher education to teach learners to become more independent and to know when they might look to the educational system to supplement their learning, gain valuable input from peers and to use the system to their advantage. The independent learner is equally likely to achieve an increase in confidence, provided the independence is well monitored by the teaching/organising tutors (De Tar, 2016). When individuals return to the group environment for group learning they bring to the group the value of both their previous independent and group learning.

## 2.3 Confidence and learning

In this section, I consider how confidence, at an individual level, affects the engagement with learning and reflect on the role of self-belief and self-doubt in increasing or decreasing confidence. I look at the impact that self-regulated learning has on confidence, and the impact of human behaviour on confidence. I consider such moderating factors as the environment and learning and summarise confidence and learning with an illustration to draw together all the factors.

### 2.3.1 Confidence and the engagement with learning

Several studies have reported changes in confidence of the participants following engagement in a learning experience (Goy, 2016; Mori, 2015; Watters et al., 2015). Goy et al. (2016) used standardized patient in mental health nursing education, enhanced the integration of didactic content into clinical setting allowing students to practice their assessment skills learned in classroom and transfer it to the clinical area. They reported the benefits of using standardized patient included, allowing students to practice their communication skills and in improving their confidence level reduced anxiety as compared with traditional classroom and textbook-based pedagogy. Mori et al. (2015) reported that simulation-based learning activities were effectively incorporated into Physiotherapy Training curricula and argued that students' learning experience had been enhanced having a positive influence on their confidence, and a decrease in their anxiety.

The study by Watter et al., (2015) provided evidence that simulation training enhances participants' self-efficacy in clinical situations. It also leads to increases in their perceived abilities relating to communication/teamwork and leadership/management of clinical scenarios. Inter-professional training showed increased positive effects on self-efficacy for nurses and doctors.

In a longitudinal study, Erlich and Shaughnessy (2014) reported the importance of didactic learning to supplement practical skills. Thirteen student teachers acquired measureable knowledge, skills and attitudes necessary for teaching excellence. They exhibited a significant increase in confidence and concluded that reinforcing educational theory with practical teaching experience under direct faculty supervision promotes teaching competency, thus highlighting the importance of different learning pedagogy.

### 2.3.2 Effects of increase or decrease of confidence

The effects of changes in confidence, as either an increase or decrease, is a perception that forms a part of the overall concept of self-belief (Stankov et al., 2014). Self-belief can be a fragile concept that can be dented for example following an assessment of knowledge and/or skills. Confidence, together with self-concept, self-efficacy and anxiety are known to be linked in the overall concept of self-belief (Stankov et al., 2014). This is significant particularly when gauging confidence following a summative assessment. In addition to answering a cognitive test question, individuals in the study by Stankov et al., were asked to express as a percentage how confident they were with their answer. Not only does this approach elicit a traditional score but also an average confidence score over all the test items. Confidence scores tend to have a higher correlation than other self-belief scores. This is because the individual is required to reflect and evaluate before putting down their confidence score. The situation is further complicated by understanding that despite the immediacy of the confidence score, there is inevitably an element of previous knowledge and experience that is brought to bear and therefore not solely a judgement of the current score in mind.

By questioning an individuals’ confidence in their answer to a cognitive question, there will be some individuals who score a correct answer with a low confidence score, exhibiting some self-doubt, and some who will score a wrong answer with a high level of confidence, exhibiting over-confidence. Self-doubt was highly prevalent among first year medical students ([Liu et al., 2015](#_ENREF_120)), who when questioned reported feelings of depression, anxiety and stress during their medical education. It is important to recognise that self-doubt is a distinct possibility in longitudinal periods of study such as medicine and that teachers must protect vulnerable students from the “helpful and destructive consequences to their experiences with doubt” ([Liu et al., 2015](#_ENREF_120): 332). There are positive and negative aspects of the experience of doubt, which includes acting as a form of motivation to be more conscientious. Early exposure to doubt could help build resilience when faced with uncertainty in the future and reflecting on the preparatory value of doubt. By contrast, the negative effects of doubt include the destructive impact of doubt, having an adverse effect on academic performance resulting in loss of sleep, poor nutrition and according to Liu et al. (2015) even binge drinking. Some students connect doubt with a sensation of burnout or depression. Whilst it might be normal for everyone to doubt themselves at some time, to some degree, a constant feeling of self-doubt can be debilitating ([Liu et al., 2015](#_ENREF_120)).

The emphasis on summative assessment during many courses can lead to stress, anxiety and self-doubt of individuals prior to the assessment, thereby reducing confidence at a time when belief in one’s own ability is important. There is also evidence to suggest that the introduction of an ‘in-training assessment’ programme for junior hospital doctors, had little bearing on their confidence levels ([Ringsted et al., 2004](#_ENREF_156)). Previous studies had shown a positive impact on learning and teaching and an increase in motivation for the junior doctors to study more. However, this latest study by Ringsted et al. (2004) did not show any increase in confidence following the introduction of in-training assessment, neither in relation to the programme nor in relation to other aspects. The introduction of in-training assessment was designed to reduce levels of stress and anxiety away from the end of module or course assessment. Ringsted et al. (2004) attempted to reduce stress levels and increase confidence of their cohort of junior hospital doctors, which was at the centre of a UK government report emphasising the need for confidence in adults embarking upon post-compulsory education. The Department for Education and Science (La Valle and Blake, 2001) report was seen as a first step in the development of enhancing confidence, achievement and progression. This report highlighted the need to increase confidence of the individual learner. Although the individual learner can affect their own level of confidence, this report highlighted the importance of tutors, peers, mentors and workplace supervisors to help increase learner’s confidence by offering support, encouragement and constructive feedback. The learning support referred to in the Department for Education and Science report needed to explore the meanings of confidence in a task-specific context, which may or may not be available. The sensation of self-doubt leads to a lack of confidence in the individual and results in a lowering of motivation, which in turn leads to further self-doubt. This is in conflict to the work of Bandura (1986) who suggests that an individual with sufficient self-efficacy can endure some self-doubt and use it as a motivational factor.

The sensation of being confident in doing a particular task generates a ‘good feeling’. Equally not being confident in delivering a procedure leads to self-doubt, anxiety and poor self-esteem. The effects of a decrease in confidence in one’s own ability about a specific task or generally can have a negative impact on health (Hammond, 2004). Hammond (2004) reported that taking part in lifelong learning activities has a positive impact on well-being, protection and recovery from mental health issues and for one to develop the capacity to cope with potentially stress-inducing circumstances including the onset and progression of chronic illnesses. However, it is prudent to be guarded in suggesting that all educational experiences have a positive effect upon health outcomes. It is easy to visualise a case where a student becomes so stressed that their health suffers. A more positive outcome ensues if the learner has: perceived a need for learning, appreciated that learning would strengthen an existing skill and expressed genuine interest in the topic. The learning environment has to be able to provide relevant, transferable information in order to deliver a positive outcome. The transfer of knowledge from the educational environment to the clinical area in undergraduate training of doctors and dentists is well recognised (Hirsh et al., 2007; Laksov, 2008) and led to the introduction of a mandatory ‘vocational training’ in dentistry in order to smooth the transition.

The constant ebbing and flowing of confidence highlights the transient nature of the concept and indicates the importance to the individual of self-confidence. As an individual’s confidence ebbs and flows, the various influences upon confidence have an impact as illustrated by the Perry Cycle (2011).

The Perry Cycle (2011) of confidence brings together the influence that moderating factors, self-efficacy, and antecedents/attributes have on confidence. Moderating factors include the individuals’ increase in knowledge and skills, the learning environment, the academic environment and their impact on self-efficacy and antecedents/attributes. Self-efficacy, made up of mastery experience, vicarious experiences, verbal persuasion and the individuals’ psychological state (see 2.2.1) in turn influences learning, which further influences confidence, learning and affective domains. The cycle continues with antecedents/attributes, which further influence confidence (consequence), whether positively or negatively. Antecedents including learners’ previous experiences and knowledge and their personal physical, emotional and spiritual state have a direct impact on confidence. It is evident that whilst confidence levels increase and decrease, depending on the contextual setting, the individual, the subject being studied and the situation in question all contribute to the overall sensation of confidence (see Figure 1).

**Moderating factor: Environment**

Learning Environment

Academic environment

Influences confidence, self-efficacy, antecedents/attributes, learning

**Figure 1. Multi/Bi-directional Cycle of Confidence (Perry, 2011).**

**Self-Efficacy (four factors)**

•Successful performances (competency)

•Vicarious experiences

•Verbal persuasion

•Arousal

**Moderating factor: Learning**

Increase in knowledge and skills

Influence all aspects of the cycle and at any point in the cycle

**Antecedents/Attributes**

Learner: Previous experience (+/-)

Learner: Previous knowledge

Learner: personal-physical, emotional, spiritual state, self-esteem

**Confidence**

Increased/Decreased

### 2.3.3 Impact of Self-regulated learning on confidence

In this section I investigate the role that self-regulation has in learning and its impact on confidence. Self-regulated learners are those learners who “approach tasks with confidence, diligence and resourcefulness” (Zimmerman, 1990: 4). Self-regulated learners are aware of what they know and are aware of what they do not know. They proactively seek out new information and take the necessary steps to master it. With suitable support, a passive learner can develop into a self-regulated learner.

Self-regulated learning has been considered by Dinsmore et al., (2008) to be a combination of cognitive learning and regulation of learning. The cognitive learning aspect being considered to be more stable whereas the regulation of learning is more dynamic, adapting and responding to the task at hand (Dinsmore et al., 2008); increasing self-efficacy for that task.

The concepts of self-regulated learning, setting appropriate goals and the individual’s motivation (see 2.2) should result in that individual taking control of their learning, their development and their desire to move forward and improve themselves; this ‘person centred approach’ to learning is a term coined by Rogers (1980: 263) (see 2.4.8). The result of a balanced approach to self-regulated learning will be an increase in confidence, which will enable the learner to follow the learning path they have chosen.

Having self-efficacy to perform a task involves having beliefs about pre-existing skills and knowledge to accomplish the task. Prior to commencing a postgraduate learning experience, students need to develop self-efficacy about their capabilities to learn new skills and acquire new knowledge. In some instances, this may have been because of self-regulated learning. Self-regulated learning is a situation where individuals choose to direct their own learning activities, which is an active rather than passive process (Ritchie, 2015). Those individuals who master the technique of self-regulated learning possess many of the same characteristics as those with a high degree of self-efficacy, i.e. Clear thinking and planning, persistence through challenges and high achievement. The ability to judge personal performance is an essential factor in self-regulated learning ([Handel and Fritzsche, 2015](#_ENREF_81)) as is the ability of individuals to become reflective in their learning. Perceptions of their self-evaluation is a consequence of self-regulated learning.

Attending a postgraduate learning experience is not a guarantee of improvement in self-regulated learner skills ([Endedijk et al., 2014](#_ENREF_58)). In fact, a significant number of the postgraduate teachers involved in the study by Endedijk et al. (2014) showed little evidence of becoming self-regulated learners. Endedijk et al. (2014) indicated that student teachers’ ways of learning would not instinctively change towards active, independent and meaning-orientated learning and therefore they could not be considered as self-regulated learners. They inferred that as student teachers became more competent as teachers at the end of the programme of study they felt less in need of further learning. The student teachers were more satisfied with their teaching skills having learnt more routines rather than developing skills as lifelong learners. Whilst it is desirable for postgraduate students to become self-regulated learners in order to be able to direct their future learning needs and to develop confidence and self-efficacy, some students find it extremely challenging to increase their conceptions and skills to become self-regulated learners. As more professionals are required to satisfy their governing bodies by undertaking CPD the need to develop self-regulated learning skills will become more widespread. Self-regulated learners need to direct their learning process by setting themselves challenging goals, by applying suitable strategies to achieve those goals and by enlisting self-regulative influences that motivate and guide their efforts.

Individual learners who come together to study in a ‘community of practice’ (Lave and Wenger, 2003) are self-regulated learners to a certain extent. Each individual can therefore be both part of the community and able to partake in ‘legitimate peripheral learning’ (Lave and Wenger, 1991) as well as developing self-regulated learning skills. This reinforces the notion that rather than being passive during the learning process participants need to be active during learning and focus on their goals (Schunk and Zimmerman, 1994).

The introduction of Problem Based Learning (PBL) in medical education as an example of being active, has focused pedagogical interventions on preparing independent learners for continuing, self-directed, professional development beyond the classroom (Thomas et al., 2016). Skills in self-regulated learning (SRL) are important for success in PBL and ongoing professional practice and have implications on the role of confidence following a PBL learning experience. Although the sample size of seven medical students was small, the study by Thomas et al. (2016) looked to develop case studies of engagement with, and outcomes from, the SRL support. The findings indicate that students who actively engaged with support for SRL demonstrated increases in cognitive and metacognitive functioning. Students also reported a greater sense of confidence in and control over their approaches to learning in PBL. Whilst the seven medical students were striving for a greater degree of SRL they continued to be part of a ‘small community of practice’.

The transformation from a teacher centred approach to learning towards a self-regulated approach can cause students to lose confidence, experience self-doubt and question the outcome. One of the outcomes of postgraduate education should be to create students’ conceptions and skills to become lifelong learners. Endedijk et al. (2014) investigated the development of self-regulated learning in a group of student teachers; they found that only 33% of the students in the study changed in the direction of becoming independent learners (Endedijk et al., 2014). This indicated that despite the attempts to introduce the student teachers to a person centred approach to learning, the majority were content to continue with a teacher centred approach and therefore did not value the importance of becoming more self-regulated learners.

### 2.3.4 The impact of Human Behaviour on confidence

In this section, I use the work of Albert Bandura to underpin how human behaviour and self-influence can effect confidence. I refer to the ‘social cognitive theory’, which emphasises that some people possess capabilities that distinguish them from others and that motivates them to strive for further understanding, skill and behaviours (Bandura, 1986: 18) and how the ‘social cognitive theory’ explains the individual variations.

The ability to self-motivate allows individuals to shape their own lives because they actively seek out situations that they perceive as beneficial to them. Much human behaviour, which is acting with a purpose, is measured by forethought embodying cognitive goals. An individual’s goal setting is influenced by their self-appraisal of their capabilities. In attempts to influence human behaviour, verbal persuasion is widely used because of its ease of use and being readily available. Individuals are led through ideas into believing they can cope successfully with what has overwhelmed them in the past. Although social persuasion alone may have definite limitations as a means of creating an enduring sense of personal efficacy and confidence, it can contribute to the overall success achieved (Bandura, 1977). It is entirely possible to imagine weaknesses in social persuasion. Observing others succeed can raise the observers’ self-efficacy, but observing peers fail may lead to the individual abandoning any attempt at the task altogether fearing a blow to their confidence. Physiological states including anxiety, arousal and avoidance behaviour explain people’s evasion of potentially threatening situations and activities, not because they experience anxiety, arousal or anticipate they will be anxious, but because they believe they will be unable to cope successfully with situations that they regard as possibly risky. By coming together and learning as part of a ‘community of practice’ there is little scope for individuals to develop their own learning style, therefore the individual needs to recognise their own behavioural traits and how these can fit in with the community. When the individual develops a sense of self-directed learning then they can combine their own learning style with the community in which they are involved.

Bandura (1977) hypothesised that expectations of personal efficacy determine whether managing behaviour will be started, how much effort will be used, and how long it will be sustained in the face of obstacles. By persisting in an activity, that is personally threatening, but in fact relatively safe, produces, through experiences of mastery, further enhancement of self-efficacy and a reduction in defensive behaviour. Self-efficacy results from four principal sources of information: performance accomplishments, vicarious experience, verbal persuasion, and physiological states, which have been discussed in section 2.2.1. The ability to be able to cope in times, situations and environments unfamiliar to the individual will develop that individuals’ sense of confidence and self-motivation.

Bandura (1991: 248) uses a ‘Social Cognitive Theory of Self-Regulation’ to explain motivational behaviour by reporting that “in social cognitive theory human behaviour is extensively motivated and regulated by the ongoing application of self-influence”. The major self-regulative mechanism operates through three principle sub functions: “self-monitoring of one’s behaviour, judgment of one’s behaviour in relation to personal standards and affective self-reaction” (Bandura, 1991: 282). People develop beliefs about what they can achieve, they anticipate the likely significances of future actions, and they plan courses of action that are likely to produce desired outcomes. Individuals possess self-reflective and self-reactive capabilities that enable them to exercise some control over their thoughts, feelings, motivation and actions. Having attended closely to performance an individual will set themselves goals of progressive improvement developing their confidence and self-efficacy as they go. According to Bandura (1991: 251), “those who set no goals for themselves achieve no changes in effort and are surpassed by those who aim to match their previous level of effort”. By monitoring ones’ success an increase in desired behaviour is achieved, however by only monitoring failures little or no changes are observed.

## 2.4 Learning interventions and confidence

In this section, I explore how different learning interventions have an influence on confidence. I consider the influence of the overall pedagogical approach, simulation, lectures, practical/hands-on, the learning environment, a person centred approach, learning experience and confidence, cognitive (whole person) learning and social learning, the influence of the learning environment and the relationship between clinical experience and confidence. I look at the pedagogy from both the teachers’ and students’ perspective and consider the relationship between teacher and student. The influence of various teaching activities is directly related to my second research question.

### 2.4.1 Pedagogical approach and confidence

The pedagogical format that teachers employ to teach their students, whether the student attends a primary school or a university faculty as a postgraduate, should be continually under review and should aim to continually support the student and enhance their confidence. Teachers often want to develop their ideas as an innovative community and push the boundaries of learning technology. This needs to be done either within the bounds of the capabilities of the students or to encourage the students to develop their goals beyond a comfortable next level and by so doing challenge themselves and, if successful, enhance their confidence beyond previous limitations. Bandura and Cervone (1983) considered the development of a new pedagogical approach should follow the same agenda as for example an engineering project would follow. The engineer will try a new concept, reflect and review the success/failure and then re-develop, often in collaboration with fellow engineers, until the pedagogy is clear. In a similar way, Laurillard (2012) advocated developing a pedagogical approach, reflecting on its merits and drawbacks and in collaboration with others, refining the pedagogy, until the individual discipline is addressed satisfactorily; thereby giving the learner every opportunity to achieve their goals, motivate them to continue learning and enhance their confidence. The opportunity is there to build one’s own pedagogy around the individual specialty. With the increase in available modern technology, including simulation, the development of new pedagogy can be enhanced. In a practical subject such as dentistry, the use of technology, whether that is technology in teaching (simulation) or technology in actually performing the task, confidence of individuals may be enhanced by the use of technology. The use of a new pedagogical approach can be used to improve students’ confidence by challenging their understanding of concepts (Bloom et al, 1956; Anderson et al, 2001).

The teaching pedagogy that most closely enables the individual to achieve their objectives will result in an increase in confidence. Linked to this is the importance of feedback (Bandura, 1991). Unless the individual has adequate feedback about their progress, it is difficult for them to be motivated to continue their learning. An individual who monitors their own progress will enhance their performance and confidence and will become proactive in their desire to learn rather than reactive to negative feedback. Whatever teaching pedagogy is used the individual’s ability to self-regulate and self-direct their progress is reliant on self-monitoring, setting standards, evaluating judgement, self-appraisal and affective self-reaction (Bandura, 1991).

### 2.4.2 Simulation

A key learning intervention within healthcare education and dentistry in particular is simulation, such as haptic technology. In this section, I consider the limited literature there is on the link between the use of simulation and students’ confidence levels, focusing on studies in other forms of clinical training due to the lack of literature relating to dental education.

The use of simulation as a learning intervention in medicine is well established with the introduction of patient manikins (Blum et al., 2010, Seoane et al., 2012). In dentistry, haptic technology, which simulates the sense of touch by applying forces, vibrations or motion to the operator through computer-generated imagery. Haptic devices incorporate tactile sensations that enhance the reality of the simulation for the operator. The rationale behind the haptic technology encourages a constructivist approach to learning through practice as opposed to an experiential approach with the traditional method of drilling a decayed tooth. The development of technology like ‘haptics’ enables student to practice a certain procedure time and time again and therefore develop their confidence prior to using that ‘new’ idea on a patient, adding to the safety implications of learning a new technique. I found no studies to indicate that haptic technology was better or worse at increasing confidence than other methods of simulation. Various forms of simulation have been used in teaching dentistry including phantom heads, case studies and more recently haptic technology.

Blum et al. (2010) investigated the role that simulation plays in improving the confidence of nurses during training and how self-confidence can be transferred to the clinical situation. Despite a relatively small sample size, they reported an increase in self-confidence because of simulation teaching but found simulation did not significantly enhance caring attributes. In other words, the transfer of self-confidence from simulation to the clinical situation did not improve. Within nursing the use of simulation has been apparent for many years. Bambini et al. (2009) highlighted the relationship with simulation and confidence when reporting on a cohort of junior nurses in training (Bambini et al., 2009). 112 nurses were questioned following completion of a period of training on new-born babies. The study reported a significant rise in communication skills, confidence and clinical judgement as a result of using simulation. Blum et al. (2010) reported an overall increase in confidence following a period of training with simulated patient scenarios, but were cautious to point out the need for ongoing examination of teaching pedagogy to transfer self-confidence from the learning environment to the clinical setting. The more traditional teaching activities, including didactic teaching and problem based learning, can be shown to have an influence on confidence although the impact varies depending on the teaching pedagogy (Tiwari et al., 2006). In their study, Tiwari et al. showed that undergraduate nurses gained more confidence and competence from teaching based on problem based learning than by lecture-based teaching. These studies indicate that although confidence improves in nurses because of learning activities involving simulation, they do not necessarily transfer to the clinical environment.

Seoane et al. (2012) investigated the use of simulation in the form of learning surgical skills by using sheep heads and found no differences in perceived ability to undertake the technique on a model or on a real patient under supervision of an expert surgeon. The significant finding here was that although confidence improved following the simulation teaching the need for supervision when transferring to the clinical environment was deemed, by the consultants, to be essential. Bullock and Webb (2015), when looking at how technology can address improvements in transferring new skills to the clinical situation, explored the link between ‘virtual and real’. In their study, they concluded that trainee doctors need the real workplace experience with patients to develop their skills and professionalism and that simulation could not be totally relied upon to deliver a skilful, caring professional.

Theoretical, lecture based training, is being increasingly supplemented by simulation of the working environment, which can incorporate scenarios and case studies developed to replicate real-life clinical situation (Kaddoura, 2010). The use of simulation was shown to provide evidence that this form of learning improved ‘critical thinking skills, learning and confidence’. There is no mention of competence in the simulation aspect, which is surprising, as competence should increase as repeated simulation exercises are performed.

The introduction of simulation as an adjunct to traditional pedagogical approaches for medical professionals has been well documented (Laurillard, 2012, Pugh et al., 2015). There is evidence that simulation training enhances participants' self-efficacy in clinical situations (Watters et al, 2015). It also leads to increases in their perceived abilities relating to communication and management of clinical scenarios. Inter-professional training showed increased positive effects on self-efficacy for nurses and doctors in the study undertaken by Watters et al. (2015). Part of the communication aspect is to provide adequate feedback for individuals undertaking a learning experience. The study by Pugh et al (2015: 603) indicated that: “simulation-based continuing medical education courses provide hands-on experiences that can positively affect clinical practice”. However, their data showed a significant mismatch between clinical skill and simulator difficulty, indicating the need for further surgical training. I consider the use of simulation as a learning experience in 2.4.7.

### 2.4.3 Lectures

Lectures are a traditional method of delivering information to a group of students, which can be either face-to-face or online. The use of lectures in medical education of undergraduate students has been shown to have little or no impact on confidence and when compared to open discussion about a topic was considered to be inferior (Costa et al., 2007). Similarly, when comparing lecture based teaching to various forms of problem based learning in medical students the problem based learning involving real patients was seen to have a more positive effect on confidence in future patient encounters and encouraging them to learn more about the discussed condition, compared to lectures (Li et al., 2013).

By contrast a study by Gormally et al. (2009), whilst looking at the impact of using a more student centred approach to teaching, reported an increase in confidence of science students following skills laboratory teaching, but a greater gain in confidence by those students being taught by traditional lecture based approach. The concept of student centred learning was explored by Rogers (1978) when he considered ‘whole person learning’. A person centred approach to teaching will necessarily involve the students in having a greater say in their education. As illustrated by Rogers (1984), encouraging students to have a person centred approach to their education can be a traumatic exercise. However, the rewards seem to be quite fulfilling, as the students become self-regulated learners. The transformation from a teacher centred approach to learning based upon lectures, towards a self-regulated approach can cause students to lose confidence, experience self-doubt and question the outcome. One of the outcomes of postgraduate education should be to create students’ conceptions and skills to become lifelong learners and not be reliant on teachers for all their learning.

### 2.4.4 Practical/hands-on

Dentistry and medicine are ‘hands-on’, skill based and cognitive studies. Therefore, the use of practical skills sessions to gain competence and confidence in numerous skills is a common teaching pedagogy. A combination of hands-on skills teaching and assessment of critical care students was undertaken using the technology of simulation and web-based instruction to measure the degree of improvement over a postgraduate course (Sekiquchi et al., 2013). This novel combination of hands-on, simulation and web-based questionnaires was reported to have significantly improved the competence and confidence of the trainees.

Another novel approach was to use senior nursing students to facilitate hands-on teaching sessions with junior nurses (Roberts et al., 2009). The senior nursing students organised a teaching session based on hands-on skills at a selection of skills stations resulting in an increase in competence of the junior nurses. Responses were positive, with students (both junior and senior) reporting improved performance and confidence with hands-on application in a non-threatening environment (Roberts et al., 2009).

As a result of discovering that their teaching curriculum failed to allow students to practice techniques, Whitcomb and Taylor (2014) introduced a series of hands-on training sessions, framed theoretically in situated learning, when introducing students to laboratory techniques. This resulted in both a quantitative and qualitative improvement in the students’ confidence. The qualitative arm of the study identified specific features of the training program that improved comfort levels for students including: seeing skills demonstrated, working in small groups, learning within a comfortable environment, and building social relationships (Whitcomb and Taylor, 2014).

### 2.4.5 The Learning Environment

In this sub-section, I consider the influence that the learning environment has on the confidence of participants. Traditionally the learning environment has meant the classroom, the lecture theatre or the laboratory but the workplace can be considered an appropriate learning environment in many situations (Lave and Wenger, 1991).

In a study, looking at the model of linking the processes and outcomes of workplace learning, researchers looked at the teaching of medicine in the clinical workplace and concluded that a critical aspect to workplace learning was the level of support the learner received (Dornan et al., 2007). The combination of practical competence achieved because of ‘participation in practice’ and the individual’s state of mind including confidence, motivation and a sense of professional identity, reinforce one another. The value of workplace learning can be illustrated perfectly in the case of training nurses. Historically the training of medical nurses was entirely based on workplace learning, but evolved into a university based degree course with more didactic teaching. The blend of university based theoretical study and workplace learning has meant that the modern nurse is knowledgeable about complex patient situations and outcomes and confident in their own skills. Working with patients in a hospital environment is an example of workplace learning and is considered critical in the development of the knowledge and skills (competence) exhibited by the nursing profession.

“Learning environments are a significant determinant of student behaviour, achievement and satisfaction” (Young et al., 2016: 63). Young et al. (2016) used students’ reflective essays to identify key features of the learning environment that contributed to positive and transformative learning experiences. The student needs to feel safe in the learning environment, be exposed to challenges with which they can cope and have positive reports of the experience itself. If the learning environment is safe, the learning challenge is suitable and the experience is satisfactory, the learning environment will promote individual learning, confidence and motivation. When first designing a learning experience teachers need to decide what they want the student to learn (Fink, 2003). Fink (2003) developed his own taxonomy to rival that of Bloom et al. and concluded that for learning to take place there needed to be some sort of change in the learner. His taxonomy followed six types of significant learning: foundational knowledge, application, integration, human dimension, caring and learning how to learn. I have already eluded to several of these aspects in this literature review but would like to consider caring as a special case. The increase in physicians’ ability for caring was enhanced following instruction in a complex exploration of chest procedures, which resulted in an increase in confidence and a lowering of the need to refer the patient (Barsuk et al., 2016). Fink (2003) considered caring was changed in students following a learning experience. This could be reflected by new feelings, interests, and values. Following a learning experience, individuals would care about something much more and this will result in the individual having greater energy to continue and enhance their learning. Without this ongoing energy (motivation), there is no significance in learning.

The learning environment would include the research setting, which may form an integral part of a master’s degree. There would appear to be some benefits from undertaking research projects at the undergraduate level (John and Creighton, 2011). Although the study by John and Creighton (2011) looked at undergraduate students, it would seem that a similar result could be true of the postgraduate students in my study, who are novice researchers in the final stage of their master’s degree. At an individual level, most students reported increased confidence and appreciation of the realities of the research process, and a desire to progress on to further postgraduate study. This indicated that schemes might have the potential to cultivate new research confidence and interest if expanded. The potential for research in the workplace as a learning environment would appear to be extensive, particularly qualitative research.

### 2.4.6 Person centred approach

In this sub-section, I explore the importance of a person centred approach to learning as opposed to a teacher centred approach. The RDP programme was not designed with one particular pedagogical activity in mind, but has evolved to incorporate several different pedagogical activities. The intention of these pedagogical activities was, and still is, to teach the students to a high level of skill and knowledge in dentistry, so that they may treat their patients more predictably and consistently, using an evidence based approach.

The pedagogy that most closely enables the individual to achieve their objectives will result in an increase in confidence. Linked to this is the importance of feedback (Bandura, 1991). Unless the individual has adequate feedback about their progress, it is difficult for them to be motivated to continue their learning. An individual who monitors their own progress will enhance their performance and confidence and will become proactive in their desire to learn rather than reactive to negative feedback. Whatever learning intervention is used the individual’s ability to self-regulate and self-direct their progress is reliant on self-monitoring, setting standards, evaluating judgement, self-appraisal and affective self-reaction (Bandura, 1991).

The concepts of self-directed learning, setting appropriate goals and the individual’s motivation (see 2.3) should result in that individual taking control of their learning, their development and their desire to move forward and improve themselves. This ‘person centred approach’ to learning is a term coined by Rogers (1980). The result of a balanced approach to self-directed learning will be an increase in confidence, which will enable the learner to follow the learning path they have chosen. Much of Roger’s writing has been concerned with a psychotherapist and his/her client but there is a suggestion that the relationship between a teacher and student, a parent and child and administrator and staff are precisely the same.

‘Person centred approach’ has three elements to it: congruence, acceptance and empathy (Rogers, 1980). Congruence refers to the individual being totally themselves. There is a sense of not putting on a façade or front; the individual teacher, parent, administrator or student is transparent in the presence of the student, child, staff member or tutor. There should be congruence between what is happening at the instinctive level, what is present in awareness and what is expressed to the student/client/staff/tutor.

Acceptance is very important if the correct climate to generate free change is to occur. If the student experiences a positive experience from the tutor (and vice versa) then change is more likely. Empathy or understanding is the final element that needs to be in place for a person centred approach. Both the student and teacher needs to sense the personal feelings that the other is experiencing and communicates this understanding to the other. In order to fulfil this role, the teacher needs to learn how to listen, not superficially but to really listen and feel what the student is feeling and therefore develop empathy. This is probably more difficult to achieve than it seems in this explanation.

If these three elements can be in place at the same time there would appear to be every opportunity for the student to move forward. The ability to change and move forward seems to be an inherent feature in all organisms. In other words, we all have a built in desire to fulfil our potential, it is just a question of triggering the desire (Rogers, 1980). Having achieved the sense of fulfilment in achieving a goal and a gain in confidence the student is more likely to want to move forward and onto the next task to continue the process.

Rogers (1980: 113) summarises by saying: “Persons in an environment infused with these attitudes (congruence, acceptance and empathy) develop more self-understanding, more self-confidence and more ability to choose their behaviour”. A person centred approach to teaching will necessarily involve the students in having a greater say in their education. As illustrated by Rogers (1984), encouraging students to have a person centred approach to their education can be a traumatic exercise. However, the rewards seem to be quite fulfilling, as the students become self-regulated learners. The transformation from a teacher centred approach to learning towards a self-regulated approach can cause students to lose confidence, experience self-doubt and question the outcome. One of the outcomes of postgraduate education should be to create students’ conceptions and skills to become lifelong learners. Endedijk et al. (2014) investigated the development of self-regulated learning in a group of student teachers; they found that only 33% of the students in the study changed in the direction of becoming independent learners (Endedijk et al., 2014). This indicated that despite the attempts to introduce the student teachers to a person centred approach to learning, the majority were content to continue with a teacher centred approach and therefore did not value the importance of become more self-regulated learners.

The transition from teacher centred teaching to person centred learning is not without difficulties. It has been reported that the introduction of different qualitative approaches to teaching, results in qualitative different approaches to learning (Trigwell et al., 1999). In other words, classes where teachers have described their approach to teaching as having a focus on what they (the teachers) do, students are more likely to report a surface approach to learning. Conversely, in classes where students report a deeper approach to learning, the teachers report adopting a more student centred approach to their teaching and a more significant impact on changing students’ perceptions. The concept of a more person (student) centred approach to teaching has been well illustrated in a study that looked at medical students working towards their qualifications as physicians (Aspy and Roebuck, 1974). The medical students did not receive what one might call ‘classical’ medical training but received three years of intensive medical knowledge they needed to deal with patients. Findings from their study indicated that their results were very well considered by the examination board and that they were more creative and humane than perhaps more traditional approaches. Rogers (1978) concluded that a person centred approach, whether at elementary, high school, college or graduate level pays off. I would argue that in a postgraduate clinical teaching environment the learning should be person centred but with the proviso that the teacher is able to guide the learning, in order to incorporate the basic skills required as well as allow the flexibility to cover those areas that the participants feel are in their interest and value.

### 2.4.7 Learning experience and confidence

In this section, I consider the learning experience of the student and its impact on changes in their confidence. I explore how changes in confidence influence the learning experience. The learning experience and particularly the relationship of the learner to the teacher can prove to be an emotional one. The stresses and anxieties that go hand in hand with a period of self-selected study, the doubts and periods of negative reflection and the hopes and desires of completing the learning exercise are linked to confidence and self-efficacy (Bandura, 1986). The various pedagogical approaches to learning, for example the use of simulation, lectures and practical/hands-on teaching can influence the confidence of individuals. The use of simulation in medical education has become more prevalent in recent years. The advantages include being able to allow student to practice a technique several times, practicing in a safe environment, a gradual increase in competence leading to greater confidence and the opportunity for peer learning and reflection. The indications for being able to predict a correlation between a learning experience and confidence would appear to be strong, however clinical experience and level of confidence have no predictive value in performance assessments when using standardized simulation scenarios. In a study of 144 medical students, Morgan and Cleave-Hogg (2002) undertook to determine whether breadth of clinical experience and student levels of confidence were indicators of competency on standardized simulator performance-based assessments. They concluded that there was no correlation between clinical experience, level of confidence and performance in a standardized simulation test. Neither was there any correlation between level of confidence and clinical grades or written examination marks.

Beyond the realms of medical learning experiences and their links with confidence, Knight (2015) discussed the role of using teaching/learning theories and their impact on the outcome on postgraduate trainee teachers in a Higher Educational Institute (HEI). Newly qualified teachers saw theory as an integral part of their practice, as a ‘crutch’ to support their confidence and underlined the importance of the HEI (university) in the process.

There is only a limited amount of literature to suggest that while cognitive skills may be enhanced by the use of simulation, the learning experience involving simulation leads to a boost in confidence (Brannan et al., 2008). I have not found any studies demonstrating a relationship between simulation and confidence in undergraduate or postgraduate dental training.

As levels of confidence increase, individuals are likely to become more adept at self-regulated learning. As levels of self-efficacy rise and goals of a suitable challenge are met and exceeded, motivation will be enhanced and confidence will ensue (Bandura, 1986). This leads to the individual accepting changes in the learning experience and being willing and able to adapt to different learning experiences. Particularly in a long-term learning experience the increases in confidence and self-doubts, simultaneously, will reflect on the individual’s ability to cope with changes, during their journey in the learning experience and rely on their antecedents for sustenance of their confidence.

### 2.4.8 Cognitive ‘Whole Person’ Learning

In this sub-section I consider the implications of “whole person learning” using Rogers’ (1980) perspective on how the learner moves from a position of reliance on teachers to a position of self-regulated learning.

‘Whole person learning’ can be considered to include both cognitive and experiential learning (Rogers, 1980). The perception that cognitive and experiential learning should be dealt with as separate issues was argued against by Rogers. Indeed, it would seem unlikely that by ignoring for example the emotional, experiential learning outside the classroom, that the teacher would be able to have their desired impact upon the student. The opportunities for participants to bring their personal experiences, their experiential learning, to the discussion and be supported by the cognitive aspect of learning means that the two elements are brought closer together and can both contribute to a deeper, more fulfilling and enlightening learning experience thus illustrating Roger’s perception of ‘whole person learning’.

In the same way as the psychotherapist and client, a whole person approach to teaching will necessarily involve the students in having a greater say in their education. As illustrated by Rogers (1984), encouraging students to have a whole person approach to their education can be a traumatic exercise. However, the rewards seem to be quite fulfilling, as the students become self-regulated learners (see 2.3.2).

In many ways, there are similarities between teachers teaching students and psychotherapists interviewing a client (Rogers, 1984). Rogers considered that changes to a person in psychotherapy have similarities to changes in students in education. He considers that the client/pupil becomes more confident and self-directing, adopts goals that are more realistic, develops into the person he would like to be, and is more flexible and less rigid in his perceptions (Rogers, 1984). This would seem to be true of all students including those undertaking a master’s degree.

The students are a significant part of the learning process but unless they have decided to be totally individualistic as a learner ([Brookfield, 1984](#_ENREF_28)) then input from the teachers is a vital part of the learning process. It is also important to recognise the contribution that transference of knowledge and skills from the educational environment to the workplace has to play (Guile, 2014).

### 2.4.9 Learning in Social Groups or as an Individual

In this sub-section, I consider the significance of learning either within a group or as an individual. Whilst this section is not a specific learning intervention, I consider the importance of this aspect in light of the RDP programme and the emphasis on small group learning.

It has been reported that a certain amount of learning takes place beyond the confines of an individual’s attention and that social interaction is an important contributor to overall learning (Salomon and Perkins, 1998; Vygotsky, 1978). Salomon and Perkins (1998) discussed the values of social and individual learning, which involves learning to learn from others, learning to learn with others, learning to draw the most from sources other than books, learning to facilitate others' learning not only for their sake but for what that will teach oneself, and learning to contribute to the learning of a group. Vygotsky (1978) postulated that social learning and building on student’s past experience was an important concept as this could lead to students developing confidence that stimulates competence (Mahn and John-Steiner, 2002). Central to this idea was Vygotsky’s (1962) notion of the ‘Zone of Proximal Development’ and the link between the thought of the student and its affect. The Zone of Proximal development is “the distance between the actual developmental levels as determined by independent problem solving and the level of potential development as determined through problem solving under guidance, or in collaboration with more capable peers” (Vygotsky, 1978: 86). Affect plays a significant role in student’s understanding and application of knowledge and once this is recognised and appreciated by tutors, they will be able to better offer support and guidance. Vygotsky’s caring support, derived from his understanding of the relationship between affect and reason and the importance for education of an expanded notion of the zone of proximal development that includes emotions like confidence.

Norman and Hyland (2003) conducted a study of participants in a social setting and therefore could question the link between social learning and confidence, which is the dominant aspect of the ‘community of practice’ (Lave and Wenger 2003). Together with teaching and learning support, Norman and Hyland (2003) showed that the role of social learning would appear to have a significant impact on confidence. Although individual learners can influence their own level of confidence, tutors, peers, mentors and workplace colleagues can have an impact on confidence by being supportive, encouraging and providing constructive feedback. Equally, it is conceivable that the lack of these concepts could result in a negative way on confidence.

In my study, there are obvious social aspects that could have a profound impact on the participants’ confidence. The learning experience of small group teaching, the close links to academic staff and the impact of social media may all contribute to whether there is a positive link between confidence and the learning experience.

## 2.5 Confidence and professional practice

In this section, I investigate the impact of confidence from the clinical aspect and consider patient satisfaction, future learning and its relationship with professional practice. I consider other relevant professions, in particular medicine. By investigating this aspect of the literature, I am able to address the third research question. Professional practice is an ability to acquire knowledge, develop skilled behaviour, plan and deliberate over decisions, deliver information and direct one’s own behaviour (Eraut, 2000), in order to provide a service to members of the public.

### 2.5.1 The impact of confidence on clinical practice

In this sub-section, I consider the impact of changes in confidence on clinical practice. The impact of changes in clinical practice following a learning experience are difficult to measure in quantitative terms so I have reported on individuals’ perceptions of impact, including confidence. Several studies report on the impact of a learning activity on confidence in GP practices (Armstrong et al., 2010; Currey et al., 2015; Currie, 2008; Lam et al., 2011; Phillips, 2016; Ward and Sanson-Fisher, 1996).

Armstrong et al. (2010) reported on an evaluation of an educational intervention on the competence of social workers and concluded that social workers were more competent in delivering cognitive behavioural strategies following a brief face-to-face learning experience. In a study based on social learning, a group of nurses reported that they were able to supply safe care to their patients with more confidence following the learning experience (Currey et al., 2015). The nurses were empowered by the acquisition of advanced critical thinking, teamwork and communication skills and specialty practice knowledge. A grounded theory study linking learning to confidence in developing practice looked at developing confidence in nurses to strengthen their clinical expertise (Currie, 2008).

Lam et al (2011) investigated the learning outcomes of a short postgraduate course for GPs on dermatological training and concluded that graduates of the course improved confidence, attitudes and skills in treating common dermatological problems. They also reported being able to handle more patients with common dermatological problems in their practice and refer fewer patients.

The complexity of treating patients with multiple illnesses was investigated by Phillips et al. (2016). Following a 6-hour learning experience they concluded that inter-professional workshops had an immediate impact on the knowledge and confidence of those attending, which appeared to be sustained. The short-term nature of the apparent success of this study is contradicted by Ward and Sanson-Fisher (1996), who reported that following a 3-day workshop, little clinical benefit was perceived in adopting preventative care measures by trainees.

The only dental study found with respect to confidence following a postgraduate course and its impact on practice reported that confidence of practitioners had been increased in a learning intervention involving placing implants by using a surgical stent to allow proper alignment of the implants (Sussman and Goodridge, 2006). It was recounted that the overall experience for the operator and patient was very positive.

The role of CPD and its impact on practice in the postgraduate training of teachers was investigated by Harland and Kinder (1997). They suggested that teachers undergoing a CPD activity needed to achieve a positive meaning, value the training they had received and to be in harmony with the CPD providers. It was reported that the emotional experience attached to a learning activity, particularly a positive emotion could be short lived, following a one-day CPD session. The long-term impact on their practice was therefore limited but some impact was recorded when new teaching approaches were adopted (Harland and Kinder, 1997)

There would appear to be a positive impact of confidence following learning interventions on clinical medical practice, but yet no data on confidence following a learning intervention and dental practice.

### 2.5.2 Confidence and patient satisfaction

In this sub-section, I discuss how practitioner confidence can influence patient satisfaction. Due to the lack of dental studies in this area, I have concentrated on medical practices. Studies show that despite an admission of lack of confidence and ability in certain procedures some medical professionals are not willing to attend a continuing medical education session to supplement their knowledge and be in a better position to advise patients in primary and secondary care ([Robotin et al., 2013](#_ENREF_159), [Makwana et al., 2016](#_ENREF_124)). Robotin et al. (2013) investigated the impact of a continuing medical education programme for general medical practitioners to improve their knowledge and confidence in dealing with patients with Hepatitis B. Despite admitting gaps in their knowledge about Hepatitis B these GPs did not improve their ability to screen patients in primary care following a CME session and did not improve their confidence level in this specialty.

Despite reporting a low level of confidence in dealing with dental trauma, doctors in primary and secondary care had no desire to improve their knowledge or confidence (Makwana et al., 2016). Their low level of confidence was attributed to poor training at undergraduate level and little or no training following graduation. In a study by Goldstein et al (2002) patients cited the lack of confidence of the medical practitioner as a contributory factor to their lack of confidence in the treatment they were recommended.

### 2.5.3 Confidence and future learning

In this sub-section, I consider the impact that confidence has on the future learning opportunities of the individual. By recognising areas of knowledge and skills in which an individual is lacking, can lead to them seeking out further education to resolve the issue. An increase in confidence can result in that individual seeking a specific course or programme to rectify their shortcomings. This was certainly the case before CPD became mandatory in dentistry in the UK (GDC, 2002). Several studies have highlighted the desire of GDPs to undertake courses of postgraduate dental education to improve their knowledge, skills and confidence or resulting from a realisation that to improve and develop their practice, new knowledge was needed (Eaton and Reynolds, 2008; Hopcraft et al., 2007; Illing et al., 2002; John and Parashos, 2007).

In an attempt to justify whether an increase in confidence following a period of training was reflected in greater competence, senior resident surgeons where questioned about their perceptions of their confidence in certain surgical procedures. These perceptions were recorded and evaluated against what the consultant surgeons thought to be a realistic appraisal of their skill, with the results that: senior residents were considered to be ill-prepared to perform the procedures studied and had unwarranted confidence in their knowledge and abilities. Senior resident surgeons’ perception clearly did not equate to reality in preparing these trainees to perform ([Bowyer et al., 2015](#_ENREF_24)). This study indicated that ongoing education was necessary for these trainee surgeons and that confidence alone was not the only criteria of improvement in clinical skills, competence needs to be measured as well. In order to support the improvement of these senior resident surgeons’ feedback of their results as well as possibly further instruction would need to be relayed to them.

It is usual for some feedback to be given to participants whether of a formative or summative nature depending on the organisation of the learning activity and whether assessment was undertaken following the activity. This feedback is extremely helpful in allowing the individual to plan future learning needs and setting themselves realistic goals (Bandura and Cervone, 1983; Zimmerman et al., 1992). The attainment of these goals is a powerful tool in the development of confidence for an individual. Clinical performance feedback is an important component of the ongoing development and education of health care practitioners ([Kaye et al., 2014](#_ENREF_102)). For physicians, feedback about their clinical practice and outcomes is central to developing both confidence and competence at all stages of their medical careers. Medical professionals may use their individual feedback reports for reflection and designing personal development plans as lifelong learners thus enhancing their personal confidence and improving patient care.

## 2.6 Summary

In this section, I summarise the findings of my literature review and the theoretical positioning of confidence within the context of my study.

Understanding confidence is a complex concept/emotion built around self-efficacy, motivation, goal setting, the individual and antecedents and attributes. The motivation to learn can have an impact on confidence by both increasing and decreasing the emotion in the same individual, at different times and in different contexts. As adults, the participants in my study should be considered as a separate issue when comparing them with people in compulsory education. Their confidence will be shaped by several factors including their: adaptive capacity to indulge in self-regulated learning, ability to reflect and change and aptitude to embrace a variety of teaching pedagogy.

It is clear that motivation is a major force in an individual’s ongoing education, which is influenced by confidence. A confident individual is more likely to be self-motivated, self-efficacious and less likely to be hampered by self-doubt. On the contrary, they would take self-doubt and use it to motivate themselves further. Very often learners will build their confidence on previous learning experience, whether positive or negative.

I have discussed the impact of how confidence changes through a longitudinal learning experience and have considered the influence of specific teaching pedagogy on confidence. The impact of an individual’s confidence in the clinical situation can influence patient satisfaction, encourage a desire for a personal development plan (PDP) to propose future learning needs and goals and to have a positive impact self-efficacy.

Figure 2 is a summary of the literature review that has occupied Chapter 2 of my thesis. The summary illustrates the links between the various factors that have been discussed in the chapter with the concept of confidence and illustrates how the components that make up confidence have addressed the research questions. Box 1 is related to the first research question; box 2 the second and box 3 the third research question.

**Understanding Confidence**

* Self-efficacy
* Motivation
* Setting personal goals
* Individual’s confidence
* Antecedents/Attributes

**3. Confidence and Professional Practice**

* Impact on clinical practice
* Confidence and Patient satisfaction
* Confidence and On-going learning

**2. Learning and Confidence**

* Pedagogical approaches
* Simulation, Lectures, practical
* The learning environment
* A person centred approach
* The learning experience
* Cognitive learning
* Social learning

1. **Confidence and Learning**

* Confidence and Engagement of learning
* Effects of Increase/Decrease on Learning
* Self-regulated learning
* Human Behaviour and Self-influence

**Figure 2. A summary of the literature review.**

his summary of the literature review highlights the salient points within the literature review and gives a structure to answering the three research questions. The development of the following chapters is based upon this diagram in terms of organisation of the methods, findings and discussion. The three research questions are approached using this framework.

In chapter 3, I discuss the methods used for collection and analysis of data, their advantages and disadvantages.

# **Chapter 3**

# **Methods**

## 3.1 Introduction

In this chapter, I set out the rationale for a mixed method approach to my study and discuss my role as a researcher. I continue by outlining details of the setting and the study participants. I then consider the four methods of data collection used, (questionnaires, focus group discussions, interviews and field notes), in chronological order, to answer the research questions:

1) How do changes in confidence influence the learning experience of general dental practitioners?

2) To what extent do specific pedagogical learning interventions have an impact on general dental practitioners’ perceived confidence during a master’s programme?

3) In what ways do general dental practitioners perceive changes in their confidence having an impact on clinical practice?

I present a timetable of events for the study, which allows the reader to have an overview of the methods employed. I then discuss how I organised and analysed the data and finally consider the limitations of my study.

## 3.2 Rationale for mixed-methods longitudinal approach

The mixed method approach to data collection, including quantitative and qualitative data, was developed from my early realisation that quantitative data alone would not adequately answer the research questions. I wanted to know in particular why the participants felt the way they did about confidence, which could not be answered by quantitative data alone. The inclusion of a qualitative approach ensured the development of a framework for conceptualising CPD (Goodyear-Smith et al., 2003). The mixed method, long-term approach to this study allowed me to investigate how changes in confidence influenced the participants’ future learning process, added to the robustness of the data, allowed for a more in-depth analysis of the participants’ perceptions of their confidence and allowed a longitudinal approach to the impact of confidence on clinical practice. The quantitative data allowed me to ascertain the frequency of the various aspects of confidence with respect to the research questions, whereas the qualitative data provided me with a sense of the emotions that the participants were experiencing. This was a longitudinal study over 6 years, in order to follow the potential changes in confidence experienced by the two cohorts of participants, over a prolonged period of the part-time master’s programme. The longitudinal nature of this study was essential to monitor participants through all elements of the RDP programme, as I anticipated there would be fluctuations in confidence during such an extended period.

Whatever the nature of a study, whether it is quantitative, qualitative or mixed method, it can be significantly enhanced by exploring convergences in stories generated from alternative data collection methods or paradigms. In my study I use a mixed method approach in order to ascertain: i) corroboration, as in establishing convergence; ii) elaboration, as in providing richness of data; and iii) initiation, which prompts new interpretations, suggests new areas for further exploration, or recasts the entire research question. (Greene et al., 1989). This mixed methods approach develops a rich database for the eventual analysis enabling me to include the ability to triangulate data, the facility for complementarity and the development of the study.

By using a method of triangulation, I was able to seek convergence in the classic sense by approaching the same question from two or three alternative directions. In order to introduce complementarity into the data collection, I used qualitative and quantitative methods to measure overlapping, which allowed different facets of the same phenomenon to be explored. I employed a system of sequential use of qualitative and quantitative methods, where the first method was used to help inform the development of the second. The combination of these factors ensured a robust, valid and comprehensive data collection outcome.

Qualitative research does not look at the cause and effect aspect but rather looks at the perceptions of those involved in a particular study. This allows the values, passion and politics to be expressed. Qualitative research requires the researcher to be patient, honest, persistent, and imaginative and have empathy with the study. Additionally, there is a component that the researcher is learning along with the subjects of the study (Reason and Rowan, 1981). The flexibility of qualitative data in the form of semi-structured or unstructured interviews and the collection of participant’s observations, allows for the development of participants’ perceptions, which fits in well with the protocol of this current study.

The primary reason for a mixed method approach to my study was complementarity. However, as the study progressed I introduced an element of developmental paradigm to reflect the changing nature of the data and in order to incorporate developing themes coming from the data.

## 3.3 My role as researcher

In this section, I outline my role as the sole researcher in order to put into context how my role within the university department has changed during the course of this study. I acknowledge the potential pitfalls of being an insider researcher, whilst accentuating the advantages, the need for reflexivity and the importance of ethics approval, whether ‘procedural ethics’, ‘ethics in practice’ or what might be called ‘participants’ ethics’. The role of the qualitative researcher, whether as an individual or as part of a research team needs to be established in the context of the research to be undertaken in order to: i) enable the study participants to understand the role of the researcher, ii) prevent partiality creeping into the study, iii) be considered as an instrument of data collection and iv) ask probing questions and develop discussions.

Having attended the RDP programme, as a participant, in its previous format, of a yearlong CPD course, in 2000, I was asked to explore the feedback given by students on subsequent courses, report my findings to the programme committee and suggest ways of modifying the programme to reflect the feedback of past participants (2004-2008). In 2008, it was suggested that I had accumulated sufficient data to commence a research project looking into the impact of postgraduate education on general dental practitioners.

I was appointed as a tutor on the RDP programme in May 2012, and continue to hold that position; therefore my study is a form of insider research, which is defined as “research undertaken by an individual or group that are working closely with the subjects or topics that are the focus of that research” ([Mercer, 2007](#_ENREF_137): 1). This raised three issues I needed to address: i) my role at the start of the research and how it changed; ii) the impact that my position could potentially have on the research; and iii) my reflexivity throughout the study. I address each of these in turn. Having been involved with the RDP programme as a consumer, initially, then as a researcher of its participants and finally as a tutor has given me a unique insight into the workings of the programme and the department that supports it. This intimate relationship with the programme has allowed me to develop knowledge that would be impossible for an outsider researcher to appreciate. By being familiar with the programme, I have been able to develop questionnaires relevant to my study, instigate focus group discussions that included semi-structured questions based on a previous pilot study, thereby encouraging participants to communicate with each other as well as with me, and to supplement semi-structured interviews with informed, relevant questions when appropriate.

Mercer (2007) argues the case for and against insider research, whilst emphasising that insider research may have limitations for the researcher and the subjects of the study. For my study, insider researcher was beneficial as a close working knowledge of the programme, department and requirements of the participants was helpful by the questioning of the participants to be undertaken in familiar, unthreatening surroundings. Provided, as the researcher, I did not reveal my own opinions, a degree of insider research is not problematic (Mercer, 2007) and can be advantageous. By continually reviewing the ethics situation and by being sympathetic to the advantages and disadvantages of ‘insider research’ I was able to collect comprehensive data objectively.

This current study evolved from that original idea of looking into the impact of postgraduate dental education on GDPs; my study commencing at the start of the 2010 RDP programme. I was able to shadow the 2010 and 2011 cohorts prior to 2012, when I was invited to do some part time teaching on the certificate element of the RDP programme. This transformed my status as a relatively independent researcher into an insider researcher and enabled me to develop my relationship with the participants further. In order to achieve meaningful responses to my research questions, I saw this close relationship with the participants as a distinct advantage. My knowledge of the format of the programme as a past student (and then as a tutor) gave me a unique insight into the mind-set of the participants. On reflection, my position of insider researcher enabled me to develop the correct methodology for this study.

My change in status in 2012, led me to seek further guidance from the Ethics Committee. Despite the fact my status did not change again, I continued to be aware that any further changes would need further guidance from the Ethics Committee. I adopted a reflexive approach, because I understood the perceived drawbacks of being an insider researcher but felt that in my study the advantages outweighed the drawbacks. I also understood the effect of reflexivity on the personality or presence of the researcher on what is being investigated (see 3.4).

Having acknowledged and disclosed the obvious part that I played within the research, I was extremely careful to maintain high levels of reflexivity throughout the study. However, one should recognise that some of the participants might feel it is not in their best interest to comment or criticise a member of staff who is also the researcher. I see reflexivity not as a single or universal entity but an ongoing process (Guillemin and Gillan 2004). By using a reflexive approach, I was able to construct knowledge from the research process, determine what sort of factors influenced the research construction of knowledge and how these influences are shown in the planning, conduct and writing–up of the research. At no time during the study did I teach any of the study participants. Reflexivity identifies that researchers are an integral part of the social world they are researching (Cohen et al., 2008). I understood that as the researcher it was potentially difficult not bringing my own experiences to the research arena, which may lead to participants behaving in a particular way. The research process involves the researcher in knowledge construction, which is an active, ongoing process that requires constant review, reflection and questioning of the data, researcher, participants and the context in which the research is taking place. Reflexivity has been defined as the process whereby “the researcher should constantly take stock of their actions and their role in the research process and subject these to the same critical scrutiny as the rest of their data” (Mason, 1996: 6). The voluntary nature of data collection ensured that those individuals who did not wish to reveal their thoughts were not penalised. Equally, it can be argued that insider research allowed the study participants to be more forthcoming with their views and opinions. Being aware of these potential disadvantages, allowed me as the researcher to be thorough and be aware of my partiality.

## 3.4 Ethical Considerations

There were a number of steps that I took to ensure that the research was conducted ethically. I obtained approval from the participants and made both cohorts fully aware of the purpose of the study, and what the intentions were for possible future publications, by giving each participant an information letter attached to the initial questionnaire (see Appendix 1). All the participants entered the study voluntarily. If any participant decided they did not want to continue with, for example an interview, they were free to withdraw immediately. I was not aware of any participants withdrawing from the study due to concerns over confidentiality and anonymity. There was no intrusion into the participants’ privacy. The data recorded was anonymous and confidential. I assured those participants who volunteered to be interviewed that their anonymity was important and would be maintained. An appropriate consent form was completed by participants prior to interviewing and reassurance given to the participants that their inclusion in the study was voluntary (see Appendix 2). The interviews took place as, where and when it was convenient to the interviewee.

Alongside methodological ethical issues, so called ‘procedural ethics’, I also dealt with everyday ethical issues that arise during qualitative research (Guillemin and Gillan, 2004). In order to address these, I ensured that prior to the distribution of questionnaires the participants’ responses would remain anonymous and confidential. The voluntary nature of the questionnaires was also stressed. Focus group discussions and interviews were undertaken on a voluntary basis; consent forms were distributed and signed by all those agreeing to interview. Audio recordings of focus group discussions and interviews were undertaken with the consent of those involved. Informed consent was derived from focus group members; if anyone had dissented, I would not have recorded the sessions. I was aware of the need to be continually reassessing the situation with respect to ‘procedural ethics’. The need to deal with possible everyday issues that arise in any research project was clear to me. Issues of confidentiality for example needed to be constantly re-visited and re-enforced to the participants. I had to consider a situation where a participant told me something in general conversation (field notes) that was confidential; but that I was aware, I needed to break confidentiality in order to be ethically correct. I decided that I would have to take each and any case on its own merits and having reflected on the situation make a decision. Through the duration of my study, I constantly reviewed the ethical issues and took appropriate action to ensure the anonymity and confidentiality of the participants. The personal, face-to-face interviews challenged the concept of anonymity but an appropriate consent form (see Appendix 2) and re-assurance to the individuals that their interview transcript was only to be used in my study and that it could not be identified by anyone else was undertaken.

## 3.5 The setting and the participants

In this section I introduce the setting in which the RDP programme takes place and the participants of my study. I outline the facilities available for the participants as well as conditions for their acceptance on the programme. The General Dental Practitioners who made up the cohort of my study were participants of the Restorative Dental Practice programme and chosen at random as a suitable sample for the purpose of this study. The GDPs, who are the subject of this study, were all self-selected participants and therefore I recognise, not necessarily representative of the dental profession.

The two cohorts in my study numbered 72 each, which was the maximum number that the institute could accommodate. Several potential students remained on a waiting list. The part time RDP programme developed from originally a CPD course for six GDPs in 1991, to its current format. The programme is restricted by the facilities at the dental institute, the number of teaching staff and competition from similar programmes.

My sample size consisted of two cohorts of GDPs commencing the RDP programme in 2010 and 2011. I chose this sample size for the following reasons: i) there was consistency of numbers of GDPs attending the programme during this time; ii) I considered that 144 participants were representative of the programme; iii) based on pilot studies, collecting qualitative data from more than two cohorts would be unnecessary and iv) as a five-year longitudinal study for each cohort, the study would have taken too long to complete, been too expensive, and made unrealistic demands on accessibility. I considered the sample size in my study to be satisfactory from both a quantitative respect (Hammond, 2004) and very acceptable for the qualitative data needed (Creswell, 2013). I noted that following the inclusion of all available data, repetition of commonly occurring themes and opinions were experienced, indicating saturation of the data and therefore a suitable sample size (see Table 5, Page 81). Since the participants attending the programme all have similar educational backgrounds, similar jobs and similar reasons for attending the programme, my sample size is appropriate for the less diverse nature of the participants. There is diversity of the cohort in terms of age, number of years of experience and previous postgraduate educational experience. A relatively small number, 25 (17.3%), completed (handed in their dissertation) at the end of the five-year master’s programme.

I have included in this chapter the demographic data collected from the pre-course questionnaire, the questionnaire at the end of the diploma and the questionnaire at the completion of the master’s degree in order to contextualise the demographic findings and so the reader is familiar with the demographics of the cohorts. In Table 1, I have illustrated the demographic details of the participants who started the RDP programme in 2010 and 2011. I have shown the diversity of the participants in relation to their age, gender and the number of years’ experience in dental practice. The majority of the participants were in general dental practice at the start of the programme. Two participants in the 2010 cohort worked for the community dental service and a small number from each cohort worked for corporate dental companies.

|  |  |  |
| --- | --- | --- |
|  | **2010** | **2011** |
| Number of Returned Questionnaires | 70/72 (97%) | 67/72 (93%) |
| Age | Mean 32  Range 25-50 | Mean 33  Range 24-57 |
| Gender | Male=44 (63%)  Female=26 (37%) | Males=48 (79%)  Females=12 (21%) |
| Number of Years Qualified | Mean 8.9  Range 3-30 | Mean 8.9  Range 2-20 |
| Location of Undergraduate University Training | UK=47 (66%)  Europe=7 (10%)  Rest of World=14 (21%) | UK=38 (62%)  Europe=9 (15%)  Rest of World=13 (21%) |
| Type of Practice Currently Working in | NHS=8 (11%)  NHS and Private=51 (73%)  Private=8 (11%)  Specialist=0 (0)  Community Service=2 (3%)  Forces=0 (0)  Industry=0 (0)  Retail=0 (0)  Corporate=2 (3%) | NHS=23 (34%)  NHS and Private=27 (40%)  Private=8 (12%)  Specialist=0 (0)  Community Service=0 (0)  Forces=0 (0)  Industry=0 (0)  Retail=0 (0)  Corporate=5 (7%) |

**Table 1. Demographic data for 2010/11 cohorts on entering the programme**

The setting for my study was a postgraduate dental teaching institute attached to a university medical faculty. The institute accepts both full time and part time students for CPD activities of a short duration as well long term degree based courses designed for career development and specialist training. The participants are all self-selected and part time students, who have commitments to patients in either their own practices or in those owned by a principle or corporate body. Entry onto the programme is dependent on having satisfied the undergraduate examinations either in the UK or overseas, being registered as a General Dental Practitioner in Europe and having supplied suitable references. The programme does not have a competitive entry but numbers are restricted by the size of the facilities, the number of teaching staff and fulfilment of the above criteria.

Facilities include two/three seminar rooms, three skills laboratories, which can accommodate 18 students each, a laboratory for casting models and five fully equipped dental surgeries for clinical teaching sessions. The skills laboratories are equipped with phantom head units (for simulation teaching) and a full range of instruments for use on teaching days as well as a teaching bench linked to computer terminals at each work station so students can follow tutor lead demonstrations of techniques on their own screen.

## 3.6 Data collection methods

In this section, I discuss each method of data collection: questionnaires, focus group discussions, personal interviews and field notes. I consider the pros and cons of each individual method of data collection. The four sources of data collection all supported the three rationales of robustness, validity and comprehensiveness.

I undertook a pilot study in 2008/9, before starting the main study in 2010, which enabled me to refine the initial questionnaires, develop skills in facilitating a focus group discussion and interviewing and cultivate skills in mixed methods data analysis.

The responses to questionnaires enabled me to design the semi-structured nature of the interviews in particular and to a lesser extent the focus group discussions. The field notes were also a source of planning the interview questions as I could pursue items of concern expressed by the participants, where relevant. I chose the approach because I was interested to hear about the individual experiences from the participants, I wanted to understand their perceptions of how the RDP programme had influenced their confidence and I wanted to discover what impact any changes in confidence had had on clinical practice.

Each method of data collection is discussed, giving the required theoretical grounding and approach undertaken.

### 3.6.1 Questionnaires

Questionnaires are primarily designed to collect data of a quantitative nature. I designed the questionnaires in this study with some questions of a multiple-choice nature, some on a linear scale and some using Likert scales to keep the questionnaire interesting, relevant and user friendly.

Questionnaires were issued to the participants before they started the programme, at the conclusion of year one, at the conclusion of year three and finally on completion of the master’s element of the programme. Hard copy questionnaires (144) were sent to GDPs prior to the programme and to participants at the end of year 1. Questionnaires (60) were handed to those participants who completed the diploma course (2010, 30; 2011, 30). Questionnaires (36) were hand delivered to those participants from both cohorts who completed the master’s element. The questionnaires were designed to be linked ensuring continuity of the questioning within and between the two cohorts (see Appendices 1, 3, 4, 5). The return of questionnaires was facilitated by issuing a return stamped addressed envelope for those participants who could not complete them at the time. I distributed the pre-course questionnaires with the pre-course information packs, to ensure a better, more consistent response rate.

I designed the questionnaires to be anonymous in order to encourage full, truthful responses. By asking the participants for a measure of their confidence on a linear scale, in each questionnaire, it was possible to trace the cohorts’ perceptions of their confidence levels particularly in communication skills and ability to undertake dental restorative procedures. Each questionnaire was designed to complement the previous one by following a similar theme throughout the study in order to follow any trends that occurred. Having decided upon the primary objective of the questionnaires, which was to collect quantitative data from the two cohorts, it was necessary to decide upon the design, content and length of the questionnaires, and therefore develop a specific set of features about which direct data can be gathered (Cohen et al, 2008). The questionnaires were a mix of multiple choice questions, ratings scales, open-ended questions and closed questions in order to allow a range of questions to be posed. The multiple-choice questions were designed to give me a clear understanding of the participants’ preferences and to help with the analysis. The rating scales enabled me to gauge participants’ predilections for certain responses. The open-ended questions, together with appropriate space, encouraged the participants to give their personal responses. I chose a five point Likert Scale for the questionnaires (Likert, 1932) because a Likert scale facilitates: i) easily quantifiable responses, ii) respondents can express their degree of agreement, iii) responses can accommodate a neutral or undecided opinion and iv) a high degree of versatility. The disadvantages of the Likert Scale include: i) limitation of scale (normally 5 or 7 choices), ii) space between the choices is not equidistant or linear, iii) frequent avoidance of the extreme ends of the scale, iv) there is no opportunity to check the reliability of the responses, v) there is little opportunity to add comments, and vi) by having a mid-point to the scale it is possible for the respondent to not commit to a definitive answer. Bearing in mind these potential drawbacks, a 5-point Likert scale was employed. I estimated that the questionnaires would take 15 minutes to complete.

I addressed the disadvantages of there being no opportunity to check the reliability of the responses and there being little opportunity to add comments to questionnaires by having several opportunities for comments to be made, which would ultimately be part of the qualitative data and by not relying totally on a Likert type scale to generate a response. Information about confidence levels was on a linear scale (1-10), opinions were sought giving a wide range of possible answers and open-ended questions were posed inviting a thoughtful, reflective response. The questionnaires requested data on: (i) perceived impact of changes, for example in confidence levels, (ii) perceived changes to practice protocols, (iii) current practice protocols, (iv) qualitative data where appropriate and (v) demographic information.

My study included “closed-ended” questions (Johnson and Christensen, 2011) as a deliberate attempt to allow comparisons between the cohorts. This facilitated being able to assess the cohort whilst acknowledging individual responses, allowing a mean score to be reported (Marsh, 1987). Standardization of the questionnaire is important, as the aim is to provide a common inducement to each person involved in the research (Dillon, 2007). I needed the questionnaires to be standardised to be: i) consistent for both cohorts; ii) making recording more consistent and iii) to follow a theme through the study.

This study posed questions about the confidence of the participants prior to, during and on completion of the RDP programme and about the impact of the programme on them and their clinical practice. I used questionnaires as one method of obtaining information because: i) questionnaires are a well tried and tested format to gather data, particularly for social science research (Kember and Leung, 2009), ii) they are a cost effective way of gathering data, iii) participants’ anonymity can be preserved, iv) the data is relatively easy to administer (Anderson, 2007) and v) specific information can be provided for the researcher in various forms (closed questions, open questions, scales), to specifically answer the research questions. I considered questionnaires to be a suitable method of data collection for this type of study due to their ease of use, their reliability and their general acceptance as an appropriate method of data collection. There are some drawbacks to the use of questionnaires: i) the recipients may choose to be selective in the questions they answer; ii) the response rate, particularly for posted and e-mailed questionnaires, may be low; iii) the questionnaire needs to be concise in order to encourage completion, with the risk of not asking potentially relevant questions and therefore compromising its validity; iv) data collection, organisation and analyses can be time consuming; and v) the anonymity of the responses means that it is impossible to track individuals through the period of the study. I feel that having developed well-structured, balanced questionnaires, which were piloted and amended accordingly, the questionnaire is a valuable method of data collection. I was able to elicit quantitative data in a logical order, evolve a user-friendly style of questionnaire and answer the research questions. Any disadvantages were overcome by the size of the cohorts responding, making the questionnaire as interesting as possible whilst gaining the desired information, and encouraging completion of questionnaires. The data collected by questionnaire in my study were largely quantitative in nature, but qualitative comments were encouraged by including open spaces after each question for thoughts and comments.

The introduction of the pre-course questionnaire allowed me to record the participants’ postgraduate behaviour before the programme started and therefore be able to compare data before, during and after each element of the RDP programme (Bullock et al., 2010). I used Kember and Leung’s (2008) protocol for constructing a valid questionnaire because I wanted to develop questions that were reliable, valid and adequately supported the evaluation of the programme. The pilot study I mention above allowed me to improve the validity and reliability of the questionnaires. In addition to asking senior lecturers for their opinions on draft questionnaires I consulted the literature on questionnaire design ([Anderson, 2007](#_ENREF_3), [Cohen et al, 2008](#_ENREF_36)). The questionnaires used in my study, started as being teacher centred but as they evolved attempts were made to improve the level of construct validity. The early questionnaires were evaluation based and teacher centred; the opinion of students was not considered (Marsh, 1987).

The quantitative nature of data collected by questionnaires allowed me to develop the ideas and questions that were used in the focus groups and interviews. I decided that an overall response of the two cohorts of participants was appropriate because I could not trace individuals through the course of the study. It was possible to identify any individual scores outside the ‘normal’ sequence of scores, it was not possible to identify what participant had completed that questionnaire. The measure of individual teacher effectiveness is supported by the results of Marsh’s study (1987), and is a function of evaluation; it is independent of course quality. The real value of the responses to questionnaires is in the average response of the entire cohort rather than individual responses (Marsh, 1987). This made anonymity and confidentiality easier to protect throughout the study, as I was not looking for individual responses, merely the average of the cohorts.

The questionnaire for the diploma participants was issued at the end of year 3. Table 2 shows the demographic findings following completion of the diploma element. The percentage of returned questionnaires is lower, particularly in the 2011 cohort due to an administrative error. The age of the participants and the number of years they have been qualified is in keeping with the demographics in Table 1. The mean age of the 2011 cohort is younger than their 2010 counterparts and they have slightly less clinical experience. The number of male participants completing the questionnaire in the 2011 cohort is quite small and their percentage of the total questionnaires is considerably smaller than in 2010.

|  |  |  |
| --- | --- | --- |
| **Cohort** | **2010** | **2011** |
| **Responses to questionnaires** | 21/31 (65.6%) | 11/32 (34.4%) |
| **Gender** | Males 11 (52.4%) | Males 4 (36.4%) |
| **Age: Mean and range** | Mean = 37.3  Range= 25-52 | Mean = 29.1  Range= 25-47 |
| **No. of years qualified: Mean and range** | Mean = 11.6  Range= 5-32 | Mean = 7.9  Range= 5-22 |

**Table 2. Demographic findings following completion of diploma**

Table 3 illustrates the demographics of those participants who completed the master’s element of the programme and when compared with Table 1 illustrates the demographical changes that occurred during the five years. The total number of participants fell and there was a drop in the response rate to the questionnaires. The percentage of male participants progressing through the entire programme was considerably lower for the 2011 cohort compared to their female counterparts for both cohorts. The mean age of the participants was consistent with progress through the five years as was the number of years’ experience, although on average younger, less experienced members of the 2011 cohort completed the programme compared to the 2010 cohort. There were changes to the type of practice that the participants worked in during the RDP programme. A comparison between Tables 1 and 3 indicates a larger proportion of participants worked in a National Health Service practice prior to attending the RDP programme than at the end of the programme. The number of participants working in private practice, from the 2010 cohort, dropped from 11% to 0% during the five years. This could be a reflection of those participants who completed the programme perceiving a greater need to continue with the programme, whereas the 11% of GDPs in private practice at the start of the RDP had achieved all they needed during the first three years. It is also conceivable that some of those completing the programme failed to complete the final questionnaire. A significant number of the 2011 cohort moved to NHS/Private (mixed) practice during the five years; 40% to 61%.

|  |  |  |
| --- | --- | --- |
|  | **2010 Cohort** | **2011 Cohort** |
| **Responses to Questionnaire** | 12 (66.6%) | 13 (72.2%) |
| **Gender** | Male 8 (66.6%) | Male 4 (30.8%) |
| **Age: Range and Mean** | 30-55, Mean=39.8 Years | 27-50 Mean 31.5 Years |
| **No. of Years Qualified: Range and Mean** | Range=8-34 Years  Mean=15 Years | Range 7-24 Years  Mean 12.6 Years |
| **Type of Current Practice** | NHS=4 (33%)  NHS/Private=9 (75%)  Private=0 (0)  Specialist=0 (0)  Community Service=1 (8%)  Forces=0 (0)  Industry=0 (0)  Retail=0 (0)  Corporate=0 (0) | NHS=2 (15%)  NHS and Private=8 (61%)  Private=3 (23%)  Specialist=0 (0)  Community Service=0 (0)  Forces=0 (0)  Industry=0 (0)  Retail=0 (0)  Corporate=0 (0) |

**Table 3. Demographic findings for the MSc element of the programme.**

I will now discuss the role of focus group discussions.

### 3.6.2 Focus Groups

I employed focus groups as one of the methods of collecting qualitative data (Cohen et al, 2008; Rabiee, 2004). These provided me with the first qualitative data and helped to drive the study in its subsequent direction of a mixed method approach. Focus groups are a form of group interview but without the backward and forward sense between the interviewer and the group (Cohen et al, 2008).

They allowed the participants to voice opinions in open discussion, which prompted new ideas to spring from the group members. Although focus group discussions are more commonly associated with market and political research surveys they have recently become more popular in educational and social research ([Punch, 2009](#_ENREF_152)) and to an extent amongst qualitative medical researchers (Stalmeijer et al., 2014), I chose them to prompt discussion within the teaching groups as they generated valuable qualitative data in a relatively short period of time and in a cost effective way. The participants were encouraged to interact with each other rather than me, the interviewer; I really acted as a facilitator. I recognised that focus groups rely upon the interaction of the group members and the encouragement of individual views from the group (Cohen et al, 2008).

With cohorts of 72 participants in each year group, I randomly selected which peer teaching groups should take part in the focus groups discussion. As the participants had been arbitrarily placed in peer groups for teaching (approximately 9 in each group), it was a case of selecting one group from each day to represent the cohort. Having selected that group for their first focus group discussion the same groups were selected for subsequent focus groups. Each peer group had two focus group sessions, one four/five months into the first year and a second towards the end of that first year. The groups were contacted by email by a member of the administration team and invited to attend at a pre-arranged date and time, emphasising that this was not part of their programme of study but a voluntary event and that refreshments would be provided.

When planning the focus groups, I developed the following strategies: i) I decided that each teaching group would be offered the opportunity for two focus group discussions, in order to gauge any changes in confidence during year one, when larger numbers of participants were involved, and to develop the social interaction within each teaching group. A total of six focus group meetings were held for each cohort. ii) I estimated the size of each group (Morgan, 1988) (ideally between 4 and 12) so that I could allow free discussion between all group members and not exclude quieter participants. The focus group discussion is a well tried and tested method of gaining qualitative data from a collective viewpoint, an opportunity to explore the background to the group’s opinions and a way of encouraging the participants to talk to each other, which was particularly beneficial early on in the study. iii) I ensured that the focus group felt comfortable as a group by encouraging general discussion prior to considering my semi-structured questions. I was able to allow the conversation to develop amongst the participants, whilst ensuring that the theme of the focus group was adhered to, rather than allowing a random conversation to occur. As facilitator, I was able to encourage a contribution from all members of the focus group and not allow the discussion to be dominated by one or two prevailing characters by thanking individuals for their contribution before requesting a response from quieter members of the group. iv) I facilitated the session rather than allowing it to become another seminar but was prepared to refer any questions about the course content to colleagues. This was particularly the case in the first series of focus groups as inevitably comments/questions about the course content occurred. I developed the skills needed to act as facilitator of the focus group discussions as the study progressed and by following the experience of researchers in the past (Humphries et al, 2010; Rabiee 2004). v) I encouraged all members of the groups to participate fully (Morgan, 1988), by varying whom I directed the initial question at. By collecting qualitative data by focus group discussions, I was able to elicit rich data focussing on the views and opinions of the study participants as a group (Richie et al, 2014). This approach to collecting qualitative data encourages discussion within the group, a greater understanding of each group member and to generate food for thought by the individuals.

I obtained consent of each focus groups to record the meeting, assuring anonymity, facilitated the focus groups myself and I transcribed the recordings. I formulated semi-structured questions (see Appendix 6): to give some structure, to ensure that all three groups were treated equally, to allow themes and topics to develop and focus the discussion so as to answer my research questions. I created an environment within the focus group meeting intended to allow the individuals in the group to have an opportunity to air different views and opinions (Ritchie et al., 2014). During the course of each focus group, I emphasised the need for only one person to speak at a time, to allow an accurate and clear recording to be made. Participants were reminded that only one person speak at a time during the focus group discussion. This made transcription of the data easier, more accurate and clearer.

### 3.6.3 Informal Field Notes

I collected field notes throughout the study but primarily during years 2 and 3 (the diploma years), in order to give me a greater understanding of the participants learning experiences and the impact of confidence on their clinical practice in particular. The field notes were important as informal discussions could reveal concerns and issues not addressed in formal data collection methods.

This greater understanding resulted as I recorded informal conversations in a field diary whenever the opportunity for general discussions arose with participants, which helped me then understand more fully the data generated through the more formal data collection methods. I recorded field notes by hand immediately following the discussion, thereby making them contemporaneous (Arthur et al., 2014). I used key words or phrases and then summarised these notes (Savin-Baden and Howell Major, 2013). In summarising, I was aware of the potential interpretation issues that could occur and the need to stay true to what I believed to be the participant’s actual meaning. I also used the field notes as a reminder of my observations as well as comments made by the participants (Cohen, et al., 2008) and any views that were expressed by the participants during other data collection methods. As my relationship with the participants grew they became more inclined to discuss their progress, concerns and objectives. Therefore, the field notes formed a valuable source of information.

The field notes formed a data set that enabled me: to identify and follow processes that I had witnessed, to better understand the views and opinions of the participants, to be able to discuss with participants, reasons for their views and to understand the practical concerns of participants (Silverman, 2010). The field notes also enabled me to reflect on the methods used in teaching, to understand ethical issues, to record the reactions, emotions and attitudes of participants and to clarify points of interest or confusion.

### 3.6.4 Interviews

I chose to use semi-structured, in depth personal interviews with participants following the conclusion of the programme, in order to question the participants in some depth about their perceptions of changes in confidence throughout the RDP programme and to understand the variations of those perceptions amongst the remaining members of both cohorts (Creswell, 2013). I designed the interviews to complement the qualitative data already collected through the questionnaires and focus groups as well as the quantitative data collected through questionnaires. I prepared a series of semi-structured questions for the interviews taking into account the impact that a personal interview may have on the interviewee, appreciating the potential for partiality, and that the interview is a social site not just a one-way exchange of information (Cohen et al, 2008). I asked questions in a logical order to allow the interview to ‘flow’, in an unthreatening manner, in a way to generate interest and prevent boredom for the interviewee, so that supplementary questions could be posed and with enough time for a meaningful discussion to take place. Prior to the start of the study, I ran some interviews as a pilot study, which helped to formulate the style of questioning, the skill needed for interviewing and to develop the skill to ask relevant supplementary questions.

I conducted the interviews for each cohort between the end of November (2014, 2015) and mid-January (2015, 2016). Each interview lasted 45-60 minutes and was transcribed between the end of November and end of February, the following year by myself. Each interviewee was allocated a number in order to protect their anonymity.

All participants, on completing the master’s dissertation and final assessment, were invited, by email and questionnaire, to attend an interview. I chose the interview as a method that would allow me, in a short period, at relatively little cost, to probe more deeply with the participants’ perspective on confidence, learning experience and the impact on clinical practice and give them space to expand their thoughts (Cohen et al., 2008). I decided to use the semi-structured, open-ended interview. I chose this approach as it allowed supplementary questions to be posed when appropriate, allowed the interviewee to feel more relaxed, encouraged open discussion and avoided yes/no/don’t know responses. I structured the interviews to put the interviewee at their ease, to have pre-determined questions ready, to keep the questions unambiguous and to allow the interviewee time to develop their answers (see Appendix 7).

I undertook as many interviews as possible within the scope of my study, eventually completing 19. I found that at a certain point there was data saturation as many themes were recurring, so decided to accept the available data. The finite number of potential interviewees also limited me. By making the interviewee as relaxed as possible, by asking a couple of straightforward questions to put them at their ease, I was able to eliminate any tendency to exaggerate or to give what was considered to be a socially desirable response (Kittwood, 1977). I was able to create a relaxed atmosphere because of having already developed a rapport with the participants and by interviewing them at their convenience, allowing them to discuss issues that concerned them, whilst not allowing them to drift too far away from the interview objectives.

While developing the questions to ask at the interview, I was aware of the importance to emphasise the legitimacy of the interview process to the potential interviewees and therefore reduce the prejudices that potentially would influence the data collected. I was aware of the potential for interviewees to answer questions in such a way as to “please the interviewer” (Holliday, 2002: 37). I used open-ended questions to encourage discussion and elicit the views of the interviewee. I considered various sources of potential influence on the interpretation of the interview data. These included the characteristics of the interviewer (me), the characteristics of the respondents (the participants) and the content of the questions. I was aware throughout the process of interviewing of the need to be reflexive in relation to the respondents’ answers, not to see them as a reflection of myself, particularly given my association with the programme. I also avoided seeking answers to pre-conceived ideas, and tried to avoid misinterpreting their answers by asking for clarification when necessary. I used the interview to increase the understanding of the data, to fill gaps in the data, to ensure that data were completed for each individual in the study allowing for thorough analysis. I designed the interviews to ask specific questions related to the research questions, such as questions on confidence levels, what learning activities influenced confidence; the learning experience and impact on clinical practice (see Appendix 7).

All participants agreeing to be interviewed were informed about the nature of the interview ([Tuckman, 1994](#_ENREF_186)), were asked to sign a consent form (see Appendix 2) and were assured of their anonymity. If further explanation as to what was being asked was needed, I supplied it. The interviewees were encouraged to make any further comments at the end of the interview.

## 3.7 Timetable of research

In this section, I present a timetable of events outlining the progress of my study chronologically and for each cohort. I also indicate which research question is covered by the individual data collection method. The initial pilot study started in December 2008, although approval for the official study was not sought until January 2010 (see Appendix 8).

|  |  |  |
| --- | --- | --- |
| **Research Task** | **Time Completed** | **Research Question** |
| **Pilot Studies:**   * Questionnaires * Focus groups | December 2008/9  November 2009 |  |
| Pre-course questionnaire cohort 2010 | December 2009 | 1 |
| First focus group meeting cohort 2010 | May 2010 | 1,2 |
| Second focus group meeting cohort 2010 | November 2010 | 1,2 |
| End of year 1 questionnaire cohort 2010 | December 2010 | 1,2,3 |
| Pre-course questionnaire cohort 2011 | December 2010 | 1 |
| First focus group meeting cohort 2011 | May 2011 | 1,2 |
| Second focus group meeting cohort 2011 | November 2011 | 1,2,3 |
| Questionnaire after year 2 of diploma cohort 2010 | November 2012 | 1,2,3 |
| End of Year 1 questionnaire cohort 2011 | November 2011 | 1,2,3 |
| Pilot questionnaire to Masters students | January 2013 | 2,3 |
| Questionnaire after year 2 of diploma cohort 2011 | November 2013 | 1,2,3 |
| Individual Pilot Interviews with Masters students | January 2014 | 1,2,3 |
| Final Questionnaire to Masters student cohort 2010 | November 2014 | 1,2,3 |
| Personal Interviews with Masters student cohort 2010 | November/December 2014 | 1,2,3 |
| Transcription of interviews. | January 2015 |  |
| Final Questionnaire to Masters student cohort 2011 | November 2015 | 1,2,3 |
| Personal Interviews with Masters student cohort 2011 | November/December 2015 | 1,2,3 |
| Transcription, organisation and analysis of interviews | January 2016 |  |
| Writing up the study | March-November 2016 |  |

**Table 4. Timetable of data collection.**

Table 4 shows the timetable of the data collection and how each data collection method relates to my three research questions: i) How do changes in confidence influence the learning experience?

ii) To what extent specific teaching pedagogy impact on GDPs confidence? and iii) In what way do GDPs perceive changes in confidence having an impact on clinical practice? The timetable runs from the initial pilot study to the final data collection with the master’s students in 2011.

## 3.8 Data analysis

In this section, I discuss the various methods I used to organise the data and my approach to data analysis for both quantitative and qualitative data generated by the four methods of data collection.

Themes began to emerge quite early on during the collection of data and were confirmed and repeated as new qualitative data was analysed. Further sub-themes and sub-sub-themes were identified as the analysis progressed. There is frequently simultaneous crossover with one theme being used to answer more than one research question. For example, the use of laboratory based skills sessions as a theme appears as a learning intervention and as an impact on clinical practice and therefore is used to answer research questions 2 and 3. Confidence in treatment planning was described by many participants as important to the way they had started to practice dentistry and in the development of their practice. In this example, being able to treatment plan well had an impact on clinical practice, whilst improving confidence in the specific skill of treatment planning.

### 3.8.1 Organisation of data

The quantitative data was organised into spreadsheets, one for each questionnaire, and in a format that would make analysis by SPSS software clear and accessible. A column on the spreadsheet represented each question and a column for each possible answer represented questions with the possibility of multiple answers. I could then compare compatible questions on each questionnaire, which were readily comparable by analysing the relevant columns. The spreadsheets were also able to store demographic information and answers to questions on a scale, which would be analogous between questionnaires. The age of the participants was organised into three groups: 25-35 years of age, 36-46 years of age and 47+. Gender was recorded as either male or female and the number of years’ experience recorded in three groups: 2-10, 11-20, 21-35 years. Levels of confidence on a linear scale of 1-10 (where 1=no confidence and 10=total confidence) were recorded. The spreadsheets were designed to accommodate as many responses as were received. Any qualitative data expressed in deliberately left spaces on questionnaires was stored by recording the comment/s in a ‘word’ document for each questionnaire in turn. These comments were stored according to in which part of the questionnaire they appeared i.e. comments referring to learning experience recorded under that heading.

I recorded the qualitative data from the focus group discussions and interviews on an electronic recording device and transcribed them personally, verbatim, onto a ‘word’ document. I also recorded questionnaire comments and field notes directly onto a ‘word’ document. I organised each comment on a separate line within the word document as this made the analysis easier to conduct. Hard copies of the transcripts were printed in order to facilitate analysis.

Following an initial organisation of the qualitative data using a thematic approach with some narrative aspects included, I looked for a data management method (Ritchie et al, 2014), which allowed a more reliable, efficient analysis of the data. I used the ‘Framework’ analysis tool of the N-vivo software (Ritchie and Spencer, 1980), which was incorporated into the organisation of data. This method allowed me to: analyse the data quicker, deal with large quantities of data, increase the flexibility, improve validity and remove the element of human error to a certain extent. ‘Framework’ supports crucial steps in the data management process, including indexing and sorting tasks common to many different approaches, but adds a data summary and display step. ‘Framework’ forms the basis for a series of thematic matrices, in which every participant in the study is allocated a row and each column denotes a sub-theme. This format allowed me to move back and forth between different levels of the data without losing sight of the raw data (Miles and Huberman, 1994). As it is specifically designed for use with verbatim data, where themes and concepts are interwoven and scattered, it was particularly useful for managing the data generated by my focus groups and interviews.

My organisation of data allowed me to see patterns, identify themes, discover relationships, develop explanations, make interpretations, mount critiques, and generate theories.

### 3.8.2 Quantitative Data Analysis

I began analysing the quantitative data after the return of each questionnaire and then undertook an overall analysis at the end of data collection in December 2014 (2010 cohort) and December 2015 (2011 Cohort). I used SPSS (Version 21) software package (Nie et al, 1968) (IBM SPSS) as it would enable thorough analysis including: cross tabulation, frequencies and means. This was adequate for the quantitative part of my study, because it allowed the comparison between the two cohorts whilst treating them as one cohort. It also meant values were easily determined, cross tabulation between cohorts when looking at specific demographics was available, frequencies of phenomena were evident, and the software programme is readily available. When looking at the demographic data I was able to compare the two cohorts, in their separate individual age groups, number of years of experience and gender and relate these to their confidence levels for communication skills and ability to carry out dental procedures.

By undertaking the analysis of my quantitative data in this way, I was able to answer the research questions and to begin to develop a feel for what questions to ask when collecting the qualitative data.

The continuity of the data collection method led to analysis of similar items being possible throughout the study and therefore being able to follow the progress (or otherwise) of the two cohorts. Analysis was possible either for the individual cohorts (2010 and 2011) or for the participants as one large cohort. I looked at the individual variations as well as the cohort means and looked at the range of results as well as mean values for example when looking at the linear measurement of confidence levels. I compared confidence levels in relation to communication skills and ability to do dentistry within the variables of age, gender and number of years’ experience. Time allowed comparisons between the cohorts, detailing similarities between them and highlighting any differences. My analysis of the quantitative data allowed me to investigate the participants’ perceptions of their confidence levels on a linear scale, the impact that the learning experience had on their clinical practice and how confidence had influenced their professional development through the five-year programme.

### 3.8.3 Qualitative Data Analysis

My analysis of the qualitative data began as soon as the study commenced and continued throughout the study ([Savin-Baden and Howell Major, 2013](#_ENREF_168)). I decided to use a phenomenological approach to qualitative data analysis, which allows analysis of the common meaning for several individuals of their lived experience. A thematic approach was adopted to present the data as from early on in the study themes, such as confidence, learning experience, knowledge and clinical relevance became apparent. I have included an element of comparison between individuals’ responses in my study to reflect the potential diversity of responses. Where appropriate, narrative elements have been incorporated.

I used a three-stage method of analysing the qualitative data: i) characterising; ii) cutting and iii) coding (Savin-Baden and Howell Major 2013). Characterising is about deciding what data is important to record. Cutting involved me cutting the data into meaningful segments. The segments were words, sentences or paragraphs. I coded the data once I had begun to notice behaviours, strategies, participants’ state of mind, meanings, patterns, relationships, interactions or consequences (Savin-Baden and Howell Major, 2013), thereby accomplishing both ‘description and analysis. I summarised the text and derived codes from the actual language of the text. Then I described codes based upon my interpretation of the data.

I used two methods to undertake the coding: i) themes for the qualitative data from questionnaires, focus group discussions and field notes were highlighted using coloured pencils, each theme having a colour that followed the theme throughout the data; ii) themes were cut into either words, phrases or sentences and arranged under the theme heading. Having broken down the data into its constituent parts, I put the data back together in a logical order (Hatch, 2002) by hand. However, this proved to be too time consuming and inefficient.

I considered using various software packages to assist with the analysis of the qualitative data but decided to undertake the analysis using a more hands-on approach in order to: have control of the analysis. This hands-on approach meant I have to continually re-read the data, which allowed me to gleam more from it and to gain a better understanding of it. The relatively small numbers of interviews particularly at the later stages of the study made this approach realistic.

During the course of analysis, I constantly reappraised my data, reflected on the process and so realised the potential to generate new themes. These emergent themes tended to be more robust as they had evolved through the theme building process. I looked to triangulate the data and therefore looked at similar themes from the individual data collection methods. By overlapping data from different sources, I was able to add to the richness and diversity of the data (Miles and Huberman, 1994). As I discovered new areas that needed analysis it was entirely feasible to add to the study, adding further layers of interest and substantiation of the data.

I ensured that the accuracy of each transcript by repeatedly listening to it and replaying any segments that were not initially clear. This was essential as analysis and interpretation of the data emanated from the transcripts. The transcribed data was just that; when the written word was read back there was no emphasis on certain words or phrases that could change the meaning of the simple written word. By repeated listening to the transcripts, I was able to get a feel for the perceptions of the interviewee. Whilst listening to the transcript I identified statements and themes that were common to many interviews and therefore supported the theme with numerical evidence. Repeatedly listening to the transcripts gave me the opportunity to interpret the data in different ways and thoroughly explore all options. The interpretation of the data, which is influenced by the language of the participants, is very much open to the interpretation of the researcher as an individual.

The coding of qualitative data using coloured markers rather than cutting each segment and then locating it within its theme proved to be reliable and predictable. Some data in transcripts could be interpreted under more than one theme but by using coloured markers this was easily achievable. The themes that were identified during analysis of the focus group discussions and interviews were also used in conjunction with the informal field notes, as it was unnecessary and undesirable to develop a new thematic approach.

## 3.9 Emerging themes

Table 5, shows the various themes, sub-themes and where appropriate sub-sub themes that emerged from the qualitative data. These identified themes form the backbone of the findings and are employed in this chapter to answer the three research questions.

|  |  |  |
| --- | --- | --- |
| **Theme** | **Sub-Theme** | **Sub, sub-Theme** |
| Reasons for attending programme | * Perception of need for more knowledge * Boredom * Improve confidence * To gain a postgraduate degree | * A need to know more in order to teach * Previous educational history |
| Confidence and Self-efficacy | * Confidence as a result of Knowledge * Confidence of the participant * Confidence of patients * Confidence as a result of Learning Experience | * Flexibility of programme * Self-doubt |
| Learning Experience | * Small groups * Hands-on/clinical teaching * Combined learning pedagogy * Reflective learning * Self-directed learning * Feedback | * Social aspect * Peer learning * Lectures/tutorials * Programme length * On-going support * Research project |
| Motivation | * Goals * Influence of family/friends * To obtain a postgraduate degree * To improve dental knowledge/skills | * No goals * One goal; the master’s |
| Impact on Clinical Practice | * Treatment planning * Taking on challenging cases * Evidence based * Changes in techniques and materials | * Fitting new ideas into practice * Restrictions/limitations * Patient satisfaction * Ability to do dentistry * Communication skills |

**Table 5. Themes drawn from the analysis of qualitative data**

## 3.10 Limitations of the study

In this section, I discuss the limitations of my study.

Quantitative data collected via questionnaires, which were anonymous, meant that individuals could not be traced through the study. When it came to the analysis of the quantitative data this meant I was unable to track for example the measure of confidence that an individual had recorded through the programme. However, I feel that my decision to anonymise the data encouraged the participants to complete the questionnaires fully, honestly and thoughtfully.

In order to give the participants time to reflect, personal interviews took place after the participants had completed the programme. Therefore, I was reliant on their good will to undertake the interview. I had generated a certain amount of good will with the participants so a suitable number (14%; n=19) of the original cohorts, were happy to be interviewed. It would have been helpful to be able to send each interviewee a transcript of their interview in order that they could check the accuracy of the transcript, but I could not because it was not possible to contact the participants following completion of the programme. Indeed, continuation of a follow-up procedure could be beneficial.

## 3.11 Summary

My study employed four methods of data collection; questionnaires, focus group discussions, personal interviews and field notes, enabling me to answer the research questions. These four methods complimented one another and enabled triangulation of the data collected. The questionnaires were designed to follow on from each other ensuring continuity of the questioning within and between the two cohorts. The focus group discussions provided me with the first qualitative data and helped to drive the study in its subsequent direction of a mixed method approach. Field notes were collected throughout the study but primarily during years 2 and 3 (the diploma years) and lead to a greater understanding of the participants learning experience, the impact of confidence on their clinical practice in particular and confirmed common themes running through the study. The in depth personal interviews following the conclusion of the programme provided me with a rich vein of qualitative data.

The subsequent analysis enabled me to link the quantitative and qualitative data, to develop an understanding of the perception of the participants to a long term, postgraduate learning experience. Analysis of the quantitative data was carried out using SPSS software (Version 21) and led me to be able to determine similarities and differences between the two cohorts, to investigate the demographic implications on confidence within the cohorts, to appreciate the role that the learning experience had on confidence and its perceived impact on confidence and clinical practice.

Analysis of the qualitative data was undertaken using a phenomenological approach after the data had been organised into the ‘Framework’ spreadsheet. This organisation allowed me to cross tabulate the data making analysis simpler and more predictable. Throughout the study I found common themes emerging whenever qualitative data was collected so similar themes were used when data analysis was undertaken.

In Chapter 4, I report the findings of my study.

# Chapter 4

# Findings

## 4.1 Introduction

In this chapter, I present findings related to the three research questions: how changes in confidence influenced the learning experience of GDPs; to what extent specific learning interventions had an impact on GDPs’ perceived confidence during a master’s programme and in what way GDPs perceived changes in their confidence had an impact on clinical practice. I have presented the demographic findings throughout the study in section 3.5 in order to place the participants into the framework of the study and to help the reader contextualise this research. In this chapter, I look at each of the themes that have emerged from the data and present the quantitative and qualitative findings related to those themes. Examples of the findings for each research question are presented; further examples can be found in Appendix 12. Where appropriate I have used tables and graphs to compare the two cohorts, illustrate similarities, and highlight differences between the 2010 and 2011 cohorts.

The main themes that emerged from the qualitative data analysis were: reasons for attending the programme, confidence and self-efficacy, motivation, the learning experience and impact on clinical practice. Each of these themes is further divided into sub-themes, which form the basis for the presentation of findings; a summary of the themes, sub-themes and sub, sub-themes can be found in Table 5 (see 3.9). The source of qualitative data used in this chapter are identified as follows: i) questionnaires (Q), ii) Focus Group discussions (FG), iii) Interviews (I) and iv) Field Notes (FN). Qualitative data from the individual questionnaires is further denoted by: Cert for certificate; Dip for diploma and MSc for master’s. Examples of sub-themes within the qualitative data are accompanied by explanation of the significance of the data. Finally, a summary of the overall findings and their implications is offered.

I report the quantitative findings as the overall findings of both cohorts, rather than each cohort or individuals within the cohorts (Marsh, 1980), as the analysis of the data reveals very little significant differences between the two cohorts. The quantitative data collected via a series of questionnaires was analysed using SPSS software (Version 21) and the following findings are a representative sample of the total findings. My analysis centres on the participants’ perceptions of their confidence in communication skills and ability to do dentistry and takes into account gender, age and number of years since graduating from undergraduate dental school. I chose these criteria as I wanted to know if age, gender and number of years’ experience had any impact on the answers to my research questions.

Figure 3 illustrates that, in relation to age, there is a small difference in the pre-programme level of confidence in the participants’ ability to do dentistry, the younger and mid age groups appearing to be slightly more confident than the older age group. There are exceptions: 1% (n=1) of younger members of the cohort appears to be lacking in confidence, only scoring their perception of their confidence as 3/10; whilst young members also consider themselves very confident, scoring 10/10.

**Figure 3. Confidence levels on a scale of 1-10 comparing age groups prior to the programme with ability to do dentistry.**

Figure 4 illustrates the high percentage of participants who reported an increase in confidence and the various topics that they perceived had benefitted from that increase following completion of the RDP programme. I report the individual aspects of these findings during this chapter when I present findings to answer the third research question as these all have an impact on clinical practice. These findings are based on responses to a multiple-choice question, offering answers shown in Figure 4. These answers were established following a review of the pilot studies.

**Figure 4. Increase in confidence reported following completion of the MSc.**

### 4.1.1 Reason for attending the RDP programme

In this section, I present findings indicating reasons why the participants decided to attend the RDP programme.

Analysis of qualitative data, collected via the pre-course questionnaire and the personal interview at the conclusion of the five-year programme, reveals the most common reasons why participants decided to enter the RDP programme were a desire to increase: i) knowledge, ii) confidence and iii) clinical skills. The most prevalent pre-course aim/objective expressed by the participants was a desire to improve their level of skills in a clinical sense and in communication with their patients. Over 50% of the participants expressed a desire to increase confidence as a clear objective for attending the programme (see Table 6). The personal interviews at the conclusion of the RDP programme endorsed the issue of confidence as a major reason for attending the programme although this needs to be seen in the context of having completed the programme and gained confidence, the participants may be using a degree of hindsight in reflecting on this objective.

The participants offer several sub-themes as to why they decided to attend this style of postgraduate programme: advice from colleagues who had done the programme or similar courses, getting bored with their current method of working and general dental practice, desiring a formal degree, a need to know more to enhance an existing teaching commitment and a general perception of the need for more knowledge and skills.

|  |  |  |
| --- | --- | --- |
|  | Number of Participants | Percentage of both cohorts |
| Increase in skills | 100 (45+55) | 70.4 |
| Increase in confidence | 78 (41+37) | 54.9 |
| Increase in level of knowledge | 67 (32+35) | 47.2 |
| Desire postgraduate qualification | 34 (15+19) | 23.9 |
| To achieve a better understanding of restorative dentistry | 31 (7+24) | 21.8 |
| Enhanced ability to practice evidence Based dentistry | 8 (5+3) | 5.6 |

**Table 6. Course objectives as stated by participants in the pre-course questionnaire.** (The first figure in brackets is the 2010 cohort and the second the 2011 cohort).

*I want to increase my confidence in taking on complex cases requiring a multi-disciplinary approach.* (Pre-Q)

Here the participant is emphasising the importance of increasing their confidence by attending the programme and with that confidence specifically to take on more complex, challenging cases. This individual has made a conscious decision to attend a postgraduate programme in the hope that it will deliver a measurable improvement in confidence. Their decision may be based upon a previous learning experience that did not fulfil their requirements (Bloom et al., 1956), recommendations from colleagues who have experienced the programme or the desire to have a postgraduate degree together with the confidence that that will bring. The participant’s current level of confidence is such that they do not feel comfortable in attempting complex cases.

**Participant 4.** *I had not done any formal training in a number of years. There are new techniques that I needed to know about, the younger dentists seemed to know a lot of things I didn't, so I had to update my knowledge.* (I)

By highlighting the need to know about new techniques, this individual expresses some doubts as to whether they are as up to date as they thought they should be. They also intimate a degree of self-doubt by comparing themselves with younger colleagues, who may have greater knowledge but are less experienced (Norman and Hyland, 2003). There is also a suggestion that *formal* training will be a better way of achieving their objectives than informal training and the fact that a structured learning experience was required.

**Participant 2.** *I was worried that I was getting bored with dentistry and wanted to start to enjoy it. It was a question of career progression and it could open doors for me in the future and also so that I could feel more confident in handling my work.* (I)

This individual had made a decision to embark on this style of learning experience specifically to enhance their career prospects and to feel more confident in handling clinical work. This link between a reason for attending the programme and the influence of confidence on learning was established by this participant in a direct attempt to progress with their career and to make dentistry more enjoyable.

I now report on the various themes that emerged from the data analysis incorporating the quantitative and qualitative findings within each research questions.

## 4.2 How changes in confidence influence the learning experience

In this section, I present findings in relation to the first research question and illustrate how changes in confidence influence the learning experience of the participants. Of the themes that emerged to answer the first research question, I present findings on: progression through the programme, levels of participation, self-directed learning, managing self-doubt, setting realistic goals, and motivation to progress. Findings show that when the participants are more confident they participate more and for longer in the programme. Those who show a high degree of self-directed learning are more inclined to increase confidence, but contrary to the literature very few participants set themselves realistic, achievable goals (Bandura and Cervone, 1983; Zimmerman et al., 1992). Their motivation is linked to their enjoyment of the learning experience although personal circumstances can interfere with motivation and challenge the individual’s determination.

### 4.2.1 Progression through the programme

In this section, I present findings to show that increased confidence resulted in participants spending longer in the programme. Participants who progressed from the certificate year to diploma and then onto the master’s element reported increases in confidence as the programme progressed and that as their confidence increased they felt comfortable to take on the next challenge. There was very little change in confidence levels on a linear scale following attendance at the certificate year reported by both cohorts (see Figure 5). As they progress through the programme, their level of competence increases and so does their confidence. Figures 6 and 7 show significant increases in confidence as the programme progresses through the diploma and MSc elements. These results show that one of the initial aims and objectives as expressed by participants i.e. a desire to improve confidence, has been achieved. The increase in confidence is illustrated by a willingness to undertake more complex treatments, whilst at the same time having an appreciation of individual limitations, as shown in Figure 6, which evolves as the programme progresses.

**Figure 5. Shift in confidence of both cohorts following the Certificate course (Year 1).**

Figure 5 appears to show a slight shift in confidence to the left but the qualitative data collected a shift to the right. This discrepancy can be explained by the fact that the vertical axis indicates number of participants completing this question; the number in the Pre CRDP cohort being much larger in the Post CRDP cohort.

**Figure 6. Reported increased confidence in specific areas of learning for both cohorts, following completion of the diploma element.**

Figure 6 demonstrates that over 80% of those participants completing the diploma have gained confidence in communication skills with their patients and that their increase in knowledge via evidence based learning has resulted in greater confidence. By encouraging a more self-directed learning approach to the two diploma years, participants have to learn to make decisions of a clinical nature, for themselves. Support from tutors is available but the participants are encouraged to treatment plan their cases, resulting in an increase in confidence and self-efficacy. Their confidence is in both their ability to treatment plan and in their self-efficacy that they are able to undertake the appropriate treatment.

Over 90% of the participants report an increase in dental skills and 84% report an increase in confidence to use those skills. The minimal increase in confidence through the Certificate element of the RDP programme represents the results of both cohorts, males and females, all age groups and all groups of number of years’ experience. As seen with the demographic findings (see Section 3.5) there is limited diversity in the participants within my study. I was able to cross tabulate the diversity when looking at confidence in communication skills and ability to do dentistry particularly with respect to age, gender and number of years qualified.

The gradual escalation in confidence over the five years of the programme (see Figure 7) indicates that for those participants who completed the programme, their confidence grew as the programme progressed. 6% (n=4) of the participants from the 2011 cohort where initially very apprehensive, however their confidence increased during the programme to bring them in line with the other participants. None of the 2011 cohort score their confidence levels at 10/10 before the programme, but 23% (n=3) score 10/10 at the end of the programme. The majority of the participants show some increase in confidence over the five-year programme.

**Figure 7. Change in confidence levels for both cohorts between starting and completing the five-year RDP programme**

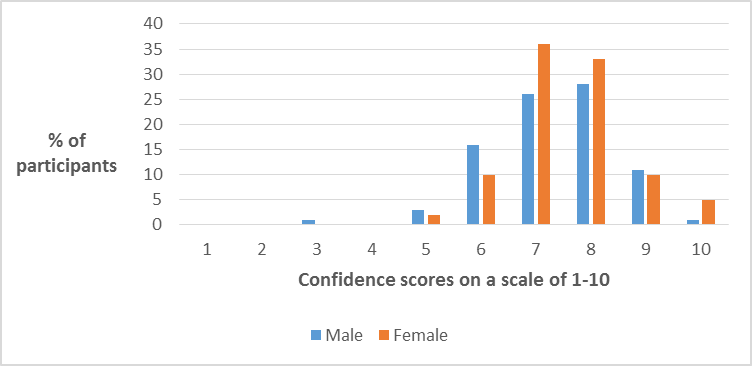
Figure 8 shows the relationship between the numbers of years of clinical experience that an individual has, with respect to their confidence in their ability to do dentistry, prior to the start of the programme. Surprisingly those participants with more experience are slightly less confident than their less experienced counterparts. The younger age range also contains some of the least and most confident individuals in my study. This indicates a wide variation in their confidence from 3/10-10/10. None of the more experienced participants appear at the most confident or least confident extremes of the scale. This would suggest that these older participants have a realisation that they still have something to learn, an understanding of their limitations and want to address them by attending the programme, the desire to become more confident and see this style of learning experience as a better way of gaining confidence than traditional short course CPD activities and that they are looking to further their careers.

**Figure 8. Confidence levels when comparing number of years since undergraduate qualification prior to the start of the programme, with ability to do dentistry.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Gender** | **Mean** | **N** | **Std Deviation** | **Minimum** | **Maximum** |
| **Male** | 7.34 | 89 | 1.167 | 3 | 10 |
| **Female** | 7.59 | 39 | 1.093 | 5 | 10 |
| **Total** | 7.41 | 128 | 1.147 | 4 | 10 |

**Table 7. Gender differences in both cohorts (combined) with respect to their confidence in their ability to do dentistry, before the programme.**

There is little significant difference in the level of confidence in their ability to do dentistry from the point of view of gender, although there is some evidence to suggest that a few female participants were slightly more confident than their male counterparts prior to starting the programme (see Figure 9 and Table 7). Table 7 represents a breakdown of the statistical analysis using SPSS (Version 21) and shows the similarities between male and female participants in terms of their confidence before they started the programme with respect to their ability to do dentistry. During the 5 years of the RDP programme the levels of confidence of the cohorts showed a gradual increase on the scale of 1-10, with respect to communication skills and ability to do dentistry for all three variables of age, gender and number of years’ experience. Figure 7 (page 91) illustrates all the participants’ confidence at the conclusion of the learning experience. Both cohorts have shown an increase in their levels of confidence in their ability to do dentistry following completion of the programme.



**Figure 9. Confidence levels comparing males and females prior to the start of the programme with ability to do dentistry.**

The quantitative data that I have presented above illustrates the steady increase in confidence through the RDP programme. I now present qualitative findings, which highlight the limitations of the quantitative data in this context, but which by being able to support the theme of progression through the programme are able to answer the first research question.

*I thought I may have more skills in complex case management [on completion of year 1], but learning curve was started at least*. (Cert Q)

It would be easy to assume that the gradual increase in confidence reported above was a universal finding. Figure 4 shows that in fact data collected at the conclusion of the certificate year did not show very much increase in confidence and this is echoed by the comment above. Here the participant expresses a degree of disappointment that they have not been able to enhance their competence and by inference confidence, in handling complex cases but a realisation that if they continue with the programme they hopefully will fulfil their aims and objectives. Several comments at the end of year 1 reflected this theme. During the diploma years, the number of comments of this kind were reduced but not eliminated as individuals became more confident and efficacious.

*The course has made me realise how little I know and that I want to continue with further postgraduate dental education*. (FG)

This feeling of lack of confidence early on during the certificate year indicated a realisation of how little this individual knew and the need to learn more, which confirms the findings presented in Figure 3. This participant does not commit themselves to either completing the RDP programme or to attending other postgraduate dental programmes in order to further their education, but their attendance at stage one of a long term, part time course has motivated them to consider their future educational needs (Bandura, 1993) and allowed them time to reflect on what will suit them and help them towards their aims and objectives.

**Participant 2.** *You can take as little or as much from the course as you want, so it certainly helped me to improve my confidence.* (I)

This individual expresses the view that the participants can gain from the programme what they want to. There is also an element of you will get out of the programme what you put in and that if you want to increase your confidence then that is possible. This individual saw the learning experience as an opportunity to increase their confidence, which was further enhanced by their comment:

**Participant 2.** *I was worried I was getting bored with dentistry and wanted to start to enjoy it. I wanted to feel more confident in handling my work. This was a way of getting clinical experience, being intellectually challenged and a qualification.* (I)

Participant 2 expresses concern that they are getting bored with dentistry and that by attending this learning experience they will reignite their interest and by association gain confidence. They reported that they saw the RDP programme and obtaining a master’s degree as important and appreciated the fact that they were committing themselves to a progressive period of study not a one off CPD course.

**Participant 4.** *My increase in confidence encouraged me to keep going. I am always trying to be a better dentist. The increase in confidence has led to an enthusiasm to do good quality dentistry and more enthusiasm for life generally.* (I)

This individual’s progression through the programme has been driven by their increase in confidence as they have progressed. Their desire to do ’good quality dentistry’, indicates an increase in self-efficacy as well as confidence and increased enthusiasm for life generally. This unexpected spin-off of an increase in confidence indicates that for this individual their confidence is not necessarily contextual or fragile (Norman and Hyland, 2003).

**Participant 7.** *To have the programme over 5 years really does reinforce the message.* (I)

This individual refers to the length of the programme and that the duration is necessary to reinforce their learning. They have considered their development through the programme and are comfortable and confident with the result. In the comment below they continue by not only accepting that there is some repetition of information but that repetition is a good thing and helps confidence to develop. There is an understanding here that the opportunities to repeat teaching/learning is desirable and has a positive impact on confidence (Watter et al, 2015).

**Participant 7.** *I think repetition is good. Especially through the diploma years when you are not here that often, I think repetition is good.* (I)

**Participant 8.**  *In our groups, we talked about cases and things at work. It was a really good insight into how other people did things.* (I)

As the social aspect of the peer groups develops over time individuals were more inclined to discuss their cases, problems and concerns within the group environment. To feel comfortable to discuss one’s cases amongst one’s peers shows a high degree of confidence by this individual. I observed that particularly with the focus group discussions the groups were more comfortable in each other’s company and therefore confident and willing to chat at the second series of meetings rather than the first. This comment could equally be included in 4.3.4, but I include it here as it shows that as their confidence increases this individual becomes a more active part of the peers group; as the programme progresses and as the individuals feel more comfortable in each other’s company. This takes time.

**Participant 18.** *I did develop reflective skills during the programme. I sort of had them before but they are a lot more developed now. This helps me go forward in every way. I think it changes every aspect really. I mean a completely different view of doing things you can reflect what you have done right, what you have done wrong, there is no right or wrong way in dentistry and then you can base your future work on your learning on that. So it is kind of evidence based, based on something part of the learning curve so you take pride in your future work, helps you to improve every aspect really.* (I)

Once again this comment could equally be appropriate in 4.3.7, but I include it here as an example of their ability to develop reflective learning skills that has helped this individual to enhance their confidence and progress through the programme. The ability to be able to reflect on a learning process and to implement new skills and then reflect again has helped this individual to develop as a dentist that they intimate would not have been possible in any other way.

**Participant 4.** *Once I started the programme, I knew I wanted to complete it although my original thought was just to do the first year. My increase in confidence encouraged me to keep going. That increase in confidence has led to an enthusiasm to do good quality dentistry and more enthusiasm for life generally.* (I)

This individual started the RDP programme assuming that they would only do the first year. The confidence they gained from that first year encouraged them to go on and in fact complete the five- year programme, indicating that their increase in confidence was a motivational factor in the decision to stay on beyond the certificate year. This individual makes a link between their confidence to continue with this style of postgraduate education in a specific learning environment and confidence in life generally (Norman and Hyland 2003). Having successfully completed the first year, including fulfilling the assessment requirements, they are confident enough to progress (Stankov et al., 2014).

*Because the topics learnt were so broad, it can often seem like you have not taken much on board. But it is only towards the end of the course that you can see areas coming together.* (Cert Q)

Having completed the certificate element of the programme this individual recognises the need to complete a whole element of the programme rather than expecting things to fall into place immediately. Their realisation that progress through such a programme is based upon completing each element in turn stands them in good stead for a gradual increase in confidence as they progress.

*Because the topics learned were so broad, it can often seem you have not taken much on-board. But it is only towards the end of the course [Certificate] that you can see areas coming together.* (Cert Q)

This individual has recognised the need to judge their progress on the entire course and not on a small proportion. They have appreciated the longevity of the learning process and are prepared to measure their increase in knowledge, skills and confidence at the end of each element.

### 4.2.2 Levels of participation

In this sub-section, I present findings to show how the level of participation increased along with the progression of the programme and confidence. As they become more confident their willingness to take on board what is being taught, to engage in discussions with peers, to challenge themselves clinically by considering cases that are more complex and to progress through the programme is enhanced. As the programme evolves into a more self-directed approach to learning, the participants need to adapt to the learning interventions and embrace the learning experience. These results are further enhanced by a breakdown of the type of teaching that occurred during the diploma years (see section 4.2.1; Figure 6).

*I have gained a lot of hands-on experience to enhance my clinical skills confidence.* (Cert Q)

The increase in this individual’s confidence was reinforced by their increase in self-efficacy (Bandura, 1989) and the realisation that they were able to successfully complete certain tasks that they previously were unable to achieve (Pajares, 2000). The resulting confidence encouraged them to participate beyond year 1.

*Occlusion was the most difficult concept to grasp and the one that I still feel most unconfident with.* (Cert Q)

Previous evidence I have presented in this chapter has indicated an increase in confidence experienced by the participants. Figure 4 shows that data collected at the conclusion of the certificate year did not show very much increase in confidence and this is echoed by the comment above. Here the participant expresses a degree of disappointment that they have not been able to enhance their competence more and therefore confidence in handling complex concepts within restorative dentistry. Participants are encouraged to participate in discussions about what they have learnt and to incorporate new ideas into their practice. If they do not, then participation becomes more challenging. There is a sense that if they continue with the programme they hopefully will participate more and overcome obstacles to their confidence. Several comments at the end of year 1 reflected this theme. During the diploma years the number of comments of this kind were reduced but not eliminated.

*I have certainly much more in terms of personal satisfaction, greater understanding of treatment planning skills and a bigger impact on acceptance of treatment. I have definitely got more confidence.* (FN)

This comment, which occurred in the 2nd diploma year, indicates how this individual is exuding personal satisfaction, a greater understanding and confidence in their own ability. It is noticeable that it has taken until this stage of the programme to achieve this level of confidence. I consider the question of acceptance of treatment in 4.7.4, but clearly this individual has gained confidence from the fact that their increase in knowledge and skills has led to an increase in acceptance of suggested treatments which in turn boosts their confidence. There is no prior evidence in the findings of such a positive impact of confidence and how this has changed the learning experience of participants but there is a degree of satisfaction that they stayed with the programme.

*I like to come in and discuss cases and do treatment planning sessions. I like the regular attendance of the course rather than distance learning. I like the reading and the fact that I can ask anyone a question there and then.* (FN)

This participant has commented on the fact that they have enjoyed the face-to-face aspect of the learning experience, in preference to a distance-learning programme. They were also commenting on the importance to them of being able to come in and discuss amongst their peers and tutors, cases that they were directly involved in, resolving in a relaxed, professional environment. As they become more knowledgeable and confident they are able to participate to a greater extent in the discussions. I have included this comment here, but it could have fitted in equally well under Section 4.3.4 on Peer learning, as the individual is expressing the values of peer learning.

**Participant 11***. I think the programme has to be that long for you to progress and learn, I don't know if I could do it in less than 3 years [reference to certificate/diploma elements]. In order for you to try every skill and be proficient at it. It does seem lengthy at times especially when you want to progress to the masters. I think repetition is good. Especially through the diploma years when you are not here that often I think repetition is good.* (I)

This individual offered a general overview of the learning experience by indicating that the RDP programme needs to be as long as it is in order to allow sufficient time for individuals to become proficient at the tasks they are taught. This is reference to the five years to complete the RDP programme. They have set themselves the goal of completing the programme and want to get on with that (Bandura and Cervone, 1983). There was some general criticism of repetition through particularly the diploma element by one or two participants, but this individual recognises the importance of repetition in order to gain the depth of experience particularly with practical skills. The repetition of tasks enhances self-efficacy and confidence (Bandura, 1986; Pajares, 2000; Blum et al., 2010) and is achieved through progression and participation through the programme. Those participants who progressed to the diploma element only attended once a month. This feeling of almost isolation by some participants was not an issue for this participant, but several participants did express (FN) that they would like to attend/participate more frequently. Participant 11 seems to have embraced self-directed learning and is eager to progress (Handel and Fritzsche, 2015).

### 4.2.3 Self-directed learning

In this sub-section, I report my findings about how the gradual introduction of self-directed learning encourages participants to become more confident. As the RDP programme progresses from the certificate to diploma and then to master’s elements there is more emphasis on the need for participants to engage in self-directed learning. I report on findings that show that an increase in confidence facilitates the transition from element to element and enhances the ability for individuals to develop self-directed learning skills.

**Participant 13.** *I think self-directed learning has had the biggest impact on me. The programme develops more self-directed learning. I feel the initial spoon-feeding is necessary before you embark on the more self-regulated learning; I think if it was self-regulated learning from the start it would not be as effective as the initial year of spoon feeding. I think that self-regulated learning is something that happens in practice every day. So you have to self-assess the things you are doing; whether it is subconsciously or at a conscious level and assess how good it is, how you could improve it and then make those changes. I think that is the real impact.* (I)

This individual is in a minority when recognising the importance of the development of self-regulated learning whilst emphasising the need for a *‘spoon fed’* approach to start with. They acknowledge that the gradual change in the pedagogical approach to teaching from the certificate through the diploma and into the master’s element allows a measured and effective development of self-regulated learning which allows confidence to ensue and be far more robust than otherwise might be the case. The participant expresses their belief that reflection on what they are doing either in the learning environment or in the workplace is important to improving confidence and that this is the way forward for them. They seem to be confident in their own abilities and aware of the need to continually be reflecting on what they do within their practice as well as in the learning environment.

**Participant 6.** *I think it [self-directed learning] is all about looking at certain procedures and finding out how other people do them, and how you could do them better. Sometimes people have been on a course and there is no evidence base for what they say, it is only their opinion. It might work well in their hands but in your hands, no.* (I)

Participant 6 has appreciated the importance of self-regulated learning and is confident and competent enough to take on the responsibility of making their own decisions about future learning needs. They are more discerning about the evidence they are presented with and are able to make good clinical judgements based on scientific evidence rather than opinion.

### 4.2.4 Managing self-doubt

In this sub-section, I present findings indicating how individuals have dealt with self-doubts during their period of studying. It is inconceivable that within a cohort of 144 participants undertaking a five-year learning experience that self-doubt will not be a factor for some if not all of the participants. It was surprising to find therefore that self-doubt was reported by a minority of participants, particularly when it came to fulfilling the assessment requirements at the conclusion of the diploma element. The examples given below show that the individuals reporting self-doubt had good levels of self-efficacy as they were able to deal with their doubts and move forward.

**Participant 12.** *I didn’t have any episodes of self-doubt because if I wasn’t confident I wouldn’t be practicing any of the items.* (I)

This individual has highlighted the contextual nature of confidence by suggesting that they would not attempt any skills they did not feel confident about, which is reassuring in many respects. On the other hand, it does indicate a degree of overconfidence. The question of lack of confidence or self-doubt was one that was commented on by several of the participants who completed the programme. Self-doubt was seen by many to be inevitable during some aspect of a long term learning experience, but those who completed the five-year programme reported that they were equally confident that the long term nature, the part time aspect and the reflective approach of the learning experience would deliver their ultimate goal.

**Participant 6.** *‘The only self-doubt I had was in finding patients to do the cases that was my major worry. To deal with that I just read up a lot on what I was going to do I would then almost write a treatment plan for the ideal patient and then what I would need to do to do that and try to find patients and matching them into the protocol with what I was going to do’.* (I)

This example of self-doubt was common throughout the cohort. Assessment for the diploma element of RDP programme require participants to present 2 comprehensive cases that they have treated. This participant (along with several others) was concerned about whether they would find suitable cases to present rather than their self-efficacy once the cases had been ratified by tutors. But they were also quite pro-active in their attempts to satisfy the assessment criteria by reading extensively, writing their treatment plan, assessing what they needed to carry out that plan and then searching for suitable patients. The resourcefulness they showed indicated confidence in their ability to continue with the learning experience.

**Participant 7.** *I dealt with periods of self-doubt by getting advice from tutors. The that they were approachable and one or two were hypercritical to the point where it actually knocked your confidence…but on the whole……Dr X [one of the tutors] for example was very approachable and critiqued in positive way. As a result of the confidence that I now have and having been exposed to things here I am now involved with the deanery.* (I)

This comment relating to self-doubt illustrates the importance of tutors being sympathetic towards the participant (Rogers, 1980). This example illustrates that not all tutors have an empathetic approach as by being hypercritical can decrease confidence. This individual seems to prefer positive feedback and respond well to that approach. By decreasing confidence with inappropriate feedback, self-doubt can develop, and then would take a high degree of self-efficacy from the individual to overcome that. Their ability to deal with self-doubt and establish an on-going increase in confidence reported by this individual has resulted in their career development, presumably down a route that has been pre-planned.

### 4.2.5 Setting realistic goals

In this sub-section, I present findings related to setting goals. Surprisingly very few participants set short term, achievable goals (Bandura and Cervone, 1983). Some reported their only goal was to get a master’s degree, others reported that their initial goal was to complete year one and then see what happened.

**Participant 13.** *I started out to do the certificate course, not with the intention necessarily of doing the MSc. At each stage, I had to decide whether to continue onto the next stage or not. My goal was to get to the end of the first year and then decide what I wanted to do. I decided to stay on because I talked to one of my colleagues and he was saying he was doing the logbooks and self-directed learning and you learnt a lot through that.* (I)

This is an example of the lack of setting realistic goals that was prevalent amongst the cohort. This participant acknowledges that they did not have any short-term goals but would just get to the end of the certificate year and see what happened. They also acknowledge the influence of a friend to continue with the programme, rather than any reference to their own confidence or self-efficacy and the promise of a greater learning experience as a result of self-directed learning.

**Participant 15.** *When I started the course, my intention was to go through the whole programme. If you start you have to finish. To get the best out of it and when you have time you might as well do it but the number of years was a problem so I did each year at a time as we went along. I did not set myself annual goals, I am not that goal orientated; I will go with the flow. I was trying to do my best throughout the course that sets the objectives so you can follow them, the end goal was to do this [master’s degree] but I wasn’t thinking too much about it.* (I)

My literature review indicated the importance of setting short term, realistic, achievable goals (Bandura and Cervone, 1983; Zimmerman et al, 1992), but here we see an individual who does not seem to have appreciated the significance of setting goals. Their rather relaxed, casual attitude is antonymous with goal setting. If they did have any sort of goal then by taking each year as it came they progressed through the programme until they reached their ultimate, long term goal of a master’s degree. This comment was typical of many of those participants completing the programme and therefore goes against the philosophy behind goal setting. This individual was prepared to follow the learning experience and take out of it anything they could; as all participants being interviewed recognised that they had increased their confidence then this individual must have increased their confidence, which had no influence on their learning experience.

### 4.2.6 Motivation to progress

The motivation to continue along a pre-determined, long-term learning experience is linked to the ongoing development of confidence. My study illustrates that as confidence increases the learning experience becomes more pleasurable, as individuals realise and appreciate their increase in confidence. The increased level of enjoyment (see Figure 10) was a contributory factor to the motivation of participants to progress. Figure 10 illustrates that not all those participants completing the RDP programme expressed a sense of enjoyment from the process, which may explain why having completed the diploma not all of the participants moved on to the master’s element of the programme. Motivation was seen as an individualistic phenomenon with some participants being motivated by a new degree, some by realisation of deficiencies in their skills and some had motivation tested by personal circumstances.

**Figure 10. Level of enjoyment reported by participants completing the diploma element**

*I would like to see more motivation in the form of challenging tasks or assessments.* (Cert Q)

This participant appears to need more motivation in the form of more challenging tasks and assessments during the certificate year. This raises the complicated issue of at what level the teaching in year 1 should be set at. Clearly, for this person it should have been set higher, although this style of comment at the end of the first year was rare. Another individual commented that some of the teaching was a repeat of undergraduate training. The repetitious nature of the learning enhances confidence as individuals become more self-efficacious. By setting the level of teaching to suit the majority of individuals it is hoped that the learning experience will motivate participants to either continue in the programme or to seek ongoing learning to fulfil their needs.

*‘Personal issues have affected my progress; I may need to defer’.* (FN)

The RDP programme is a five-year programme designed with suitable exit points along the way for those who either are not motivated to continue or like this individual have to deal with personal issues which interfere with motivation. The diversity of the cohorts is such that during the course of five years of study motivation is bound to be tested at certain points in time. This particular individual has managed their motivation up to the end of year 3 but is now considering whether personal issues preclude them from continuing to the master’s element of the RDP programme.

**Participant 14.** *My motivation was to improve my skills and to get a qualification as well. It is important to get letters after my name.* (I)

This participant is quite clear about their motivation to do the RDP programme. Like many of their contemporaries, they want to improve their skills, but this individual is in the minority in seeing getting a further degree as a major motivational factor. They are not necessarily motivated by a change in confidence influencing the learning experience but are driven by the long-term goal of an extra degree. Their motivation to increase self-efficacy is geared to the long-term nature of the programme and so they realise that self-efficacy and confidence will develop as the learning experience progresses.

**Participant 13.** *The motivation to make changes came from the fact that I want to do better work. I want to be doing things that last and ultimately I want to do a good job for my patients.* (I)

This individual used motivation as a way of doing better work and to be able to look after their patients by doing a ‘good job’. Their motivation was driven by a strong morale sense as well as an apparent realisation that they could improve their skills.

**Participant 18.** *It's like you are doing a marathon, it's hard, it's tough but you see the end result that motivates you. I wasn't motivated by what was going on at the Eastman; I was motivated by doing the Masters. So it was a personal thing for me.* (I)

Participant 18 likens the learning experience to running a marathon. There is an understanding here that this is a long-term period of learning and as such a steady progression through its stages is preferable than trying to sprint to the finish. By understanding this concept of a long-term programme their motivation is having a vision of light at the end of the tunnel. Unlike other participants who were motivated by friends, colleagues or family this individual looks upon their motivation to be a personal thing.

**Participant 19.** *Now I feel more confident but in the first year I felt intimidated. I didn't want to say anything when I was first in the group and I was quiet. What made my confidence improve was the motivation from the tutors. They would push you and if you needed it give you personal feedback.* (I)

Motivation to proceed for this participant came from their tutors. Their confidence has developed through the progression of the programme (see 4.2.1) and is seen to be a product of the feedback they received. During year 1 they admit to feeling intimidated and by inference less confident; this may be due to the learning interventions used in the programme and in particular learning in peer groups. Until individuals have become accustomed to this learning pedagogy, they will feel less confident and perhaps even intimidated.

### 4.2.7 Summary of findings for research question 1

In this section, I have highlighted how changes in confidence have influenced the learning experience. As confidence generally increased the participants became more likely to complete the programme, participated more fully in the learning experience, became better self-directed learners, and where able to deal with self-doubt. Contrary to the literature very few participants found it necessary to set themselves short-term achievable goals, but they remained motivated to achieve their objectives as their confidence grew.

## 4.3 The effect of specific learning interventions on confidence

In this section, I present findings in relation to the second research question and illustrate how specific learning interventions had an impact on the participants’ confidence. The participants were only able to comment in evaluations and therefore in the questionnaires on the learning interventions that were available to them within the RDP programme. These are lectures/tutorials, clinical and laboratory based demonstrations, case studies in teaching clinics and problem based learning. However, other themes emerged in the data in relation to learning interventions that also influenced participants, such as opportunities for discussions and feedback from tutors. I consider the impact of the various learning interventions: lectures/tutorials, laboratory skills and simulation, small group learning, peer learning, and a combinations of learning activities and their relationship with participants’ confidence. I also report on social learning, reflective practice, self-directed learning, the length of the RDP programme, on-going support and the research project by using examples from the data.

My findings illustrate that a combination of the learning activities available was thought to be the most appropriate way of developing confidence. The participants reported how important they felt that small group teaching, peer learning, social learning and self-directed learning were to them (Lave and Wenger, 1991 and 2003). They reported how working in a skills laboratory, under supervision, with the opportunity to practice clinical skills on a simulation model was a good way to develop confidence. The confidence based in the learning environment seems to have been transferred to the clinical setting (Fuller and Unwin, 2009).

The diversity of the cohort does not appear to have had significantly influenced their confidence. In terms of gender, if anything the females appear slightly more confident than their male counterparts. There is some difference in confidence with respect to age and number of years’ experience with communication skills and ability to do dentistry. Surprisingly before the programme started, the older participants, with the exception of one young individual (1%), and those with more years of experience were slightly less confident than the younger, age groups in their ability to do dentistry (see Figure 3). Figure 11 reveals participants reported that combinations of learning interventions were conducive to learning and developing confidence.

**Figure 11. Participants’ preference for different learning activities on a 5 point Likert Scale.**

### 4.3.1 Lectures/tutorials

In this section, I present findings about the effect of lectures/tutorials as specific learning interventions and their impact on confidence. Lectures/tutorials were seen as a good way of developing confidence because they increased knowledge, which was seen as a powerful contributor to confidence. Evidence based lectures were particularly valuable.

**Participant 2.** *Teaching worked well, it is traditional in that we got didactic with lectures, not particularly learner lead, but problem based. You were able to implement what was learned very soon. Started off with reading then lecture and then implementation.* (I)

Participant 2 has highlighted the importance, to them of a traditional didactic approach to learning, which includes lectures/tutorials. They suggest that their confidence grew from the basic knowledge delivered during lectures and that their confidence as a result of more knowledge allowed them to implement new ideas immediately. The hierarchical approach of reading, then a lecture to listen to, followed by implementation is a well-recognised experiential learning pathway (Kolb, 1984). Hopefully there was a period of reflection that followed before the cycle was complete.

**Participant 14.** *The combination of lectures and hands-on teaching gave me a lot from the theory level and to apply it to either my patient for the diploma process or the hands-on as well.* (I)

This individual expressed to view that was held by the majority of participants, but highlights here the fact that they needed to understand the theory before they could put into practice what they had learnt. The development of knowledge, then being demonstrated a technique, practicing the skill and then reflecting on the attempt is a basic learning model (Kolb, 1984).

**Participant 18.** *You need to learn some theoretical skills and ideally be a specialist. The best thing for me was the evidence based lectures and also having a specialist from the field as they will tell you why this is how it is, and that is what is wrong and right.* (I)

This participant reports the need for a theoretical background to their learning. They felt that some lectures were the best aspect of the learning experience as well access to ‘specialists’. Their desire for specialist knowledge was motivated by their wish to emulate ‘specialist’ teachers and exhibit the confidence that many of the teachers do exhibit.

### 4.3.2 Laboratory skills and simulation

In this sub-section, I present findings that illustrate the effect of laboratory skills and simulation sessions have on confidence. The use of laboratory-based skills learning as a form of simulation was very well considered by the majority of the participants as important in them developing confidence. Figure 12 shows the perceived increases in confidence in clinical skills of the participants before and after the RDP programme. It shows that the degree of confidence in clinical skills has increased during the programme and even the one individual who expressed low confidence prior to the programme has increased their confidence dramatically. The range of measurement on a linear scale for confidence prior to the programme was 3-10 and after was 7-10, with 24% of those completing the programme reporting a confidence level of 10/10. The teaching carried out in the skills laboratory in the form of simulation enabled the participants to enhance their clinical skills in a safe environment where formative feedback can be delivered as part of the learning experience.

**Figure 12. The perceived increase in confidence of clinical skills before and after the RDP programme.**

I now present qualitative findings to support the theme of laboratory skills sessions and the use of simulation to answer the second research question.

*The most useful learning experience was certainly in the skills laboratory.* (Cert- Q)

This comment following completion of the certificate year was expressed by several participants. Dentistry is a practical subject to teach and learn and so an element of practical tuition is not just desirable but essential when teaching students. The participants on the RDP programme appreciated the opportunity to practice the skills they had either forgotten or that were new to them within the confines of a skills laboratory (Blum et al., 2010). This individual valued the hands-on skill sessions above other forms of learning.

**Participant 11.** *I think the practical/hands-on sessions are the most confidence boosting. The clinical sessions you get to see what is going on. The programme made me more professional I would say; I can explain the options to the patients very well, I am more confident in saying what is available for the patient, just more information for the patient and doing everything ethically.* (I)

This participant has linked their increase in confidence with a sense of greater professionalism as a result of the mixed methods of learning. By having more knowledge, they are able to communicate better with their patients and are more comfortable as a professional to discuss treatment options and advise patients. Along with the increase in knowledge seems to emanate an increase in their sense of ethical considerations.

**Participant 3.** *I thought it was quite good actually to learn on simulation. Unless you put it into practice on the phantom heads or models you don’t really learn that well.* (I)

Here this participant is expressing a view widely held by the cohort that practicing their skills in the safe environment of a skills laboratory, under supervision is a good way to learn. Undergraduate dentistry has been taught this way for many years; this individual can see the value of this teaching style in a postgraduate environment.

*I am more confident in knowing treatment options and when to use them.* (Cert- Q)

This statement is representative of many participants’ reactions to the learning activities that enhanced the RDP programme. The emphasis on clinical and laboratory demonstrations (hands-on) as methods of teaching are well received and appreciated by the vast majority of participants. The opportunity to practice techniques in a simulation environment, under supervision and get immediate formative feedback is both reassuring and confidence enhancing. The opportunity to then discuss treatment options, techniques and implications within a peer group can add to the level of confidence of an individual (Lave and Wenger, 1991). With this quote the participant has identified the practical teaching sessions in the clinic and skills laboratory as the pedagogy that has increased their confidence in clinical skills. Despite the fact that there was little or no increase in confidence amongst the cohorts, reflected in the quantitative data, here is one individual whose confidence had increased during the certificate year. The practical teaching sessions are based around simulation training and allows the individual to practice a procedure on a phantom head, under supervision, in a safe environment with formative feedback from the tutors.

**Participant 6.** *The phantom heads were pretty good. You know when you need to prep teeth you can look at how other people have prepped things. You can compare how you have done and also try other equipment.* (I)

The emphasis here on the importance of practicing skills in a simulation environment and then having the opportunity to discuss your work with colleagues, be they peers or tutors, is well recognised by this participant. By comparing their work with colleagues there is the opportunity to gain confidence from a satisfactory preparation or to be motivated by a realisation that their work is not as good as their colleagues.

**Participant 2.** *I thought it was quite good actually (learning on simulation) Unless you put it into practice on the phantom heads or models you don't really learn that well.* (I)

Here participant 2 recognises the usefulness of simulation in the form of phantom head exercises that have taught them the skills that they need to transfer to the clinical situation. They see using phantom head exercises, which are used routinely in undergraduate training, as a good way to learn.

### 4.3.3 Small group learning

My study shows that working in small groups helps to increase confidence because the participants have the opportunity to listen to the colleagues, to discuss cases amongst themselves, to learn from peers in a relaxed atmosphere and to not feel intimidated when uncertain.

***Participant 18.*** *Working in small groups does work for me. You get feedback from your colleagues and compare your work with someone else. You have got 2/3 tutors next to you, they give you some feedback as well so it is better to do it in small groups. It is good in a lecture that there are more people and everyone has a view on things and they ask questions but if it is practical teaching it is better to have small groups.* (I)

The example of participant 18, above, is typical of comments recorded at interview about how specific learning interventions impacted on individuals’ confidence. Here the individual is expressing the values of working/learning in small peer groups and the value of feedback from one’s peers and tutors is so valuable. This social learning environment generated within the peer groups is a major factor in the increased confidence of participants (Bandura, 1986). This individual has highlighted another important consideration in the staff to student ratio. Clearly they felt that a ratio of 3:1 (students: staff) was most acceptable as presumably formative feedback was regularly delivered and helped this individual to develop.

**Participant 13.** *I think working in small groups is very useful because obviously you get greater contact with tutors, and you get to know your group as well and you get to know your peers. If you are shy of asking questions, you feel confident of asking questions and it's a good environment to work in because everyone knows everyone.* (I)

The example of participant 13, above, is representative of comments recorded at interview about how specific learning interventions impact on individuals’ confidence. Here the individual is expressing the values of working/learning in small peer groups and how that has impacted on their confidence; to the extent that they are willing to discuss their failures with their peers and are confident enough to accept criticism and learn from it. Participant 13 raises an interesting point about shyness and their willingness to be an active member of the peer group once their confidence is increased. I feel that this social learning environment generated within the peer groups is a major factor in the increased confidence of participants. The reluctance of some individuals to contribute to the initial focus group discussions, despite the fact that they had volunteered, was resolved to a large extent for the second series of meetings when the groups had been together for 11 months and their reticent to contribute was reduced. Having had time to get to know each other they were generally more confident in each other’s company.

### 4.3.4 Peer learning

In this sub-section I present findings indicating how peer-learning influences confidence. Learning in peer groups was seen as having a positive impact on confidence by the participants. The groups met on each teaching day and therefore the rapport between members of the group developed. The impact of the peer group was seen to be directly on the individual’s confidence, but also some individuals looked for confidence from the group.

**Participant 4.** *Working in small groups was generally a positive experience. Even in the informal discussions at lunchtime, you learnt something talking to other colleagues or tutors. Yes, it was quite encouraging.* (I)

This comment indicated that this individual felt that peer learning was encouraging and that that form of learning carried on beyond the confines of the formal teaching environment. It was also commented on by this individual that they considered tutors to be part of peer group learning.

**Participant 6.** *You are part of a year group where you obviously discuss things every time you were in, some of us communicate when we are not in, so you become part of a group that you wouldn't have if you were doing it as distance learning.* (I)

Peer learning is illustrated by this comment; the individual feels they are very much part of the year group (Lave and Wenger, 1991) and so it is obvious that you are going to discuss things amongst your peers. What is interesting is their reference to the preference for face-to-face learning rather than an on-line mode of study. This links with the social aspect of learning (see 4.3.6).

**Participant 12.** *Learning in small groups means it is easier to get to know your fellow students. You get to build confidence in the way that you can perhaps even show your failures.* (I)

Participant 12 emphasises the importance of learning in a peer group and links to that their increase in confidence. They are feeling comfortable enough in their peer group to even consider discussing their failures and therefore increase their learning through the peer group.

*There have been some areas this year where we have not been pushed [reference from year 3]. Peer pressure has been pushing me.* (FN)

Here this comment highlights the reliance that this individual places on peer learning to ‘push’ them to achieve their goal. The gradual introduction of self-regulated learning has meant that this individual relies much more on peer pressure to support their learning. It would seem that they need that support as the inference is if there was no peer pressure they would not progress and that self-directed learning has not been mastered by this individual.

*I need more practice to develop my confidence and require more peer support.* (Cert Q)

This individual appreciates the importance and significance of peer support for their on-going learning as well as the need to practice skills to increase their confidence. There is a degree of reliance here on the peer group to enhance this individual’s confidence, which may be lacking in an environment where peer learning is not encouraged.

*Following this course, I have more respect for my peers.* (MSc Q)

This comment indicates that this individual developed more respect for their peers having worked/learn together during the preceding five years. The mutual respect that evolved during the programme made for an atmosphere that was conducive to learning and as this individual goes on to say a realisation of their own limitations.

### 4.3.5 Combination of learning interventions

The majority of participants reported that a combination of learning interventions was the ideal way to develop confidence and progress through the programme. The mix of academic knowledge based learning, hands-on practical skills, the opportunity to try out new skills and then reflect on them, the chance to discuss concepts and new skills with colleagues were all influential in changing confidence of the cohort members. The approval of a combination of learning interventions indicates the preference of face to face teaching rather than online seminars.

Data reveals that the participants believed that a combination of learning activities was conducive to learning and developing confidence. The five main learning activities of: clinical demonstrations, teaching clinics, laboratory demonstrations (simulation), problem based learning and lectures/tutorials were well thought of by the participants (see Figure 11), with most participants grading 4 -5 on a Likert Scale (Likert 1932). Lectures/tutorials were particularly well thought of for generating knowledge and increasing confidence (88%, n=90). In my study lectures/tutorials were considered as the learning activity, which had the biggest impact on GDPs perceived confidence. Problem based learning was the least most popular learning activity to be considered important in developing confidence (n=78, 76%).

**Participant 5.** *I think you need a combination of lectures, seminars and hands-on. I think you need the academic side when you have lectures. My undergraduate teaching was problem based learning so I can reflect from that. Then seminars where you are discussing cases. Probably the hands-on first and then you go away and apply it and then come back and discuss cases. I think you learn so much from other people.* (I)

This participant has expressed a view held by many participants that a combination of the learning activities was the best approach, rather than any single aspect (Erlich and Shaughnessy, 2014). This individual has indicated that group discussions about cases is a valuable learning format (problem based learning), but that traditional lectures have their place as well in getting across basic knowledge. The overriding response by this individual centred on small group discussions; having tried a new idea, reflected on it and then used the small group environment to reflect further what colleagues experienced.

**Participant 4.** *I think coming from a low level of knowledge, they [learning experiences] were all relevant. I think there was a balance between lectures and small group discussions even informal discussions amongst colleagues, yes. For example, at lunchtime. Sometimes the tutors would even sit in and talk about cases. I think case presentations were good too. We had to do a log book and then, I think that was certainly one of the learning influences, yes it was good.* (I)

This participant has expressed a view often articulated within the qualitative data, that a combination of the learning activities was the best approach rather than any single factor. They indicated that group discussions about cases is a valuable learning format but that traditional lectures have their place as well in getting across basic knowledge. The overriding response by this individual centres around the small group discussion learning pedagogy, which may or may not involve tutors from time to time. The introduction of a logbook as both a learning pedagogy and a form of assessment meant that the participants had to record what they have achieved on a daily basis but more significantly reflect on that.

**Participant 13.** *I think the combination of hands-on and lecture based teaching is good. As well as the reading material. I think doing the essays you learnt a lot by reading.* (I)

As well as praising the lecture and hands-on practical learning sessions this individual has highlighted how important reading the pre-course reading material was to them as a critical part of the learning activities. Also by undertaking suitable reading and research prior to submitting an essay, as part of the formal assessment procedure, participant 13 emphasises how much they learnt from researching an essay.

### 4.3.6 Social learning

In this sub-section, I present findings on how social learning has influenced the confidence of participants. Learning within a social group was considered very significant with respect to changes in confidence. The social learning in the RDP programme is based on the entire cohort who come together two or three times during year 1, the individual peer groups and the social groups that appear via on-line social contacts (Lave and Wenger, 2003). Findings indicate that the social aspect of learning increases confidence.

**Participant 6.** *You are part of a year group where you obviously discuss things every time you were in, some of us communicate when we are not in, so you become part of a group that you wouldn't have if you were doing it as distance learning. A lot of other dentists do purely on-line course and miss out on the social aspect of learning. Being able to discuss cases and minor problems with other professions is good.* (I)

Participant 6 brings up an interesting point about their preference to be part of a social group rather than do a course purely on-line. They imply that the isolation of doing an on-line course is not conducive to learning and their preference is to have the social interaction with peers.

**Participant 7.** *I think that working in general practice, mainly NHS practice being amongst colleagues of a similar year of qualification I think this is ….this is what a crown prep looks like, and then when you come on the course you realise there is more to it than that, when you start to consider the science side, the technical side, the ethical side of it, you start to realise what a crown prep should look like.* (I)

Working in general dental practice, particularly if you work alone, can be a lonely existence. This participant clearly enjoyed the social aspect of learning. They were able to interact with like-minded colleagues and gain confidence from the group approach to learning.

**Participant 5.** *I think you learn so much from other people. We have done that in our group privately but it wasn't done on the course.* (I)

This comment is reference to the ongoing social learning that occurred amongst the peer groups. The participant is telling me about how learning in peer groups was beneficial, but that it went beyond the confines of the university department and with the help of social media the peer groups kept in touch for discussions between teaching days.

### 4.3.7 Reflective practice

In this sub-section, I present findings that show that by developing reflective skills as a learning intervention, the confidence of the participants was increased. The development of reflective skills was something that some members of the cohort reported having already acquired whilst others developed such skills as the programme progressed.

**Participant 18.** *I developed reflective skills during the programme; I sort of had them before but they are more developed now. This helps me go forward in every way. I think it changes every aspect really. I mean a completely different way of doing things; you can reflect what you have done right, what you have done wrong. There is no right or wrong way in dentistry and then you can base your future work on your learning. So it is kind of evidence based, based on something, part of the learning curve so you take pride in your future work, it helps you to improve every aspect really.* (I)

Some of the participants needed to develop reflective skills as they had not had experience of reflection beforehand. This individual recognised the importance of reflection, and how it can help future development of skills and confidence. By becoming more self-critical this individual intimated that confidence is needed to be self-critical, but that by achieving this, the level of confidence will be enhanced. This comment transcends other themes but is present here as the overriding theme is about the learning experience gained from reflection. Several participants expressed a similar idea at interview; reflection was thought to be an important contributor to setting goals, motivation and confidence.

*I like to come in and discuss cases and do treatment planning sessions. I like the regular attendance of the course rather than distance learning. I like the reading and the fact that I can ask anyone a question there and then.* (FN)

This participant has commented on the fact that they have enjoyed the face-to-face aspect of the learning pedagogy, in preference to a distance-learning programme. They were also commenting on the importance to them of being able to come in and discuss amongst their peers and tutors, cases that they were directly involved in, resolving challenges in a relaxed, professional environment.

**Participant 13.** *I think I developed reflective skills during the programme particularly the diploma element because I think reflecting about your work makes you more self-critical and reflective and I think doing the logbook aspect of the diploma made you become more self-critical. I have become more self-critical through the programme.* (I)

Some of the participants needed to develop reflective skills as they had not had experience of reflection beforehand. This individual recognised the importance of reflection at the diploma stage of the RDP programme and the value of having a reflective diary, which has enhanced their learning experience. The reflective diary was a form of assessment but enabled this participant to generate real reflections that influenced future learning experiences. They became more confident and more self-efficacious. By becoming more self-critical this individual intimated that confidence is needed to be self-critical, but that by achieving this the level of confidence will be enhanced.

**Participant 12.** *I guess with some clinical aspects I set small goals but that is quite normal. To set some intermediate goals and then progress to the next level. I don't think I had any specific goals for the academic side of it. I developed some interest after the 2nd/3rd years when reflective learning and all that came into place. I decided to continue and do the research component.* (I)

This comment could have appeared in 4.2.4 but I chose to include it here as the reference to reflective learning is relevant here. Participant 12 was the only individual who reported having used the technique of ‘goal setting’ to help them to move through the programme, increasing their confidence as they go. By setting themselves small, realistically achievable goals they have utilised the learning experience to develop their own confidence and achieve what was their long term goal to get an MSC (Bandura and Cervone, 1983; Morisano et al., 2010; Zimmerman et al., 1992).

This participant has acknowledged the role that reflection has played in helping them to progress through the learning experience, but not until the second or third year of the programme. They intimated that having reflected on the learning experience they have enough self-efficacy and confidence to progress to the masters element (Kolb 1984).

### 4.3.8 Self-directed learning

In this sub-section I present findings of how self-directed learning influences confidence. The gradual introduction of self-directed learning led the participants to report an increase in their confidence. Most of the participants appreciated having a taught programme initially but valued the self-directed learning that increased during the diploma and master’s elements.

**Participant 13.** *I think self-directed learning has had the biggest impact on me. The programme develops more self-directed learning. I feel the initial spoon-feeding is necessary before you embark on the more self-regulated learning; I think if it was self-regulated learning from the start it would not be as effective as the initial year of spoon feeding.* (I)

This participant recognises the importance of a well-controlled learning experience in year 1 (spoon-feeding), but then appreciates the gradual transference to a self-regulated style of learning through the diploma and into a largely self-regulated learning experience during the master’s. Having learnt some basic knowledge and skills in year 1 this participant was ready for a more self-regulated approach for the remainder of the programme. Their confidence was such that they were able to apply their new knowledge and skills from year 1 and develop confidence through the next elements.

**Participant 7.** *My confidence was improved by the fact that the teaching was pitched at about the correct level. I was taking it to a different level and I was able to put it into practice at the same time.* (I)

As this participant has progressed through the RDP programme and become a more ‘self-regulated learner’ (Ritchie, 2015), so their confidence has increased with the change in emphasis of the learning experience. This participant has developed self-efficacy about their capabilities and has moved on as the learning experience requires. They have embraced the learning experience as a result of their increase in confidence.

**Participant 10.** *I think the research project is a big learning curve. I think the obvious method to do the MSc is continual assessment. I think it would work better as a continued assessment with aspects of systematic review.* (I)

The RDP programme utilises different forms of assessment but the master’s element is a dissertation following a research project. This individual felt that it would be better to use a continuing assessment method to assess the master’s element. By indicating this preference, they perhaps found the research aspect difficult to contend with and therefore stressful. The idea of making the research project one of continual assessment indicates that this individual is not comfortable with a largely self-directed approach but needs more support and therefore is lacking in confidence to a certain extent.

### 4.3.9 Length of programme

The RDP programme extends over a five-year period, which is a considerable commitment by participants who complete the entire journey. In this sub-section I present my data revealing that the majority of those participants who complete the master’s degree agree that it needs to be this long in order to give them ample opportunity to practice new skills, to develop skills that may be weak or absent and to enable messages to be reinforced from time to time.

**Participant 11***. I think the programme has to be that long [five years] for you to progress and learn, I don't know if I could do it in less than 3 years [reference to certificate + diploma elements]. In order for you to try every skill and be proficient at it. It does seem lengthy at times especially when you want to progress to the masters. I think repetition is good. Especially through the diploma years when you are not here [in the department] that often I think repetition is good.* (I)

This individual offered a general overview of the learning experience by indicating that the RDP programme needs to be as long as it is in order to allow sufficient time for individuals to become proficient at the tasks they are taught; to increase their self-efficacy in individual tasks (Bandura, 1986). This is reference to the five years to complete the RDP programme. Clearly they have set themselves the goal of completing the programme and want to get on with that (Bandura and Cervone, 1983). There was some general criticism of repetition through particularly the diploma element by one or two participants, but this individual recognised the importance of repetition in order to gain the depth of experience particularly with practical skills. Those participants who progressed to the diploma element only attended once a month. This feeling of almost isolation by some participants was not an issue for this participant, but several participants did express (in field notes) that they would like to come in more frequently: ‘*I understand that we should be more self-learning but I like to be taught regularly and then reflect’.*  Participant 11 seems have embraced self-directed learning and is eager to progress (Handel and Fritzsche, 2015).

**Participant 6.** *It was a long course so I think that reflective learning was the best way to monitor your progress. Looking back at what you had done and looking at what you could have done better because there is always scope for improvement.* (I)

This individual has linked the length of the programme with their development of reflective skills and the understanding that to reflect on what you had done and how you might improve it next time is a valuable lesson. This comment reflects the views of several participants and shows that as they develop reflective skills they become confident enough to reconsider how they carry out clinical procedures so that their ongoing development continues.

**Participant 7.** *To have the programme over 5 years really does reinforce the message.* (I)

With a degree of hindsight at the conclusion of the five-year programme this individual recognises the value of some repetition through the programme. It is not always possible for everyone to take away a new skill or new piece of knowledge and immediately put it into practice, so the opportunity to reinforce messages over the period of the programme has the effect of allowing participants to catch up if they have fallen behind, to develop skills and knowledge in line with clinical expertise and to increase the confidence of those participants who have heard the message before.

### 4.3.10 On-going support

In this sub-section, I present findings outlining the significance of on-going support to enhance confidence. Whilst the programme encourages the development of self-directed learning (see 4.3.8), it recognises the need to offer support to individuals whenever needed. My study shows that the ongoing support from tutors is valuable in helping participants deal with episodes of self-doubt, the participants appreciated the on-going support as they progressed through the programme, participants looked upon feedback as the main area of support and the learning interventions were well thought of in supporting the aims and objectives of the participants.

**Participant 7.** *I dealt with periods of self-doubt by getting advice from tutors.* (I)

This individual admits to periods of self-doubt and has overcome these by chatting to tutors. This relies on the continuing support of tutors and their understanding of the predicament that the individual is in. The empathy needed by tutors is a significant aspect of a ‘person centred approach’ (Rogers, 1980, see 2.4.6). The feedback delivered by tutors can have a significant impact on future learning, confidence and self-efficacy.

*I am still unsure in the field of full mouth rehabilitation, occlusion and periodontics. Yes, the course has broadened my approach but I still feel it is not enough to complete this course and be able to go on to do extensive cases. I am still lacking some confidence in my own ability. I have learnt a lot from conversations about cases.* (FN)

This participant who had just completed three years of study did not feel that the learning experience fulfilled their learning requirements and that their confidence was still lacking to a certain extent. Whilst the learning interventions had made some impact on their knowledge, skills and confidence this individual felt that completion of the programme would not necessarily result in further increases in confidence. The conversations with peers and/or tutors proved to be a popular learning intervention for this individual who specifies this as important to them. Their confidence levels had not had a significant impact on the learning experience, they were still waiting for something to happen.

**Participant 4.** *Being able to interact with tutors gave me the biggest boost of confidence. Just to say 'well how does this look to you' or 'am I doing this right'. You could actually talk to someone about it.* (I)

Participant 4 reports that their biggest boost of confidence came from the tutors who work alongside them. What appears to be formative feedback has helped this individual to increase their confidence by simply being able to talk to a tutor about any issues or challenges. There is no doubt that the small group learning environment helps this aspect as it would seem very difficult for tutors to be so attentive when dealing with a cohort of 144, the 8/9 members of a peer learning group is manageable.

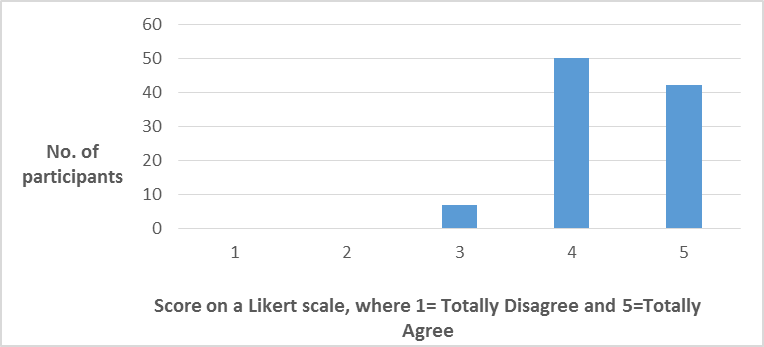
*Clinical teachers were very good and always ready to help. I am grateful to have the kind of teaching I had in group WB.* (Cert Q)

This participant acknowledges the support they received from tutors and expresses their gratitude. (Group WB was group B on the Wednesday). There were as many positive comments about support from tutors as there were negative, particularly during the early stages of the programme. For example:

*There were staff available but I have not made use of these facilities’* (Cert Q)*; ‘The only feedback we really got was for assignments, which were based on intra-coronal procedures’* (Cert Q*); ‘I am getting good support here; time management and motivation is down to me’* (FN) *and ‘A change of supervisor from last year means the new one has become more involved; I get more feedback, which has encouraged me to work harder.* (MSc Q)

These four comments indicate: that although tutors were available for support participants did not always make full use of their on-going support, that participants were critical of the feedback they received but looked upon feedback as on-going support, that participants need to contribute to the learning process (Rogers, 1980) and that once the participant has an appropriate tutor on-board support was forthcoming.

It can be seen that the participants enjoyed all the learning activities used in the certificate and diploma years and that a combination of these pedagogical approaches led to increased confidence and an enjoyable learning experience. 91% (n=131) participants either agreed or strongly agreed that they had received a satisfactory learning experience by the end of year 1 (see Figure 13, page 127), which indicates a degree of enjoyment of the process (see Figure 10). Despite the diversity of learning activities, there was minimal increase in confidence of the participants during the certificate year. This may be due to: the limitations of Likert scale scoring, the limitations of quantitative data in this context and the participants actually enjoying the teaching without perceiving a significant gain in confidence. Figure 10 (see page 102), gives an indication of the level of enjoyment that those participants completing the diploma element felt, which is synonymous with an increase in confidence. It was evident from the findings that those participants who recorded a low score where some of the younger members of the cohort and were in the main female.

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**Figure 13. How satisfactory the learning experience had been following Year 1, on a Likert Scale, when asked ‘would you agree that you have received a satisfactory learning experience’.**

**Figure 14. Appropriateness of the teaching following the diploma element.**

When asked about the appropriateness of the teaching 82% (n=26) of the participants who had completed the diploma course scored 7/10-10/10 (see Figure 14). This indicates that the participants generally consider the teaching appropriate for their learning needs and that they have received a satisfactory or very satisfactory learning experience. The satisfactory learning experience results in an increase in their confidence during the diploma course, which subsequently led to an increase in the level of enjoyment (see Figure 10; page 102).

The inference that can be drawn from Figures 10, 13, and 14 is that having had a satisfactory learning experience, having enjoyed the process and having found the teaching appropriate to their needs the majority of participants achieved their objective for attending the programme and gained knowledge, skills and confidence.

### 4.3.11 Research project

In this sub-section, I present findings about how the research project (during the master’s element) influenced participants’ confidence. Findings show that the research project, which was a new concept to all participants, was a steep learning curve, demanded different skills but enhanced confidence once achieved.

**Participant 8.** *The research project has given me a fair bit more confidence in what I can do. I got promoted to senior dental officer……the community service supported me throughout the masters as they wanted me to achieve a senior role.* (I)

This individual, who is the only participant not working in general dental practice, clearly had a major objective of attending the RDP programme to gain promotion at work. They make specific comments about the research element (years 4 and 5) as a significant factor in gaining confidence as this was a completely new concept to them and the fact that they were successful resulted in a boost of confidence. Here also support from their employer was very important to them and clearly a major factor in their success. I have included this comment within my findings to answer research question 2, because I interpreted the remark primarily as being about the learning process and its influence on confidence rather than an impact on practice (research question 3). However, this is one of the comments that could be interpreted as having two options and could equally be included into findings about research question 3.

**Participant 4.** *The research project had an impact on my confidence. Because a lot of it was outside the normal dentistry I did writing the dissertation, interpreting everything. I had to learn a lot about research first. I didn't understand how to write. I am far more critical of papers now. Once I got into it I built my confidence.* (I)

Having progressed to the master’s element, this participant took on the challenge of doing a research project with renewed confidence gained from the first three years. The project offered its own challenges as this discipline is outside the normal skill set of most GDPs. Participant 4 reports that having understood how to write and become more critical of previous research papers they enhanced their confidence even more. All participants had no previous experience of research, but this type of comment was quite common. There were two individuals who felt that the master’s element should be a continuation of assessment of clinical cases.

**Participant 17.** *I loved the master’s year. It was amazing with the assistance of the tutors all around me, It was a good setting for me choosing to do an experiment was exciting and then at some point both my supervisors had personal circumstances, so I was left completely on my own, which suited me.* (I)

Participant 17 clearly enjoyed the experience of doing a research project and greatly valued the on-going support of their supervisor (see 4.3.10). When both supervisors were unable to continue giving their support (due to illness), the participant was self-efficacious enough, had sufficient motivation and was confident enough to complete the master’s research alone. If anything being alone for the last stages suited this individual.

### 4.3.12 Influence of feedback

As the programme progresses the amount of interaction with tutors in the way of feedback increases. The increase in the amount of feedback and the participants’ score of feedback is directly related to confidence scores. Figures 15 and 16 illustrate the participants’ perception of the feedback they received in relation to the diploma and master’s element respectively. It can be seen that the majority of the participants are much happier with the feedback they receive as the programme advances.

Figure 15, illustrates the scores for feedback following the diploma element for each cohort separately. The 2010 cohort are less happy with their feedback than the 2011 cohort. In Figure 16, it can be seen that those participants completing the master’s element are satisfied with their feedback, although 1 individual is not satisfied and scores questions about feedback very low on a linear scale. As the numbers of participants falls through the period of this study so the tutors: have more time to give feedback, understand each individual’s needs better and therefore are able to give feedback in an appropriate manner and work closer with participants through their research project (Stankov, 2014). As confidence increases through the programme and as the participants become self-regulated learners, they are able to accept feedback, either constructive or critical, and use it to further their development.

**Figure 15. Feedback scores following completion of the diploma.**

**Figure 16. Feedback scores following completion of the master’s.**

I now look at the qualitative data on feedback.

*Students received a lot of unconstructive criticism for their cases, which I felt was unfair.* (Cert Q)

This individual has taken it upon himself or herself to represent the group by stating that the type of feedback received was unfair. It is unclear from this example whether the feedback is of a formative or summative nature but it would seem more likely to be formative. The mode delivery of feedback is important in the development of confidence as unconstructive feedback may lead to self-doubt, low self-esteem and the likelihood of the individual leaving the programme (Bandura, 1986).

*Adequate feedback on practical/clinical sessions was good.* (Cert Q)

By contrast, this individual was satisfied with the feedback they received during the first year, particularly the formative feedback.

**Participant 20.** *I loved the master’s year. It was amazing with the assistance of the tutors all around me, It was a good setting for me choosing to do an experiment was exciting and then at some point both my supervisors had personal circumstances, so I was left completely on my own, which suited me.* (I)

This individual expressed their gratitude for the assistance that their supervisors had given them during the master’s element. The assistance would have been largely feedback about their research project and with only 18 participants in each cohort progressing to the master’s element feedback was more likely than with 72 in each cohort during year 1.

### 4.3.13 Summary of Findings for research question 2

Research question 2 asks to what extent do specific learning interventions have an impact on perceived confidence during a master’s programme. The findings I presented in this section show that the participants felt that all 5 learning interventions that they experienced during the RDP programme had impacted on their confidence. Lectures/tutorials, clinical demonstrations, laboratory demonstrations, teaching clinics and problem based learning sessions delivered in peer learning groups all contributed to increased confidence. The laboratory and clinical demonstrations, hands-on sessions, were highlighted as having a great impact on confidence building, which is understandable as the participants were all GDPs wanting to develop skills, knowledge and confidence in practical, clinical dentistry. The value of learning in small peer groups was highlighted as having a significant impact on confidence as was the social aspect of learning, reflective learning, and the development of self-directed learning skills. The length of the programme was seen as an advantage, on-going support was available and valued, the research project was challenging but highly rewarding.

## 4.4 The impact on clinical practice of changes in confidence

In this section, I present findings concerned with the impact that the participants perceived changes in confidence have had on their clinical practice. The perceived impact of confidence on clinical practice is possibly the most important aspect of the study as the participants are returning to full time clinical practice following completion of the RDP programme; their confidence in clinical practice being one of the primary reasons for starting the programme.

Increased confidence was seen to have a positive impact on clinical dental practice. Participants reported an increase in their confidence in their ability to do dentistry, on communication skills and their ability to use evidence based protocols to decide on materials and techniques. A surprising finding was that patients’ satisfaction with treatment increased as confidence increased, which was based on greater knowledge and that their newfound confidence spilled over beyond the confines of clinical dentistry.

The data shown in Table 8 demonstrates the changes in practice profile of the participants before and after the RDP programme. This data is obtained from the final questionnaire; data from the pre-course questionnaire (see Table 1; page 66) illustrates the majority of participants were in mixed NHS and Private practice (73% 2010; 40% 2011). Although the numbers are small there appears to be a move away from practicing in a totally state sponsored environment (NHS Dental Practice) and a desire to work in a more private, independent setting. The increase in confidence that has been engendered during the RDP programme has contributed to facilitating some of the participants to make a career decision about what type of practice they wish to work in and have enough self-efficacy to actually make that career change.

It would seem that the 3% (n=2) participants who started the RDP programme in 2010 and who worked in the community service did not complete the programme. However, other data (see 4.4.6) indicates that one participant who worked in the community service completed the five-year programme and volunteered for interview. This would suggest that either they failed to complete the final questionnaire or omitted to answer that question. When presenting the qualitative data to answer my third research question the main theme that emerged was ‘impact on practice’. Various sub-themes emerged from this: Impact of confidence on communication with patients, impact of confidence on ability to do dentistry, patient satisfaction, and increased knowledge base. There was also a sub-theme on the impact of increased confidence outside the clinical environment.

|  |  |  |
| --- | --- | --- |
|  | **Before RDP 2010/2011** | **After RDP 2010/2011** |
| **NHS Practice** | 4/4 | 0/2 |
| **NHS/Private Practice** | 9/9 | 9/8 |
| **Private Practice** | 0 | 3/3 |
| **Specialist Practice** | 0 | 0 |
| **Community Service** | 0 | 0 |
| **Armed Forces** | 0 | 0 |
| **Industrial Practice** | 0 | 0 |
| **Retail Practice** | 0 | 0 |
| **Other** | 0 | 0 |

**Table 8. Changes in practice profile over the five-year RDP programme**

*I have moved practices a lot to accommodate the course. I started off in a fully NHS practice and am now in a mixed [NHS and private] practice, but income has taken a hit, and so I am unsure what to do in the future* (FN)

During the diploma course the dilemma faced by several of the participants, who found it necessary to move practice to: find suitable patients to work with, to be able to practice their new skills and to reduce some of the financial burdens on themselves and their principle/practice owner. The cost implication of this learning experience are not considered in my study but this individual has highlighted a point, which should be considered in the future.

**Participant 4.** *We have a mixed NHS/Private practice so there have been no restrictions in implementing the changes since doing the course. There was no one telling me what to buy or do. My associate has become a partner and we are both doing the course. It has raised the standards in the practice. I try not to accept what I feel is unsatisfactory especially with other colleagues in the practice examining your [clinical] work.*  *Peer influence has a positive impact on practice.* (I)

The impact on this individual’s practice following the learning experience is huge. It would appear that this individual owns their practice so are not restricted by financial restraints in the same way as some participants who are associates or employees of practices. It is unclear from this comment in isolation whether one individual started the programme and then encouraged their partner to start or if they started at the same time, but what is interesting is how the status of the associate has changed to being a partner and the peer element of relationship has helped the practice to develop.

*I have been paying out of my own pocket for patient’s treatment as they can’t afford it.* (FN)

This comment is a reference to the challenges the participants faced when trying to assemble their cases for assessment. This individual has made a large financial sacrifice to ensure that the cases they wished to present for assessment were not compromised by the patient’s lack of funding. Together with course fees and the need to purchase equipment this shows a tremendous sense of motivation to complete the diploma element satisfactorily and notwithstanding the financial implication of postgraduate degrees.

### 4.4.1 Impact on confidence of ability to do dentistry

In this sub-section, I present findings of how increased confidence impacted on the ability to do dentistry as reported by participants. The participants indicate an increase in their confidence in their ability to do dentistry over the programme, which is preceded by a minimal increase in confidence following year 1. Participants reported an increase in patients’ acceptability of treatment plans, indicating confidence in the participant, which further enhanced their confidence.

The confidence of the patients has not been considered in the quantitative data of this study but was highlighted as a feature in the qualitative data. When reporting on the qualitative data I consider the impact of the numerical increase in perceived confidence (quantitative) as a result of more treatment plans being accepted.

Figure 17 looks at the levels of confidence reported by both cohorts after the certificate year, with respect to the participants’ ability to do dentistry. As can be seen once again with the exception of one person at the lower end of the scale there has been very little change in confidence levels, which would perhaps indicate that the participants’ objectives from the certificate year have not been met. The participant who recorded 3/10 as a measure of confidence in communication and ability to do dentistry (see Figures 17 and 19) is the same individual.

Figure 19 shows a significant increase in confidence of both cohorts throughout the RDP programme and an indication that the participants are more confident in their ability to do dentistry following completion of the programme. This indicates that following more time, tuition, discussion and the opportunity to practice new skills confidence increases. However, these quantitative results must be seen in the context of the limitations of measuring confidence on a linear scale. It would seem likely that some of the participants may have overestimated their confidence when asked the questions in the pre-certificate course questionnaire. Therefore, they were not able to record the percentage increase in confidence at the end of the programme, whilst some may have forgotten what score they gave themselves at the start and so were not able to accurately compare their quantitative response. It is expected that those participants completing the RDP should be confident following five years of postgraduate education.

**Figure 17. Changes in confidence, of both cohorts, in their ability to do dentistry, before and after the certificate year.**

The participants reported an increase in their confidence following completion of the RDP programme with respect to clinical skills. Figure 17 illustrates the perceived increase in confidence of participants before and after year one of the five-year programme with respect to clinical skills.

**Figure 18. The degree of acceptance of treatment plans before and after the RDP programme.**

As well as an increase in confidence in their ability to do dentistry the participants also indicated an increase in the acceptance of their treatment plans by patients, which had a direct impact on clinical practice (see Figure 18). In the clinical situation of a dental practice to have an increased acceptance rate of one’s treatment plans, (treatment planning is a skill learnt on the RDP programme), generates confidence both in the prescribing practitioner and the accepting patient.

*I am now able to do Michigan splints and re-do endodontic treatments [specific skills taught on the RDP programme] confidently. In the last few months I feel more confident to restore implants* *and do resin retained bridges, when and how to apply them.* (FN)

During the diploma element of the programme this comment highlights some individual items of advanced dental treatment that this participant sees as adding to their practice skills. They indicated that these skills were missing before attending the programme and that having learnt about them, developed the skills to undertake them they are now confident enough to offer these items of treatment to their patients.

*I gained more confidence; I know when to ask for advice. I am able to assess mistakes and am better equipped to correct them. The course is about me feeling more able to work, not so much about theory.* (FN)

Being confident in one’s clinical ability allows this individual to better assess mistakes and correct them in an appropriate way. At the same time, they have enough humility to appreciate that they have more to learn and are not afraid to ask for advice when needed. This allows them to feel confident in their clinical ability and whilst the theory is necessary, it is this ability to do clinical dentistry that has driven them.

**Participant 5.** *I think my dentistry has changed; that is why I wanted to do this MSc. I wanted to be a better dentist, then I just decided I wanted to be better, I just wanted to be more confident in what I do and that is one thing the course has done it has made me more confident.* (I)

Participant 5 expresses a view held by many participants that they want to improve their dentistry. As a result of becoming a ‘better dentist’ they have increased their confidence, which was one of their primary aims from the programme. There is a direct relationship here between improved ability to do clinical dentistry and confidence.

### 4.4.2 Impact of confidence on communication skills

In this sub-section, I present my findings for the impact of confidence on communication skills. These finding illustrate that communication skills, which was a primary reason for participants to attend the programme, increased during the five years and that confidence as well as knowledge were fundamental in improving communication skills.

Perceived increases in communication skills have been shown following a modest increase in confidence after the first year, and a more significant increase in confidence following completion of the programme (see Figures 19 and 21).

Figure 19 shows the change in confidence levels before and after the certificate year for both cohorts with respect to communicating with their patients. With the exception of a small percentage of participants at the lower end of the scale there does not appear to have been a significant change in confidence levels with respect to communication skills following the certificate year. This may be due to the realisation that knowledge is essential in order to communicate in a confident way with patients and a realisation that individual’s knowledge base is not complete at the end of year 1. Figure 20 shows the number of participants who reported an increase in knowledge at the conclusion of the programme in various topics. This increase in knowledge contributed to the increase in confidence reported by the participants.

**Figure 19. Changes in participants’ confidence in communicating with patients before and after the Certificate year.**

**Figure 20. Increased knowledge in topics**

Figure 21 illustrates the changes in confidence with communication during the entire RDP programme and here we can see a significant shift in the participants’ confidence towards the more confident end of the scale. This indicates that following the certificate year the participants needed more time, tuition, discussion and practice of communication skills in order to develop confidence. As they became more competent, their confidence grew. The two years of the diploma course enhanced and built on the foundations of the certificate year. Assessments were based on case presentations, which helped to build confidence, and as confidence grew, the participants developed their communication skills, which in turn resulted in greater confidence.

**Figure 21. Changes in confidence of both cohorts throughout the RDP programme with respect to communication skills.**

*I have gained more confidence in explaining and providing treatment to patients.* (Cert-Q)

This comment encapsulates the views of many participants. With an increase of knowledge and skills has come confidence in communicating with patients and ability to carry out clinical skills. The ability to explain treatment options to patients allows this individual to give their patients information that helps them make an informed decision about treatment. The participant is then confident to undertake that treatment.

**Participant 15.** *You can definitely offer patients more choice and realise where your limitations are, when to refer. You can also communicate better with peers there is no question.* (I)

This individual comment highlights the general opinion of the cohort. By having more knowledge, they are able to communicate with their patients in a more confident manner and have the confidence to offer more clinical options and support that information with sound evidence based research. Interestingly they report being more able and confident in communicating with peers.

**Participant 16.** *Talking to patients, even within the practice, I think it is a different level of professionalism now…* (I)

The question of professionalism was mentioned by several participants in connection with their communication skills. Participant 16 says that their communication skill with their patients is now on a different level and that they feel more professional during conversations. The inference here is that in order to be able to discuss treatment with patients the individual needs to be confident so that their professionalism comes through.

**Participant 5.** *I'm confident so for example a few years ago before I started the course, if there were any problems with the lab work I would trust the technician to call me, and say you haven't done this right, where as now I check and double check everything before I send it off. If there are any queries or issues I can discuss it with him. If there is something that comes back that is not up to my standard I can say well hang on a second, the impression I sent you was fine, what is going on here?* (I)

The impact of confidence on communication skills goes beyond communication between the practitioner and their patient. This participant has highlighted the importance of being confident enough to communicate with fellow professions in an authoritative way. They would not have had the confidence prior to the programme to express such views. As confidence in their clinical skills has increased so confidence in communication has been augmented.

### 4.4.3 Ability to use new materials and techniques

In this sub-section, I highlight the changes made by participants to materials and techniques used in clinical practice as a result of increased confidence. Figure 22 indicates the significant change in materials and techniques that were adopted by the participants during the RDP programme. Most of these changes occurred within the first two years of the programme as participants learnt about materials and techniques that were not necessarily new but new to them. As can be seen almost all the participants changed materials and techniques, which is in conflict with data indicating limitations to being able to implement changes.

**Figure 22. % change of materials and techniques**

*I have certainly started to use different materials in the practice although it is sometimes difficult to implement new things.* (FG)

This comment highlights a common theme particularly in the early stages of the programme. Many of the participants do not own the practice in which they work and so are reliant on the good will of practice owners to purchase new materials and support new techniques. Having gained knowledge in the use of new materials, this participant feels confident enough in the material and in their skills to use it correctly to try its use on their patients.

*I am more thoughtful in deciding the choice of materials for various applications like the repair of teeth.* (MSc Q)

With more knowledge about the variety of materials that are available for dentists to carry out restorative dental procedures, this participant has demonstrated a degree of thoughtfulness in deciding which material to use for any given procedure. This so-called ‘evidence based’ approach to decision making is a common theme that is represented by this example. Having been more thoughtful about which material is likely to serve their patient best they can recommend that option with confidence and discuss the pros and cons of other options authoritatively.

*I am able to apply what I am taught, so I don’t forget it. I apply most things in practice; I have changed materials and techniques.* (FN)

This comment highlights an important concept; this individual has been able to learn about a new material and/or technique and has put it into practice immediately. By doing so they are able to reinforce the learning experience, reflect on how the concept fits into their practice and modify their working environment accordingly. This is easier for practice principles/owners to achieve than perhaps those participants that are associates and have less of an influence on the running of the practice or those who are governed by the buying policy of the practice. The opportunity to introduce a new material or techniques helps the individual to remember how to achieve a personally acceptable result.

### 4.4.4 Patient satisfaction

In this sub-section, I report findings that indicate a change of confidence has an impact on patient satisfaction. This was a surprising finding but several participants reported that they perceived an increase in their patient satisfaction, which they attributed to their increase in confidence.

**Participant 2.** *Increases in confidence were accompanied with increase in patient's satisfaction. I do feel more confident because I can justify my treatment plan, which is evidence based. I can explain to the patient what material is best for them and how it will benefit them.* (I)

When asked directly about confidence, this participant was keen to explain the link that they had made between their confidence and patient satisfaction. By expending better knowledge and skills the participant perceives an increased in their confidence in communication skills and their ability to do dentistry. In the participant’s response the satisfaction of their patient is important as is their sense of professionalism. The participant has undergone an extensive period of postgraduate education having recognised a need to continue learning and as a result is able to improve their provision of care for their patients, which is the basic philosophy of continuing professional development (Megginson and Whitaker, 2007). The increase in knowledge, skills and confidence of this individual has had a positive impact on clinical practice. This positive impact is reflected by many of the interviewees.

**Participant 7***. I have had patients come to me and been happier with their work and the results. They question much more in terms of other treatment needed and they have also recommended other patients as a result. This has obviously impacted on my confidence.* (I)

This comment shows a direct link between an increase in an individual’s confidence and a significant impact on their clinical practice. As a professional, this individual has been able to grow their practice and increase their confidence as a result of increased competence and has witnessed an increase in patient numbers simply by doing their work to a good standard. By engaging in advanced study to improve knowledge this individual has also increased their confidence and sense of professionalism (Eraut, 2000).

**Participant 15.** *You can definitely offer patients more choice and realise where your limitation are, when to refer. You can also communicate better with peers, there is no question.* (I)

In this example the individual does not mention the word confidence but one gets a sense of increased confidence as they are willing to offer their patients more treatment options, which comes from an increase in knowledge and skills. It is also significant that even with new knowledge, skills and confidence this individual appears to be more aware of their limitations following completion of the RDP programme. Qualitative data recorded prior to the programme did not indicate a sense of limitations at all. In fact, by contrast the quantitative data indicated that the majority of participants were reasonably confident before the programme. There is a sense here that at the start of the programme this individual knew what they knew but were unaware of what they didn’t know; following the programme this awareness of limitations leads to comments like ‘*realise when to refer’.*

An appreciation of being able to communicate with peers is also expressed by this individual. As a result of an increase in confidence the individual feels more able to communicate on the same level with peers, be they fellow practitioners or other allied professionals. Part of the learning pedagogy on the RDP programme involves small peer groups of students working/learning together, which encourages communication between peer group members. The value of learning and working in small social groups has developed the skill to communicate with peers and emphasised the potential impact of social learning (Vygotsky, 1978).

*I am a lot more confident now and patients are accepting my treatment plans more often.* (FN)

The acceptance of treatment plans is considered to be a reflection on the ability of the participant to communicate with their patients following gaining more knowledge and skills (see Figure 18; page 135). This individual has linked their increase in confidence with the acceptance of treatment plans and sees this as a positive development of their practice.

### 4.4.5 Increased knowledge base

By having a greater knowledge on topics that are routinely used in restorative dentistry it is reported by many participants that they are more confident in both their ability to do dentistry and communication skills. Gaining more knowledge was a primary reason for attending the programme (see Table 6), so it is fitting that it is linked with an increase in confidence.

**Participant 4.** *The single most important impact on the practice is the fact that we are a VT training practice and I can talk to the young graduates at a similar level or at least have an understanding of the theory behind why we do certain things; this has been a quantum leap for me. If I hadn't done the master’s I am 100% sure I wouldn't have the knowledge base to back-up what I am talking about.* (I)

In this comment the participant, a practice principle and trainer, indicates having identified a shortcoming in their confidence to communicate with young trainees in their practice, and a need to improve their communication skills by gaining knowledge and confidence. Having improved their confidence, they can communicate with the trainees at least on an equal basis. The realisation that as a ’teacher/mentor’ for a young dental graduate, the trainer has decided to improve their own knowledge and confidence which they perceive as important when tutoring a trainee. This idea of a sense of community, where the more experienced practitioner is handing down their experience to the younger trainee, stems from the work of Lave and Wenger (1991) and their ‘community of practice’. Here is an experienced practitioner who wishes to continue to develop their own knowledge and skills not just for their own satisfaction but to be able to influence a young practitioner in their midst. There is also an element of the master/apprentice model at work here, with both parties agreeing that an improvement in clinical care for the patients is their joint goal.

The impact on the practice is seen as a positive thing with both master and apprentice improving their competence and the master seeing his/her increase in confidence as desirable to help their junior colleague.

**Participant 20.** *It [the RDP programme] has just had a positive impact on my practice, to my patients and myself. I am able to inform them in a constructive way, in a systematic way, in an organised way because I have more knowledge then I can explain to them what the alternatives are, the options etc.* (I)

Here we see the direct link between knowledge and perceived confidence. Once again the sense that more knowledge allows the participant to communicate to their patients in a more confident and professional manner is important to this individual. I sense a lack of confidence restricted this individual previously and lead to a certain amount of frustration on their part. The increase in competence and confidence in communication skills has resulted in an altogether more fulfilling experience in the clinical setting for this individual. The work of Norman and Hyland (2003) reports the sense of satisfaction and ‘happiness’ that teachers feel following achieving their goal of a master’s degree; very similar to the sentiments suggested by participant 20’s comments.

**Participant 5*.*** *I wasn't in a practice environment that I could apply the things I had learnt straight away, so there was a gap in that and now I am in an environment where I can apply things that I know.* (I)

This participant decided that the practice environment that they had been working in was not conducive to carrying out the type of work that they wanted to do, so a career move was undertaken. Having gained knowledge, skills and confidence during the RDP programme I sensed a degree of frustration that this participant was unable to put their new knowledge and skills into practice. Confidence in their ability allowed this individual to make a career move rather than stay in a position of job security but without perhaps job satisfaction. Other participants, in field notes and interviews particularly, have expressed similar views that career changes have needed to be considered in order to progress not only with the programme but with their ideal practice environment allowing them to pursue the type of dental work their confidence warrants.

*I don’t think anyone is confident to do periodontal surgery.* (FG)

This comment occurred during a discussion about whether having new knowledge had led to an increase in confidence to incorporate new ideas into clinical practice. This individual, whilst appearing to speak for the group, expressed a general opinion that despite having more knowledge about periodontal surgery they were not confident enough to undertake this treatment in practice.

### 4.4.6 Confidence beyond the RDP programme

In this sub-section, I present these somewhat surprising results that are in contrast to the work of Norman and Hyland (2003), who reported confidence, is specific to a particular context. My findings reported by a few participants indicates that their increase in confidence found during the RDP programme, spilled out beyond the dental environment and included the confidence to achieve sporting prowess, undertake major refurbishments at home and assist career development.

**Participant 18.** *I think that this increase in confidence has had an impact on my life outside of dentistry. This year I went out and ran. It wasn't a half marathon but it was 6K which I had never done before; yes it did help, I mean you go and you deal with things much better.* (I)

This example of sporting prowess resulting from an increase in confidence was only reported by two participants. It does illustrate the impact of confidence beyond the dental environment by encouraging this individual to embark on a running race that they would never have felt possible before.

**Participant 3.** *Well like I said earlier I am getting married, so I can’t afford to do another course right now as I want to buy a house. If the truth be known the plan is to do family for a little while. I am going to do the implant course and get more confident with that; I want to have a family first.* (I)

This participant expresses a view at the conclusion of the five-year master’s programme that they have other things in their life that they wish to do whilst realising that they will need to continue with further educational objectives.

**Participant 6.** *My increase in confidence has allowed me to do up my own house. I mean read up on what to do and get on and do it. It’s what we have got out of the course; it’s not what we have learnt it’s the built in continuous learning; improving what you could do.* (I)

Participant 6 reports that their increase in confidence has spilled over into allowing them to do rebuilding work to their house, which presumably they would not have attempted before. Whilst not having a direct impact on clinical practice this comment reflects a minority of participants who expressed a view that confidence gained from attendance at the programme impacts on their confidence beyond the programme.

*I have taken on a more senior role in the community service and am now involved in management, development of protocols and the finance.* (MSc Q)

This participant has indicated a progression in their career responsibilities as a result of completing the programme and their increased confidence. This example of career development was echoed by many of the participants. In this individual the motivation to gain a master’s degree was rewarded by their employer with a promotion within the setting and the opportunity to take on more responsibilities. The promotion was in itself a boost to their confidence.

*The course has definitely helped me to further plan my self-development. I would like to go on to complete the master’s and maybe continue with course on implants. My personal development plan has changed because of new knowledge. I am feeling more ambitious because of rubbing shoulders with the tutors*. (FN)

This comment could have been used in several different sections of the findings, but I chose to include it here as it represents the confidence that this participant exhibits during the diploma element. They are confident enough to state what course of action they would like to take next and rather than feeling satisfied with the learning they have achieved they are determined to progress to the master’s and even have plans beyond the next couple of years. The confidence that they have helps them to plan their future as well as to recognise areas of knowledge that they need to improve upon.

### 4.4.7 Summary of finding for research question 3

Research question 3 is the most significant part of my study as the impact of changes in confidence on clinical practice affect the way participants communicate with and treat their patients. In this section I have presented findings that show that an increase in confidence has an impact on the participants’: overall ability to carry out dental treatments, communication skills with patients and fellow professionals, patient satisfaction, knowledge of materials and techniques, and a greater knowledge of dentistry generally. I have also presented findings that for a few participants the increase in confidence has spilled over into their lives beyond dentistry, indicating the robustness of their confidence.

## 4.5 Summary

The diversity of participants in my study has resulted in the antecedent influences of age, gender and number of years’ experience as well as previous educational experiences. Antecedents can also be influenced by the physical and emotional state of the participant, which may account for the reduction in sample size as the study progressed (Hammond, 2004). Some of the participants may have undergone stress as a result of the learning experience, resulting in their early exit from the programme, whilst those with a strong sense of self-efficacy, motivation, confidence and realistic goal setting have achieved an appropriate goal whether or not that was their initial intention. The stress and anxiety that an individual can experience during and after a self-regulated learning experience can impact on future learning decisions.

As the RDP programme progressed through from certificate to diploma and then the master’s elements the perception is that participants’ confidence has increased. Initially the qualitative data indicated a sense of disappointment from the participants in how little their confidence had increased and indeed in many individuals’ confidence had decreased during the first year, returning to pre-programme levels by the end of the year. The diploma element showed a distinct increase in confidence of participants, who had received further tuition, had had more time to practice techniques and had successfully completed all assessments leading to a boost in confidence. Those individuals who progressed to the master’s element realised the impact on their clinical practice of an increase in confidence which was universal for all those interviewed.

An increase in ability and knowledge was seen as critical to many participants in increasing their confidence, which included new materials and techniques. The participants reported a definite link between their increase in confidence and patient satisfaction. There was some evidence of increased confidence influencing participants’ lives beyond dentistry

In Chapter 5, I discuss the findings of my study, linking my findings to previous studies, and suggest ways of using my findings in future postgraduate dental education.

# Chapter 5

# Discussion

## 5.1 Introduction

In this chapter, I discuss the findings of my study in relation to the participants’ perceptions of how changes in confidence influence the learning experience, to what extent specific pedagogical learning interventions impact on their perceived confidence following a master’s programme and in what way they perceive changes in their confidence having an impact on clinical practice. After a general introduction I discuss each research question in turn and develop the idea that an increase in confidence has: motivated the participants to continue with continuing professional development, informed the participants about the learning interventions that helped them achieve their objectives and what they prefer for future learning involvements (as well as informing programme designers what learning activities postgraduate dental students prefer) and how a perceived increase in confidence results in improved patient care in the clinical situation.

A sense of confidence is central to personal development and on-going study (Bandura, 1986, Eraut, 2007), leading to firstly, an improved capability to perform tasks (competence), secondly, confidence is a product of the relationship and trust of those people associated with the individual/professional and thirdly, the correct level of challenge is important to confidence. Participants entering a five-year, part-time programme need to have a certain degree of confidence and self-efficacy, confidence that they will achieve their objectives and confidence that they will satisfy their learning needs. The perceived change in confidence experienced by the cohorts in my study has enabled me to answer the research questions.

I have traced the progress of the two cohorts of participants through the five-year part time Master’s in RDP programme and have seen a steady increase in confidence many of the participants who have been willing to take part in my study. I have not followed those participants who left the programme before its conclusion, so am unaware of their evolving confidence although it is likely that they have contributed to the data. Some of the participants embarked on this learning experience with the perception that their confidence was particularly low (see Figure 4; page 87) but the findings indicate that following the completion of year one, participants report a small rise in confidence, which continues throughout the programme (see Figure 7; page 91). I now discuss reasons why individuals attended the RDP programme, including a desire to increase confidence.

### 5.1.1 Reasons for attending the programme

In this sub-section, I consider the reasons that participants put forward for attending the programme. The participants starting the RDP programme report improving knowledge, skills and confidence as their main reasons for attending. Over a half of participants, report their primary reason for attending the programme was to achieve an increase in confidence. The participants perceived a lack of confidence and/or self-efficacy at the start of the programme, which is a personal perception perhaps fuelled by: i) previous postgraduate or undergraduate learning experiences (Stankov et al., 2014), ii) caution prior to embarking on a lengthy period of study and/or the beginning of a journey into the unknown to a certain extent and iii) a general lack of confidence in their ability to communicate with patients and/or skills. The wide variation in scores on a scale of 1-10, when the participants were asked about their confidence in communication skills and ability to carry out dental treatment prior to the RDP programme does substantiate this notion. This is in conflict, to a certain extent, with the work of Bandura (1978), who in his interpretation of self-efficacy and confidence as a measure of academic success, suggests that to undertake a postgraduate degree demands a reasonably high level of self-efficacy on behalf of the partakers. Due to the anonymity of the participants in this study, I was unable to determine whether those recording a low score on the linear confidence scale prior to the start of the programme actually were amongst those who completed the programme and reported, in a quantitative sense, an increase in confidence. However, data shows that all those participants who successfully completed the five-year programme report significant improvements in their confidence.

## 5.2 How changes in confidence influence the learning experience

In this section, I discuss how changes in confidence during the RDP programme influenced the learning experience of the participants and therefore answer the first research question. By following the themes that have been established throughout the previous 2 chapters, I discuss my findings and their implications by considering: progression through the programme, levels of participation, self-directed learning, managing self-doubt, setting realistic goals and motivation to progress. All these themes have contributed to changes in confidence influencing the learning experience.

### 5.2.1 Progression through the programme

In this sub-section, I discuss how changes in confidence have influenced the learning experience with particular respect to the progression of participants.

As confidence, and to a certain extent competence, developed, individuals are more willing and able to handle the introduction of a more self-directed learning style and are able to have more frank open discussions with peers about cases or ideas for treatment that they were considering. This increase in confidence is developed from the experiential learning that takes place (Kolb, 1984). The opportunity to learn a new technique, to practice that technique under expert guidance, to go back to their practices and use the technique and then having reflected be able to come back to the institute and reflect in their peer groups, enhances not only the learning experience but confidence of the participants (Bloom et al, 1956). The experiential learning that results from continually trying new techniques, reflecting on successes and failures and then re-trying is only restricted by the limitations of the learning environment. A university department or learning intervention could be conceived as only a cognitive process rather than a cognitive and experiential approach and therefore the individual does not have the opportunity to develop their confidence beyond knowing facts. Participants of the programme are encouraged to develop their experiential learning and obviate the limitation of a cognitive only experience. Those participants who completed the RDP programme report the value of lecture based (cognitive) learning in combination with experiential learning and how changes in their confidence enabled them to adapt to the learning process therefore fulfilling their learning needs. The gradual introduction of self-directed learning encourages a ‘whole person learning’ (Rogers, 1980) approach to learning. The participants have, through their learning experience, increased their confidence in an appropriate environment and developed the idea of whole person approach to learning, which is revealed in the findings (see Figures 9, 11, 12). These findings about the learning experience, the level of enjoyment and the appropriateness of teaching support the concept of whole person learning being conducive to increases in confidence.

The participants reached a certain level of competency, which impacts upon their confidence; but there is a realisation by all those who completed the five-year programme that they are not yet experts, but that they have moved along the ‘Dreyfus Model of Skills Acquisition’ (Dreyfus and Dreyfus, 1986), a little further towards the expert end of the scale. The awareness that they still have more to learn was founded on their experience of a long term postgraduate programme, which encouraged an ongoing approach to learning and a realisation that they had progressed from the outer aspects of the community of practice towards the centre (Lave and Wenger, 1991; Wenger, 2008) without actually ever reaching the centre. The Dreyfus and Dreyfus model highlights the importance of the RDP programme being a step along the continuing professional development pathway of individual participants and not the end point. The opportunity to develop this philosophy of learning is particularly the case for a long-term period of study as opposed to a short CPD activity. There is little opportunity to develop confidence when attending an evening lecture for two hours, although short CPD activities do satisfy the regulatory requirements for GDPs. Short term courses subsequently offer less of an opportunity to enhance skills by practicing tasks and gaining self-efficacy for that task (Bandura, 1986).

During personal interviews participants comprehended the need for an ongoing nature to postgraduate dental education by either having personal development plans in place or ideas as to what they wanted to study next. These individuals became more critical of learning experiences and learning interventions, which would indicate their future learning, will be focused on their perceived needs and would infer a more satisfactory learning experience with ongoing increased confidence (Bullock et al., 2010).

### 5.2.2 Levels of participation

As the RDP programme evolves, the participants become more involved in the process. As they become more confident their willingness to take on board what is being taught, to engage in discussions with peers, to challenge themselves clinically by considering more complex cases and to progress through the programme is enhanced. It is reasonable to expect that an individual who is unable to cope with the workload, is not becoming more confident, is not able to put into practice what they have learnt will feel less inclined to fully participate in the learning process. It would take a strong motivational force, self-efficacy, good support and determination to encourage such an individual to participate fully.

As the programme evolves into a more self-directed approach to learning the participants need to adapt to the learning interventions and embrace the learning experience. Self-directed learning does not mean they participate less, on the contrary they make more of an effort to participate by staying in contact with peers, discussing cases with tutors and becoming more competent members of the profession.

### 5.2.3 Self-directed learning

In this sub-section, I discuss the role that self-directed learning plays in changing confidence levels in relation to the learning experience. The gradual introduction of self-directed learning through the progression of the programme allows the participants to develop their confidence, which enables them to manage self-directed learning in a positive way. Individuals need to recognise that as their self-directed learning becomes more skilled they will develop confidence and that then motivates them to continue progressing through the programme. Not everyone is able to develop these skills which makes progression through the diploma and master’s elements more difficult. This could explain why some participants decide to leave the programme either at the end of year 1 or 3. They realise that they prefer a learning intervention which continually feeds them with information.

Self-directed learning attempts to develop more independent learners who can recognise their learning needs, understand how to achieve those needs, and be motivated to achieve their objectives (Rogers, 1980). This more ‘person centred approach’ to learning (see 2.4.6) can be valuable in medical/dental postgraduate education, but only to a certain extent. Rather than the participants having an entirely ‘person centred approach’ to their education there needs to be a combination of person centred and teacher centred-approaches, as postgraduate (and undergraduate) professionals need the input from teachers in order to create an atmosphere for useful discussion. The idealistic person centred approach seen in Rogers work with psychiatry students is not appropriate when dealing with medical/dental graduates or undergraduates.

### 5.2.4 Managing self-doubt

In this sub-section I discuss the role that self-doubt has on the confidence of individuals. For all of the participants the journey through the rigours of a master’s programme was a journey into the unknown. By taking them out of their comfort zone and challenging them, a proportion would rise to the challenge but equally some would show signs of self-doubt and question their ability to complete such an undertaking. It would be reasonable to suggest that most of the participants felt self-doubt at some stage during the programme. Linked with this could have been a sense of inferiority amongst their peers. This feeling of inferiority was expressed by one or two participants when they reflected on the fact that younger practitioners knew more than they did, academically. Despite their greater clinical experience, they recognised self-doubt in their make-up and the importance of overcoming self-doubt and becoming more self-confident in their career development. What was important was that self-doubt was recognised and dealt with by the participants, with the support of teachers, peers and those beyond the confines of the programme. Those individuals who recognise and are able to cope with these episodes show high levels of self-efficacy and determination to succeed: “The stronger the perceived self-efficacy, the more likely are persons to select challenging tasks, the longer they persist at them, and the more likely they are to perform them successfully” (Bandura, 1986: 397).

Some individuals were overly challenged by the programme and expressed opinions about self-doubt and stress. The link between anxiety/stress and the individuals’ level of confidence was well illustrated by those participants reporting significant episodes of self-doubt, the rising stress levels when assignments where due to be delivered and the impact of outside factors that influence the individual. The participant who reported having to postpone their wedding until the programme was complete, illustrated the sort of stresses that this cohort was willing to endure and the level of stress they were under from family and friends in order to reach their goal, (Rogers, 1980). The individuality of the participants was a significant factor; what one individual found stressful another would be at ease with. For those individuals who completed the RDP programme, the motivation to reach their maximum level of expansion was stronger than the nagging voices of self-doubt (Rogers, 1980). Rogers’s theory that all creatures strive to achieve their ultimate potential is challenged here as it is true of the participants completing the programme, but not the case for those exiting before the end. Conjecture as to why the quantitative findings of a minority of participants exhibited low levels of confidence would include:

*Newness of the tasks:* Not all students were able to incorporate new knowledge and skills into their daily practices due to a perception that they needed more time to develop confidence.

*Identity:* Despite the fact that tutors encouraged an atmosphere of working together as colleagues to ‘discover’ new ideas, techniques and rationales, some of the participants may have taken longer to consider themselves colleagues and persisted with the tutor/pupil status, doubting their own ability and reason for being there.

*Self-doubt:* For all of the participants their attendance at a master’s programme would undoubtedly be one of the most academically challenging journeys they would embark upon. The rigors of a part time study of this nature as opposed to occasional CPD activities would challenge the participants beyond their comfort zone and inevitably produce self-doubt from time to time. Some participants would rise to the challenge more than others; those with motivation, self-efficacy and confidence. Being prepared for the occasional set back creates an individual who can deal with occasional self-doubt and use it as a springboard to future success.

*Age and appearance:* It is possible that some of the older participants felt self-conscious and out of place; a feeling of inferiority would perhaps ensue: *I have been doing this [a particular technique] this way for years and now I am being told it is wrong.* This is accompanied with a sense that the younger members of the cohort seem to be able to adapt and change more readily. There was some evidence that this was the case for a few participants. Evidence from one interview suggested the participant perceived younger colleagues to be more knowledgeable and this was their primary reason for attending the programme.

*Being judged:* By embarking on this type of long-term programme participants are opening themselves to judgement by university staff in the process of assessment but also by their peers during the teaching days. Those participants with greater self-efficacy and confidence were able to turn this to their advantage by questioning tutors and colleagues in their peer groups, by adopting a positive attitude to feedback and by being motivated to achieve their goals.

The data analysis revealed a gradual increase in confidence levels, which could be attributed to:

*Learning, experience and achieving:* As the level of their knowledge and skills increased and having successfully undertaken the tasks during practical teaching sessions, confidence was steadily developed. The opportunity to practice new techniques and materials in their own clinical environment enhanced learning and experience and in addition to a degree of reflection and questioning of previous practices, confidence was further boosted. These gradual changes in confidence influence the learning experience by allowing the individual to become a self-regulated learner, thus expanding their options for learning and career development in the future. The participants in my study are more critical of learning experiences and teaching pedagogy having attended the RDP programme, which would indicate that their future learning will be more focused on their perceived needs and would infer a more satisfactory learning experience will be experienced, resulting in ongoing confidence.

*Social interaction:* Interaction with fellow participants proved to be a popular way of gaining confidence. Participants realised the advantages of working in peer groups for learning and the social implications of learning in small groups (Vygotsky, 1978). As a result of discussions within their groups the participants were able to appreciate what aspects they were not confident in and endeavour to work on that feature.

*Respectful teaching:* Participants reported how well they were taught but also the degree of care and encouragement they were given which supported them during times of self-doubt.

The participants felt more confident and secure as the programme progressed, although there were a small number who felt very secure after the certificate year, but less so by the end of the diploma. This was perhaps due to changes from a much guided, hand held approach to teaching in year one to a more self-directed learning approach during the diploma years. This would result in self-doubt occurring without suitable mechanisms, for example setting realistic goals, in place to deal with that.

### 5.2.5 Setting realistic goals

In this section, I discuss how the setting of goals, despite being well-recognised as a functional and productive method of progressing through a learning experience, has not necessarily been employed by the participants.

The link between setting appropriate goals and confidence has been well-established (Bandura and Cervone, 1983). However, the qualitative data in my study revealed that there was a mixed response to questions about whether the participants had used pre-set goals to get them through the programme. Some participants indicated that they had one goal from day one, which was to complete the five-year MSc and their determination was their motivational force. This was in contrast to the work of Bandura and Cervone (1983) who indicated the need for students to set interim goals in order to achieve success. The setting of goals that are relatively easily achievable in order to promote a sense of achievement and therefore self-efficacy in students (Bandura and Schunk, 1981) would seem to be important to most students, but not this cohort of GDPs. The use of interim goals as ‘stepping stones’ toward their ultimate goal does not seem to be a process which the participants completing the RDP programme have needed or considered. It would seem that in achieving a successful conclusion to a long term postgraduate study the majority of participants did not rely on achieving short term goals, but linked successful completion to the motivational qualities of the individual and their developing confidence. In some ways the lack of settings goals may be another way of distinguishing between postgraduates and undergraduates. Undergraduate students are potentially more strictly monitored and guided by tutors and therefore more likely to have some form of goal setting in mind, even if it is from one assessment to the next. Some of the participants who completed the five-year programme did express the view that their initial goal had been to complete the first year only, but that following that year they became caught up in the experience and a realisation that at that time their learning experience was incomplete.

Some of the participants going on to do the master’s element report not setting a goal beyond the diploma but feeling that having come that far they may as well finish the programme. This sentiment of almost indifference could be as a result of some self-doubts creeping in despite the general increase in confidence, stepping into the unknown with a research project and a desire not to be seen as failing at the last hurdle by their colleagues. The research project that dominates the master’s element of the programme is a very different experience to the previous two parts by being largely self-regulated, no direct clinical content and each participants being guided by a minimum of two supervisors. Those participants who successfully completed the programme showed a degree of self-regulated learning perhaps not exhibited by others and made greater use of the learning strategies than did their ‘unsuccessful’ counterparts (Zimmerman et al., 1992).

The setting of goals is part of a well-established culture in learning and is a feature of the ‘learner centred approach’ to leaning that is evident in the RDP programme. This is a constructivist approach to learning, building on each goal achieved and is one that has been developing over the past hundred years in education; the idea that the individual learner focuses on solving problems, often in groups, over a prolonged period of time. It embraces social issues, the culture of the classroom, life-long learning concerns, and technology. The basic concepts can be described through such key words as "constructivism”, "learner-centred”, "problem-based". The participants were apparently unaware of the goal setting aspect, which is built into the learning interventions of the programme. These goals are assessment driven to an extent but also are focussed on the complexity of treatment options being learnt.

As the participants progressed through the five-year programme their self-efficacy has increased as they have mastered each level of the programme. It would be interesting to consider that by building into the educational experience natural short term, achievable goals, whether a greater percentage of participants would have completed the programme successfully. The uses of mandatory assessments at various points during the programme do act as goals. But these are goals that are set by the teachers and not self-achieving goals. By working in small teaching groups the participants have a built-in gauge as to their progress amongst their peers and therefore are able to set themselves goals in relation to the progress in relation to other members of the group. However, the ‘weaker’ participants may feel intimidated by their peers and be encouraged to exit the programme at the earliest time. Extra support and short term achievable goals should be set for these students, to develop the sense of self-efficacy and confidence and therefore improve the successful completion rate of the programme. However, it is unrealistic to expect teachers/tutors to get to know every one of 72 participants in each cohort to such an extent as to be able to influence their degree of confidence by offering appropriate support, when the tutors are part time, the participants are part time and teachers/tutors change after each element of the programme.

The difficulty, particularly with participants on a part time programme is the length of time it might take teachers to recognise those less confident individuals and be able to offer them that extra support. It is quite likely that in cohorts of 72 adults, there were some who needed a great deal of support and direction, some who need direction but less support, some who appeared to need direction but are in fact in need of support and some who are already self-regulated learners, what Knowles et al., (2015) would call ‘a true andragogic approach’.

### 5.2.6 Motivation to progress

In this section, I discuss how motivation influences changes in confidence and how it affects the learning experience. Motivation was a significant element in them developing confidence and self-efficacy (see Figure 6; page 90).

The self-motivation, particularly of those participants completing the master’s research projects, was fuelled by the constant improvement in their knowledge (Ward and Dixon, 2012), the support they received and the successes that they experienced. The findings revealed a wide range in the levels of confidence in the study cohorts prior to the start of the programme indicative of the antecedents of the cohort. Despite this apparent variation in their confidence and self-efficacy, they were motivated to attend a structured learning environment because of a perceived need to learn more and enhance their confidence. Whilst they may not have fully appreciated the demands of a five-year master’s degree on entering the programme, their motivation to embark on a long-term study was evident.

The participants exhibited a genuine motivation to improve their knowledge, skills and confidence, which was the driving force behind their attendance. This is perhaps in contrast to other members of the dental profession who appear to undertake short-term CPD activities to satisfy regulatory requirements (Eaton et al., 2011). There is no doubt that GDPs embarking on this learning style need support from a variety of sources as their personal motivation comes under constant pressure. Those individuals who did not complete the programme may have been less well supported and therefore when motivation waned they succumbed, even though many participants entered the programme with similar aims and objectives.

Motivation of an individual is therefore a multi-faceted phenomenon, one of which is the fact that individuals should set realistically achievable goals along the learning pathway. Motivation for the participants initially came about as a result of a desire to learn, the influence of current and past students, the need to develop a career and the influence of family and friends. The learning interventions that are available during a long-term period of study is also a factor when considering motivation.

The variety of learning interventions employed during the RDP programme seemed to motivate the participants, as they enjoyed the didactic teaching, hands-on elements and peer group discussions. The peer group teaching and learning appeared to be a source of on-going motivation for the participants. Tutors were able to motivate participants by encouraging them to make connections between the theoretical and practical aspects of the concepts under discussion, by reflecting on personal experiences, or by considering how they might change their practice in the light of discussion (see Figure 20; page 130). The face-to-face discussions were seen by the participants to be an appropriate pedagogy for learning. This traditional methodology may be challenged by those advocating the use of more online learning, which may question the effectiveness of social constructivist pedagogy, and whether discussion actually takes place, not whether something is learned (Laurillard, 2012). The positive motivational impact on confidence of the social, face-to-face learning that took place is well supported by the findings of my study (see 4.2.5).

The requirement of participants to respond to discussion points motivates the learner to consider their response and the need to defend their response of a particular concept motivates the individual to learn more before re-articulating their point. The peer group discussions allow the participants to reflect on their responses and to realise deficiencies in their knowledge, thus motivating them to address the issue.

Motivation from an adult cohort to embark on such a learning experience is based on: the individual’s self-concept of the need to learn, their past experience of postgraduate education, their desire to learn following reflection on existing shortcomings in their knowledge and their orientation to learning from a specific learning intervention (Knowles, 1975). Within my study, the qualitative data in particular has taken into account the individuals’ perceptions whilst the quantitative data concentrates on the responses by the cohort. It is worth questioning whether investment by an individual into a learning experience that does not deliver an improvement in performance is worthwhile and the impact that will result on future motivation and learning. This is particularly true in adult, non-compulsory education as opposed to mandatory education legislated for by government. It is also important to consider the role that self-regulated learning, which is a significant part of the andragogy of the RDP programme, has on motivation. Having considered all the appropriate motivational forces at play, I reflect that the fundamental motivational force is from the inherent desire of every organism to reach its full potential (Rogers, 1980).

Confidence seems to be a trait that can be observed between personality and ability. It represents an accumulated experience that is used to the advantage of the individual in the process of decision making. It has been reported that students who repeatedly underestimate their performance may soon loose motivation for learning due to this lack of self-confidence. Similarly, students who continually overestimate their confidence may be at a disadvantage as their overconfidence may impede their motivation to learn, assuming they know it all (Boekharts and Rozendaal, 2010). The interesting finding, represented in Figure 10, (See page 102), acknowledges how the level of enjoyment is directly related to confidence. The level of enjoyment generated by a suitable learning environment is important in the development of confidence. In a relaxed, professional atmosphere, individuals can learn and develop their skills, their self-confidence, and self-efficacy in individual tasks, as well as successfully fulfil achievable goals, all of which will be enhance confidence and support motivation.

### 5.2.7 Summary

One or two of the participants measured their confidence levels as 10 out of 10 on a linear scale before and after the programme in terms of communication skills and ability to do dentistry; although it is not clear whether the same participants necessarily measured 10/10 each time. One has to question why these individuals would attend the course if they were already that confident in their ability. It is interesting to note that there appears to be a change in the type of confidence between the start and finish of the programme. Confidence at the start of the programme seems to be borne out of a sense of knowing what the participants know but unaware of what they do not know. This confidence seems to be based around self-esteem and self-efficacy; a belief that the individual can carry out procedures successfully. This confidence is presumably not based on experience as the participants with greater experience did not score themselves at the high end of the scale. Confidence expressed during (and after) the programme is based on knowledge, skill and an increased sense of self-efficacy. One of the limitations of the study is that I could not trace individuals throughout the study as data collection methods were anonymous. It would have been interesting to follow the individuals who score themselves highly on the linear confidence scale at the beginning of the programme and see how they rated their confidence at their point of exit. At the start of the study I decided to follow the cohorts as one group (Marsh, 1987), rather than individuals, in order to maintain anonymity, to prevent individuals feeling they were being targeted and because at that stage I did not know who or how many participants would continue to the master’s stage of the RDP programme. I cannot say whether those individuals who successfully completed the programme where the same individuals who scored themselves 10/10 in the pre-course questionnaire, therefore it is still questionable whether confidence can be used as a measure of academic achievement.

The participant who considered their confidence level in communication skills as 10 out of 10 prior to the commencement of the programme, left little or no ‘room for manoeuvre’ when they realise that actually their confidence increased during the study. Their perception that they were extremely confident prior to the programme can perhaps be considered as over confident or even arrogance in hindsight. Therefore, should the quantitative data collected prior to the start of the programme be considered with a degree of caution if not scepticism? Similarly, those participants, who only scored their confidence levels 4 out of 10 at the start of the programme, could be considered as lacking confidence or even having a low level of self-efficacy.

The use of confidence levels as a predictor of academic achievement in postgraduate dentistry has not been considered before. There is some evidence in the education literature that it is feasible to correlate confidence with academic achievement (Stankov et al, 2012). However, this is a relatively new idea in the medical field and as far as I know, unique in dentistry. The main non-cognitive predictor of academic performance is the participant, particularly their self-belief. The sense of self-belief arises from confidence and the comforting feeling one has in the security of a familiar situation. The use of a linear scale (as in my quantitative data) underlines the specificity of confidence and underlines its fragility.

## 5.3 The extent to which specific pedagogical learning interventions impact on confidence

In this section, I discuss to what extent specific learning interventions used during the RDP programme impact upon the confidence of the participants. Individual’s knowledge will help the participants to plan which future courses to attend based on a pedagogical approach and help programme designers to understand what learning interventions are favoured by postgraduate dental students, in order to meet the needs of future programme participants.

Dentistry is a profession that deals with scientific facts requiring cognitive learning, the development of hands-on skills requiring experiential learning and the development of skills in communication requiring both cognitive and experiential learning. The learning activities adopted on the Master’s in RDP programme involves lectures and tutorials, clinical and laboratory based demonstrations, case studies in teaching clinics and problem based learning. These activities are popular with the course participants who generally felt that a combination of learning activities is essential. Previous studies have upheld the view that GDPs felt “courses most likely to impact on practice were those which offered updates on common clinical topics and were hands-on in nature” (Bullock et al., 1999: 487). Due to the overwhelming evidence that a combination of learning interventions is appropriate for the RDP programme, I discuss each aspect of the learning interventions: lectures/tutorials, laboratory skills (simulation), small group learning, peer groups, a combination of learning interventions, social learning, reflective practice, self-directed learning, the length of the programme, on-going support, the research project and the influence of feedback.

All the participants in my study selected this style of learning activity, knowing something about the challenge ahead and weighing up the pros and cons. For many of the participants their previous experience of less structured courses/programmes had resulted in them seeking a different style of learning experience in the hope that they could fulfil their aims and objectives. The qualities of making a conscious decision based on reflection, self-motivation, recognition of the constant need to learn and self-selection for a programme, as shown by the participants, indicates a strong sense of self-efficacy of the participants (Bandura, 1978).

### 5.3.1 Lectures/tutorials

This sub-section deals with how lectures/tutorials impact on the changing confidence of the participants. The work of Laurillard (2012) introduces the concept that modern learning should adopt the most modern methodologies. The participants in my study are committed to the more ‘traditional’ style of face to face lectures/tutorials because they: enjoy the experience of discussions that take place during a session, value the small group, social learning style (see 5.3.3), see a lecture as the best way of gaining knowledge and have direct access to specialist tutors.

The vast majority of participants were in practice with someone else either as a principle or associate, however dentistry can be an isolating profession and so the coming together at lectures/tutorials is very important to these participants.

### 5.3.2 Laboratory skills (simulation)

It would seem logical that the more often a technique is practiced the more confident the individual should become in their ability to perform that technique to a higher standard (Bambini, 2009). Although the participants generally only have the opportunity to perform a technique twice or three times under direct supervision, in the skills laboratory, there is evidence to suggest a strong correlation between the number of time a procedure is performed and the level of confidence of the individual (Morgan and Cleave-Hogg, 2002). Both cohorts were encouraged to practice new techniques in their own clinical environment in order to develop the skills required and the confidence to perform those procedures. The significance of practicing a technique cannot be overstated. At undergraduate level as the curriculum has evolved there appears to be less time for repetition of practicing techniques, which seems to impact on the new graduates’ confidence when they first arrive in practice (Blum et al, 2010). However, my study indicates that if anything the younger participants are more confident than their more experienced counterparts leading one to question whether this confidence is overstated.

### 5.3.3 Small group, social and peer group learning

The participants in my study showed a varying degree of confidence and self-efficacy when embarking on the programme. Some may have had experience of small /peer group learning either during undergraduate training or during postgraduate experience at CPD courses. All those who completed the programme agreed that peer group discussion based learning had given them a boost of confidence beyond what they perceive would have occurred in traditional lecture based approach. The ability to discuss with tutors and peers about the subject of the day, as well as individual clinical cases was seen as a powerful learning tool. The question is though, do members of peer discussion groups really challenge each other and respond positively to criticism of their opinions, techniques and views. Some of the more self-confident individuals flourish in such an environment whereas those with less self-confidence are perhaps not so garrulous. If these discussion groups are exclusively student lead then one needs to question the quality of the learning experience; there needs to be a measured degree of tutor input in order to maintain the quality of learning (Rogers, 1980).

My findings show that the concept of peer group learning incorporates: the ability to increase confidence (Mahn and John-Steiner, 2002) and the ability to share new concepts and constructive criticism, what Vygotsky calls ‘the zone of proximal learning’ (Vygotsky, 1962). The reliance on emotional support from peers was demonstrated by the relationship between the writer/philosophers Jean Paul Sartre and Simone de Beauvoir (de Beauvoir, 1984), who were lifelong partners in their personal and work lives. An interview with Sartre conducted by de Beauvoir produced the quotation, “You did me a great service. You gave me confidence in myself that I should not have had alone”. The implications are that confidence is conceptualised far more readily as a group than with the lone learner and therefore the small group learning approach engenders confidence following the interaction of the participants.

The small group-teaching environment allowed the participants to learn as part of a community of practice (Lave and Wenger, 1991; Wenger, 2008), whilst being members of the larger community that was the year group and an even larger community, the dental profession. The findings of my study indicate that this learning experience was conducive to an increase in confidence of the participants. This rise in confidence was seen as a result of both formal and informal learning both within their groups and as self-directed learners (Handel and Fritzsche, 2015).

It could be argued that learning of facts could be achieved by distance learning or by reference to a text book, but on-site attendance for teaching was seen by the participants to be advantageous, as was the small group teaching that dominates the pedagogy (see 4.3.3 and Figure 12). This may be due to four factors. Firstly, working in general dental practice can be an isolated existence and so an opportunity to join likeminded colleagues in a social, learning environment is attractive. Secondly, the opportunity to discuss one’s own cases with colleagues and peers is viewed to be very helpful and professionally stimulating (Maidment, 2006). Thirdly, the interaction between teachers and students, particularly during the practical exercises is deemed to be most valuable. Fourthly, the importance of social small group teaching (Vygotsky, 1978) was emphasised by the participants.

The opportunity to study and learn in small groups has also resulted in: the social interaction of peer group members, which has been advantageous to the learning experience, ready access to tutors was important and in the case of shy individuals the small group helped self-confidence to improve (see 4.5.3). The importance of social learning as a factor in increasing confidence is well documented (Harkin et al., 2001, Norman and Hyland, 2003).

The findings of my study have emphasised the importance of small group learning to this cohort of participants, particularly those who completed the Master’s in RDP, but it should not be forgotten that this learning intervention may not be suitable for all GDPs embarking on a long term CPD activity. The development of confidence and self-efficacy in the small group is based upon individual members of the group comparing their performance with others in the group (Bandura, 1986: 403). This comparative approach could result in a loss of confidence and self-efficacy, particularly if the comparison is made with someone of exceptional ability. By comparing one’s self with individuals who one recognises as not as capable, will result in a reduced increased confidence and self-efficacy, as the individual has recognised that the comparison is not as valid as when comparing their ability to someone more capable or equal to themselves.

Figure 14 indicates that a combination of all learning interventions is considered to be important; problem based learning was the least popular format in terms of learning interventions. This may have been due to a small number of individuals still exhibiting some signs of lacking confidence and not wanting to stand up in front of their peers and defend their reasons for undertaking treatment in a certain way. However, to put this in perspective, there were still 76% of those participants who answered the question were keen on problem-based learning. This question was asked specifically during a focus group discussion and so confidence was not any higher than when they started so it is unsurprising that participants were a little reluctant to stand in front of their peer groups and discuss their cases. As confidence grew, during the diploma element, presentation of cases and therefore problem based learning became a more acceptable and less intimidating form of learning.

Participants report they had received a good learning experience (see Figure 9). The fact that they were happy with the learning they received indicates satisfaction with the process, which enabled them to increase their confidence and self-efficacy. The use of a combination of different learning activities seems to have been successful, rather than relying on one activity i.e. lectures/seminars (see Figure 11), and is in keeping with previous studies (Bullock et al., 2010). The use of hands-on practical sessions using simulation was particularly favoured as they allowed participants to practice skills in a safe environment and receive formative feedback. This form of simulation has been common in dental education for many years.

It may be that those individuals who left the programme at the end of year one or year three had gained enough confidence to satisfy their learning needs. However, it would seem from the increases in confidence expressed, that those individuals who completed the entire five years, gained confidence from the ongoing nature of the learning experience. The changing learning experience from a taught programme in year one to a more self-regulated approach to learning during the diploma and to a fully self-regulated approach in the final phase helped to develop robust, valuable and tangible confidence.

A lot of emphasis was placed on the value of learning in small peer groups. This learning experience was seen as an ideal opportunity to discuss cases with colleagues, reflect on the more formal teaching, reflect on attempts to introduce new ideas into practice and to gain confidence on an individual and group level (Bloom et al, 1956). The social learning that takes place during the first three years of the RDP programme is considered to be an integral part of the learning process (Vygotsky, 1978; Bandura, 1986). The gradual introduction of a more ‘self-regulated’ style of learning throughout the five years, leading to a largely self-regulated approach to learning during the master’s research project is well received by most participants. The exceptions being those individuals who preferred either a taught or continual assessment approach to the master’s element. Those in favour of the research aspect reflected that it increased their confidence and gave them another skill set.

For some of the cohort reflection on/in learning (Schon, 2009) was a new experience. Those individuals who were interviewed at the end of the programme expressed satisfaction at their ability to reflect on what they had learnt and report an increase in confidence following acquisition of this skill. By being able to reflect on a past learning experience it is hoped that the participants will be able to choose relevant learning opportunities in the future.

Social learning is a cognitive process that takes place in a social context and can occur purely through observation or direct instruction, even in the absence of motor reproduction or direct reinforcement. The participants in my study have had the benefit of motor reproduction (hands-on skill sessions) and direct reinforcement (via reflection following practice of a technique) resulting in an increase in confidence both as a member of a social group and as an individual. By learning in peer/social groups, individuals were able to observe the behaviour, attitudes, and outcomes of others. Most human behaviour is learned observationally through modelling: from observing others, one forms an idea of how new behaviours are performed, and on later occasions this coded information can be put into practice (Bandura, 1977). The continuous reciprocal interaction between cognitive, behavioural and environmental influences goes some way to explaining human behaviour through the social learning theory. Since the original theory put forward by Bandura (1977), the term social learning has escalated particularly with social media in mind.

The use of social media as a method of communication between the participants was not necessarily encouraged by tutors but was evident from informal discussions with participants. The qualitative data in particular emphasised the importance, to the participants, of working/learning in small peer groups and the fact that they continued to learn beyond the confines of the teaching environment, beyond the set teaching days, but were keen to have an ongoing dialogue via social media. The opportunity to learn through peer discussion is appreciated by all participants and follows well recognised social aspects of learning (Vygotsky, 1978). Rather than being used as a method of teaching to alleviate the one-way transmission of information in the familiar lecture environment, the peer discussion environment encouraged individuals to express their views and opinions and share their experiences.

Social learning interventions were not necessarily familiar to all the participants of the programme, some of whom may have only experienced lectures, which could explain why a minority of the focus group discussions were not ‘free flowing’ conversations but required me (as the researcher/facilitator) to probe and prompt the focus group members and to create an environment conducive to free flowing conversation. Having studied together for almost a year, the second series of focus group discussions were infinitely more relaxed and garrulous. The need to ‘get to know’ your fellow student and colleagues before disclosing what knowledge and experience one has is not surprising. For adult learner their past experiences develop their capacity to have internal conversations prior to the peer group and therefore not be as totally reliant on the group as perhaps children with far less experience would be.

Throughout my study the participants are taught in small peer groups; 8/9 during the certificate year and 10 during the diploma years. Those participants continuing onto the master’s element of the programme are much more self-regulated learners and as such did not work in peer groups, other than via social media (Laurillard, 2012).

The constructivist approach (Kolb, 1984) exhibited by the cohort in my study illustrated that human development is socially situated and knowledge is constructed through interaction with others. Due to the requirements for attending the RDP programme all participants will have had some past experience of postgraduate dental education. By building on existing knowledge and skills, a constructivist approach to learning, the participants illustrated how humans develop meaning in relation to the interaction between their experiences and their ideas.

### 5.3.4 Combination of learning interventions

In this sub-section, I discuss the fact that participants considered a combination of learning interventions was the most likely way of changing confidence levels. The use of lectures/tutorial has been seen to be popular (see 5.3.1), as has the valuable sessions in the skills laboratory (see 5.3.2) and the social aspect of learning in small peer groups (see 5.3.3), but the combination of all these was almost universally accepted as the best way of increasing confidence. This is based on the work of Bloom et al (1956), where knowledge is the essential foundation of a hierarchy of development, the ability to then comprehend that knowledge, to apply it, analyse the results and evaluate the implications increases experiential learning (Kolb, 1984).

Dentistry is both a cognitive and practical subject and as such, learning interventions need to cover the gaining of knowledge (cognitive) and practical, hands-on sessions (practical) in order to achieve their objective. The combination of cognitive, lecture based learning, practical sessions in the skills laboratory, clinical teaching and evidence based learning encouraged the active participation of the cohort, by creating an environment that was conducive to discussion, that gave individuals the chance to express their views through case presentations, that used formative and summative feedback (see 5.3.10) and that developed self-directed learning (see 5.3.6).

### 5.3.5 Reflective practice

In this sub-section, I discuss the role that reflective learning has to play in changing confidence. Some of the participants entered the RDP programme with a degree of reflective learning skills but all participants reported that those skills either were developed or enhance during the programme. The ability to reflect of new knowledge, new skills and their implications on clinical practice enabled the participants to develop their confidence. By introducing a ‘reflective’ session at the conclusion of each teaching day, I was able to encouraged reflection amongst the cohort and foster the idea of reflecting on what had been taught, how they would apply new knowledge and skills, having attempted a new procedure in practice to reflect on its merits/failings and then to return and discuss with peers those relative merits/failings. The increased ability to reflect increased the confidence of this cohort.

Learning is a multifaceted, complex process during which it is assumed that knowledge is the outcome of learning (Zukas, 2009). Professionals moving along a career pathway can be reassured that learning is taking place by the introduction of ‘competency–based frameworks’. The participants in my study have chosen a ‘competency-based framework’ of learning. Having graduated from university, they have fulfilled the GDC requirements of Vocational Training (if applicable), and have embarked on the RDP programme, which includes some degree of competency-based assessment. To ensure that learning has occurred the learning should be recorded and reflected upon. Reflection following a learning activity is fundamental if the aims of learning are to be appreciated and the outcomes of learning are to be realised.

### 5.3.6 Self-directed learning

If participants set as their goal self-improvement, confidence and learning, then they will be motivated to continue to engage in various cognitive and metacognitive activities in order to improve their learning and comprehension. The goal of learning and mastery seems to be a much better standard for self-regulated learning than any extrinsic goals.

As the participants became more accustomed to self-regulated learning and their confidence grew, the increase in confidence became a self-motivating factor to complete the programme. As the programme progressed, the need for outside influences became less important and confidence in the ability to self-regulate their learning was more significant. The gradual introduction of self-regulated learning was facilitated by a realisation of mastery and achievability of realistic goals. Self-regulated behaviour was further enhanced by positive self-efficacy, which drove the individual’s motivation. The combination of cognitive and metacognitive knowledge exhibited by the participants allowed them to realise the level of achievement (or beyond) that they had set out to achieve. It was Interesting to note that the link between self-regulated learning and motivation leading to an increase in confidence spilled over to life outside of dentistry for a small proportion of participants who found they were willing and able to attempt a variety of previously unattainable tasks (see 4.4.6).

Participants who believed that their programme material was interesting, important, and useful were more likely to account for the use of self-regulatory strategies. The activation of relevant prior knowledge could free more capacity in working memory for the monitoring and regulatory processes involved in self-regulated learning.

### 5.3.7 Length of the programme

In this sub-section, I discuss the length of the RDP programme and its implications on confidence. When considering a programme of study participants should consider whether that programme will fulfil their needs and objectives. The length of the RDP programme is a factor that needs to be considered. Some of the participants were determined to complete the five-year programme, others thought about doing year one and then reflecting whether to take it further. The fact that only 17% of the initial 144 participants completed the programme would suggest that for some the length of the programme proved to be a negative factor, although I have no evidence to substantiate that assumption. Those who completed the programme emphasised the importance of the five years and that to do a part time master’s in less time would have been difficult. They appreciated the opportunity to revisit topics and perhaps having had the opportunity to reflect on new materials or techniques, come together to discuss their experiential learning.

Five years, part time study demands motivation, self-efficacy and a developing confidence to continue with the process. The opportunity to practice new skills and gain confidence in clinical practice, whilst retaining the chance to return to the programme enhances confidence.

### 5.3.8 On-going support

In this sub-section, I consider the impact that on-going support has on confidence. The on-going support that is offered by tutors and fellow participants had a significant impact on confidence. My study is concerned with confidence of a cohort of GDPs undergoing a long term, part time master’s programme. Although the programme relies on a degree of self-regulated/directed learning the role of the tutor/teacher should be acknowledged, all be it briefly. Whether that role is facilitating a learning session, a peer group discussion or giving formative feedback following a practical hands-on session any postgraduate educational programme is reliant on its teaching staff.

I did not report on data indicating the influence of tutors on the programme as this was beyond the remit of my study but I observed that those teachers who showed signs of ‘authenticity’ as teachers, accepted and trusted students’ fears and hesitations, were empathetic towards students and not judgemental of their weaknesses and self-doubts were the same teachers to be singled out for praise by participants (Rogers, 1980). Realness of the tutor/teacher/facilitator is an essential attitude and attribute. When the facilitator is a real person, being themselves rather than presenting a façade they are much more likely to be effective. The facilitator needs to be able to live their feelings and not be afraid to share them or communicate them.

Prizing, trust is about caring for the learner, but a non-possessive caring. It is the acceptance of this other individual as a person, a respect for the other as having worth in his/her own right. The tutor/facilitator who has this degree of trust can be fully acceptant of the fear and hesitation of students as they approach new problems. What Rogers described as “a prizing of the learners’ imperfections, and many potentialities” (Rogers, 1980; 272).

When a teacher has empathy they have the ability to understand each student’s reactions from the inside, has a sensitive awareness of how the process of education and learning seems to the individual student, then there is the likelihood that significant learning will take place.

Perception of these attitudes: In order to achieve ‘whole person learning’ (Rogers, 1980), the students need to sense that these attitudinal elements exist in a facilitator. To have a teacher truly understand a student’s private world in a non-judgemental way arouses deep belief.

The conclusion to be drawn is that it pays to be personal and human in the classroom. A humane atmosphere is not only more pleasant for all concerned; it also promotes more significant learning. The payoff is that grades increase but also in the more elusive qualities such as self-confidence, increased creativity and a better understanding of one’s fellow students all the participants have benefitted. The challenge for the tutors/teachers on the RDP programme is that they are all part time, the participants of my study were all part time and therefore the opportunities for prizing, empathy and perceptions are reduced compared to full time equivalents. However, there is no reason why they cannot exhibit ‘realness’ in their teaching.

The part time nature of the participants and teachers can be considered to be an advantage for both parties. The participants are able to return to their clinical setting to practice newly learnt techniques and ideas whilst the teachers, also returning the clinical environment are able to keep techniques and ideas contemporaneous. The teachers/tutors can be thought of as an attribute for the programme (Flott and Linden, 2016) in addition to the teaching/learning environment. Their ongoing desire to remain up to date and provide the most relevant information to the participants is an attribute to the RDP programme in order to keep it fresh and contemporary.

The on-going support from fellow participants was seen to be important in changing confidence, by the ongoing communication between peer groups beyond the learning environment. Discussion amongst peers about what they had learnt and their own cases helped the individuals to question what they were doing, clarify points of conflict and gain confidence.

It would be interesting to speculate whether fewer participants would have exited the programme prior to its conclusion, if greater emphasis had been place on supporting the academically ‘weaker’ participants by measuring ‘self-efficacy’. Despite the fact that self-efficacy beliefs are strong predictors of academic success (Bandura, 1986), their impact on academic performance has received little attention (Ward and Dixon, 2012). Although not the only way to measure student success, if a teaching institute concentrates on non-cognitive factors such as self-efficacy, this can prove to be a useful way to aid retention and completion rates of participants. By using ‘mastery experience’ or ‘performance accomplishments’ we can develop robust expectations of our students.

### 5.3.9 The research project

The findings with respect to the research project were from those participants who completed the programme. Undertaking a research project was a new skill to all the participants and as such was a learning curve for all concerned, and which enhanced the confidence of all participants. Other possibilities to achieve the master’s element would have been to continue assessment of clinical cases or have a further taught element to the process. The fact that the majority of the participants valued the research project as a good way to enhance confidence showed that they were confident enough to embark on such an undertaking, had developed self-directed learning skills and were motivated to achieve their ultimate goal. The inclusion of a research project as an original piece of work fits in with the revised version of Bloom’s taxonomy (Anderson et al., 2001).

### 5.3.10 Influence of feedback

In this sub-section, I discuss the influence that feedback as a learning intervention plays on perceived changes in confidence. Feedback during the RDP programme was seen as important in helping participants to increase confidence. As the programme progresses the number of participants drop and therefore the quantity and quality of feedback increases. It is challenging to give precise feedback to every one of the 144 participants, but as numbers reduce so feedback plays a more significant role. Part time tutors are less likely to really get to know 144 individuals and are therefore less likely to be able to tailor feedback to the individual.

There may also be an element of the participants not recognising when they are receiving feedback. During practical sessions in the skills laboratories, formative feedback could be considered as criticism and not as constructive feedback. Tutors need to be aware of the individual preferences of participants and modify their feedback appropriately. Those participants with lower self-efficacy may need to be guided more than those with undoubted self-efficacy and existing confidence. The topic of feedback is beyond the remit of my study but clearly participants felt good, bad or no feedback could influence their confidence.

### 5.3.11 Summary

There were several learning interventions that contributed to the increase in confidence reported by participants but the most popular was a combination of lecture/tutorials, hands-on laboratory and clinical sessions, problem based learning interventions and case discussions. Dentistry is a cognitive and practical subject to teach and learn so it is not surprising that a combination of didactic and practical learning was favoured by the participants.

The role of social learning (Salomon and Perkins, 1998; Vygotsky, 1978), peer learning (Lave and Wenger, 1991) and small group learning should also be emphasised as this proved to be a major factor in the perceived increase in confidence. The random nature of the grouping encouraged the participants to develop social contacts and to be able to gain confidence from an individualistic point of view as well as a group perspective. Learning from other individuals within the group is a powerful learning intervention. The opportunities to discuss cases amongst themselves or with a tutor present stimulated those who were confident to push themselves further and those less confident individuals to gain confidence and contribute to the discussions. Feedback received by individuals was welcomed as a source of improving confidence but the frequency, quality and methodology of delivering feedback needs to be reviewed (Bandura, 1991). With such a large cohort of participants, timely, valuable and individualised feedback is a challenge.

## 5.4 The impact of changes in confidence on clinical practice

In this section, I discuss the impact that perceived changes (increases) in confidence have on clinical practice, highlighting how an increase in knowledge and skills results in greater confidence. I also consider the importance of transferring new knowledge and skills from the learning environment to the clinical setting.

Confidence at the end of the programme is based upon a deeper understanding and appreciation of the problems associated with restorative dentistry, being able to deal with everyday problems in an evidence based way, being more aware of the materials available (particularly their limitations), feeling more confident in discussing various options with patients and a higher level of skills to undertake dental restorative procedures. In addition, the increase in patient uptake of suggested treatment options and satisfaction with treatment undertaken is reflected upon, leading to an increase in confidence reported by participants. Treatment planning cases was thought to be so thorough that outcomes of treatment were more predictable and that predictability led to increase in confidence. The increase in confidence to communicate with patients and colleagues resulted in the participants feeling completely adequate, secure in what they were doing and unintimidated by challenges.

Changes in confidence and its impact on practice is minimal following the certificate year and then improves considerably through the diploma years and into the master’s element of the programme because: i) there is a realisation at the early stages of how little knowledge individuals possess, ii) as their knowledge and skills develop through the first three years so confidence increases, iii) as new skills such as reflective learning, self-directed learning and peer group learning improve so confidence increases and iv) as new techniques and materials are used in an evidence based way and clinical results justify them confidence increases. Improvement in communication skills and ability to do dentistry are fundamental increases that participants report as impacting on clinical practice. It is interesting to see how many of the participants change practices to achieve their aims and objectives (see Table 8) and how many have subsidised patients in developing their cases for assessment at the conclusion of the diploma.

I found no mention of the influence of confidence levels on clinical practice or patients’ responses to treatment, treatment planning or the use of dental restorative materials during my literature review. Similarly, there is nothing in the dental literature to suggest that there is a link between participation in CPD activities and performance enhancement (Eaton et al., 2011). The medical literature includes mixed messages; there was no correlation between CME and the improvement in specialist care of urology patients (Ahmed et al, 2013). By contrast, there is some evidence to suggest that undertaking a CME activity to enhance pain control did enhance performance (Bellamy et al., 2000). In choosing to question participants about their perceived confidence in communication and clinical skills, I wanted to explore any repercussions of changes in confidence. My findings point to an increase in confidence having a profound impact on clinical practice following this style of learning intervention. Whether a similar effect results from a CPD activity is unclear. This would suggest that the length of the programme, the learning interventions, the support, motivation, setting realistic goals and self-efficacy all have an impact on confidence in clinical practice.

### 5.4.1 Impact on confidence of ability to do dentistry

Data recorded early in my study points out that during the certificate element of the programme it was not all plain sailing. In Chapter 4 section 4.2, I report the frustration and lack of confidence expressed and the reasons highlighted for the restrictions in being able to implement changes. The participants had improved their skills in the practical exercises but had become frustrated at not being able to implement them in practice. Some of the participants became more reflective about the impact treatment might have on their patients and in their own limitations. The experience expressed by the participants is in contrast to the work of Koo et al. (2014), who reported that during the analysis of qualitative data collected at focus group discussions and personal interviews student nurses reported increased confidence when completing the simulation activities.

However, Koo et al failed to comment on the transfer of the simulation skills from the teaching environment to the clinical workplace. Various factors influence the transfer of new knowledge and skills from the teaching/learning environment to the ‘workplace’ (Guile and Young, 1998). This concept of re-contextualisation is well recognised in the educational world but is a relatively new concept in the medical/dental educational environment. By having multi-pedagogical learning interventions, the transfer of new skills from the learning environment to the clinical setting is less problematic. This concept of re-contextualisation appears to be an issue for some of the participants, who do not receive the support that they need for adequate transfer. In order to help overcome this issue I consider the impact of developing the RDP programme to include a form of apprenticeship following the formal training, which would help individuals to further develop their confidence, establish good practice protocols and encourage a smooth transfer of skills and knowledge (see 5.6).

### 5.4.2 Impact on confidence of communication skills

In this sub-section, I discuss the influence that confidence has on communication skills. Communication skills was one of the main reasons for attending the programme and therefore must have been perceived as lacking in the participants’ armamentarium. The ability to communicate confidently with patients and fellow professionals is borne from a greater knowledge and understanding of the topic (see Figures 19 and 21). One of the areas of most value is the increase in confidence when treatment planning, which not only requires the logical planning of treatment options but endorses the participants’ ability to discuss treatment option with patients, resulting in an increased acceptance of treatment by patients, leading to a more confident individual (see Figure 18).

The increase in confidence in communicating with patients was perhaps predictable and desirable to a certain extent but what I found more surprising was the increased confidence exhibited by participants in communicating with their peers. The ability to discuss treatment options with one’s peers, including fellow participants, tutors, colleagues in the practice and technicians, in a confident manner enabled individuals to feel more professional about the way they portrayed themselves. Rather than accepting work from a technician, the participants were a lot more prescriptive about what they wanted and were less willing to accept second best. This shift in attitude enhanced the quality of treatment, which further enhanced confidence.

### 5.4.3 Ability to use new materials and techniques

In order to increase the quality of treatment offered to patients, individuals need to consider the choice of materials and techniques available. In this sub-section, I discuss how choices of new materials and techniques influenced the confidence of participants. The RDP programme does not contain a separate module on dental materials, but lectures, discussion groups, evidence based learning interventions, laboratory and clinical skills sessions all consider the appropriateness of materials and their clinical use. By understanding which materials are more appropriate in particular situations individuals can make an informed judgement about what to recommend to their patients. What is also important is their confidence to discuss the limitations of dental materials and why something a patient may request may not be the best option for them.

Although I mentioned ‘new materials and techniques’ this may refer to a material/technique that the individual has not considered before, a material/technique that is new to the profession or a material/technique that has been in use but its correct use has not been adhered to. By understanding the appropriate use of materials/techniques participants have the opportunity to try them in a simulation environment, take into practice and then reflect upon their use, becoming more confident to use these in clinical practice.

Several participants reported difficulties in implementing new materials and techniques into clinical practice for a variety of reasons. The demographics of these cohorts indicated that the majority are not practice principles and therefore need to rely on the good will of their principles to incorporate new materials into their practice. There was also an understandable reluctance in the early stages of the programme to incorporate new ideas, as these would take longer to perform and therefore incur more costs. The fact that many participants were prepared to move practice, adopt new concepts at their own expense and rely on the good will of the practice principle was testament to their determination and motivation. Once their confidence had shown signs of increasing (particularly during the diploma) then the motivation to try new concepts, by having a good level of evidence-based knowledge about them was enhanced.

Increases in individual self-efficacy is apparent as the participants improved their technical skills and transferred those skills to the clinical environment. Figure 22 illustrates the high percentage of participants who changed their techniques (and materials) as the programme progressed. As they became more self-efficacious with techniques, they were willing to incorporate them into their daily work. As the tasks become progressively more challenging, those participants with a high degree of self-efficacy are able to rise to the challenge (Bandura, 1986).

### 5.4.4 Patient satisfaction

Patient satisfaction was expressed by the participant as having directly influenced their perceived confidence levels. Thereby my data may not emanate from subject-related learning alone. Some of the participants reported an increase in their sense of job satisfaction with the increase in confidence. Their sense of job satisfaction was as a direct result of more knowledge and therefore the ability to communicate in a more authoritative, informative and empathetic way with patients. In some cases, this resulted in a noticeable increase in the uptake of more complex treatments by patients leading once again to self-satisfaction and an increase in confidence. Inherent within this is the concept of patient satisfaction as well as practitioner satisfaction. Several participants highlighted the ability to accurately and logically treatment plan complex cases as a major factor in their increase in confidence. Increased confidence in clinical skills expressed by the individual and their patients can result in the steady growth of the business as patients are happy to refer their friends. An increase in acceptance of treatment plans (see Figure 18; page 128), is an indication that the patients have confidence in the participant, confidence in their professionalism and confidence in their clinical ability.

### 5.4.5 Increased knowledge base

Throughout this chapter, I have mentioned the importance of knowledge in the participants’ perception of their confidence levels (see Figure 20; page 130). In this sub-section, I discuss how an increase in their knowledge base influences participants’ confidence in clinical dentistry. By having an increase in knowledge participants are able to: understand what they are trying to achieve in treating a patient, appreciate the limitations of materials and techniques as well as their own limitations, offer their patients more options and in so doing advise patients which options are more predictable and have more predictable results in their clinical work which enhances patient confidence as well as their own. A significant proportion of the original cohorts (2010 and 2011) expressed wanting more knowledge as a primary reason for attending the programme (see Table 6; page 88).

### 5.4.6 Confidence beyond the RDP programme

In this sub-section, I discuss changes of confidence that have been reported to impact on the individual beyond the confines of the RDP programme. Whilst this is not strictly within the remit of my study, there were a number of occasions when this was reported. I have included this small section here as previous definitions of confidence have indicated its contextual nature which for these individuals was not the case; their increase in confidence as a result of the RDP programme was not limited by the context (Norman and Hyland, 2003).

Some participants reported that they had recognised changes in their lives outside of dentistry as a result if their increased confidence. Individuals related tales of athletic prowess, which they never dreamt possible beforehand and the fact that they had felt confident enough to even attempt a half marathon. Another participant spoke of their increase in confidence allowing them to undertake a major refurbishment project of their home. Despite the literature telling us that confidence is a contextual concept, which can fade as the situation of the individual changes (Norman and Hyland, 2003), here were a small number of participants who perceived that their increase in confidence gained from the RDP programme had had a major impact on their lives outside of dentistry.

To investigate the impact that an increase in confidence in one context can have in another was beyond the remit of this study, but it would seem that confidence amongst this cohort of postgraduate dental students may not be as fragile and contextual as first thought. This may be a reflection of their maturity, which is evident with postgraduate students rather than undergraduates and schoolchildren who have been the subjects of previous studies.

There would appear to be ample evidence to suggest that there are economic benefits of continuing education beyond the state levied age limit (Field, 2006). Having a degree-based education in most countries leads to more likely financial stability. The participants in my study have reported an increase in their earning potential as a result of greater confidence, which is evidenced by a stronger uptake of treatment plans and greater patient satisfaction leading to requests for more work to be carried out. There is also a growing body of evidence of the non-economic benefits from learning; this includes the cognitive benefits of growing confidence and self-efficacy, which appear to be associated with improved mental and emotional well-being (Morrell et al, 2004).

There is limited evidence that the introduction of mandatory CPD has resulted in an increase in knowledge, skill or improvement in patient care (Eaton et al, 2011). My study shows that with this particular style of learning experience there is a perceived increase in knowledge, skills and confidence of participants and as a consequence a perceived increase in the standard of patient care. The dilemma is how to measure that increase. A more reflective approach to CPD (rather than the current prescriptive approach) may resolve the challenge, whilst encouraging individuals to continue with postgraduate education and to become self-regulated learners.

The longitudinal nature of the programme does not guarantee the participants becoming self-regulated learners (Endedijk et al, 2014). There is some evidence that a proportion of them do develop self-regulatory skills. A skilful self-regulator will set themselves high value goals, have a good degree of self-efficacy, instruct themselves and monitor their learning needs, seek more opportunities for self-assessment and reflect on their future learning needs.

Because of the anonymity of the data it is impossible to know which individuals have benefitted most from a perceived improvement in confidence. The data indicates that as a group the participants’ confidence improved as the ongoing learning experience tested them further and introduced more information. Participants realise that learning is an ongoing process and that whilst they are still bound to undertake CPD activities to satisfy professional requirements, they are much better placed to select appropriate courses to satisfy their needs and desires.

Participants report increases in confidence, which has helped them to be able to communicate better with their trainees. The realisation of the need to undertake such a programme in order to keep up to date with younger colleagues coming into the practice is accompanied by the realisation that the learning process needs to be ongoing in order to accommodate future trainees or their current trainee as they develop. This attitude towards ongoing learning will become infectious as the senior practitioner creates an atmosphere of ongoing learning within their practice for everyone.

Those participants, who exited the RDP programme early on, may not have appreciated the nature of ongoing learning. The individual quoted in 4.2.1 is disappointed that their confidence has not increased to the degree that they had hoped by the end of the certificate year. Due to the anonymity of the data collection methods it is impossible to say whether this individual has progressed to the next stage but there is a sense here that they have failed to appreciate the ongoing learning nature of the programme. All participants are aware that the RDP programme is a five-year programme on entry, with appropriate exit points, but it appears that if this individual did exit after year one they did not appreciate they would forfeit some of the ongoing learning aspects of the programme.

The five-year RDP programme is onerous and as I have indicated requires participants to put other aspects of their lives on hold until satisfactorily completing the programme to whatever level they require (see 4.2.5). This is also well illustrated in 4.2.1, where this individual has a plan about their ongoing learning and realises that their confidence is contextual. They have recognised a need to boost their knowledge and confidence by planning to do a course on implants, but feel that they owe their family some time before embarking on this next stage of the ongoing learning. It is likely that this participant is female as she talks about starting a family. As the percentage of women in the profession increases so ongoing learning activities will need to consider this changing demographic.

### 5.4.7 Summary

The findings indicate an overall desire by the participants to improve their skills and confidence in their clinical dentistry in order to offer their patients a more comprehensive, more contemporary and increased skill level for their treatment.

By attending and completing the RDP programme, the participants have had the opportunity to fulfil their aims and objectives. Those participants, who left the programme after year one or three, have fulfilled their aims and objectives and are in a position to achieve improved patient satisfaction. Data indicates the participants, whether completing or not completing the five years, have made significant changes to the techniques and materials they use in practice and that their decisions to change are evidence based decisions, which installs confidence in them as well as the patients (see Figure 5; page 90).

Those participants successfully completing their master’s degree report, an increase in confidence of patients, which has manifest itself in positive feedback from patients about finished work, a desire to recommend other patients to the participant and a greater take-up of treatment (see Figure 18; page 128). Previously ‘unsolvable’ issues have been addressed in a calm, logical and sympathetic manner and resolved to everyone’s satisfaction.

There is a general impression that as their levels of competence increased with greater knowledge and skill, so their self-efficacy in specific tasks and their confidence overall improves, indicating a strong link between competence and confidence in this cohort of postgraduate dental students, which has not been reported in previous studies.

## 5.5 The impact of demographics on confidence

In this section, I discuss the impact on confidence of gender, number of years of experience and age in order to put into the context these variables in the demographics of the participants. The demographics of my study sample are limited as they are all GDPs, have all had similar educational backgrounds, are all self-selected participants and have attended the RDP programme with similar aims and objectives

### 5.5.1 Effect of Gender

The demographics of the dental population in the UK has changed over the last 25 years as more young women are looking at dentistry as a career. There was no statistical difference in the level of confidence between males and females amongst the cohorts for this study, but when looking at the pre-course quantitative data the female members of the cohort seemed slightly more confident than their male counterparts (see Figure 8; page 92). It was also clear that more women completed the five-year RDP programme indicating more motivation, self-efficacy and confidence (see Table 3).

Self-efficacy and confidence are thought to be fundamental when looking at the general health and wellbeing of adult learners ([Hammond, 2004](#_ENREF_80)), but we should not be surprised that women are at least as confident as their male counterparts. Analysis of national British datasets suggests that the level of qualifications protects individuals from obesity and depression, but the health effects are not universal and vary depending on the level of qualification, whether it is an academic or vocational qualification and the gender of the learner ([Feinstein et al., 2002](#_ENREF_61)). In my study, gender has no bearing on the success or confidence of those participants completing the RDP programme. This is in contrast to previous dental studies, where female practitioners have been reported as being less confident than their male counterparts (Mouatt et al., 1991).

### 5.5.2 Effect of number of years’ experience

Once again, the quantitative data showed very little significant differences between the confidence level in communication skills and ability to do dentistry and the number of years’ experience the participants had (see Figure 7; page 91). This is somewhat surprising, as one would have thought that the more experienced participants would be more confident (Morgan and Cleave-Hogg, 2002). It is possible that those participants with a number of years’ experience become more cautious and aware of all the potential pitfalls and the risks of failure. It is possible that their motivation to attend the programme is driven by: the need for reassurance that what they are doing is acceptable, the realisation that they need to update their knowledge and skills and a desire to develop their clinical practices.

### 5.5.3 Effect of age differences

There was a large variation in the age of the participants who took part in the study, suggesting the diversity of the cohorts. The age range was perpetuated throughout the study despite the smaller number of participants in the later stages of the programme. This was interesting as it would appear that all age groups were motivated to complete the programme and not just the younger members. The motivation to do the master’s programme is observed in all three-age ranges in my study. The older GDPs were more likely to be practice principles, had a steady income and attended the programme to improve knowledge, skills and confidence, as had the other age groups. As with the more experienced GDPs the older members of the cohorts did not score themselves at the top end of the scale when recording their confidence in communication skills and ability to do dentistry (see Figure 2; page 57).

The age range did not seem to be a significant factor when assessing the confidence of individuals prior to the start of the programme (see Figure 3; page 86). The younger age group appears at either end of the range and none of the older group appears at either end. The middle age group are not evident at the lower end of the scale but a small percentage do appear to be very confident prior to starting the programme. These minor variations may be explained by the small sample size compared to the population of GDPs in the UK and that a large proportion of the participants attend the programme recognising a need to increase their confidence.

## 5.6 A New Theoretical Approach to Postgraduate Dental Education

In Chapter 2, I considered the work of Lave and Wenger (1991) and the introduction of the term ‘legitimate peripheral participation’ and how this encouraged a way for experienced individuals to speak to newcomers. Lave and Winger’s work was based on their understanding of apprenticeships and its various formats. The teaching of medicine and dentistry was originally an apprenticeship, until the introduction of university degrees in the 18th century. The introduction of mandatory CPD in 2002 saw an attempt to regulate the postgraduate education of dental practitioners and make the profession more accountable. There seems to be a logical argument for making postgraduate learning separate from a professions’ statutory requirement for CPD (Zukas, 2009). My study has highlights the complex nature of the educational protocol that needs to be employed if postgraduate dental education is to develop and flourish.

I postulate that postgraduate dental education should follow the example of the apprenticeship model that has been successful for many centuries and in many walks of life. Innovative apprenticeships certainly enhance the theories of Lave and Wenger (1991), particularly their concept of ‘legitimate peripheral participation’ and the reproduction of ‘communities of practice’, where senior figures pass on their knowledge and skills to younger professionals (Fuller and Unwin, 2011). Apprenticeships have been traditionally associated with manual work of a vocational nature. This does beg the question at what levels of competence should registration to a profession be approved ([Eraut, 2000](#_ENREF_59)). My study focuses on postgraduate dental education and comments on undergraduate dental education are beyond the remit of this study. It is assumed that having satisfied the criteria for inclusion on the Dental Register that all the participants have some degree of knowledge and skill, which they recognise as inadequate for their future needs. Traditionally apprentices have learned a trade manually; an apprentice today needs to combine theoretical knowledge together with practical skill. The informal practice through which learning occurs in apprenticeship is potentially very powerful and leads me to question whether the value of formal learning has been over emphasised. A recurring criticism of Lave and Wenger has been that, by building their argument about apprenticeship as a model of learning through a focus on traditional, rather than modern apprenticeship, they down play the contribution that educational institutions make to apprenticeships through teaching theoretical knowledge ([Gamble, 2006](#_ENREF_69); [Guile, 2014](#_ENREF_77); [Wheelaham, 2010](#_ENREF_194); [Young, 2000](#_ENREF_197)). Postgraduate education of GDPs can lend itself very well to the apprenticeship model and combine the attributes of traditional, vocational and experiential learning.

A long term dental apprenticeship allows the impact that CPD has on patient care to be monitored more closely, to address the ongoing educational needs of the individual and to develop competence and confidence to high level. Lave and Wenger (1999) refer to a ‘master’ as being the knowledgeable person whose pupil is the apprentice and whom, in consultation with the apprentice, will advise the pupil what shortfalls in knowledge and skills are apparent as well as covering aspects of particular interest to the apprentice. Before embarking on an apprenticeship monitoring previous CPD activity over a prolonged period can also be beneficial ([Best and Messer, 2003](#_ENREF_19)) as can workplace learning (Eraut, 2007). As an apprentice, the GDP would be able to invite the master into his/her workplace and therefore enhance the learning experience. As well as providing academic support the ‘master’ can support the GDP to make challenging changes to their practice and to patient care ([Barnes et al., 2012](#_ENREF_15)). This support needs to be underpinned by identifying new pedagogical practices to support workplace learning and the concept of social learning.

It is conceivable that with the inclusion of new technologies into teaching postgraduate dentists (and medics) the individual will be able to undertake further studies from home at a time that is convenient to the individual. However, one of the findings from this study emphasised the perceived importance of social learning, and therefore the individual will need to consider combining workplace based learning, which will be self-regulated, and social learning, which has the advantages of working as a ‘community of practice’.

The ideal ratio of one master to one student is unlikely to occur in the current economic climate. The current state of the job market in the UK will dictate: how many apprentice positions are available, the gender ratio and the scope of undergraduate training. The apprenticeship model could work in three ways:

i) It would be reasonable for 6 or 7 apprentices to be assigned to a master, who could then teach them his/her specialty. Once that specialty had been learnt, assessed and a satisfactory standard reached, the apprentices would then move onto the next master and so on. This approach would allow: i) mandatory elements to be routinely undertaken; ii) the individual to attend programmes that he/she was particularly interested in; iii) individuals to attended courses they perceived as a learning need; iv) the individual to develop a Personal Development Programme specifically for their perceived needs following guidance of the master.

ii) The development of professional curricula is challenging since a balanced education is required to satisfy the profession, regulatory bodies and the public. It also needs to stimulate interest in professionals to become both specialists and better generalists. The professional curricula for dentists, both undergraduates and postgraduates, involve many separate disciplines all of which are generally taught by specialists in their respective fields. The apprenticeship model would work equally well with one master teaching 6-7 students covering all disciplines within the profession. This would allow the apprentice to develop knowledge and skills in dealing with the ‘whole’ patient, rather than compartmentalising treatment. Transfer of new knowledge and skills from the educational environment to the workplace would seem far easier, more efficient and more effective if they occurred in the same environment. This would result in an overall more comprehensive and improved patient experience. The individual would still be able to specialise in their chosen topic but would have a much broader general professional knowledge and enhanced confidence.

iii) Following completion of the RDP programme, the participants are free to pursue their own avenues of future learning. If a ‘community of practice’ could be formed by individual participants, they could meet on a regular basis, under the supervision of a ‘master’ and consider current trends, up to date thinking and discuss common challenges. These meetings could take place in the practice environment, in a teaching institute or in a social context; each group could decide its own preference.

One of the challenges to the resilience of a model of apprenticeship for learning would be how to measure its beneficial effect. Resilience can be measured by; the continued availability of apprenticeships in traditionally current sectors, for example engineering; its extension into new sectors such as health care and business; and by a continuing process of development of new models of apprenticeship. Whether the benefits would be measured on a local, national or international level would depend on some continuity within the profession. Individual states may decide to develop their own model of apprenticeship which then makes comparisons of results impossible. However, if a universal model for apprenticeship within the dental profession could be agreed upon then movement of workers across national borders would have little consequence on the standard of practice as all practitioners would be of an equal standard. I appreciate that this is rather a utopian concept but one that is worth striving towards. It would perhaps be prudent for each sector to develop its own brand of apprenticeship to suit its own needs. It could be argued that if the state is charged with developing and monitoring a state-wide apprenticeship scheme that it would become a ‘policy instrument and undermine it as a model of learning’ ([Fuller and Unwin, 2009](#_ENREF_67)).

### 5.6.1 Apprenticeship and confidence

The selection of apprenticeship models as discussed ([Lave and Wenger, 1991](#_ENREF_113)) indicate that as the individual progresses through the training process they become more competent but also more confident. The participants in my study have achieved a good level of confidence as well as competence and are therefore in an ideal position to benefit from the apprenticeship format for their ongoing learning. They have enough knowledge and confidence to undertake complex cases in a systematic and logical way and whilst they may require some guidance from a ‘master’ they are in a position to discuss all the options, give a professional opinion and undertake the work to their satisfaction and that of the patient. The apprenticeship model, whether the individual goes to the master or the master goes to the individual lends itself to the continuing professional development of these professionals in the true essence of CPD.

## 5.7 Future Plans

Collection of data from the two cohorts involved in this study has produced a large amount of interesting and relevant information. I feel that the volume and quality of the data collected for two cohorts was more than sufficient for the purpose of my study, however it would be interesting to continue to collect both quantitative and qualitative data for another few years to be able to present results from say 4/5 cohorts of participants. It would also be interesting to re-interview the participants who have completed their master’s in restorative dental practice in five years’ time to see: i) how their perceived confidence level has been maintained, diminished or risen and why; ii) what longer term impact the programme has had on their careers; iii) if and how the programme has changed them as people; iv) what learning experiences have been most valuable to them and v) their ongoing future plans.

My study has been about the perceived confidence of general dental practitioners before, during and following a long term, part time Master’s programme in Restorative Dental Practice. I would like to investigate how we could use students’ perception of their confidence to measure confidence based assessment. It would be interesting to look at how confident postgraduate dental students are in answering summative assessment. The precedent for this technique has been established with respect to medical and biomedical students (Gardner-Medwin and Gahan, 2003). By looking at an appropriate marking system and evaluating the individual’s confidence in their answers it would be possible to help students identify where they lie on the scale of knowledge, encourage reflection in their learning and emphasise the fact that uncertain but correct answers (lucky guesses) are not the same as knowledge. This idea would help students to identify weaknesses in their knowledge and to encourage voluntary thought and reflection about their confidence and to reflect on different approaches to ratifying their answers.

My study has followed the progress of GDPs through a very traditional learning experience. It would be interesting to compare this didactic and hands-on approach to learning with on-line learning and a more blended approach to achieving a master’s degree. There would appear to be advantages and disadvantages of all learning interventions, but in conjunction with the findings of this study it would be thought-provoking to see what teaching pedagogy was seen by participants to be effective, valuable and provide the required elements.

## 5.8 Reasons for non-completion of the programme

At the start of the study there were 72 participants in each cohort; a total of 144 General Dental Practitioners started the Restorative Dental Practice Programme in 2010 and 2011. The conclusion of this study saw a total of 25 participants exit with a master’s degree, constituting a completion rate of approximately 17%. On the surface, this would appear to be a small number of participants who have converted their initial aims and objectives of starting a master’s programme and who have actually fulfilled their objective. It would be easy to assume that the overriding goal of all 144 GDPs who started the five-year programme was to gain their master’s degree, when in fact the substantial number of ‘drop outs’ would suggest that for a proportion that long term goal was never considered to be their prime objective. There could be a number of reasons why so many participants did not complete the programme. It is beyond the remit of this study to present actual reasons for only partial completion but one can speculate as follows:

*Financial considerations:* the programme could be construed as expensive in monitory terms and the demographic results indicate a relatively young cohort of GDPs was attracted to this type of programme. In addition to their academic commitments the same cohort will also be getting married, buying practices and homes as well as funding their postgraduate education. It is conceivable that the older participants were already heavily committed financially and therefore unable to invest in their education beyond their exit point.

*Lack of self-efficacy:* The effect of lack of self-efficacy and confidence, as we have seen in the work of Bandura (1986), is a perfectly valid reason why participants exit the programme either at the end of year one or three. Those participants that do go on to complete their master’s should in fact be congratulated for their stamina, self-efficacy, determination and motivation. A growing sense of confidence allows the participants to adapt to new situations quicker and to engage more fully in the learning process, therefore enjoy learning more, be more relaxed and more motivated. Participants who lacked confidence and self-efficacy would find the learning journey more uncomfortable than those who were more confident (Norman and Hyland, 2003).

*Original aims and objectives:* The original aims and objectives of the individuals may have been to only complete a certain element of the programme and having achieved their personal aims and objectives decided to exit the programme. Conversely, some participants who enter the programme with the intention of only doing year one did complete the five-year programme. As was reported at interview these individuals engaged in the learning process, became embroiled in the learning experience and put everything else on hold whilst they completed their studies. I can only venture to suggest that those participants who exited the programme after year three had achieved their primary aims and objectives or perhaps exceeded them.

*Disappointment/dissatisfaction:* Disappointment/dissatisfaction with the first/third years as a learning experience or perhaps due to unrealistic expectations may have contributed to the high number who left the programme. It is also possible that whilst the learning pedagogy was acceptable and desirable for most participants, it may not have been to the liking of all them. There is a possibility that the feeling of being totally overwhelmed by the process, with an ever increasing demand on self-regulated learning was too much for some of the participants. As the levels of stress increased they were increasingly less comfortable/confident (Norman and Hyland, 2003) and therefore decided to exit the programme.

*A Research based degree:* Having completed the first three years of the study, which was predominantly aimed at improving clinical knowledge and skills, it is possible that those participants who exited at that point, had fulfilled their aims and objectives and did not have a reason to do a research project. These participants did not feel they would benefit from further studies.

*Lack of self-motivation:* A sense of lack of achievement fuelled by a feeling of low motivation possibly affected by personal factors, and contextual factors like class size, peer groups and community and home influences could have had a bearing on participants not completing the programme (Schunk and Mullen, 2012).

*Underachievement:*  Student underachievement brought about by low academic motivation has been shown to be a major contributor to student drop out (Schunk and Mullen, 2012). In this way the vicarious, symbolic and self-regulatory processes play a part in self-efficacy. Vicarious processes allow the individual to acquire beliefs, cognition, skills and behaviours from observing others. The symbolic processes help people adapt to their environment and self-regulatory processes show that people regulate their behaviour to conform to their own internal standards and goals (Schunk and Mullen, 2012).

A combination of reasons, as given above is the most likely explanation, with a lack of self-efficacy and confidence being to the fore.

Despite the general feeling from participants who complete the programme to carry on with further postgraduate education that ongoing education seemed to be of a general nature rather than any further degree based courses. It would seem unreasonable and unlikely to expect those participants who have completed a master’s programme and who are part time students with other commitments, to continue for example, to doctoral level. It is doubtful that those experiencing lower levels of self-efficacy will want to do so. The question of lack of self-efficacy may be interpreted as one reason for this relatively low completion rate. According to Ward and Dixon, (2014: 20), “from a systemic point of view little attention has been paid to the effect of efficacy beliefs on enrolment decisions and completion rates.” As a consequence of this failing we need to question how we can better support participants through the emotional, demanding journey of a long term, part time, postgraduate, continuing professional development programme to master’s degree.

The importance of confidence cannot be over stated in healthcare education because students learning new information and skills, and dealing with challenging situations can be negatively impacted by a lack of confidence, which can result in students’ detachment from placements or leaving a programme. Valid and reliable instruments are needed to track changes in confidence levels in specific skills over time and the examination of the degree of congruence between confidence and competence (Hecimovich et al, 2014). This may have a direct impact on patient’s treatment and their confidence in the practitioner.

It is conceivable that some of the 83% of individuals who left the programme before the end did not experience such an increase in confidence or did not develop the same sense of self-efficacy; on the contrary they may have left with feelings of self-doubt, frustration and reduced confidence.

## 5.9 Summary of discussion

During the process of this study the research questions have evolved as a result of the direction that the research has proceeded, which lead to unforeseen discoveries which has raised different questions ([Holliday, 2002](#_ENREF_87)). The research questions in my study have been answered in the following way:

**i) How do changes in confidence influence the learning experience of general dental practitioners?**

As the programme progressed, the confidence levels in communication and dental skills rose allowing the participants to adopt a more self-regulated approach to learning. Having been equipped with knowledge to support their skills the participants who completed the RDP programme were more comfortable, confident and self-efficacious to develop a self-regulated approach to learning, which will stand them in good stead in future postgraduate dental education.

**ii) To what extent do specific pedagogical learning interventions have an impact on general dental practitioners’ perceived confidence following a master’s programme?**

My study shows that the mixed approach to learning activities is well received by the participants; lectures/tutorials to impart knowledge and cognitive ability, peer group teaching and discussions to encourage social learning and simulation of actual clinical situations to promote experiential learning were reported to be specific learning activities that had a significant impact on confidence and clinical practice. A face-to-face learning intervention was reported to be preferable to distance learning due to the need for a heavy reliance on social learning. When choosing future postgraduate training these individuals will be far more discerning of the course/programme they are considering and choose learning interventions and educational experiences that will benefit them, their patients and their practice situation.

Previous learning experiences have intimated at the notion of confidence but have not highlighted the impact that for example peer-learning groups have clearly had on confidence, as illustrated in my study. The gradual development of confidence over a prolonged period, following repetition of the learning experience indicates the impact that long-term educational intervention can have on individuals’ confidence. The participants were not deterred by the repetitious nature of the teaching; on the contrary they were stimulated by it.

**iii) In what way do general dental practitioners perceive changes in their confidence having an impact on clinical practice?**

With any educational intervention the aim of educators has to be to impact on the learner and make a difference to what they can achieve. The participants, through all stages of the programme, have reported a significant impact on the way they practice dentistry. The improvement in confidence drawn from more knowledge, better skills and a greater appreciation of dentistry has allowed the participants to push the boundaries of their professional capabilities and enhance their confidence. Whether it is being able to plan treatment more predictably, undertake more complex work, get more patient satisfaction or realise limitations in one’s skills, they have perceived changes in their confidence as being beneficial to clinical practice. The overall sense of achievement and satisfaction reported by the participants who completed the programme is supported by increases in confidence and a sense of well-being.

Previous studies showed that confidence was at the expense of anxiety and depression (Mason et al, 2016). My study did not reveal similar levels of anxiety and depression in the participants in order to improve confidence, on the contrary, as confidence grew the inference was that anxiety levels dropped due to more knowledge and skill.

Chapter 6 concludes this thesis by drawing together the research questions, the data collected, the findings of my study and the implications/reflections from the study.

**Chapter 6**

# Conclusions

## 6.1 Introduction

In this section, I conclude my study and answer the three research questions: how changes in confidence influence the learning experience of GDPs, to what extent specific learning interventions impact on GDPs’ perception of confidence following a long term learning experience and in what way do GDPs perceive that changes in confidence impact on clinical practice.

The participants of my study (both the 2010 and 2011 cohorts) attended the RDP programme to improve their knowledge, skills and confidence. All participants successfully completing one, two or three elements of the RDP programme may or may not consider that they have fulfilled those objectives, but findings show that throughout the five-year programme confidence increased.

The GDPs attending the restorative dental practice programme are generally well motivated and have expressed a desire to further their knowledge and skills. It is difficult to distinguish between the increase in knowledge and skills shown by the participants as a direct result of attending the RDP programme and that, which may be obtained from experiential learning beyond the confines of the programme itself. The questioning of the two cohorts in this study was restricted to new knowledge and skills obtained within the programme specifically ([Jarvis, 2007](#_ENREF_96)). However, one has to question whether it really matter where, by what format and for how long GDPs undertake their learning interventions. The RDP programme would appear to be a convenient vehicle to deliver contemporary knowledge and to allow the study of course participants’ perceptions of changes in their confidence during a restorative dentistry programme. There is still the challenge as to how one can definitively measure the actual level of improved knowledge, skills and confidence as well as the actual impact on patients; these variables are beyond the remit of the study reported here. Future analysis of the current and forthcoming data and additional studies will be required in order to quantify actual, as opposed to perceived, impact on the learning experience, learning interventions and clinical practices.

## 6.2 Confidence and the research questions

The use of confidence as a measure of academic achievement is a concept that warrants further investigation. The findings from my study indicate that those individuals who embarked upon the Master’s degree in Restorative Dental Practice benefitted from an increase in confidence from three aspects:

1. Changes in confidence influenced their learning experience by increasing the motivational forces that drove the individual, encouraging them to set realistic, attainable goals so that as each goal is achieved they are able to move forward with confidence and self-efficacy; stimulated them to develop self-regulated learning skills in order to be able to achieve their goals and increase the sense of motivation thereby giving them sound foundations for future learning decisions and needs. By increasing their confidence, the participants of my study will be able to approach future learner centred teaching without self-doubt or apprehension.
2. Specific learning interventions did have a significant impact on the participants’ perceived confidence particularly following completion of the diploma and master’s elements of the RDP programme. The data indicates the mixed learning interventions of lectures/seminars, hands-on practical sessions, problem based tutorials and peer group teaching were all valuable in boosting confidence. Without the scientific knowledge imparted at lectures/seminars, without the opportunity to practice skills in a dedicated simulation environment of a skills laboratory, without the opportunity to discuss cases amongst peer groups with or without a tutor and without the huge influence of small peer groups for learning, the participants would not have experienced the increase in confidence to the degree to which they reported. Therefore, a mixed pedagogy of this face to face learning experience would seem to be the most appropriate method of delivering this type of educational experience. The strength of the programme was in the diversity of learning interventions rather than any single element. The lack of increase in confidence after year one, the certificate year, was a product of participants getting used to: the learning environment, the peer group learning style, the demands of an academic programme on their time and each other.

The social learning aspect of the RDP programme should not be understated as the participants all felt that social learning was a genuine reason for increases in individual and group confidence (Schunk and Mullan, 2012).

1. Changes, primarily increases in confidence, had several impacts on clinical practice. These included: a desire and ability to advise patients in a more informative way thus improving communication skills, a realisation that previously unattainable skill levels were attainable, allowing the participants to undertake more complex, challenging cases with confidence; a greater appreciation of the individual’s limitations; and a greater sense of job satisfaction which was reflected by greater patient acceptance and satisfaction. Early frustrations with limitations of incorporating new knowledge and skills into practice were overtaken during the diploma element by increases in confidence. The participants who took part in my study were able to develop their clinical practices, which in some cases meant moving practice, were able to utilise their new knowledge and were able to plan future postgraduate learning opportunities. They had fulfilled their aims and objectives of attending the programme.

## 6.3 Final thoughts

Whilst a relatively small proportion of participants who started the programme actually completed it, approximately 12 master’s students each cohort, this represents approximately 17% of the participants graduating with a master’s degree.

With the exception of one individual, all those successful participants who made themselves available for interview indicated a desire to continue with professional development and in one or two cases had already started that process. They all seemed to be focused, motivated and determined to continue their postgraduate education. The rigors of undertaking five years of part time postgraduate dental education had engendered a sense of wanting more rather than a dread of future learning experiences. I hope that the participants who chose to exit the programme after either one or three years have gone onto achieve what they set out to achieve. Their contributions to the data sets have been invaluable and I do sense that for some of them they did achieve their own individual aims and objectives. The remit of my study did not allow me to follow them beyond the bounds of the study environment and perhaps ascertain their confidence a year later, their reasons for leaving the programme before its completion, if the learning interventions had impacted on future learning they had considered, whether their practice situation had changed as a result of a change in confidence, particularly from a clinical point of view.

The influence that teachers/tutors have had on this cohort and indeed can have on postgraduate students entering a long-term part time study is immense. Not only do they act as role models in many cases but by giving positive and constructive feedback and support to the participants, encouraging the individual to develop as a self-regulated learner and by understanding the views and aims of the students, the teachers have a significant role to play in the increase in confidence of the participants. As teachers/tutors, we need to be more aware how the emotion of confidence can have such a dramatic impact on our students’ well-being, success and future learning experiences.

At the beginning of the literature review I quoted the Oxford English Dictionary definition of confidence. During the course of this study I have discussed different types of confidence, learning interventions that have a positive impact (or not) on confidence and the effect of this emotion on the participants. With those participants in mind I am able to offer what I consider to be a definition of confidence in this professional context: *confidence is a personal emotion that is influenced by knowledge, understanding and support; which allows the individual to work in an assured, positive, supportive way; whilst still contextually driven substantial levels* *of confidence and self-efficacy can in fact bypass context, to the advantage of patients or clients.*

As indicated in my introduction (Chapter 1; page 14) the role and impact of confidence has not been researched in postgraduate dental education before and has only received minimal recognition in medical education. Therefore, this study has contributed to the concept of confidence as a significant factor in postgraduate dental education. The study has shown confidence is both affected by and impacts upon: the learning experience of general dental practitioners; specific learning interventions do have an impact on confidence and that significant impacts upon clinical practice are reported following an increase in confidence.

The sample of GDPs who agreed to contribute to my study were a diverse group in terms of age, previous year’s clinical experience and gender. Therefore, it is reasonable to consider them a representative sample of the dental profession in the UK. However, I recognise that the RDP learning interventions are not appropriate or suitable for everyone. Many GDPs will be satisfied with fulfilling CPD requirements by attending mono pedagogical learning experiences and not recognising a need to improve confidence or broaden their options. Similarly, I recognise that a very small percentage of GDPs in the UK would want to enter into an apprentice/master relationship, but for those who do a greater sense of self-satisfaction and confidence could be achieved.

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## Appendices

## Appendix 1:

**Questionnaire following the Diploma in Restorative Dental Practice.**

Dear Colleague,

I would be most obliged if you could spare a few minutes to answer this questionnaire following completion of the first year of your Diploma course. I can assure you that the contents of the questionnaire and the results that are obtained from you answers will remain anonymous. The questionnaire is a combination of quantitative and qualitative enquiries and is designed to give you ample opportunity to express your views and opinions. Completion of a student evaluation questionnaire is a requirement of UCL but would also be most helpful to me in my continuing study of your progress through the Masters programme.

Thank you for your help in this matter.

Peter D Fine.

……………………………………………………………………………………………………………………………………………………………

Q1 Gender. Please tick the appropriate box.

 Male

 Female

Q2 Age at start of Diploma course------------------------------

Q3 Year of qualification-------------------------------------------

Q4 Have you enjoyed the first year of the Diploma course? Please score your level of enjoyment on the scale below, where 1= No enjoyment and 10= Totally enjoyed.

1 2 3 4 5 6 7 8 9 10

Comments:

Q5 What aspect/s of the CRDP course has/have been most/least useful in your practice?

Most:………………………………………………………….

Least:…………………………………………………………

Q6 Has the Diploma course followed on from the CRDP programme in a logical manner? Please tick the appropriate box.

 Yes

 No

 To a certain extent

Comments:

Q7 Has the diploma course developed the knowledge that you gained from the CRDP programme?

 Yes

 No

 To a certain extent

Comments:

Q8 Have you changed the way you carry out the following clinical procedures, having completed the CRDP course? Please circle the appropriate response.

Intracoronal Procedures YES NO

Periodontology YES NO

Occlusion YES NO

Posterior/Bonded Cemented Restorations YES NO

Endodontics YES NO

Ceramic Restorations for Anterior Teeth YES NO

Restoration of Edentulous Space YES NO

Comments:

Course Structure:

Q9 Were the course aims made clear? Please score your answer on the scale below, where 1=Not at all clear and 10 m=Totally clear.

1 2 3 4 5 6 7 8 9 10

Q10 Were the course aims met? Please score your answer on the scale below, where 1=Not met at all and 10=Totally met

1 2 3 4 5 6 7 8 9 10

Q11 Were teaching sessions presented in a logical order? Please score your answer on the scale below, where 1=Not at all logical and 10=Totally logical.

1 2 3 4 5 6 7 8 9 10

Comments:

Teaching and Learning:

Q12 Was the pace of teaching appropriate? Please score your answer on the scale below, where 1=No and 10=Totally.

1 2 3 4 5 6 7 8 9 10

Q13 Were sufficient resources and activities made available in the centre and on Moodle? Please score your answer on the scale below, where 1=No and 10=Totally.

1 2 3 4 5 6 7 8 9 10 Centre

1 2 3 4 5 6 7 8 9 10 Moodle

Q14 Were facilities at UCL Eastman Dental Institute appropriate for this course? Please score your answer on the scale below, where 1=Not at all appropriate and 10=Totally appropriate.

1 2 3 4 5 6 7 8 9 10

Q15 Was the ratio of staff: students appropriate? Please score your answer on the scale below, where 1=Not at all appropriate and 10=Totally appropriate.

1 2 3 4 5 6 7 8 9 10

Comments:

Workload and Feedback:

Q16 Did you receive adequate feedback for your coursework/essays? Please score your answer on the scale below, where 1=Not at all adequate and 10=Totally adequate.

1 2 3 4 5 6 7 8 9 10

Q17 Was feedback on your coursework/essays prompt? Please score your answer on the scale below, where 1=Not at all prompt and 10=Very prompt.

1 2 3 4 5 6 7 8 9 10

Q18 Was the feedback on your coursework/essays helpful? Please score your answer on the scale below, where 1=Not at all helpful and 10=Very helpful.

1 2 3 4 5 6 7 8 9 10

Q19 Was the time allocated for coursework/essays, adequate? Please score your answer on the scale below, where 1=Not at all adequate and 10=Totally adequate.

1 2 3 4 5 6 7 8 9 10

Comments:

General Questions:

Q20 Please indicate below what aspects of your practising lives have been changed as a result of more knowledge attained on the course. Please tick all that apply.

 Routine anterior fillings in composite

 Routine posterior fillings in composite

 Routine amalgam fillings

 Endodontic Treatment

 Periodontal Treatment

 Crown and Bridge

 Treatment planning cases

 Occlusal analysis

Comments:

Q21 Please indicate below what aspects of your practising lives have been changed as a result of more skills attained on the course. Please tick all that apply.

 Routine anterior fillings in composite

 Routine posterior fillings in composite

 Routine amalgam fillings

 Endodontic Treatment

 Periodontal Treatment

 Crown and Bridge

 Treatment planning cases

 Occlusal analysis

Comments:

Q22 How has the course influenced your day to day practising life? Please tick all that apply.

 More confident communicating with patients

 More confident providing dental treatment

 Willing to undertake more complex work

 More aware of my limitations

 Able to put skills learnt on the CRDP course into practice

 Able to make decisions based on good scientific knowledge

 Able to make decisions about future career

 Other/s: Please describe any other influences on your day to day practising life since completing the CRDP course.

Q23 Have you experienced any limiting factors which restrict your practice of dentistry since completing the CRDP course? Please tick all that apply.

 Lack of funding (practice)

 Lack of funding (patient)

 Restricted by practice principal/owner

 Restricted by other members of staff (receptionist, nurses)

 Patients not willing to have treatment undertaken

 Lack of patient numbers

 Lack of suitable equipment

 Lack of appropriate materials

 Other/s: Please describe any other limiting factors which restrict your practice of dentistry since completing the CRDP course……………………………………..

Q 24 Please give three examples of procedures that you have changed in your practicing life as a result of the diploma course.

1)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Q 25 Please give three examples of materials that you have changed in your practicing life as a result of the diploma course.

1)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Comments:

Q 26 Has your situation in the practice where you currently work changed since you completed the first year of the Diploma course?

 Yes

 No

If you have answered YES, please tick all that apply from the list below.

 Greater proportion of private dentistry

 From associate to principal

 Bought own practice

 Bought a share in current practice

 Other/s: Please describe any other changes since you completed the first year of the diploma course.

Comments:

Q 27 What are your future aspirations/plans?

 No change in status planned

 Greater proportion of private dentistry

 From associate to principal

 To buy own practice

 To buy share in current practice

 To combine practice with a teaching role

 Disillusioned - planning to leave dentistry

 Other/s: Please describe any other aspirations/plans since you completed the first year of the Diploma course.

Comments:

Q 28 Do you think that you would like to continue with the Masters programme to its conclusion?

 Yes

 No

 Undecided at present.

Thank you for taking the time to complete this questionnaire.

Peter D Fine.

## Appendix 2:

**Consent Form for One to One Interviews**

The purpose of this one to one interview is to develop in-depth qualitative data, which will form part of the PhD study that I am undertaking. This interview is the final stage of the five-year study looking at: An Investigation into General Dental Practitioners’ Perceptions of the Influence of Postgraduate Dental Education on Dental Practice. Other stages of data collection have been questionnaires and focus group discussions.

I ………………………………………………………………, agree to participate in a personal, one to one interview with Mr Peter Fine and understand that this is part of his ongoing research. I have been given the choice as to the time, venue and medium that this interview will take and am happy with that decision.

I understand that I am at liberty to stop the interview at any time if I feel at all uncomfortable with the questions.

I understand that the data from the interview will be recorded, transcribed and used in publications as a result of the research.

Name: ………………………………………………………………..

Signature: ……………………………………………………………

Date: ……………………………………………………………………

Telephone No………………………………………………………

e-mail:…………………………………………………………………

My preferred method of contact for the interview is:

 By telephone

 Face to face at UCL Eastman Dental Institute

 Face to face at an alternative venue. Please state the venue ………………………………………….

My preferred time for the interview is:

 During the day (to be arranged to suit the individual)……………………………………………..

 In the evening

 At the weekend

 On my day off (to be specified)…………………………………………………………………..

## Appendix 3:

**Pre-Course Questionnaire for PG Certificate in Restorative Dental Practice.**

1) What is your Gender?

 Male

 Female

2) What is your age?

 Under 30 years

 31 – 40 years

 41 – 50 years

 51 years and above

3) What is your year of Graduation?...................................

4) Where did you gain your undergraduate dental training and basic qualification?

………………………………………………………………………………………………………

5) Did you already have a university qualification when you began your undergraduate dental studies?

 Yes

 No

Details of previous qualifications (including subject)………………………………………………

1. Where do you do your clinical work? Please select one option from the list below.

 NHS

 NHS and Private

 Private

 Specialist

 Community Service

 Forces

 Industrial e.g. ICI

 Retail e.g. M&S

 Corporate Dentistry e.g. James Hull

 Other……………………………..

7) Are you able to access the internet?

 Yes

 No

8) How did you hear about this course?

 Advertisement in a Professional Journal

 Word of mouth

 Attended previous courses at UCL Eastman

 Other……………………………………………….

9) What do you hope to gain from this course?

10) Intracoronal Procedures:- e.g. Amalgam, Composite:

a) What direct restorative materials do you use?

 Composite

 Amalgam

 Glass Ionomer

 Compomers

 Other…………………………………..

b) What indirect restorative materials do you use?

 Composite

 Porcelain,

 Gold

 Other: Non precious metal …………………………………

11) Periodontology:

a) Do you have the use of the services of a hygienist?

 Yes

 No

b) Do you undertake periodontal surgery?

 Yes

 No

If you have answered Yes, to question 11b please score your current confidence level on a scale of 0-10, where 0 = no confidence in your ability and 10 = complete confidence in your ability. Please circle the appropriate score.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

0 1 2 3 4 5 6 7 8 9 10

c) Do you undertake root planning?

 Yes

 No

If you have answered Yes, to question 11b please score your current confidence level on a scale of 0-10, where 0 = no confidence in your ability and 10 = complete confidence in your ability. Please circle the appropriate score

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

0 1 2 3 4 5 6 7 8 9 10

12) Endodontics:

Please select the treatment options, which you provide:

 Root treat single rooted teeth only

 Root treat multiple rooted teeth only

 Root treat all teeth

 Refer all root canal therapy

13) Crowns:

How many crowns do you provide annually? Please circle the appropriate answer:

O—10, 11—20, 21—40, 40+

Percentage of anterior crowns----------

Percentage of posterior crowns---------

14) Bridges:

How many bridges do you provide annually? Please circle the appropriate answer:

0—10, 11—20, 21—40, 40+

Percentage of traditional bridges--------------

Percentage of adhesive bridges----------------

15) What post system do you use?……………………………………………..

16) What core build-up material do you use?…………………………………

17)Occlusion:

a) Do you cast and/or mount your own study models?

 Yes

 No

b) Do you use a semi adjustable articulator and face bow?

 Yes

 No

c) If you answered yes to question 15b, are they your own or do they belong to the laboratory?

 My own

 Laboratory

18) Removable Prostheses:

a) Who designs your Partial Dentures? Please select the appropriate answer from the options below.

 I do

 A colleague in the practice

 The technician

 A combination of the above

b) Do you use a surveyor for partial dentures?

 Yes

 No

19) Implants:

a) Do you place your own implants?

 Yes

 No

b) Do you restore your own implants?

 Yes

 No

c) Do you restore implants placed by another practitioner?

 Yes

 No

d) How many implant supported restorations do you provide annually? Please circle the most appropriate answer.

0—10, 11—20, 21—40, 40+

20) How confident are you in discussing treatment with your patients? Please score your level of confidence in your ability to communicate with your patients on a scale of 0 – 10, where 0= No confidence in your ability to communicate and 10=Total confidence in your ability to communicate. Please circle the appropriate score:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

0 1 2 3 4 5 6 7 8 9 10

21) How confident are you in your ability to practice dentistry? Please score your level of confidence in your ability to practice dentistry on a scale of 0-10, where 0= No confidence in your ability to practice dentistry and 10= Total confidence in your ability to practice dentistry. Please circle the appropriate score:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

0 1 2 3 4 5 6 7 8 9 10

Thank you for taking the time to complete this questionnaire. We hope you enjoy the Certificate in Restorative Dental Practice course.

## **Appendix 4:**

**Student Evaluation Questionnaire**

To help me analyse your responses, please supply the following information:

Date of Birth: \_\_\_\_/\_\_\_\_/\_\_\_\_ (date/month/year)

Year of Qualification: \_\_\_\_/\_\_\_\_/\_\_\_\_ (date/month/year)

Dental School attended: …………………………………………….

**Curriculum Design, Content and Organisation**

**Design**

Strongly Disagree Strongly Agree

The amount of time devoted to the following aspects of the programme was appropriate in the context of the entire programme length:

Intracoronal Procedures 1 2 3 4 5

Periodontology 1 2 3 4 5

Occlusion 1 2 3 4 5

Cemented/Bonded Posterior Restorations 1 2 3 4 5

Endodontics 1 2 3 4 5

Ceramic Restorations for Anterior Teeth 1 2 3 4 5

Restoration of the Edentulous Space 1 2 3 4 5

Overall the programme design was well balanced. 1 2 3 4 5

Comments:

**Content:**

Strongly Disagree Strongly Agree

The content of the following aspects of the programme was appropriate:

Intracoronal Procedures 1 2 3 4 5

Periodontology 1 2 3 4 5

Occlusion 1 2 3 4 5

Cemented/Bonded Posterior Restorations 1 2 3 4 5

Endodontics 1 2 3 4 5

Ceramic Restorations for Anterior Teeth 1 2 3 4 5

Restoration of the Edentulous Space 1 2 3 4 5

The programme:

covered a sufficiently broad range of subjects 1 2 3 4 5

avoided repetition 1 2 3 4 5

was appropriate for your needs as a GDP 1 2 3 4 5

Comments

**Organisation:**

Strongly Disagree Strongly Agree

The programme was delivered in a

logical and coherent order. 1 2 3 4 5

The programme was well organised. 1 2 3 4 5

Comments:

**Teaching, Learning and Assessment**

**Teaching:**

Strongly Disagree Strongly Agree

Lecturers:

Were clear in their presentation of material. 1 2 3 4 5

Were well prepared 1 2 3 4 5

Made explicit what was expected of you 1 2 3 4 5

Clinical teachers:

Were clear in their teaching 1 2 3 4 5

Treated you respectfully throughout 1 2 3 4 5

Offered constructive criticism without responding

In a hostile or demeaning manner. 1 2 3 4 5

Made explicit what was expected of you 1 2 3 4 5

Were available when required 1 2 3 4 5

Offered useful informal practical advice 1 2 3 4 5

Teaching methods employed enhanced learning and understanding

Clinical Demonstration 1 2 3 4 5

Teaching Clinics 1 2 3 4 5

Laboratory Demonstration 1 2 3 4 5

Problem based Seminars 1 2 3 4 5

Tutorials/Lectures 1 2 3 4 5

**Learning**

Strongly Disagree Strongly Agree

Sufficient time was given to absorb information. 1 2 3 4 5

The workload was appropriate. 1 2 3 4 5

Seminars and lectures provided information

that was easily understood. 1 2 3 4 5

The seminars/lectures offered something that

cannot be gained from reading the appropriate

standard textbook. 1 2 3 4 5

When you made an error you were shown how

to correct it so as to avoid it in future. 1 2 3 4 5

Considering everything, would you agree that

you have received a satisfactory learning

experience on the programme. 1 2 3 4 5

Comments:

**Postgraduate Progression and Achievement**

Strongly Disagree Strongly Agree

The aims of the programme were made explicit. 1 2 3 4 5

The objectives of the programme were made explicit.1 2 3 4 5

On completion of the programme you felt

you had accomplished the programme

objectives. 1 2 3 4 5

Adequate feedback was provided about your

progression throughout each programme topic below:

Intracoronal Procedures 1 2 3 4 5

Periodontology 1 2 3 4 5

Occlusion 1 2 3 4 5

Cemented/Bonded Posterior Restorations 1 2 3 4 5

Endodontics 1 2 3 4 5

Ceramic Restorations for Anterior Teeth 1 2 3 4 5

Restoration of the Edentulous Space 1 2 3 4 5

Comments:

**Postgraduate Support**

Were staff available, knowledgeable and helpful in broader issues relating to the programme and your long-term aspirations?

Yes No

If yes, was there a member of staff available to help you with:

Certificate programme related matters? Yes No

Registration for Diploma modules? Yes No

Other matters? Yes No

Did you receive helpful careers advice on request? Yes No

Comments:

**Learning Resources**

Teaching support facilities

Strongly Disagree Strongly Agree

Lecture / seminar room facilities were

suited to their purpose. 1 2 3 4 5

Photocopied material was appropriate 1 2 3 4 5

Phantom head simulated clinical circumstances 1 2 3 4 5

Eastman Information Centre (Library)

was useful for my studies 1 2 3 4 5

Comments:

**Laboratory Facilities**

Strongly Disagree Strongly Agree

Good conditions were provided for

laboratory related procedures 1 2 3 4 5

Comments:

**Following completion of the CRDP course:**

1) How confident are you in discussing treatment with your patients? Please score your level of confidence in your ability to communicate with your patients on a scale of 0 – 10, where 0= No confidence in your ability to communicate and 10=Total confidence in your ability to communicate. Please circle the appropriate score:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1 2 3 4 5 6 7 8 9 10

2) How confident are you in your ability to practice dentistry? Please score your level of confidence in your ability to practice dentistry on a scale of 0-10, where 0= No confidence in your ability to practice dentistry and 10= Total confidence in your ability to practice dentistry. Please circle the appropriate score:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1 2 3 4 5 6 7 8 9 10

3) Have your expectations and objectives from the course been fulfilled?

 Yes

 No

 Partially

Please explain: ……………………………………………………………………………………………………………………………………………………………………………

4) Has the course influenced your choice of materials?

 Yes

 No

If you have answered yes to this question, please give some indication what materials you have changed and why.

…………………………………………………………………………………………

………………………………………………………………………………………….

5) Has the course influenced your choice of techniques?

 Yes

 No

If you have answered yes, please indicate in what way your techniques have changed.

……………………………………………………………………………………….

……………………………………………………………………………………….

## Appendix 5

**Questionnaire to be completed by MSc students**

**Year 4/5 of RDP programme**

**Section A. General Information.**

1. Gender

* Male
* Female

1. Age at commencement of MSc

* 25-30
* 31-40
* 41-50
* 51+

1. In what year did you gain your undergraduate dental degree?...............................
2. In what year did you start the RDP programme?............................................
3. In what type of practice did/do you spend the majority of your time? Please tick the appropriate box.

|  |  |  |
| --- | --- | --- |
|  | Before the RDP programme | After the completed RDP programme |
| NHS Practice |  |  |
| NHS/Private Practice |  |  |
| Private Practice |  |  |
| Specialist Practice |  |  |
| Community Service |  |  |
| Forces |  |  |
| Industrial e.g. ICI |  |  |
| Retail e.g. M&S |  |  |
| Corporate e.g. James Hull |  |  |
| Other. Please specify |  |  |

1. Would you be willing to volunteer for a personal interview about your experience having completed the RDP programme? The interview would last approximately 45 minutes.

* Yes
* No

1. If you answered yes to question 5 please indicate in the table below, the most convenient place and time for such an interview.

|  |  |  |
| --- | --- | --- |
|  | AM | PM |
| In your practice, in person |  |  |
| In your practice, by telephone |  |  |
| In your home, by person |  |  |
| In your home, by telephone |  |  |
| At UCL Eastman CPD |  |  |
| In a pub or restaurant |  |  |

Tel: e-mail:

**Section B. MSc Specifically**

1. Have you enjoyed the MSc aspect of the RDP programme? Please score your level of enjoyment on the scale below, where 0= No enjoyment and 10= Total enjoyment.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

0 1 2 3 4 5 6 7 8 9 10

Comments:

1. Please indicate in the table below if your lecturers/presenters on the Clinical Research Methods (CRM and Statistics) course were:

|  |  |  |
| --- | --- | --- |
|  | **Yes** | **No** |
| Clear in their presentation of material |  |  |
| Well prepared |  |  |
| Explicit as to what was expected of you |  |  |
| Treated you respectfully throughout |  |  |
| Able to offer constructive criticism |  |  |
| Available when required |  |  |
| Able to offer practical advice |  |  |
| Able to offer career advice |  |  |

Comments:

195

1. Please indicate in the table below if your project supervisors were:

|  |  |  |
| --- | --- | --- |
|  | **Yes** | **No** |
| Well prepared |  |  |
| Explicit as to what was expected of you |  |  |
| Treated you respectfully throughout |  |  |
| Able to offer constructive criticism |  |  |
| Available when required |  |  |
| Able to offer practical advice |  |  |
| Able to offer career advice |  |  |
| Prompt with feedback |  |  |
| Approachable |  |  |

Comments:

1. Do you feel overall, you have received a satisfactory learning experience during the MSc element of the programme? Please tick the appropriate box.

* Totally satisfactory
* Satisfactory
* Reasonable
* Unsatisfactory
* Totally unsatisfactory

Comments:

1. Have you prepared a Personal Development Plan (PDP) since starting the RDP programme?

* Yes
* No

11(a) If you have a PDP do you consider the plan helped give more structure to the learning experience

Comments:

1. Do you feel that you have received satisfactory feedback with respect to: Please score your answer on the scale below, where 0=Not at all satisfactory and 10=Totally satisfactory, by ticking the appropriate score.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Dissertation |  |  |  |  |  |  |  |  |  |  |  |
| Speed of feedback |  |  |  |  |  |  |  |  |  |  |  |
| Feedback was constructive |  |  |  |  |  |  |  |  |  |  |  |
| Sufficient time allocated for feedback |  |  |  |  |  |  |  |  |  |  |  |

Comments:

1. Were sufficient resources made available at the Eastman Dental Institute, on Moodle and on-line (UCL web pages) during the MSc element of the programme? Please score your answer on the scale below, where 1=Not at all and 10=Totally. Please circle the appropriate score.

1 2 3 4 5 6 7 8 9 10 Centre

1 2 3 4 5 6 7 8 9 10 Moodle

1 2 3 4 5 6 7 8 9 10 On-line

Comments

**Section C. The RDP Programme.**

1. Which aspect of the RDP programme has been most enjoyable?

* Certificate Year
* Diploma two years
* Masters one/two year(s)

Comments:

1. Do you feel that the RDP programme has followed a logical pattern?

* Yes
* No
* Partially

Comments:

1. **Intracoronal Procedures:- e.g. Amalgam, Composite**:

a) What *direct* restorative materials do you use following completion of the RDP programme? Please tick all that apply.

* Composite
* Amalgam
* Glass Ionomer
* Compomers
* Other. Please specify…………………………………..

b) What *indirect* restorative materials do you use following completion of the RDP programme? Please tick all that apply.

* Composite
* Porcelain,
* Gold
* Other: e.g. Non precious metal. Please specify …………………………………

1. How has your choice of materials changed since the start of the whole programme?
   * Yes
   * No

Comments:

1. Please score your current confidence level on a scale of 0-10, where 0 = no confidence in your ability and 10 = complete confidence in your ability, with respect to a) direct restorations, b) indirect restorations. Please circle the appropriate score.
2. 0 1 2 3 4 5 6 7 8 9 10

b) 0 1 2 3 4 5 6 7 8 9 10

1. a) Approximately how many crowns do you provide annually? Please circle the appropriate answer:

O—10, 11—20, 21—40, 40+

Percentage of anterior crowns----------

Percentage of posterior crowns---------

b) Approximately how many bridges do you provide annually? Please circle the appropriate answer:

0—10, 11—20, 21—40, 40+

Percentage of traditional bridges--------------

Percentage resin retained bridges----------------

Comments:

1. Please score your current confidence level on a scale of 0-10, where 0 = no confidence in your ability and 10 = complete confidence in your ability, with respect to providing; a) crowns, b) bridges, for your patients. Please circle the appropriate score.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

a) 0 1 2 3 4 5 6 7 8 9 10

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

b) 0 1 2 3 4 5 6 7 8 9 10

1. Please indicate three treatment options that you now provide for your patients that you did not provide at the start of the RDP programme.

i)……………………………………………..

ii)…………………………………………….

iii)……………………………………………

Comments:

1. How confident are you in discussing treatment with your patients? Please score your level of confidence in your ability to communicate with your patients on a scale of 0 – 10, where 0= No confidence in your ability to communicate and 10=Total confidence in your ability to communicate. Please circle the appropriate score:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

0 1 2 3 4 5 6 7 8 9 10

1. How confident are you in your ability to practice dentistry? Please score your level of confidence in your ability to practice dentistry on a scale of 0-10, where 0= No confidence in your ability to practice dentistry and 10= Total confidence in your ability to practice dentistry. Please circle the appropriate score:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. 1 2 3 4 5 6 7 8 9 10

1. Please indicate below what aspects of your practising life has changed as a result of more knowledge specifically attained during the whole programme. Please tick all that apply.

* Routine anterior fillings in composite
* Routine posterior fillings in composite
* Routine amalgam fillings
* Endodontic Treatment
* Periodontal Treatment
* Crown and Bridge
* Treatment planning cases
* Occlusal analysis
* Other. Please state……………………………………………..

Comments:

1. Please indicate below what aspects of your practising life has changed as a result of more skills specifically attained during the whole programme. Please tick all that apply.

* Routine anterior fillings in composite
* Routine posterior fillings in composite
* Routine amalgam fillings
* Endodontic Treatment
* Periodontal Treatment
* Crown and Bridge
* Treatment planning cases
* Occlusal analysis
* Other. Please state……………………………………………..

Comments:

1. Please estimate in the table below the degree of acceptance of your treatment plans, by your patients, before and after the RDP programme.

|  |  |  |
| --- | --- | --- |
|  | Before | After |
| 0-25% |  |  |
| 26-50% |  |  |
| 51-75% |  |  |
| 76-100% |  |  |

1. Have you changed the way you carry out the following treatments since completing the RDP programme?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **After CRDP** | **After DRDP** | **After MSc** | **No** |
| |ntracoronal Procedures |  |  |  |  |
| Endodontics |  |  |  |  |
| Periodontics |  |  |  |  |
| Occlusal analysis |  |  |  |  |
| Posterior/Bonded Cemented Restorations |  |  |  |  |
| Ceramic Restorations for Anterior Teeth |  |  |  |  |
| Restoration of Edentulous Space |  |  |  |  |
|  |  |  |  |  |

Please comment on the reason for the changes:

1. How has the RDP programme influenced your day to day practising life? Please tick all that apply.

* More confident communicating with patients
* More confident providing dental treatment
* Willing to undertake more complex work
* More aware of my limitations
* Able to put skills learnt on the CRDP course into practice
* Able to make decisions based on good scientific knowledge
* Able to make decisions about future career
* Other/s: Please describe any other influences on your day to day practising life since completing the RDP programme.

Comments:

1. A) Has your situation in the practice where you currently work changed during your time on the RDP programme?

* Yes
* No

30 B) If you have answered YES to question 30 A), please tick all that apply from the list below.

* Greater proportion of private dentistry
* From associate to principal
* Bought own practice
* Bought a share in current practice
* Negotiating a share in current practice or purchasing own practice
* Other/s: Please describe any other changes since you completed the RDP programme.

Comments:

1. With respect to your practice status, what are your future aspirations/plans? Please tick all that apply.

* No change in status planned
* Greater proportion of private dentistry
* From associate to principal
* To buy own practice
* To buy share in current practice
* To combine practice with a teaching role
* Disillusioned - planning to leave dentistry
* To become a specialist practitioner. Please indicate which specialty……………………………………
* Other/s: Please describe any other aspirations/plans now that you have completed the RDP programme.

Thank you for taking the time to complete this questionnaire. I can assure that your answers will remain anonymous and will only be used for this research and for the improvement of the RDP programme.

Peter Fine,

Honorary Research Fellow.

UCL Eastman Dental Institute.

## Appendix 6:

**Questions to be Asked at Focus Group Discussion.**

* Group: MA WB FC
* How far have you had to come today?
* How long have you been in practice/qualified?
* Has the course met your expectations so far?
* Has the teaching staff met your expectations?
* Has the teaching staff been able to offer useful advice?
* Have you been satisfied with the hands-on facilities?
* Have you had the opportunity to bring in your own cases for advice?
* Are you happy/comfortable with the learning format?
* Has your personal appraisal by staff been helpful?
* In what way has the course affected your confidence?
* Has the level of education been appropriate?
* What aspects of the course have you used in your practice?
* What have been the most/ least useful parts of the course so far?
* Have you enjoyed the course so far?
* What are your hopes and aspirations for the second half of the course?

## 

## Appendix 7:

**Questions to ask MSc students at interview**

1. What is your background? Schooling, undergraduate education etc. Where your parents in medicine/dentistry?
2. Did you perceive a need to undertake a CPD activity to improve your knowledge and skills as a reason to attend the programme?
3. Restrictions to implementing changes to practice following CPD activity
4. What was your motivation to start the CRDP course?
5. Did you identify learning needs to be addressed by attending CPD activity?
6. Did you develop any reflective skills during the programme?
7. Discuss the content (what is learnt), mode (how it is learnt and translation into practice (making it happen).
8. At the start of CRDP course were you in single handed practice, an associate, and what about now
9. What impact has the RDP programme had on your clinical practice
10. What were your selection criteria for choosing the programme?
11. How long was it before the CRDP/DRDP courses began to have an impact on your practice?
12. Did you feel that you were set the correct level of challenge, which may have had an impact on confidence?
13. How long did it take you to change your routine?
14. Was supervision available when you needed it
15. The Masters dissertation process was fair
16. What do you think of the Masters being a research degree rather than a taught programme?
17. At what stage did the new knowledge and skills that you have learned become second nature to you
18. What form of teaching intervention did you find most valuable?
19. Are there any aspects of your practice that you changed as a result of the programme but have now gone back to your previous technique?
20. Did you meet any resistance to taking time off to do the programme?
21. Did you have sufficient self-motivation to bring about changes
22. Did you also attend other CPD course whilst doing the RDP programme and how did you find time to do that?
23. Did the other courses compliment what you were doing on RDP?
24. Did the CPD satisfy your learning needs
25. Are you still in the same practice as when the programme started
26. How would you prefer to be asked about your programme experience.I.e. Questionnaires, interviews etc.
27. Do you have a PDP and did it exist when considering taking this programme?
28. What is the most important aspect of CPD to you?
29. Do you think that the GDC has the correct emphasis on CPD?
30. Is it easier for you to be interviewed by someone you know i.e. me or a stranger?
31. What do you plan to do now?
32. Were increases in your confidence accompanied with patient satisfaction levels increasing
33. Do you feel more confident in communicating with patients and why?
34. Why did you choose the Eastman for this type of training?
35. Do you agree that the long term nature of the programme helps to reinforce the message?
36. Can you state the single most significant impact the RDP programme has had on your practice?
37. Tell me about the feedback that you received.

Learning Experience and confidence:

1) Did you start the RDP journey with the thought of completing the whole 5 years.

2) Tell me about your confidence before the course started, did you have enough confidence to start the course or where you lacking in confidence in which case what made you sign up.

3) How did you deal with episodes of self-doubt.

4) How has your increased confidence impacted on your life generally

5) What impact did working with peers have on your confidence

6) What do you think about working on simulation

7) What teaching protocol gave you the largest boost in confidence

8) Assuming that you started on the programme to gain knowledge and skills how did the programme influence your sense of your professionalism.

9) How have you monitored and measured your learning experience.

10) Can you tell me something about how you have self-regulated the learning experience and its inference for subsequent learning experiences.

11) Tell me about learning in a small group of 8/9.

12) Tell me about your personal learning goals. Was there conflict between these two?

13) Tell me about the group discussions

14) Can you tell me if you have had a role model during your education and would that be beneficial during the RDP.

15) What do you think the benefits of a research programme are

16) Can you summarise the difference in the feeling of confidence when you obtained your BDS to now gaining your masters.

17) What difference do you think your dissertation could make.

18) What was your overriding sensation on completing the dissertation.

19) What effect did a dearth of research experience have on your project.

20) How did that strengthen your resolve?

21) Did you set yourself goals as you progressed through the programme

22) Do you think that the research MSc was more valuable than say an assessment of coursework?

## 

## Appendix 8:

The Administrator, Graduate School,

North Cloisters, Wilkins Building,

University College London,

Gower Street, London, WC1E 6BT

22nd January 2010

Dear Sir,

I am enquiring whether a research project shortly to be undertaken at UCL Eastman Institute, requires Ethics Committee approval or not.

The study is a 4 to 5 year longitudinal study towards a PhD in postgraduate Dental Education. General Dental Practitioners (GDPs) will be assessed over a five-year, part time MSc programme in Restorative Dental Practice (RDP) as to their perception of the course and the influence that it has had on their practices.

The monitoring will take the form of questionnaires, delivered either electronically or in hard copy. There will also be some focus group discussions and individual interviewing of the GDPs to gauge their thoughts and ideas. There will be no patient involvement. The questionnaires are completely voluntary and anonymous.

I attach a copy of my full study proposal, as presented to Professor Steven Porter, for your information. I would be obliged if you would confirm that for this type of study, ethics committee approval is not needed.

Yours sincerely,

Peter D Fine.

## Appendix 9:

The Administrator of the UCL Research Ethics Committee,

Graduate School, North Cloisters, Wilkins Building,

University College London, Gower Street

London, WC1E 6BT

14th October 2013

Dear Mrs Poulter,

I wrote to you in January 2010 requesting ethics committee approval for my MPhil/PhD studies at UCL Eastman Dental Institute. You kindly advised me that I did not need approval. I have attached my original letter and proposal for your information.

At the time of the original request I was acting in an independent way and undertaking the research in a totally impartial way. Since that time the nature of the research project has remained unchanged but my status at the university has changed. I am now employed as a senior clinical teaching fellow and whilst I am not teaching the students that form the cohorts of my study, I do teach on the programme of which they are participants.

My concern is that this could be construed as a conflict of interests and would therefore value your clarification of this situation. I feel that the criticism of “insider research” is one that I can explain, discuss and justify but need to know that the ethics committee is happy that there is no conflict of interest and that the study can continue in its current format.

Thank you for your help in this matter.

Yours sincerely,

Peter D Fine BDS (Lond) DGDP RCS (Eng)

UCL Eastman Dental Institute

## Appendix 10:

**Proposal for Study Project, Leading to MPhil/ PhD in Postgraduate Dental Education**

**An Investigation into the Influence of Postgraduate Dental Education on General Dental Practice and the General Dental Practitioners’ Perception of a Certificate in Restorative Dental Practice.**

**Peter Fine**

**Introduction.**

Since the introduction of mandatory continued profession development (CPD) the demand for postgraduate education has escalated. There is a requirement to monitor, evaluate and review the effectiveness of any particular course, with a responsibility to the course organisers to respond with changes in the course following evaluation. It is also of interest and appropriate to build a profile of the students to include their expectations before they embark on their postgraduate studies. Following completion of the course students should be invited to evaluate their studies at various times. These will include immediately post completion as well as at three months, one year and possibly yearly thereafter, until the conclusion of the study. This will provide the course organisers with valuable information for future curriculum planning.

The Certificate Course in Restorative Dental Practice (RDP) is a 12 month, 28 days, part theory part hands-on course designed to update general dental practitioners in current thinking and trends, in restorative dental practice. Subjects covered include intra-coronal restorations, anterior and posterior cast restorations, occlusion, endodontics and periodontics. Generally speaking, there is a lecture/seminar followed by either a practical or hands-on session when the students can practise their newly acquired skills. For example, during the endodontic module there is the opportunity to use a microscope to undertake the hands-on exercises.

The staffing for the course is a mixture of full time UCL Eastman staff complimented by part time specialist practitioners, contributing to a good all round knowledge of the course content. Prelimary work was presented, as a poster, at the Association of Dental Educators in Europe (ADEE) conferences. (Fine PD. et al, 2008 and 2009).

**The Aims:**

 To investigate General Dental Practitioners (GDP’s) perception of their professional development and the effect that has on their practices.

 To provide feedback to individual course directors on the effectiveness and relevance of their course as perceived by GDP’s.

 To recommend changes to individual course directors and teaching staff.

**Methodology:**

It is already a normal UCL requirement to assess the student feedback immediately after a module or programme of study has been completed. In addition to these exit questionnaires, other questionnaires will be developed to assess student feedback before a course has started, 2-3 months after completion of the course and then 12 and 24 month’s post-course completion. The aim will be to follow a cohort of students (usually 72 in each year) for at least 2 years, with the possibility of extending that time scale. This will enable collection of information, statistics and perceptions of the students’ new found skills and how they integrate these into their individual practices.

The questionnaires will be presented to the students either in a hard copy form or on-line version. Additional investigative tools will include personal interviews, both small groups and with individuals (Cohen, Manion and Morrison 2006). Statistical advice will be sought where required.

New questionnaires have been designed and piloted before using them as research instruments.

**Previous Research:**

Previous studies have investigated the assessment of postgraduate dental courses. (Morris ZS et al, 2001; Prescott LE et al, 2002), However, as far as I am aware there are no previous studies specifically looking at how GDP’s perceive the effect of postgraduate training to be on their clinical practice over an extended period of time.

Contribution that the work will make to the field.

This study will aim to show the influence postgraduate dental education can have on GDPs working lives, particularly the hands-on, practical elements, and will have an influence on the design, content and delivery of future, similar courses. Criteria will be established which will allow similar, future postgraduate courses to be effectively evaluated. Generic questionnaires will be developed which will form the basis of future programme specific questionnaires.

**Previous Experience of Peter Fine in the Field**

• Currently a full time General Dental Practitioner and practice owner

• Regular consumer of postgraduate education.

• Postgraduate Dental Tutor for 8 years allowing an insight into the demands and needs of GDPs.

• As a recipient of CPD, well placed to investigate the course participants’ perceptions of the effectiveness of postgraduate teaching.

• This study will provide valuable data for planning future Certificate courses in RDP.

**References:**

1. Cohen L, Manion L, Morrison K. 2008 Research Methods in Education.

2. Fine P.; Eder AH.; Louca C.; Petrie A. 2008 Association of Dental Educators in Europe (ADEE) Poster Presentation

3. Fine P. Louca C. Eder A. Blizzard R. 2009 ADEE Poster Presentation.

4. Mattheos N, Albrektsson, T, Buser, D, De Bruyn, H, Donos, N, Hjotying Hansen, E, Lang, N, Sanz, M and Nattested, A. 2009. Teaching and assessment of Implant Dentistry in undergraduate and postgraduate education: a European Consensus. European Journal of Dental Education. Feb. 13 Suppl. 1:56-65

5. Morris ZS. Bullock AD. Belfield CR. Butterfield S. Frame JW. 2008 Assessment in postgraduate dental education: an evaluation of strengths and weaknesses. Eur. J. of Dental Education 2009 Feb; 13 Suppl. 1:56-65

6. Morris ZS, Bullock AD, Belfield CR. 2001 The benefits and cost of continuing profession development (CPD) for general dental practitioners: a discussion. Euro. J Dent Educ. May; 5(2): 47-52

7. Prescott LE., Norcini JJ., McKinlay P., Rennie JS. 2002 Facing the Challenges of Competency Based Assessment of Postgraduate Dental Training: Longitudinal Evaluation of Performance (LEP) Med. Educ. 202 June 36.

## Appendix 11:

**Acceptance of Study**

Dear Peter

Re: Application to MPhil/PhD

I am pleased to advise you that a recommendation has been made to make you an offer on the above degree programme commencing in September 2011.

Before your application can be processed for a formal offer letter the Eastman Dental Institute requires you to agree to license any intellectual property rights generated during the course of your studies to UCL to give permission for UCL staff to copy and reproduce any data generated. An Intellectual Property Rights form is attached and you are herewith requested to sign the form and fax it back to me via +44 (0) 20 7915 1274 as soon as possible.

Once the form has been faxed back to me your application will be processed to the UCL Admissions Office who will issue the formal offer letter in due course. When you have received the offer letter please return the offer reply form to the College Admissions Office, with a copy to me, stating if it is your intention to accept the offer of admission (subject to the terms and conditions) or not.

You may care to note that if your offer of admission is subject to conditions, these will be specified on the formal offer.

If you require any further information in the meantime, please do not hesitate to contact me.

Yours sincerely

Marianne Dang, Admissions Officer

UCL Eastman Dental Institute

256 Gray’s Inn Road

London WC1X 8LD

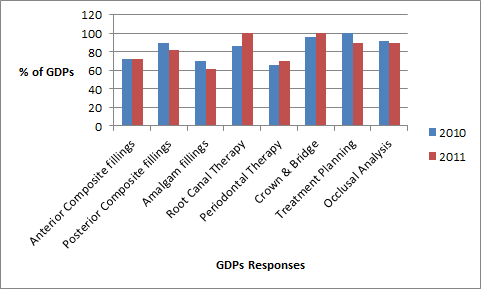
e-mail: [m.dang@eastman.ucl.ac.uk](mailto:m.dang@eastman.ucl.ac.uk)

Tel: +44 (0)20 7915 1092

Fax: +44 (0)20 7915 1274

## Appendix 12:

**Graphs not presented in Chapter 4 Findings:**



Graph illustrating perceived changes in practice as a result of increased skills, following the diploma course.

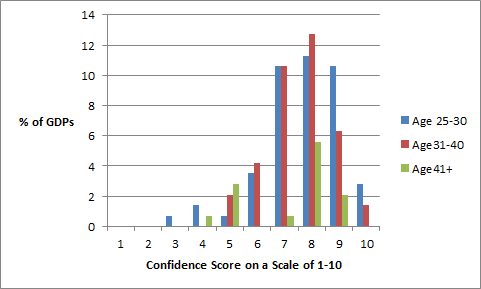
Graph of confidence in ability to do dentistry before and after CRDP 2010

Graph of confidence in ability to do dentistry before and after CRDP 2011

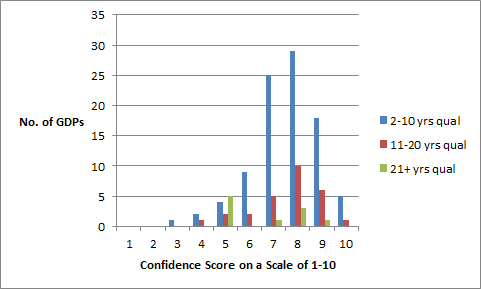
Graph illustrating the perceived level of confidence reported by the GDPs after the MSc element, in their ability to undertake Direct and Indirect Restorations.

Graph to illustrate the perceived confidence levels reported by the GDPs after the MSC element, in their ability to undertake Crown and Bridge Restorations.

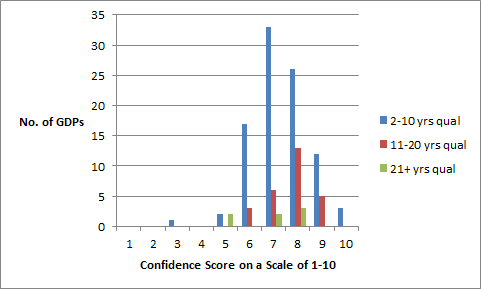
Graph illustrating the relationship between the participants perceived levels of confidence in clinical skills in relation to gender, before the programme started.



Confidence levels on a scale of 1-10 comparing age groups prior to the start of the programme with communication skills.



Confidence levels on a scale of 1-10 comparing number of years since qualification prior to the start of the programme with communication skills



Confidence levels on a scale of 1-10 comparing number of years since qualification prior to the start of the programme with ability to do dentistry.