

# Interactions in the dental team: understanding theoretical complexities and practical challenges

M. G. Reeson,<sup>\*1</sup> C. Walker-Gleaves<sup>2</sup> and N. Jepson<sup>3</sup>

## IN BRIEF

- Highlights the professional experiences of undergraduate dental students and trainee dental technicians during shared learning opportunities.
- Illustrates the issues related to collaborative working.
- Stresses the benefits of team working in delivering patient-centred care.
- Emphasises the importance of collaboration and communication within the dental team.

## VERIFIABLE CPD PAPER

**Background** Interdisciplinary collaboration and communication during dental training has become an increasingly influential idea within dental schools, both in the United Kingdom and European contexts. Research into this curriculum innovation has provided evidence to argue that benefits accrue both in terms of professional understanding and the development of dental professional learning dispositions. **Objective** This study investigates the interactions within a trainee dental team. In particular, the paper reports the professional experiences and development of trainee dental technicians and undergraduate dental students during a prolonged shared learning exercise in a combined UK university dental school and hospital. **Methods** Using a qualitative approach with a phenomenological framework, data sources included reflective diaries, focus group interviews and participant feedback. **Results** Eleven major domains were identified that accurately characterised the participants' beliefs, thoughts and practices. The results indicate that both trainee dental technicians and undergraduate dental students were pragmatic but positive in terms of their expectations of shared learning. In particular, they regarded the exercise as useful in terms of communication and understanding each other's role. Evidence also indicated the presence of original elements such as crisis of confidence and feelings of awkwardness that do not arise in other studies. **Conclusions** The implications for dental education are that for effective professional collaboration during training to take place a merger of interests among educators and policy developers in dental education must occur, and the challenges encountered within practice cultures must somehow be overcome. Therefore, more investment in evaluating research into interprofessional learning in dentistry would contribute to our knowledge about the place and role of interprofessional education in the professional dental curriculum and beyond.

## INTRODUCTION

One of the aims of any vocational undergraduate health-based curriculum is to foster and promote in students a professional duty and obligation to providing a high standard of patient care.<sup>1-3</sup> There are several means to achieving this: some curricula adopt reflective practice episodes during their programmes;<sup>4</sup> others build in periods of critical incident analysis where professional dilemmas are examined

in the field;<sup>5</sup> while others adopt curricula innovations based on the development of particular attributes and behaviours, such as collaboration and team working on projects between different groups of professionals in the hope of fostering mutual understanding.<sup>6</sup>

The general aims of any undergraduate dental curriculum are to teach students the skills and techniques to practise dentistry and thus routinely deliver a high standard of professional care that both meets the challenges of a rapidly changing technological and clinical environment and the demands of an increasingly diverse and arguably more aware and demanding population.<sup>7</sup>

However, the undergraduate dental curriculum is at a profound point of change; the complexities, uncertainties and challenges residing in the contemporary dental workplace present formidable impediments to dental educators,

administrators and external bodies alike. Economic pressures, high profile public dental health problems and concerns, and the influence of new knowledge and technologies impact on dental education in bewilderingly complex ways.<sup>8</sup> Not only this, but today's dental schools and hospitals are expected to be more productive and transparently accountable while at the same time coping with a reduction in fiscal resource.<sup>9</sup> The economic evaluation of healthcare programmes is now commonplace in medicine and is becoming increasingly important in dentistry and governments as third party fund holders have intensified their need for budgetary tightening while seeking alternative sources of funding.<sup>10</sup> For example, in a recent survey examining the public's attitudes to dental health it was found that although accessibility to dentistry has increased, people have reported a significant decline in the quality

<sup>1</sup>School of Dental Technology, The Dental Hospital, Richardson Road, Newcastle upon Tyne, NE2 4AZ;

<sup>2</sup>School of Education, University of Durham, Leazes Road, Durham, DH1 1TA; <sup>3</sup>Senior Lecturer School of Dental Sciences (Retired), Newcastle University, Framlington Place, Newcastle upon Tyne, NE2 4BW

\*Correspondence to: Dr Michael G. Reeson  
Email: michael.reeson@nuth.nhs.uk;  
Tel: +44 (0) 19 1282 5123

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of care they receive.<sup>11</sup> Indeed, the current literature on dental education reflects widespread desire for reform and change to the dental curriculum both nationally and internationally.<sup>12-16</sup>

There is a substantial body of literature that demonstrates significant conceptual gaps in the relationship between dental professionals in teams.<sup>17-25</sup> Within the current undergraduate dental curriculum there are conceptual gaps in understanding how responsive change and improvement in the educational process can be achieved.<sup>26</sup> Such change will arguably go some way to enhancing dental schools' viability in a rapidly changing world, thus benefiting all dental professionals and the communities they serve.<sup>27</sup> These issues notwithstanding, despite the arguments and recommendations for educational change, there are still relatively few studies that seek to co-relate the change process with substantive curriculum development itself in dental education.<sup>27</sup>

This study explores the professional experiences and development of trainee dental technicians and undergraduate dental students during a prolonged shared learning exercise in a combined UK university dental school and hospital. Using a qualitative approach with a phenomenological framework, data sources included reflective diaries, focus group interviews and participant feedback.

## MATERIALS AND METHODS

The shared learning exercise was undertaken in the Newcastle upon Tyne Dental Hospital /University Dental School, and involved two different groups of third year trainee dental technicians (DT) and two different groups of third and fourth year undergraduate dental students (DS3/DS4) working together to provide both complete and partial dentures for patients currently receiving treatment in the hospital. Ethical approval for the study was granted by the Newcastle and North Tyneside 1 Research Ethics Committee.

As the third year undergraduates normally work in pairs one trainee dental technician linked with two paired third year undergraduate dental students and each fourth year undergraduate dental student linked with a single trainee dental technician.

**Year one of study:**

- Six third year trainee dental

technicians (DT)

- Twelve third year undergraduate dental students (DS3)
- Six fourth year undergraduate dental students (DS4).

**Year two of study**

- Five third year trainee dental technicians (DT)
- Ten third year undergraduate dental students (DS3)
- Five fourth year undergraduate dental students (DS4).

The trainee dental technicians shadowed the undergraduate dental students on the clinic and carried out all the laboratory procedures for the patient. The undergraduate dental students were also actively encouraged to involve themselves in the laboratory work for their patients. A total of 11 trainee dental technicians and 33 undergraduate dental students took part in the study for one day each week over two academic years.

Triangulation was the methodology used in the collection of data.<sup>28</sup> Reflective diaries, focus groups and participant feedback were used. Each student in the study was asked to keep a reflective diary of their learning in every session of the exercise.

As this was a relatively new experience for most of the students, a prescribed format of the diary was given with question headings designed to assist students to revisit and reflect on what they had learned during the session and to identify areas where they encountered problems and how they planned to resolve them. The final part of the reflective diary was a self-reflection section in which the students were required to focus on their thoughts about the session. Students were free to write as much or as little as they wanted under each heading, the only stipulation being that at the end of each clinical/laboratory session they would complete the required page in their diary.

Focus groups were conducted with students immediately following completion of their patients work. In total six focus group meetings were held over a two-year period with both groups of students. Separate focus groups between the undergraduate dental students and

the trainee dental technicians were considered likely to be most productive. Greater homogeneity would encourage more free-flowing discussions and would facilitate comparison between the two groups.<sup>29</sup> It was felt that having mixed groups might inhibit the students from discussing their experiences openly. All focus group meetings were audio recorded; an observer was also present to record verbatim the participants' responses. An information sheet outlining the details of the study along with consent forms for both the reflective diaries and focus group discussions were made explicit to all participants.

The methodology used in the implementation of the learning exercise was phenomenology.<sup>30</sup> Phenomenology attempts to understand people's perceptions, perspectives and understandings of a particular situation (or phenomenon). In other words, a phenomenological research study tries to answer the question 'what is it like to experience such and such?' By looking at multiple perspectives of the same situation a researcher can start to make some generalisations of what something is like as an experience from the 'insider's' perspective.

## DATA ANALYSIS

The primary source of data for each participant was the reflective diaries and the transcripts from the focus group data. Thematic content analysis was used to identify themes and categories that emerge from the data.<sup>31</sup> This involved the researcher reading all the transcripts from both the reflective diaries and focus groups and making notes of words, or short phrases that sum up what is being said in the text.

In the second stage, all the words and phrases are then worked through to look for duplications, thus reducing the number of categories. Once this second list has been compiled, overlapping or similar categories are refined and reduced in number by grouping them together.<sup>31</sup> This reduced list is then used to build a story that connects each of the categories defined through the initial coding. Finally, to validate the data, participant feedback was used. Here a list of central concepts and excerpts of the findings were returned to an invited group of participants in

**Table 1 Emerging themes from reflective diaries**

Question	Domain	Themes	Headings
What you did	Decision making and professional judgement	Learning Communication	The growth of the dental team
Outcome	Collaboration	Cooperation Team work	The growth of the dental team
Problems encountered/handled	Patient care	Reflection Problem solving	Worries about patient care
What would I do again/what I would not do again/what was a mistake	Awareness	Familiarity Proactive	The growth of the dental team
Follow up/action plan	Treatment plan	Involvement Interaction	The growth of the dental team
Additional comments; possible comments about How I felt in the clinic/laboratory How the patient felt	Professional identity, role definition	Relationship Confidence	Apprehension and Awkwardness

**Table 2 Emerging themes from focus group discussions**

Question	Domain	Themes	Headings
What benefits did you gain from the exercise?	Understanding one another's role	Collaboration Team work	The growth of the dental team
Was there anything that wasn't of benefit from the exercise?	Apprehension	Concern Anxiety	Apprehension and Awkwardness
Were you conscious of any barriers to learning during the exercise?	Awkwardness	Attitude Uneasiness	Apprehension and Awkwardness
Do you feel the patient benefited more?	Awareness of responsibility to patients	Communication Understanding	Worries about patient care
How could the exercise be improved?	Preparation	Information Equality	The growth of the dental team

order for them to validate, or refute, the researcher's interpretation of the data. Tables 1 and 2 show the reflective diary and focus group questions, the corresponding major domain that each addresses and the themes arising out of the data saturation.

The key overarching elements arising from both the domains and themes from the reflective diaries and focus groups are subsumed under the following headings: apprehension and awkwardness, the growth of the dental team, and worries about patient care. These three key headings are linked to their respective domain/themes in the tables.

## FINDINGS AND DISCUSSION

### Apprehension and awkwardness

Students' initial experiences reflected the domain of apprehension and awkwardness. Both the undergraduate dental students and trainee dental technicians reported

that they felt uneasy at the beginning of the exercise not knowing what was expected of them and it had taken a few weeks for a working relationship to develop. Some undergraduate dental students were concerned that, once a working relationship had developed, criticism of any technical work produced by the trainee technicians may have a negative impact on this relationship as indicated by the following abridged responses;

From trainee dental technician:

*'Initially I did feel left out; however, this all changed as the patients treatment progressed and I got to know the undergraduates better.'* (DT: Focus group)

From undergraduate dental student:

*'I would have felt quite bad criticising the technician's work after he had put in so much effort.'* (DS4: Focus group)

Research has shown that each person involved in collaborative practice must feel responsible for, and safe with,

expressing his or her own opinions and feelings.<sup>32</sup> Therefore, an environment must exist in which this can be done without fear of retaliation or ridicule. A number of trainee dental technicians also described behaviours that evoked uncertainty and insecurity, which had impacted on their sense of belonging and learning, raising concerns over their input and whether or not their contribution to the patients' care was being taken into consideration;

From trainee dental technicians:

*'Sometimes I felt that my opinion was disregarded.'* (DT: Focus group)

*'...just want to feel I belong in the team.'* (DT: Focus group)

The concept of belongingness is very relevant to the experiences of the trainee dental technicians in the current study working within a clinical environment. Belongingness has been recognised as a fundamental human need, exerting a powerful influence on cognitive processes, emotional patterns, behavioural responses, and health and wellbeing. Students need to fit in and be accepted in order for them to actively participate and learn. Research shows that learners in unfamiliar environments do experience some reduction in self-confidence and increased anxiety.<sup>33</sup> The trainee dental technicians wanted to create a smooth journey for themselves, and recognised the importance of being interested and inquiring when participating in the clinic. They realised that in doing so this helped broker a positive relationship with both the undergraduate dental student and the clinical tutors.

However, the undergraduate dental students acknowledged that at times it was difficult for every team member to be totally engaged with the patient. This caused concerns and anxieties with them also on what each team member should be doing;

From undergraduate dental student:

*'Not knowing the technician at first was a little strange and I felt everyone was a bit shy at voicing opinions in the first session, but that soon sorted itself out once we got to know each other.'* (DS4: Focus group)

Students also indicated that they would have liked to have familiarised themselves more with the materials they were using before undertaking a particular procedure

with their patients on the clinic;

From undergraduate dental student:

*'...need to familiarise ourselves more with the materials before we start so we look more efficient and confident.'* (DS4: Reflective diary)

Students also reported on the need for them to be a more proactive member of their respective teams;

From trainee dental technician:

*'Next time I will try to get more involved at the chair side.'* (DT: Reflective diary)

Initially, some students focused on working as part of a proactive team in the best sense of the word, that is, that joint working adds to the outcome of integration. For others, however, the principle of integrated teamwork was more like a division of work, a democratic way of solving a practical task in terms of equal workload, and this focus tends to lose sight of the spirit of integration. For learning to be optimal, active participation is desirable. Evidence of relationships and confidence emerged as students reported on their experiences of working together. They described how relationships had developed both with themselves and their patients, and how their confidence had improved over the period of the exercise. The importance of the development of relationships with patients is connected with a student's personal and professional growth, confidence and self-esteem;

From trainee dental technician:

*'...felt valued and a part of what was going on.'* (DT: Reflective diary);

From undergraduate dental student:

*'...pleased and feeling more confident since the patient informed us she is happy with her new dentures.'* (DS3: Reflective diary)

Finally, a number of students felt they should have been given more information before the commencement of the exercise;

From undergraduate dental student:

*'... it should be made clear what each person is expected to do.'* (DS3: Focus group)

However, many students also recognised that this could only be done through the experience of participation in the exercise itself.

### The growth of the team approach

There was clear evidence to suggest that developing cooperation and teamwork was a gradual process. Students reported

on how they interacted together in both a clinical and laboratory situation;

From undergraduate dental student:

*'...working with the trainee dental technician was a huge help for us on the technical side.'* (DS3: Reflective diary)

From trainee dental technician:

*'...felt more confident on clinic as the patient's treatment progressed, found it easier to talk about and explain any problems with both the student and the patient.'* (DT: Reflective diary)

Students were engaged in constructive dialogue as they worked together and were learning from each other although it was clear that this was a discursive process that took into account different conceptual understandings and thus involved a great deal of negotiation;

From undergraduate dental student:

*'...shared opinions and discussed information before reaching agreement on the best way forward with the patient's work.'* (DT: Reflective diary)

From trainee dental technician:

*'...discussed the options on the shade and mould of the teeth.'* (DS3: Reflective diary)

Both groups of students shared stories of their personal experiences during the exercise and how they cooperated and worked with each other as part of a collaborative team;

From trainee dental technician:

*'I now feel more comfortable in voicing my opinion with both the undergraduate dental student and the patient.'* (DT: Reflective diary)

Research suggests that the principles of interprofessional learning should encourage students not only to learn with one another but also from and about one another.<sup>34</sup> Learning to work together is fundamental to effective teamwork. Learning about, from and together with other professions in the healthcare team is crucial in the formation of an identity as a professional, as it allows health professionals to rethink their roles, identities and purposes as well as their relationship to each other within the traditional healthcare team. This collaborative learning appeared to foster new respect for each other as colleagues and professionals, and provided an opportunity to demonstrate the valuable role dental technicians provide to both patients and the oral healthcare team;

From undergraduate dental student:

*'It helped me appreciate the vital role of each one as well as the importance of sharing and discussing information.'* (DS3: Reflective diary)

Both groups of students agreed that their knowledge of the other professional group had increased and this improved understanding results in increased self-confidence;

From undergraduate dental student:

*'Seeing both the technical and clinical side really worked for me.'* (DS4: Focus Group)

From trainee dental technician:

*'...this week I feel part of a team.'* (DT: Reflective diary)

The use of a team-orientated approach has the potential to expand students' understanding of the contributions made by other professionals/colleagues to effective patient care. As a result the trainee dental technicians were able to gain a better understanding of the role of the dental student, and the undergraduate dental students were able to appreciate the technical support and opinion the trainee technicians could provide. This type of collaborative learning has the potential to promote better understanding between the professions by encouraging students to engage in detailed exploration of health and social roles.

### Worries about patient care

Both groups of students were asked if they felt their patients had benefited from the exercise. In this context, students identified greater confidence in interactions with their patients, improved communication, greater awareness of patient care and greater empathy for both the patient and each other developed from working as a team. What did emerge from this current study was the majority of students agreed that their patients had received a better standard of care;

From undergraduate dental student:

*'...my patient had a lot more choice in her treatment.'* (DS3: Focus group)

Students considered communication central to the success of their patients' care. Successful communication essentially relies on communicators' ability to consider the other participants' viewpoints, an aspect identified by students in the present study;

From undergraduate dental student:  
*'I could discuss the problem with both the technician and the patient and it could be sorted out while the patient waited'.* (DS4: Focus group)

Students recognised successful collaborative incidents as those in which all participants' perspectives were considered. They described how active face-to-face dialogue and joint decision making with both the patient and themselves enabled them to gain a better understanding of their patients' needs, which in turn allowed them to provide more efficient patient-centred care. Students reported on how they went about resolving problems with their patients' work and in doing so reflected on what they had done and what perhaps they would have done differently;

From trainee dental technician:

*'I would in the future trim my trays shorter in order to save time at the chair side'.* (DT: Reflective diary)

From undergraduate dental student:

*'I would familiarise myself more with the technical side of the procedure so I would look more confident and efficient'.* (DS3: Reflective diary)

Unlike, the classroom, where knowledge is acquired and then used at a later date, learning in a practice setting allows knowledge to be gained and applied while working in the setting. It can be adjusted and amended immediately. Therefore, learning together can contribute more effectively to the development of the necessary skills and knowledge students require becoming competent practitioners. For that reason, bringing professionals into close contact with patients gives them much more of a 'consequentialist' approach to care, where they become a lot more aware of ethical and moral implications of their work.

## CONCLUSION

In general this work has indicated that the use of a practice-based interprofessional experience can improve participants' awareness and understanding of issues related to collaborative work. This process had potentially very positive benefits for patient care. For example, in both a clinical and laboratory situation, students were able to develop a greater understanding of each other's roles and develop their team

working skills, sharing their knowledge and observations for the benefit of their patients. They also acknowledged that initial setbacks in the development of their relationships, such as crisis of confidence and feelings of awkwardness, led to efforts to be more forward thinking about what would be the best outcome for a patient. This is a key issue in the climate of increasing emphasis being placed on involving patients in decisions about their care. Clearly the development of a common curriculum would allow all members of the dental team to engage early in their educational experience in a team environment. This would fulfil the benchmark statements made by the Quality Assurance Agency (QQA)<sup>35</sup> and the Bologna Declaration<sup>36</sup> implemented within Europe, emphasising the importance of generic and cognitive skills acquisition, for example in team-based learning and research.

The ability of health professionals to work together collaboratively is critical to delivering patient-centred care. The suggestion that learning together may help people to work together more effectively is reasonable. Effective teamwork requires an education system that helps to foster understanding between all those entering the health workforce. The UK Government's support for promoting collaboration between health professionals is evident in policy documents.<sup>37-39</sup>

With regard to dental education within the UK, the General Dental Council (GDC) has recently drawn up a revised set of learning outcomes for dental qualifications that lead to GDC registration.<sup>40</sup> This document recognises the importance of professional co-learning. In particular, the document makes explicit the expectation that training will help to create adaptive learning environments and produce practitioners capable of operating in complex multiprofessional cultures.

However, if expectations and the allocation of funding discourage the evaluation of interprofessional education, policy makers and education providers will continue to make decisions from a relatively weak evidence base. It is vital that more investment in evaluating research into interprofessional learning in dentistry is provided as such research would contribute to our knowledge about the place and role of interprofessional

education in the professional curricula. In addition it would critically provide invaluable evidence regarding curriculum design, and inform educators and policy developers as to how to maximise the initial professional development possibilities inherent in dental curricula learning outcomes.

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