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# Empowerment in a Model of Outreach Undergraduate Dental Education

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## Abstract

**Aim** To undertake a quantitative and qualitative examination into what aspects of the students' experience in outreach at University of Portsmouth Dental Academy (UPDA) are encouraging their empowerment as autonomous practitioners, ready to graduate as safe beginners.

**Methods** The study was devised as part of the educational service evaluation of outreach education at the UPDA. For the two most recent cohorts of 160 students (2014-16) an additional domain was added specifically investigating the students' sense of how their experience of outreach at the UPDA has impacted on their development to be ready for independent practice (safe beginner). The questionnaire was completed anonymously in their last week of attendance just prior to graduation.

**Results** A 91% response rate for the questionnaire was achieved. To the question about 'being given an opportunity to become an independent dentist', 83% of the respondents strongly agreed. Two themes with 7 subthemes were identified from the free text responses. The two themes were 'Self-actualisation: developing self-awareness and self-confidence' and 'Delivery of care as a dentist'.

**Conclusion** Within the limitations of this educational evaluation, students enjoyed the increase of autonomy they gained during the year-long placement and felt that the clinical teachers empowered, encouraged and supported them to develop as autonomous dental practitioners and as 'safe beginners', to deliver holistic care in the National Health Service.

## INTRODUCTION

Empowerment has been defined as a social process of recognising, promoting and enhancing people's ability to meet their own needs, solve their own problems and mobilise the necessary resources in order to feel in control of their own lives (1). In terms of nursing education, Hokanson Hawks (2), adopted the definition as 'the interpersonal process of providing resources, tools and environment to develop, build and increase the ability and effectiveness of others to set and reach goals for individual and social ends'.

One element of empowerment has been described as 'being valued' and again in the context of nursing education this has been subdivided into being 'valued as a learner'; 'a team member'; and 'a person' (3). All three aspects have been identified in previous studies in dental outreach education (4-6). However, as 'empowerment' and 'being valued' are amorphous concepts these feelings articulated by students and teaching staff in dentistry have not been specifically labelled as such.

The General Assembly of the Association for Dental Education in Europe has produced comprehensive documentation on the profile and competencies of a graduating European dentist (7). The General Dental Council (UK) (GDC) requires dental schools to qualify graduates as 'safe beginners' (8). The GDC has defined a safe beginner as an individual who is a rounded professional who, in addition to being a competent clinician, will have the range of professional skills required to begin working as part of a dental team and be well prepared for independent practice. They should be able to assess their own capabilities and limitations, to act within these boundaries and to know when to request support and advice (8). Neither document makes any recommendations of where these competencies can be achieved, however, many of these competencies, for example,

- "educating patients and managing oral health care for patients at all stages in their life appropriately effectively and safely" (Competency 6.1) (7);

- "accurately assess their own capabilities and limitations in the interest of high quality patient care and seek advice from supervisors or colleagues where appropriate" (Outcome 9.6, Preparing for Practice) (8),

are more easily achieved but not necessarily exclusively, in an outreach/community setting rather than the traditional dental school (5,9). All clinical teachers who are involved with final year undergraduate education particularly those in outreach environments have to be aware of their responsibilities' to prepare students for independent practice, (10,11), whether, as in the UK, where graduates are mentored for one year in dental foundation training or in other clinical settings as in other EU countries (12). Part of that education has to be to empower the student to progress along their own journey to clinical autonomy within their scope of practice. The preparedness of graduates

has been studied and emphasis has been placed on the continual development for final year students to become safe beginners and foundation year practitioners (13).

There is a substantial body of literature in nursing, centred around empowerment and disempowerment and increasingly this has been studied in clinical nursing education (14). Student nurses value being delegated responsibility thus empowering their learning. The continuity of mentorship within the placement and being given time have been stated to be the antecedents of empowerment. With these in place, the student is more likely to be empowered. This encompasses notions of understanding; promotion of learning; responsibility; inclusion; being nurtured; making a difference; respect; justice and having a voice. However, disempowerment is typified by the opposite notions i.e. misunderstanding; inability to learn; lack of responsibility; exclusion; insensitive treatment; helplessness; lack of respect; injustice and being silenced. However, the important outcomes of empowerment were considered high self-esteem, motivation for learning and a positive regard for the placement (14). Within whatever aspect of education, these are aspirational goals for all who facilitate learning.

Outreach education has been embedded in the UK undergraduate dental education (4-5, 15-18) and internationally (19-21); as such it is recognised as being able to give dental students an invaluable experience and expose them to a wide range of patients. Previous documentation from the GDC recommended a period of time in a primary care setting to extend the clinical environment that students could experience (22). Our experiences over the last 5 years at the University of Portsmouth Dental Academy (UPDA) have been well documented (9, 23-25), and through our longitudinal service evaluation of the teaching, the concept of belongingness has emerged (6,26). Belongingness and empowerment are both engendered by the environment and the context in which the education is delivered (3,14,26) and are thus powerful factors in being able to engage the student body in their final year prior to qualification and undertaking paid employment within the NHS as Dental Foundation Trainees (10,11,13). However belongingness is defined as a deeply personal and contextually mediated experience in which a student becomes an essential and respected part of the dental educational environment where all are accepted and equally valued by each other and which allows each individual student to develop autonomy, self-reflection and self-actualisation as a clinician (6). It thus part of the package of education that is necessary to empower the student which is the focus of this current study.

The context of the study based at the University of Portsmouth Dental Academy (UPDA) has been discussed in detail previously (9). In brief the model used by the UPDA is that of a residential outreach for 80 dental students a year utilising integrated team care with 20 student dental nurses and 48

dental hygiene/therapy students in their second and third years registered at the University of Portsmouth. The dental students from King's College London Dental Institute (KCLDI) attend for one week in four (four days/week) for a total of 10 weeks in their final year (27). The clinical care is funded using a live National Health Service England primary care contract (Personal Dental Services Plus contract) (24).

The aim of this study was to undertake a quantitative and qualitative examination into what aspects of the students' experience in outreach at UPDA has empowered their learning and development as autonomous practitioners ready to graduate as a 'safe beginners'.

## METHODS

The study was devised as part of the educational service evaluation of outreach experience at the UPDA. Each year cohort, 80 students in each year cohort, are asked to complete a comprehensive questionnaire divided into domains that provided both quantitative and qualitative data (9). For the two most recent cohort of students (2014-16) an additional domain was added to the questionnaire specifically investigating the students' sense of how their experience of outreach at the UPDA had impacted on their ability to develop as rounded professionals who, in addition to being competent clinicians, have a range of professional skills required to begin working as dentists in a dental team and be well prepared for independent practice i.e. 'safe beginners'. The questionnaire was sent and returned electronically and completed anonymously in their last week of attendance just prior to graduation. Consent was gained by the students completing the questionnaire and specifically agreeing that their data could be included. Anonymity was assured to the participants.

Questions asked were:-

1) At UPDA I had the opportunity to become an independent dentist and was given the confidence to make my own autonomous clinical decisions. Strongly agree/Agree/Neutral/Disagree/Strongly disagree.

2) In comparison to clinics in London (KCLDI), was autonomy encouraged more at UPDA? Yes/No

3) In Portsmouth (UPDA) were you encouraged to develop at sense of "I am becoming a complete dentist as a safe beginner"? Yes/No

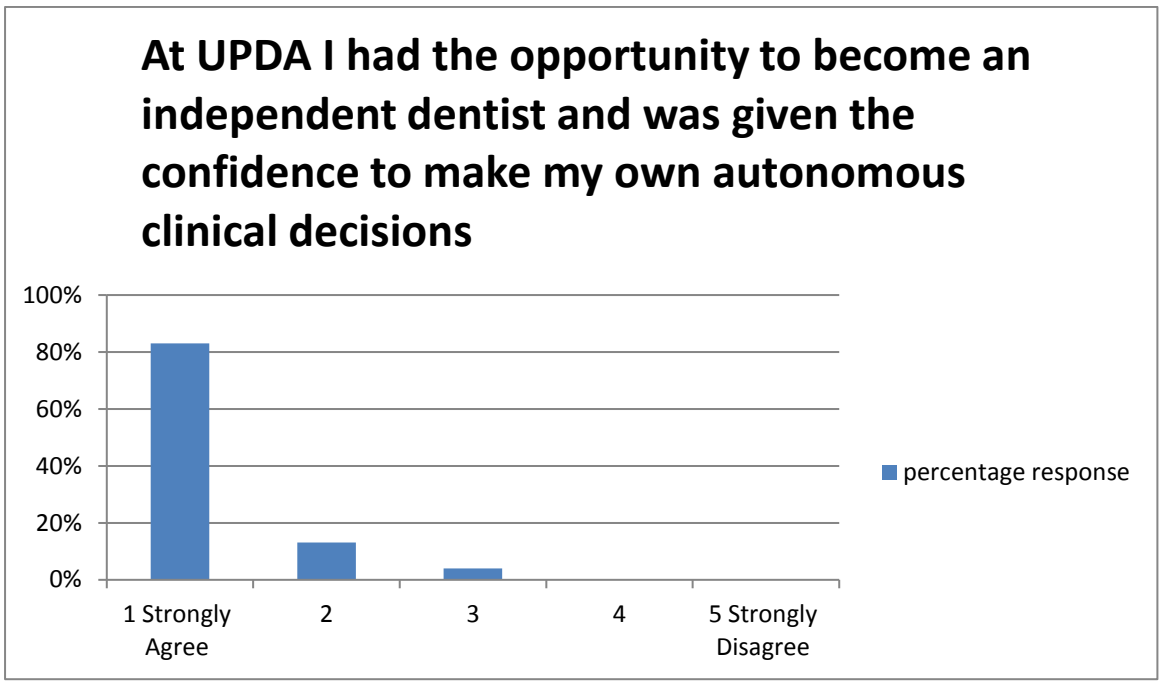
Free text comments were requested to explain their answers. The quantitative data was handled with descriptive statistics and the qualitative data (free text responses) was analysed, coded, with

subthemes and themes identified. The two authors read through all the qualitative data independently and used thematic content analysis to identify themes (28). Subsequently, they met to combine and refine their findings. These were then discussed at further meetings after which the raw data was re-read to ensure that all themes were identified or not misinterpreted.

## RESULTS

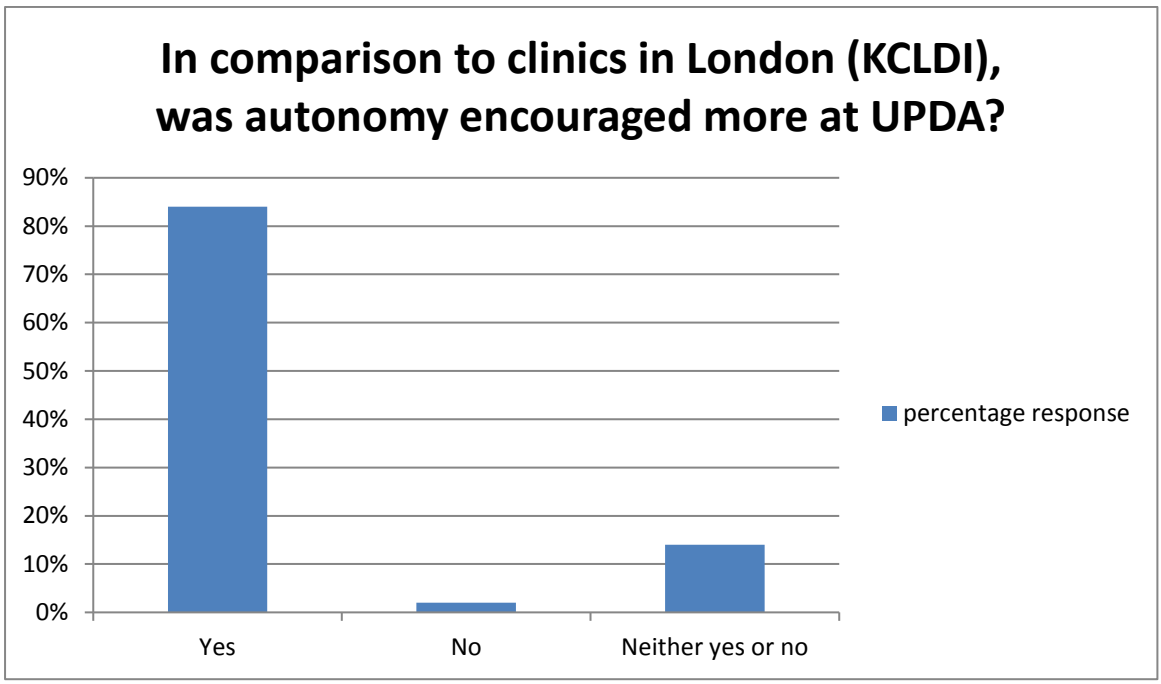
146 out of 160 students completed the evaluation with 3 not wishing their data to be used for research purposes. The overall response rate as therefore 143 participants (91% response rate). To the three questions with regard to becoming an independent dentist as a safe beginner, 83% strongly agreed to the statement: At UPDA I had the opportunity to become an independent dentist and was given the confidence to make my own autonomous clinical decisions, (Figure 1), with 84% feeling this autonomy was encouraged more in the outreach setting (Figure 2). To the final statement: In Portsmouth were you encouraged to develop at sense of "I am becoming a complete dentist as a safe beginner"? 94% agreed to this statement (Figure 3).

Fig. 1



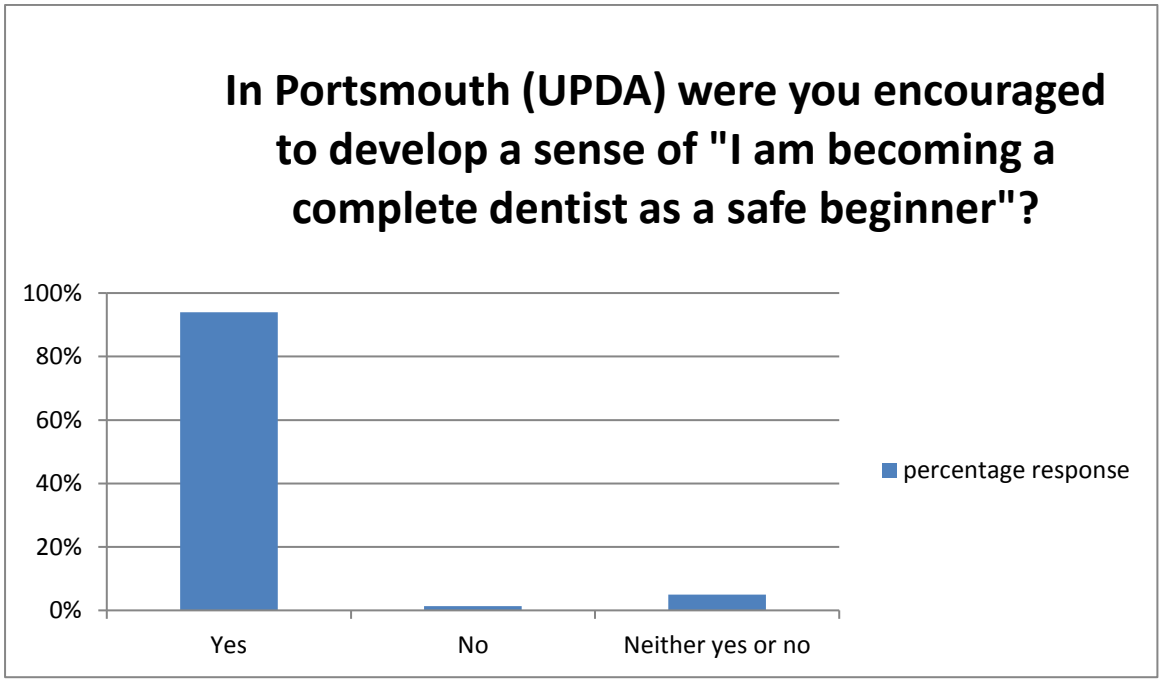

| | Percentage response |
|---|---|
| 1 Strongly Agree | 83% |
| 2 | 13% |
| 3 | 4% |
| 4 | 0% |
| 5 Strongly Disagree | 0% |

Fig. 2




| | Percentage response |
|---|---|
| Yes | 84% |
| No | 2% |
| Neither yes or no | 14% |

Fig. 3




| | Percentage response |
|---|---|
| Yes | 94% |
| No | 1% |
| Neither yes or no | 5% |

From the qualitative analysis, two themes encompassing seven subthemes were identified for the students feeling that they were becoming independent dentists:-

1) Self-actualisation: Developing self-awareness and self confidence
   1a) Given the opportunity to make decisions
   1b) Encouragement of self-assessment and self-reliance
   1c) Given support
   1d) Given respect and trust.
2) Delivery of care as a dentist
   2a) Working independently (autonomy as safe beginner)
   2b) Holistic care
   2c) NHS Primary care.

## Theme 1

### Self-actualisation: Developing self-awareness and self confidence

### 1a) Given the opportunity to make decisions

*Towards the end of the year Portsmouth tutors made an active effort to be less involved in decision making to allow us to do it ourselves. Tutors at UPDA trust us more to get on with what we are doing.*

*All my clinical tutors were very keen on me making my own decisions as I progressed week by week at Portsmouth.*

*I was encouraged to come up with my own treatment plans then discuss this with the tutor rather than the tutor telling me what to write down.*

Commentary: This subtheme suggests that the clinical teachers encourage and provide the opportunities for the dental students to gain the confidence in progressing towards independent decision making during their outreach placement in the final year.

### 1b) Encouragement to self-assessment and self-reliance

*We were asked 'what do you want to do?' 'what is your risk assessment?' and 'whether we're happy with our work?' We were able to be the judge of our own work and decisions at a UPDA.*

*I was asked to judge my own work. I was able to critique my own work.*

*I became less and less reliant on my clinical tutors.*

Commentary: Again this subtheme gives evidence that the clinical teachers are providing the opportunity for students to develop self-reliance but from the perspective of being a reflective, self-

critical practitioner. This is in line with the outcomes required for registration of UK dental professionals who have successfully completed their training (8).

## 1c) Given Support

*In the same way tutors were always there to give advice when needed and I never felt alone.*

*Tutors generally having a stand back attitude, but willing to help if they were needed, encouraging me to develop skills.*

*And then happy for us to call them only if needed. This showed the tutors confidence in us at all times and if the treatment was difficult for example a surgical extraction, they would frequently pop in to see if we needed any assistance and if not happy (sic then) to let us continue.*

Commentary: The students reported perception on the subtheme of 'Given support' suggests that the students still needed support and advice in care planning and provision of treatment in the primary care setting where there is no prior screening of patients that often occurs in dental schools.

## 1d) Given Respect and Trust

*I absolutely loved the confidence the tutors have in us as clinicians. They all respect the fact that we know our limitations but allow us to push ourselves to improve our clinical skills. Very different from dental school and much appreciated, this has contributed to my development in the final year from student to DFT enormously.*

*I was in complete shock when Dr C referred to me as his colleague to my patient……..then the other tutors started saying this! I think it can be hard to get patients to trust us and its completely different feel here to London. The tutors trust your abilities and judgments. If I disagree I am able to politely discuss with the tutor my reasoning where I would not feel confident in London doing this.*

*Treated like real dentists with respect taught in a way where we had the confidence to make decisions and actually had fun in the process.*

*It was a great feeling to feel like a real dentist being treated with respect.*

*There were examples where tutors placed trust in us and our opinions and didn't feel the need to jump in at every stage of treatment*.

Commentary: The philosophy appears to be of the clinical teachers encouraging the development of autonomy and self-reliance in their student colleagues. The students need to be given an appropriate level of respect and trust as they develop as 'Safe Beginners'.

# Theme 2

## Delivery of care as a dentist

### 2a) Working independently (autonomy as a safe beginner)

*Certainly by the end of the Portsmouth rotation we are working independently and running what we would like to do past our tutors (rather than asking if that's what we are supposed to be doing).*

*I was asked to make my own decision with planning different stages of stabilisation and advanced care. This made me feel as though I was in charge of my own treatment plan and I was a responsible dentist.*

*You were made aware that you are a lot more responsible for the nature of the care provided in Portsmouth compared to London, where you vicariously carry out the treatment for your clinical tutor. There is actually very little in the way of organising treatment provision in London, where there seems to be a much more prescriptive dynamic, insofar as the clinical tutor will decide on what is required and the students is tasked with providing it.*

*I like being able to treatment plan and follow up patients and gaining experience of community, emergency and routine appointments (sometimes all in the same day) is a more realistic experience.*

*The role of 'dentist' was encouraged to be led by the students not the clinical tutor.*

*However, I still don't feel as independent as I'd like but largely due to my lack of confidence.*

Commentary: This theme clearly suggests that the students responded to the development that the clinical teachers were engendering in them, reporting that they did begin to feel independent (the majority of comments and Figs 2 and 3) towards the end of their outreach placement.

### 2b) Holistic care

*It was holistic patient care, which I am a big fan of.*

*I was able to think in all domains of dentistry whilst maintaining a good rapport with patients.*

*All patient care is delivered rather than breaking it down into specialities (I feel is was good to have learnt the basics within the specialists was we did in dental school) but UPDA helps to place everything into context for general dental practice.*

*Seeing a wide range of patient/treatments each day. Holistic approach- treatment plans, community outreach, (sic outreach to socially disadvantaged in the City from the UPDA) treatment, working with HTS (sic hygiene/therapy students) and different nurses and tutors, reflective learning and independent practice.*

Commentary: Much of the care was focused on long term planning and a pragmatic holistic approach to the management for the patient as a whole, after discussion with the patient as to the diagnosis and treatment options, rather than focusing on certain items of treatment.

### 2c) NHS Primary care

*We have been taught more of a sense of being a dentist in the real world of primary care from the use of the UDA and KPI systems (sic Units of Dental Activity and Key Performance Indicators, NHS dental contract) and working as part of a team.*

*All the paperwork involved gave me a sense of what being a dentist will be like in practice something we do not get in London.*

Commentary: The impact of using a live UK NHS contact at the Academy appear to have educational benefits and has been discussed previously (24).

## DISCUSSION

Many of the concepts expressed in this study particularly with regards to increasing confidence and developing a complete dentist ready to begin vocational training as a 'safe beginner' have been reflected in other qualitative studies most notably from Sheffield and Cardiff dental schools (4-5). However, in the current study these concepts have been contextualised into two major themes, that of 'Self actualisation' and the second 'Delivery of care as a dentist'. Within the theme of self-actualisation (that of the student developing self-awareness and self-confidence), two notions were expressed, 'that of feeling that they belonged and had a oneness with the staff of the UPDA' previously reported (6,26) and the second, they were given the opportunity to develop decision making skills, self-assessment and self-reliance. The second theme, of delivery of care as a dentist, encompassed the notions of them 'feeling able to develop, ready to qualify as a safe beginner'. Outreach educational delivery in this particular model adopted by KCLDI and UPDA to final year students is in a fortunate position, as at this stage in their career, students have mastered the core skills. They are developing as mature professional people and as we have reported previously, are looking forward to the challenges of post qualification dentistry (24).

Another advantage of the pattern of educational delivery at the UPDA is the longitudinal course of ten individual weeks over the full final year of the students' education. Both staff and more importantly students can reflect on their development.

*'All my clinical tutors were keen on me making my own decisions as I progressed week by week.'* Subtheme 1a) Given the opportunity to make decisions

*Certainly by the end of the Portsmouth rotation we are working independently and running what we would like to do past our tutors (rather than asking if that's what we are supposed to be doing).* Subtheme 2a) Working independently

These qualitative findings were supported by the responses to the questions 'At UPDA I had the opportunity to become an independent dentist and was given the confidence to make my own autonomous clinical decisions' of which 83% strongly agreed; question 2, 'in comparison to clinics in London (KCLDI), was autonomy encouraged more at UPDA' 84% agreed; and question 3 'In Portsmouth (UPDA) were you encouraged to develop a sense of "I am becoming a complete dentist as a safe beginner" of which 94% agreed. These results do not reflect negatively on KCLDI, but rather more, that UPDA is successfully delivering the education that has been established by the published intended learning outcomes (9).

Outreach in the UK and internationally has been shown to develop the students' confidence and increased competence for independent practice. This is partly to do with the increased number of patients and the closer working relationship with the tutors and invaluable experience of practice-like environments to prepare the students for the demands of the profession (4,29). In encouraging students to develop self-reliance and appropriate decision making, the clinical teachers have to create the environment of trust.

*There were examples where tutors placed trust in us and our opinions and didn't feel the need to jump in at every stage of treatment*. Subtheme 1d) Given respect and trust

Further, the clinical teachers have to have confidence in the student's clinical ability as well as their personal knowledge of their limitations. This is gained over the duration of the placement so that towards the end of the placement the students feel like "real" dentists.

*I absolutely loved the confidence the tutors has in us as clinicians. They all respect the fact that we know our limitations but allow us to push ourselves to improve our clinical skills. Very different from dental school and much appreciated, this has contributed to my development in the final year from student to DFT enormously.* Subtheme 1d) Given respect and trust

*It was a great feeling to feel like a real dentist being treated with respect.* Subtheme 1d) Given respect and trust

Last there has to be an environment where the students know that the clinical teachers are willing to help if difficulties are encountered.

Tutors generally having a stand back attitude, but willing to help if they were needed, encouraging me to develop skills. Subtheme 1c) Given support

This is a different style of supervision from that which is adopted in more junior years where, although students will be given more simple procedures, it is not always possible to predict the outcome, so tutors may well wish to intervene at an earlier stage. When the students attend outreach at beginning of the final year there is an element of boundary crossing. Boundary crossing is a concept which may be relevant to understanding the students' reported perceptions in this study (30). The role of an outreach placement can be conceived of as a bridge between initial more academic and later work environments and that of becoming 'more of a dentist'. Such boundary crossing may also partly explain the students' perception that they were being treated differently and empowered by outreach clinical teachers at UPDA compared to KCLDI. Outreach takes place in a new setting, in a new city, combined with working within an NHS contact that again is new to them (24). Although the responsibility and conduct expected of students is articulated at induction to the placement, this new environment appears to prompt changes of attitude and expectations of themselves. Further, their comparisons are being made against a baseline coloured by their early interactions with the clinical teachers at KCLDI when they were appropriately being treated as new to the clinical environment. Being able to apply conceptual approaches in a new and contrasting situation is a cognitive process that characterises much expertise and professionalism (31).

The philosophy of education at the UPDA is of continual mentorship with continuity offered by the clinical teachers. A rota of part-time clinical teachers allows a rich mix of approaches and experience to be available to the students (32). However, underlying this is the clinical teacher's role to encourage and develop responsibility. The continuity of mentorship within the placement and being given time and responsibility have been stated to be the antecedents of empowerment (14), and with these in place, the student is more likely to be empowered. This encompasses notions of understanding; promotion of learning; responsibility; inclusion; being nurtured; making a difference; respect; justice and having a voice.

You were made aware that you are a lot more responsible for the nature of the care provided in Portsmouth compared to London, where you are vicariously carry out the treatment for your clinical tutor. Subtheme 2a) Working independently (autonomy as a safe beginner)

We have been taught more of a sense of being a dentist in the real world of primary care from the use of the UDA and KPI systems (sic Units of Dental Activity and Key Performance Indicators, NHS dental contact) and working as part of a team. Subtheme 2c) NHS primary care

It should be noted that these themes are not dissimilar to those recorded as pre-requisites of a sense of belongingness (26). For instance, Levett Jones *et al* (33) identified themes within nursing education such as 'having a valid and valued role', being 'trusted' and 'challenged to push the boundaries'. It could be hypothesised that it is partly out of this sense of belongingness and trust that autonomy and self-actualisation are able to develop.

With regard to care planning and holistic care identified in Theme 2, again it is possible for this to be developed as the students are in their final year and have mastered the basic skills that they have been taught since year 1. The provision of a clinical environment which is as close as possible to their future practice environment in terms of holistic patient care together with the administrative procedures inevitably associated with primary care, appears to encourage the concepts of autonomy. Students mentioned, for instance, the increased responsibility for 'for the nature of the care' provided, 'all the paperwork involved gave me a sense of what being a dentist' and being able to carry out 'all domains of dentistry whilst maintaining a good rapport with patient'. Even at the start of their practicing lives, when further significant development and boundary crossing can be expected over the next 5 years, the clinical confidence and competence of the majority of students at UPDA appears to flourish in the environment provided. The description of 'safe beginners' may not do justice to their abilities as new graduates in the profession.

Similar to the significant majority of similar studies on educational benefits of outreach education, this is a one centre study (4-5, 15-17). Further the bias of the study with possible leading questions and the bias of the authors should be recognised. The questions asked of the students were directed at establishing whether they perceived independence as 'safe beginners' so some element of acquiescence bias has to be recognised. Both the authors have worked at the Academy since the inception of the outreach element in 2010 and therefore strongly support the educational philosophy of the UPDA and of KCLDI in their outreach programme.

## CONCLUSION

Empowerment is a powerful concept and has been well recognised in the nursing educational literature. Within the limitations of this educational service evaluation, students enjoyed the increase of autonomy they gained during the year-long placement and felt that they were empowered to develop as autonomous dental practitioners as 'safe beginners' to delivery holistic care within the contractual obligations of the Dental NHS contract. This was encouraged by the clinical teachers supporting them and giving them the space to make clinical decisions and develop self-assessment and self-reliance.

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## References


1. Gibson CH. A concept analysis of empowerment. *J Adv Nur* 1991; **16:** 354-361.
2. Hokanson Hawks J. Empowerment in nursing education: concept analysis and application to philosophy, learning and instruction. *J Adv Nur* 1992; **17:** 609-618.
3. Bradbury-Jones C, Sambrook S., Irvine F. Empowerment and being valued: A phenomenological study of nursing students' experiences of clinical practice. *Nur Educ Today* 2011; **31:** 368-372.
4. Smith M, Lennon MA, Brook AH, Robinson PG. A randomised controlled trail of outreach placements' effect on dental students' clinical confidence. *J Dent Educ* 2006; **70:** 566-570.
5. Lynch CD, Ash PJ, Chadwick BL. Students perspectives and opinions on their experience at an undergraduate outreach dental teaching centre at Cardiff: a 5 year Study. *Eur J Dent Educ* 2010; **14:** 12-16.
6. Radford DR, Hellyer P. Dental students' perceptions of their experience at a residential outreach centre. *Br Dent J* 2015; **219:** 171-175.
7. Cowpe J, Plasschaert A, Harzer W, Vinkka-Puhakka H, Walmsley AD. Profile and competences for the graduating European dentist-update. *Eur J Dent Educ* 2009; **14:** 193-202.
8. General Dental Council. *Preparing for Practice* 2012 pp 5. Available at http://www.gdc-uk.org/ (accessed September 2015).
9. Radford DR, Holmes S, Dunne SM, Woolford MJ. Outreach clinical dental education; the Portsmouth experience- a four year follow up study. *Eu J Dent Educ* 2015; doi: 10.1111/eje.12153.
10. Patel J, Fox K, Grieveson B, Youngson CC. Undergraduate training as preparation for vocational training in England: a survey of vocational dental practitioners and their trainer's views. *Br Dent J* 2006; **201:** Educ suppl: 9-15.
11. Gilmour A, Jones R, Bullock A. Dental foundation trainers' expectations of a dental graduate; final report Cardiff: Cardiff University 2012. Online report available at http://www.cardiff.ac.uk/__data/assets/pdf_file/0007/26566/Dental-Foundation-trainers-expectations-of -new-graduates.pdf (accessed May 2016).
12. Widstrom E, Eaton KA. Oral healthcare systems in the extended European Union. *Oral Health and Preventive Dentistry*. 2004; **2:** 155-194.
13. Ali K, Tredwin C, Kay EJ, Slade A, Pooler J Preparedness of dental graduates for foundation training; a qualitative study. *Br Dent J* 2014; **217:** 145-149.
14. Bradbury-Jones C, Sambrook S., Irvine F. The meaning of empowerment for nursing students: a critical incident study. *J Adv Nur* 2007; **59:** 342-351.

15. Elkind A, Watts C, Qualtrough A, et al. The use of Outreach clinics for the teaching undergraduates restorative dentistry. *Br Dent J* 2007; **203:** 127-132.

16. Craddock H. Outreach teaching –the Leeds Experience: reflections after one year. *Br Dent J* 2008; **204:** 319-324.
17. Davis BR, Leung AN, Dunne SM. Perceptions of a simulated general dental practice facility-reported experiences from past students at the Maurice Whol General Dental Practice Centre 2001-2008. *Br Dent J* 2009; **207:** 371-376.
18. Lynch CD, Ash PJ, Chadwick BL. Current trends in community-based clinical teaching programs in UK and Ireland dental schools. *J Dent Educ* 2013; **77:** 604-611.
19. Skelton J, Mullins MR, Kaplan AL, West KP, Smith TA. University Kentucky community-based field experience: program description *J Dent. Educ* 2001; **65:** 1238-1242.
20. Woronuk JI, Pinchbeck YJ, Walter MH. University of Alberta dental students' outreach clinical experience: an evaluation of the program. *J Can Dent Assoc* 2004; **70:** 233-236.
21. DeCastro JE, Bolger D, Feldman CA. Clinical competence of graduates of community-base and traditional curricula. *J Dent Edu* 2005; **69:** 1324-1331.
22. General Dental Council *The First Five Years* 3rd Ed London General Dental Council: 2008.
23. Wanyonyi KL, Radford DR, Gallagher JE. Dental skill mix: a cross-sectional analysis of delegation practices between dental and dental hygiene-therapy students involved in team training in the South of England. *Human Resour Health* 2014; **12:** 65-73.
24. Radford DR, Holmes S, Woolford MJ, Dunne SM. The impact of integrated team care taught using a live NHS contract on the educational experience of final year dental students. *Br Dent J* 2014; **217:** 581-585.
25. Colonio Salazar FB, Andiappan M, Radford DR, Gallagher JE. Attitudes of the first cohort of student groups trained together at the University of Portsmouth Dental Academy towards dental interprofessional education. *Eur J Dent Educ* 2016; DOI:10.1111/eje12183.
26. Radford DR Hellyer P. Belongingness in Undergraduate Dental Education. *Br Dent J* 2016; **220:** 539-543.
27. Radford DR. A personal perspective, breaking new ground in Portsmouth in integrated dental education and professional care. *Higher Education Research Network Journal* 2011; **2:** 67-71 [Online]. available at :http://www.kcl.ac.uk/study/learningteaching/kli/research/hern/hern-j2/David-Radford-hernjvol2.pdf (accessed May 2016).
28. Green J, Thorogood N. *Qualitative Methods for Health Research* 2nd ed. Sage Pub Ltd, London. 2009.

29. Smith M, Ash P, Gilmour ASM, Austin T, Robinson PG. Outreach training: the special interest group's report. *Eur J Dent Educ* 2011; **15:** 85-89.
30. Akkerman SF, Bakker A. Boundary crossing and boundary objects. *Rev Educ Res* 2011; **81:** 132-169.
31. Engeström Y, Engeström R. Kärkkäinen M. Polycontextuality and boundary crossing in expert cognition: Learning and problem solving in complex work activities. *Learning and Instruction* 1995; **5:** 319-336.
32. Radford DR, Hellyer P, Meakin N, Jones KA. Identifying and preparing the next generation of part-time clinical teachers from dental practice. *Br Dent J* 2015; **219:** 319-322.
33. Levett-Jones T, Lathlean J, Higgins I, McMillan M. Staff-student relationships and their impact on nursing students' belongingness and learning. *J Adv Nurs* 2009; **65:** 316-324.