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Bespoke video vignettes – an approach to enhancing reflective learning developed by dental undergraduates and their clinical teachers

(Running title: Enhancing clinical learning with bespoke video vignettes)

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Bespoke video vignettes – an approach to enhancing reflective learning developed by dental undergraduates and their clinical teachers

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Abstract

This paper explores the selective use of video as a medium to support reflective processes as related to dental undergraduate learning. With the objective of developing and enhancing high quality adult dental care, the use of compiled video materials created in an undergraduate clinical setting was investigated. Video-cameras were used to capture elements of reflection-in-action and reflection-on-action typically found during everyday clinical practice.

"Gold standard" or "textbook outcomes" are rarely, if ever, fully achieved in dental practice. Real life clinical experiences offer challenges and opportunities for both teachers and students to engage with reflective learning processes.

The materials generated allowed for an experience of individual reflective learning and the creation of a data-bank or archive with potential use for the benefit of a wider student cohort. Various aspects of the students' views and

comments on the process of reflection were reported and explored by means of a semi-structured focus group moderated by a linked educational advisor.

Introduction

In common with many other clinical disciplines, Primary Dental Care encompasses a subtle combination of clinical and communication skills that are, in turn, linked to a sound understanding of best contemporary team-working practices. With over 90% of dentists in the UK working in primary care dentistry (Aggarwal et al., 2011), acquiring these attributes forms an extremely important part of the current dental student development (Sweet et al., 2008).

Traditional clinical teaching settings rarely offer students sufficient time and opportunity to analyse, in any depth, many of the challenges they encounter (Lawton 1976) during patient care delivery. Contemporary primary care dentistry is often complex and multi-faceted with technical-based procedures being only one of the many attributes to be learned and mastered (General Dental Council, 2006). Other factors such as patient management, treatment planning, teamwork, communication skills and good practice protocols (General Dental Council, 2013), are seen as crucial in order to deliver effective and successful dentistry.

It can therefore be argued that "gold standard" dental care mirrors the combination of many mutually non-exclusive factors. None of the current learning methods applied in primary care clinical training can fully encompass all of these domains (Tsang and Walsh, 2010). The development of carefully selected clinical vignettes supported by contextualised clinical photographs and radiographs serve to illustrate commonly encountered treatment

scenarios. These in turn form a unique paradigm seeking to address the perceived "learning gap" in clinical dentistry (Leung, 2008).

The development of an enriched contextualized "materials bank" allows for the analysis of best practice which can then be discussed, reflected upon and refined by cohorts of students at a similar stage of clinical development (Smith et al., 2012). This process allows for the generation of a large collection of high-quality interactive and bespoke learning materials, based on real patients and real total patient care episodes. This model of reinforced clinical teaching and learning potentially provides all dental students with an opportunity to work with a tool for personal self-reflection (Ashley et al., 2006).

The ability to both reflect-in-action (Schon, 1983) and reflect-on-action (Tillema, 2007) should help foster meaningful learning for both the individual and group learners. This mode of learning should also facilitate the undergraduate dental student to integrate the theoretical knowledge acquired into practical applications in day-to-day practice of clinical dentistry along the Learning Pyramid espoused by Miller (1980). It should also facilitate the concept of primary total patient care where the welfare and the best interests of the patient is being reflected overall and not just the executed technical excellence of the clinical dentistry delivered.

On a practical scale, our premise is that effective clinical pedagogy flourishes in a learner centred environment (Davies, 2000) where the student is fully supported by teamwork based on real activity (Leung, 2008). The authors believe that, for students, the opportunity to be in a safe non-threatening environment can provide learning experiences which help foster deeper

understanding (Davies et al., 2012) and potentially carve out meaningful insight into the wider clinical environment to enhance the intensity of deep learning (Gerzina et al., 2005). It is within this paradigm and concept that this article is presented.

Materials and Methods

This study involved a current cohort of 20 final year dental students who attended the Maurice Wohl Dental Centre at King's College London Dental Institute for a whole day (two sessions) every fortnight over three academic terms; equivalent to approximately 20 days of clinical experience. These students were subdivided into two groups of 10, with each student having a responsibility for clinical preparation within an individual surgery.

Each episode of clinical management was usually assisted at the chair-side by a dental nurse and then supervised either by the Director (Author 1) or the Deputy Director (Author 2) of the Centre. All participants were trained in respect of the making of video vignettes with full instructions and protocol for engagement discussed and agreed with an advisory educationalist (Author 4). To facilitate the teaching and learning of total patient care, episodes of comprehensive patient care and patient management were jointly identified by the student and the supervising clinician. Subject to consent from all parties, aspects of these episodes of clinical care of the patient were filmed using hand-held video compatible digital cameras, by the student, the dental nurse or the clinical teacher. The video capture either took place after the patient had left (reflection-on-action) or whilst the patient was being treated

(reflection-in-action).

Meaningful and bespoke learning episodes were identified by the student or the teacher and chosen to demonstrate pertinent issues encountered in everyday practice. The vignettes were collected, edited and built into themed categories of teaching materials. The rich, mixed data generated was compiled and contextualized into teaching materials and, to date, over 100 vignettes have been produced. These materials were then used in interactive group seminars to facilitate student learning, integrating knowledge and applying them in the different clinical situations encountered.

A semi-structured focus group facilitated by a specialist educationalist (Author 4) together with an in-depth interview of a representative sample of participants were used as the basis for evaluation of the project.

Results and discussion

A total of 122 statements were received in respect of the qualitative data generated from the cohort of 20 participants. The principal themed areas and typical responses received have been identified. They were arrived at by immersing the data and scrutinizing the transcribed text responses in order to develop collective generalities, thereby confirming the theme (Richards, 2005). They are as follows:

Thematic characteristics identified by the participants	Representative responses in respect of the identified themes
1. Reflection on video adds a new dimension to the learning experience	"Many of us probably have not had to reflect on video, after the event, and reflect on the reflection. This is a whole new concept, and the self-learning element is beneficial for me, and for my peers in the future to get something out of my learning experience."
2. This exercise reinforces learning in a natural way	"After talking about it on film and sharing the experience with my colleagues, I didn't even have to think twice now of what I did and what I will be doing when similar clinical situations present themselves in the future: it kinds of stick in the back of your brain."
3. Students benefit from sharing clinical experiences on video and the best time to share the reflection may be when things have not gone completely right	"By having colleagues say, [their own procedures] didn't go so well, it sort of nurtures a natural and realistic environment, making me realise that I am not on my own: this is very encouraging to see that we are all learning from our gaps in knowledge and mistakes in training: In the end our patients will benefit."

4. These reflective video clips enhance students' learning of total patient care	"I feel a lot more confident communicating and thinking on my feet which is particularly useful in a primary care dentistry situation when you have to be able to deal with so many interactive things all at the same time, and be able to reflect them meaningfully during and after the event."
5. These video clips enhance the quality of reflection	"It extends my comfort zone and make me think back deeply, what has or hasn't gone right, and how I can improve my all round clinical and patient management skills… it tends to focus your mind when you think aloud."
6. This process is voluntary and may not be for everyone	"I am afraid I haven't done one yet, I am just so shy in front of the camera."

T**able 1:** Representative qualitative findings on principle themed areas and typical responses

Initially the vignettes were largely teacher-directed and tended to focus on situations where either a clinical procedure or a patient management episode had not gone smoothly. Students were guided towards the key challenges presented in a given situation with emphasis placed on the practical actions or solutions required to resolve the pertinent issues. At the same time, strong

encouragement was given for them to further identify and reflect upon (Schon, 1987) what they saw as key learning points for later discussion and analysis.

In relation to total patient care, the vignettes do not actively seek to demonstrate an artificial "gold standard" but rather to convey the day-to-day dilemmas and difficulties faced in clinical dentistry (McMillan, 2011) and then to explore more fully the reasons why certain decisions have to be made in order to facilitate true reflective practices (De Cossart & Twinn, 2005). Using this methodology the learner was encouraged to explore more fully the thought processes involved in good clinical decision making (Fish & Twinn, 1997). Reflection-in-action (Schon, 1983) and reflection-on-action (Tillema, 2007) serve to illustrate how such a process may be used to enhance both individual performance (Robinson & Davies, 2004) and ultimately working towards the goal of improving better treatment outcomes for the patient (Davies et al., 2009).

This new dimension of clinical learning involving reflective practices is believed to foster deeper processes over time (Moon, 1999). The exercise reinforced learning in a natural way and showed that an individual may have more in common with others than first thought, with shared experiences often seen as valuable. Video archives to share with successive students were also seen as generally positive and may help reduce some of the initial "fear factor" involved in early exposure to group work (Bush & Bissell, 2008).

The students appeared to derive real benefits from sharing clinical

experiences on video with the best time to share the reflection often being when things had not gone completely right. In contrast, much less value seemed to be gained from the cases that went well comparatively well. However, the process of video-making was useful for boosting confidence in some students as they had to think aloud and hence improve and enhance their clinical, communication and patient-management skills.

Being strongly encouraged to share both good and bad experiences was seen overall as positive (Kalwitzki et al., 2003). However, the level of teacher direction could be seen as a potential barrier to this process and may instead stifle openness when involved in filming in respect of the concept of "the power relationship" (Barrows, 1979). Instead, the involvement of other dental care professionals such as dental nurses frequently enhanced the quality of reflection and learning obtained, perhaps acting as an overall "best friend" within the team (Benner, 2001) to bring out the quality of reflection-in-action and reflection-on-action.

Short (<3 minute) video vignettes were effective tools for group discussion and could open up lines of thought that would not be obvious to the individual when reflecting to camera. As stated by one participant, *"it tends to focus your mind when you think aloud"*. The overwhelming majority of students found this an extremely beneficial experience, similar to the findings of Kalwitzki (2005), particularly when sharing clinical learning. The process was voluntary and it may not be found suitable for everyone. Video-reflections could be easy for some but more difficult for others with feelings of vulnerability expressed in

certain situations (see Table 1). It could also be viewed as "exploring" areas of perceived knowledge or known weaknesses. Possible differences in medical and dental training were also observed within the groups. It appeared that the medically-trained students were more used to admitting when they were wrong, which perhaps is less commonly found in a typical dental setting.

Not everybody could film and not everybody wanted to be filmed; particularly when the student may not have been on top of the clinical situation. In the authors' experience, shyness and unwillingness to reflect-in-action during vulnerable moments were frequently encountered during the early stages of the project. To date, we have identified the making of video vignettes as having a *"dual purpose"* – namely, one for self-reflection and another as a record to be reviewed by future learners.

Adding a voice-over could be helpful to explain the problems seen or encountered, and enhance the modality effect (Crooks et al., 2012) which facilitates the learners' thinking and reflection. This would be an important tool to enhance the quality of clinical learning (Davies et al., 2012). In this study, participants became more comfortable and confident around a camera with increased practice. It is anticipated that the making of vignettes would be of limited use near to final examinations, unless they contained good examination-usable materials such as clinical facts. However, this mode of learning would be directly relevant to enhance students' familiarity with the assessment process whereby final year undergraduate students compete for positions to undertake mandatory Dental Foundation Training which they have

to undertake in the UK when they qualify as dentists (COPDEND 2013). There may be potential for further development as an assessment tool in this respect in order to demonstrate competencies and quality of reflective learning.

Conclusions

The approach to teaching and learning in clinical dentistry presented in this study allowed the learner access to a unique paradigm in order to experience the concept of *total professional patient care*. The needs of the patient as a whole were strongly reflected in the vignettes. The process was seen as valuable in conveying the concept of true comprehensive patient care and not just simply the achievement of technical excellence alone.

The variable qualitative human factors underpinning the clinical environment in which healthcare provision takes place exposes students to many real-life situations. This interactive learning methodology is in line with the aims and objectives of the advanced stage of the undergraduate curriculum of King's College London Dental Institute (King's College London, 2013) and the latest guidance from the General Dental Council in the UK (General Dental Council, 2013).

Furthermore, via the vignettes, key learning points were identified and compiled to generate teaching materials to be used in the Department's bespoke learning opportunities (e.g. interactive small group clinical seminars and chair-side teaching) to further inform practice, refine patient management

skills and enhance better clinical decision-making.

References

Aggarwal, V., Palmer N., Nelson, P., Ladwa, R., & Fortune, F. (2011). Proposed career pathway for clinical academic general dental practitioners. Primary Dental Care. 18, (4) 155-160

Ashley, F., Gibson, B., Daly, B., Lygo Baker, S. & Newton, T. (2006). Undergraduate and postgraduate dental students' "reflection on learning": a qualitative study. European Journal of Dental Education, 10: 10-19.

Barrows, L. (1979). Power relationships in the student teaching triad. Paper presented at the annual meeting of the American Educational Research Association. (San Francisco, California).

Benner, P. (2001). *From novice to expert: excellence and power in clinical nursing practice.* Prentice Hall. New Jersey.

Bush, H., & Bissell, V. (2008). The evaluation of an approach to reflective learning in the undergraduate dental curriculum. European Journal of Dental Education, 12, 103-110.

Committee of Postgraduate Dental Deans and Directors UK (COPDEND) (2013), Interim dental foundation training curriculum and assessment framework guidance.

http://www.copdend.org//data/files/Foundation/Interim%20DFT%20curriculum%202013-14.pdf. Last accessed 27th April 2015.

Crooks, S., Cheon, J., Inan, F., Ari, F., & Flores, R. (2012), Modality and cueing in multimedia learning: Examining cognitive and perceptual explanations for the modality effect. Computers in human behaviour. 28: 3 1063-1071.

Davies, B. (2000), *Moving towards more co-operative learning at the Maurice Wohl General Dental Practice Centre*, University of Dundee M Med Ed. dissertation.

Davies, B., Leung, A. & Dunne, S. (2009), Perceptions of a simulated general dental practice facility- reported experiences from past students at the Maurice Wohl General Dental Practice Centre 2001-2008. British Dental Journal 207: 371-376

Davies, B., Leung, A. & Dunne, S. (2012) So how do you see our teaching? Some observations received from past and present students at the Maurice Wohl Dental Centre. European Journal of Dental Education 16:138-143

De Cossart, L. & Twinn, D. (2005) Cultivating a thinking surgeon: new perspectives on clinical teaching, learning and assessment. (Shrewsbury, TFM Publishing).

Fish, D. & Twinn, D. (1997). Quality clinical supervision in healthcare professions: principle approaches to practice. (Oxford, Butterworth Heinnenmann)

General Dental Council (2006). Standards and scope of practice: principles of team working. London General Dental Council.

General Dental Council (2013). Standards for the dental team. London, General Dental Council.

Gerzina, T., Mclean, T. & Fairley, J. (2005). Dental clinical teaching; perceptions of students and teachers. Journal of Dental Education 69:1377-1384

King's College London (2013). Dental Undergraduate Curriculum.

Kalwitzki, M. (2005). Self-reported changes in clinical behaviour by undergraduate dental students after video-based teaching in paediatric dentistry. European Journal of Dental Education, 9: 108–114.

Kalwitzki, M. Rosendahl, R. Gottle, R. Weiger, R. (2003). Acceptance of video-based teaching in paediatric dentistry by undergraduate students. European Journal of Dental Education 7: 66-71

Lawton, F. (1976). What can be done to correct deficiencies in the

undergraduate course? International Dental Journal 26: 67-72.

Leung, A. (2008). An investigation of dental students' nurses' and patients' perceptions of four-handed dentistry in the learning of primary care dentistry in an extended clinical environment, King's College London MA dissertation.

McMillan, W. (2011). Making the most of teaching at the chairside. European Journal of Dental Education 15: 63-68

Moon, J (1999). Reflection in Learning and Professional Development, Theory and Practice (London: Kogan Page)

Richards, L. (2005). Handling qualitative data: a practical guide (London: Sage)

Robinson, P. & Davies, B. (2004). Reflective practice in the teaching of conservative dentistry to undergraduate dental students- perceptions derived from a pilot study using personal development diaries. European Journal of Dental Education 8: 67-71.

Schon, D. (1987). Educating the reflective practitioner. San Francisco, Jossey Bass.

Schon, D. (1983). The reflective practitioner: how professionals think in action.

New York. Basic Books.

Smith, W., Rafeek, R., Marchan, S. & Paryag, A. (2012). The use of video-clips as a teaching aide. European Journal of Dental Education 16:91-96

Sweet, J., Pugsley, L., Wilson. J. (2008). Stakeholder perceptions of dental chairside teaching and learning in one UK dental school. British Dental Journal 205: 499-503.

Tillema, H. (2007). Brief change towards self-directed learning in student teachers: immersion in practice or reflection on action. Teaching and Teacher Education, 16 (5) 575-591

Tsang, AK. & Walsh, LJ. (2010). Oral health students' perceptions of clinical reflective learning- relevance to their development as evolving professionals. European Journal of Dental Education 14:99-105

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