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Supporting postgraduate students in their role as clinical teachers: A pilot study.

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Abstract

In higher education, reliance on part-time teachers, including postgraduate students (PGs), in our undergraduate (UG) programmes is widespread. Dental education is no exception: the bulk of our UG clinical teaching/supervision is provided by casually-employed clinicians. Consistent with reports highlighting the need for professional development for part-time (including PG) teachers, we identified our PGs needed support. This paper describes the programme we developed for our PGs and the initial evaluation. Recommendations from the literature informed our programme design. Evaluation of the programme involved PG-clinical teachers' perceptions of their experience and analysis of their learning outcomes, using pre- and post-tests. The tests required PG-clinical teachers to identify behaviours related to UG clinical assessment criteria and clinical teacher attributes, and judge the level of performance portrayed in a series of UG clinic video simulations. To check that clinical assessment criteria for UGs and clinical teacher attributes were identifiable, experienced-clinical teachers completed the same tests. Learning from repeated viewing of the test-videos

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was not evident. It was difficult to identify and/or classify UG clinical assessment criteria in the videos. Both PG- and experienced-clinical teachers identified and classified more clinical teacher attributes than UG clinical assessment criteria. There was some improvement by PG-clinical teachers in identifying and classifying clinical teacher attributes. These data indicated the programme may have contributed to PG-clinical teachers' learning about their role, but it did not consistently contribute to improved outcomes for evaluating UG performance. Implications for our PG-clinical teaching programme and how we evaluate our UG performance are discussed.

Keywords: postgraduate students; part-time clinical teachers; training

Introduction

Internationally, reliance on part-time teachers to provide core learning and assessment support in our undergraduate programmes is widespread in higher education (Anderson, 2007; Bryson, 2006; Chalmers, Herbert, Hannam, Smeal, & Whelan, 2003a; Percy et al., 2008). Postgraduate students (PGs) contribute to this critical group of teachers (Kimber, 2003). While numbers of PGs in this role are difficult to ascertain, based on age distributions they are likely to be at least 20% (May, Strachan, Broadbent, & Peetz, 2011). Dental education is no exception. Due to shortages of academic staff, dental schools rely on significant numbers of part-time teachers (Haden, Weaver, & Valachovic, 2002; Tedesco et al., 2002). Our part-time teachers consist of dental practitioners from private and public practice and consistent with other departments (Chalmers et el., 2003b), also include PGs. In reality, the bulk of the clinical supervision of our dental students is provided by part-time teachers who are employed casually. For example in our school, 150 part-time clinical supervisors are needed for clinical supervision of 515 undergraduate students (UGs) across our five- and three-year clinical programmes.

The high numbers of part-time staff in dental programmes relates to the fact that dental graduates are able to enter independent and unsupervised practice immediately on graduation, e.g., Australia, Brazil, many European and Asian countries and North America, i.e., there is no compulsory intern year.   As a result, learning and assessment in the clinic setting forms a major component of our undergraduate programmes (Manogue, Brown &

Foster, 2001; Tedesco, 1995). For example, in the final 2-3 years of their undergraduate/graduate programmes, dental students provide complete courses of care for patients for up to 33 weeks in an academic year. In contrast to other clinical programmes, e.g., medicine and nursing, a major component of this care involves performing irreversible procedures on their patients. As expected and similar to ambulatory settings in medicine (Bowen & Irby, 2002), clinic sessions in dental programmes are characterised by time-pressured communications between the UGs, their clinical supervisors and patients, in which limited opportunities for regular observation and feedback to UGs occur. The complexities and time pressures associated with UGs' learning and assessment of their performance make clinic feedback and assessment more difficult than many academic settings (Ladyshewsky, 1995).

To achieve quality learning and teaching experiences for our UGs, all staff, need appropriate academic and professional development (BLASST, n.d.; Bryson, 2006; Chalmers et al., 2003b; Dental Board of Australia, n.d.; Harden & Crosby, 2000; Health Workforce Australia, 2013; Percy et al., 2008). However, it is evident that consistent implementation of this support for part-time teachers to undertake their teaching roles is a major issue in higher education (BLASST, n.d.; Bryson, 2006; Chalmers et al., 2003b; Percy et al., 2008). PG part-time teachers are no exception. For the majority of our PGs, this will be their first time undertaking such a role. As in other disciplines, they may be familiar with the discipline content (Percy et al., 2008, p10), however, the majority of our PGs are enrolled in a postgraduate dental clinical specialty qualification having completed their general dentistry qualifications overseas. As a result they often have had quite different learning experiences by comparison with the Adelaide UG programme. For example, they may have no or limited experience of core features of the Adelaide curriculum, e.g., inquiry-based learning, self-directed learning, early clinic experience and/or student monitoring and evaluation of their clinic performance (Redwood, Winning, Lekkas, & Townsend, 2010; Townsend, Winning, Wetherell, & Mullins, 1997). Similarly, as UGs they may have had only limited direct patient care experiences, e.g., in India and Korea (Heo, Kim, Kawamura, & Komabayashi, 2004; Komabayashi et al., 2005). This level of patient care experience contrasts with the norm in other dental schools internationally, e.g., in Australia, Europe, and North America (Australian Dental Council, 2010; Commission on Dental Accreditation, 2010; Cowpe, Plasschaert, Harzer, Vinkka-

Puhakka, & Walmsley, 2010; Manogue et al., 2001), where comprehensive patient care forms a significant component of the programme. Informal discussions with PGs in our school have revealed some apprehension in taking on the role of PG-clinical teacher due to their lack of experience.

Consistent with our ongoing commitment to improving the experience of our UGs learning and assessment experiences in clinic (Redwood et al., 2010; Winning et al., 2005), we recognised there was a critical need to support the development of our PGs in their role as clinical teachers. Therefore, clarification of their role in assessment including providing feedback, was essential. This is particularly important as inadequate teaching skills impact on the quality of UGs learning outcomes and UGs satisfaction (Chalmers et al, 2003a; Griffith, Wilson, Haist, & Ramsbottom-Lucier, 1998; Steinert et al., 2006; Stern et al., 2000). For example, there is evidence from inpatient clinic settings in medicine that the quality of teaching by clinical supervisors, as rated by UGs, was associated with improved examination performance (Griffith et al., 1998; Stern et al., 2000). Specifically, higher levels of skills and knowledge were achieved by UGs who rated the quality of their teachers highly by comparison with lower levels of achievement for UGs who were supervised by teachers with lower ratings.

There are examples of programmes and resources to support part-time teachers in terms of general principles of learning and assessment (Bryson, 2006; Gelula & Yudowsky, 2003; Percy et al., 2008). However, changes in health professions curricula, including expansion of learning into community settings, means faculty development needs to be adapted to meet the learning needs of clinical teachers in this broader range of educational settings, and take account of the varied levels of teaching experience and time demands on part-time staff (McLean, Cilliers, & Van Wky, 2008). Adaptation of materials for clinic teachers from other disciplines (e.g., Lake, 2004; Percy et al., 2008) is not sufficient to address many of the core learning and teaching experiences of dental UGs. Specifically, the local context of learners and clinical teachers is a critical issue in the design of faculty development (O'Sullivan & Irby, 2011; Steinert et al., 2006). Therefore, available materials need to be adapted to the local discipline and context and new materials developed that specifically address the assessment of complex clinic treatment provided by our dental UGs. This specificity of context relates to the complexity of psychomotor skills and irreversible treatment performed by dental UGs and time

constraints in these settings. This paper describes the clinical teacher programme that we developed for our PG-clinical teachers and the initial evaluation of their experiences. Our PGs work as clinical teachers across all years of our five-year UG dental programme, usually acting as a clinical teacher for one or two sessions weekly for up to 17 weeks each semester.

Context

Clinical Assessment Processes

Our part-time teachers are introduced to their clinical teacher roles in an induction session and a meeting with their course/subject co-ordinator. However, as in other institutions (Chalmers et al, 2003a; Percy et al., 2008, p12), these activities are focused on policy. The small group meetings with course co-ordinators reviewed specific issues such as current clinic techniques and a brief introduction to core assessment resources, e.g., Assessment Handbook and UG Clinical Assessment Criteria and Standards booklet which includes descriptive criteria and standards across all UG year levels for all clinical disciplines in dentistry.

Our current approach to clinical assessment at the Adelaide School of Dentistry has been informed by good practice for providing feedback and assessing students' performance (Biggs, 2003; O'Donovan, Price, & Rust, 2004; Ramsden, 2003). Specifically, clinical assessment involves continuous assessment over the semester/year (1-5 sessions weekly, depending on year level) and is based on observation and judgement by clinical teachers using our UG Clinical Assessment Criteria and Standards booklet. Clinical teacher feedback at the end of each clinic session, using these criteria is complemented with students' monitoring their own performance (Wetherell, Mullins & Hirsch, 1999). To support these processes for assessment of clinic performance, standardised feedback forms have been developed (Wetherell et al., 1999). These forms list the key UG clinical assessment criteria, namely, knowledge, skills, patient management, and professional behaviour as well as providing space for comments by UGs and clinical teachers regarding the UG's strengths, areas for improvement and summary of strategies to be implemented

to address the areas needing improvement. Following analysis of the UG's performance based on the data collected on the assessment forms from each clinic session for the semester/year, written summative feedback and a grade are derived by clinical teachers using the standards provided in the UG Clinical Assessment Criteria and Standards booklet.

PG-Clinical Teacher Needs Analysis

Following implementation of our clinical assessment processes, various issues have been identified. For example, UGs complained about unfair clinical assessments (Winning et al., 2005). They particularly perceived that clinical teachers, including PGs, were inconsistent in their application of our clinical assessment criteria and standards. This perception, supported by clinic coordinators' review of assessment processes, undermines UGs ability to learn from their self- and clinical teacher-assessments. Our PGs development needs were identified by UGs comments in standardised evaluations of clinical teaching, course co-ordinator discussions with PG-clinical teachers and review of their clinic assessment forms, and from a survey of clinical teacher needs where PG-clinical teachers requested help in using the assessment criteria and standards and providing feedback (Lekkas, 2003, unpublished data).

Issues related to the application of criteria and standards are not peculiar to clinic assessment nor our School (Winning et al., 2005). Similar issues have been noted in another study of assessment values and practices of clinical staff in UK dental schools (Manogue et al., 2001), in studies of the implementation of an assessment grid across a business school (Price & Rust, 1999; Rust, Price, & O'Donovan, 2003) and in medical education (Williams, Klamen, & McGaghie, 2003). Consistent with these reports (Holmboe, Hawkins, & Huot, 2004; Price & Rust, 1999; Rust et al., 2003) it was clear that mere access to the criteria/standards was insufficient for clinical teachers (and UGs) to use them consistently.

Frameworks for designing learning activities

There are a range of models and recommendations for supporting teachers in their role as clinical teachers (reviewed by Mclean et al., 2008; O'Sullivan & Irby, 2011; Steinert et al., 2006). Experiential theories of learning, namely learning by participating in actual experience with subsequent reflection, development of concepts and related models followed by application of these models in new situations (Kolb, 1984) have informed the design of faculty development activities (Steinert et al., 2006). Studies using these approaches have demonstrated changes in teaching behaviours of clinical teachers (Holmboe et al., 2004; Steinert et al., 2006). Another useful framework, from a non-clinical setting, for defining content related to assessing performance, includes activities focussed on training in 'performance dimension', 'frame of reference' and 'behavioural observation' (Woehr & Huffcutt, 1994, p190-192). These approaches have been shown to be effective in improving rating and observational accuracy (Holmboe et al., 2004; Woehr & Huffcutt, 1994). In summary, these approaches involve: training in recognising performance dimensions or criteria through either review or development of the core components of performance (i.e., performance dimension training), training in understanding both the criteria and standards of performance through practice at evaluating examples of performance that depict the range of criteria at different levels of performance followed by feedback (i.e., frame of reference training) and focussing on development of observation skills by practice at recording events from different examples of performance (i.e., behavioural observation training). Taken together, these frameworks involve similar approaches to training clinical teachers as the social constructivist assessment approach for both students and staff described by Rust, O'Donovan, and Price (2005). Specifically this involves developing a shared understanding of clinical assessment criteria and standards through opportunities to discuss the scope of the criteria and standards and practice using the criteria in the observation of UGs.

Programme Format and Content

The programme was delivered over one semester, commencing with a one-day workshop followed by weekly clinical teaching by PGs, two further text-based activities provided online and two mentor meetings (Table 1). The literature discussed above informed the

design of the various learning activities (Mclean et al., 2008; Rust et al., 2005; Rust et al., 2003; Steinert et al., 2006; Woehr & Huffcutt, 1994).

Table 1.   Outline of semester programme for PG-clinical teachers.

Week	Activity
0	Workshop (see Appendix 1)
2	Commenced clinical teaching, one or two sessions/week for up to 17 weeks
7	Completed discussion board activity focussed on identifying an issue from their current clinical teaching experience, indicating how they had responded to the situation, followed by reflection on what they might do differently next time; feedback provided in mentor meeting.
8	Mentor meeting* focussed on identifying and reviewing ways to manage situations that arose during the initial seven weeks of semester.
12	Constructed an end of semester written feedback and summative grade based on a series of simulated weekly formative assessment forms; written feedback provided by mentor.
14	Mentor meeting as above.

* Second co-author was mentor for PG-clinical teachers.

In the workshop, the activities required PG to play the role of clinical teachers by observing a range of videos of clinical situations and making independent judgements about the performance of UGs and clinical teachers (Appendix 1). As examples of performance from the clinic environment are complex and difficult to obtain and the use of standardised patients/students (Holmboe et al., 2004) was not feasible or sustainable in our context, we developed a series of video or text-based scenarios of UG/patient and UG/clinical teacher interactions. These common or difficult situations were derived from actual clinical teacher and UG experiences obtained from a focus group of UGs, PGs and staff. The clinical scenarios simulated the time pressures of clinic and were supplemented with examples of technical work. The final workshop consisted of six exercises that progressed from readily understood technical judgements to complex multifactorial management of clinic situations, e.g., managing a UG who demonstrated an unsatisfactory performance on several assessment criteria and then became aggressive during the formative assessment review. Based on the framework for learning how to use assessment criteria and standards, which included discussion and feedback (Holmboe et al., 2004; O'Donovan et

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al., 2004; Rust et el., 2003; Woehr & Huffcutt, 1994), PG-clinical teachers were required initially to make independent judgements on each exhibit or text/video scenario using worksheets that listed the UG clinical assessment criteria currently in use. For some exercises, PGs were also asked to make independent judgements of the clinical teacher performance demonstrated in the video, using a checklist of attributes derived from the literature (e.g., Harden and Crosby, 2000; Ladyshewsky, 1995). These activities were followed by discussion of their judgements with two to four other PG-clinical teachers, then collation of their ideas with the whole group. This collation step included discussion and provision of feedback from the facilitators and other PG-clinical teacher participants, followed by provision of further 'tips' and resource materials (e.g., guides for key clinical processes).

Evaluation of the programme

An explanation of the project and planned evaluation using an information sheet was presented one week prior to commencement of the workshop. Consent to use de-identified data from PG who participated in the programme was obtained at this time, using a standard consent form. Based on Kirkpatrick's model of educational outcomes (Belfield, Thomas, Bullock, Eynon, & Wall, 2001; Thackwray, 1997), the programme was evaluated by PG-clinical teachers' perceptions of their learning experiences and their learning. Specifically, how well the programme supported their learning and the acquistion of knowledge and skills about the UG clinical assessment criteria and clinical teacher roles were evaluated.

Perceptions of the workshop and programme learning activities

An anonymous survey with eight likert-scale response items addressed participants' perceptions of the workshop in terms of clarity of expectations, value of the learning activities, realism of the situations and whether they were clearly linked to core assessment issues, and whether they received adequate feedback in the workshop. Two open-ended questions regarding the best aspects and areas for improvements were also included. A focus group with PG-clinical teachers who participated in the programme was

held at the end of semester. Key aspects that were addressed included the usefulness of the online activities and mentor meetings, how well these activities supported them in their role as clinical teachers and what other support would have been valuable.

Learning Outcomes

PG-clinical teachers' learning outcomes were evaluated by pre- and post-workshop and programme video 'tests' (Holmboe et al., 2004; O'Sullivan & Irby, 2011; Steinert et al., 2006) using three videos that collectively depicted all UG clinical assessment criteria for UGs and the majority of clinical teacher attributes. These videos were: Video 1: '*Jippy*': first-year dental UG, Video 2: '*Jason*': first-year dental UG, and Video 3: '*Yola*': fourth-year dental UG. The pre- and post-tests required PG-clinical teachers to observe the performance of the UG or clinical teacher, identify the various UG clinical assessment criteria or clinical teacher attributes that were depicted in that situation, make a judgement about the standard of performance of the UG and/or clinical teacher and note the related behaviour demonstrated. This involved the PG-clinical teacher using a checklist of the key UG clinical assessment criteria or clinical teacher attributes, to independently identify the UG or clinical teacher behaviours and judge the behaviours as either positive or negative. Of the 15 PGs who participated in the workshop, 14 of them consented for their data to be analysed. For the semester length programme, six PGs consented for their data to be analysed.

To check that the UG clinical assessment criteria and clinical teacher attributes depicted in the videos were able to be identified in the three test-videos and to provide an 'expert' standard for identifying and classifying performances, three experienced-clinical teachers completed the same video tests as the PGs, ie assessing the videos three times over the same time frame. The PG- and experienced-clinical teachers' worksheets (Table 2) recording their identification and classification of UG clinical assessment criteria or clinical teacher attributes were scored by one co-author blind to the experience or timing of the test. Scores were assigned if the behaviour was identified and the level of performance was judged correctly, i.e., as positive or negative (1) and if the behaviour was noted and correctly classified under the appropriate core UG clinical assessment criterion or clinical teacher attribute (1). If the behaviour was identified and judged correctly, but only a tick was noted, with limited to no details of the example demonstrated, only a score of 1 was

assigned. Percent agreement with the UG clinical assessment criteria/clinical teacher attribute and level of performance depicted in the video was calculated.

Table 2.   Excerpt of checklist of undergraduate student (UG) assessment criteria used   by postgraduate (PG)-clinical teachers for recording UG behaviours presented in the workshop and test-videos.

UG clinical assessment criteria	+ve	-ve	Example
Knowledge (K)			
1 Knows and understands details of patient and procedure and has relevant background knowledge			
2 Understands and sets up operatory, materials, kit			
Skills (S)			
1 Performs clinical steps competently and efficiently	----	-----	--------------------------------------
2 Does not harm patient or put them at risk of harm			
3 Self assesses against criteria and identifies and implements specific remedial strategies			

Findings

Perceptions of the workshop and programme learning activities

The workshop was attended by all PGs who were potential clinical teachers (Table 3) and eight of these PGs participated in the semester length programme. The majority of the participants (n $\geq$ 15; > 88% or respondents) indicated that to a reasonable/great extent they were clear about what was expected of them, the exercises were valuable for understanding their role as clinical teachers, that the situations presented were realistic and addressed key assessment issues, and they received adequate feedback. Overall, all participants were satisfied, to a reasonable/great extent, with the quality of the workshop.

In terms of the best aspects of the workshop, it was evident that the videos were clearly valued by the majority, in terms of their realism and creating opportunities for discussion. They also valued the opportunities to discuss their understandings and judgements of performance based on realistic situations, and recognised this would facilitate consistent judgements of UG performance between clinical teachers. As a result they considered the workshop helped clarify their role as clinical teachers. However, 50% recommended that the workshop be split into two sessions on separate days as a lot of material was covered.

Table 3.   Summary of experience of postgraduate (PGs) participants in the workshop and programme.

Workshop Participants	n=15	Australian Graduate	International Graduate*
PGs: New	11	6**~	5
PGs: >1 semester experience	4	1#	3#

*	PGs whose undergraduate degree was from Malaysia, India, Thailand
**	Five Adelaide graduates from 1998-2003 (of whom one PG was from Malaysia), and one PG from Sydney
~	Four PGs participated in the semester length programme
#	All PGs (four) in these groups participated in the semester length programme

In terms of the PG-clinical teachers perceptions of the subsequent learning activities and mentor meetings, only four of the six consenting PGs participated. It was clear that they found the timing of the activities and mentor meetings useful and provided valuable opportunities for reflection and individual feedback on their experiences and how they might resolve problems that had arisen. For those who had been clinical teachers previously, they indicated the programme helped them keep useful records of UGs performances which in turn assisted them in managing UGs' behaviours better, particularly those who challenged their feedback. They considered the number of meetings and online activities were sufficient, considering their time constraints. They also experienced some issues with accessing online materials, which was managed by providing hard copies.

Learning Outcomes of the workshop

For each test-video, useable data was available from 13 PGs and three experienced-clinical teachers. For the experienced-clinical teachers, there was no consistent evidence of learning from repeated viewing, in terms of identification of behaviours depicted in the test-videos, (Table 4). It was clear, some experienced-clinical teachers achieved low scores for the same video at different times. Both PG- and experienced-clinical teachers accurately identified and classified more clinical teacher attributes than UG clinical assessment criteria (Fig 1 compared with Fig 2-4). The majority of PG-clinical teachers (85%) showed some improvement in identifying and classifying clinical teacher attributes after completing the workshop, though some gains were small (range of 3-24% improvement) (Fig 1). For the PG-clinical teachers who participated in the semester length program (PG1, PG2, PG5, PG6, PG7, PG11), all showed improvement in accuracy in identifying and classifying clinical teacher attributes after the workshop and all but one of them maintained or improved their post-workshop score on the end of semester post-test (Figure 1).

Table 4.   Percent accuracy for three experienced-clinical teachers at identifying and classifying undergraduate student clinical assessment criteria and clinical teacher attributes in videos over the same timeframe as the PGs workshop participants

| Video of clinical simulations	Experienced Clinical Teachers (n=3)	Time 1	Time 2	Time 3
Video 1 (Jippy):	1	74	-	68
clinical teacher	2	71	-	74
	3	21	-	58
Video 1 (Jippy):	1	56	53	65
student	2	41	29	38
	3	26	24	47
Video 3 (Yola):	1	33	23	-
student	2	33	27	-
	3	27	23	-

Time 1: beginning of day

Time 2: end of same day as time 1

Time 3: 14 weeks after time 1 (equivalent to semester length programme)

Figure 1.   Percent accuracy of PG-clinical teachers for identifying and classifying
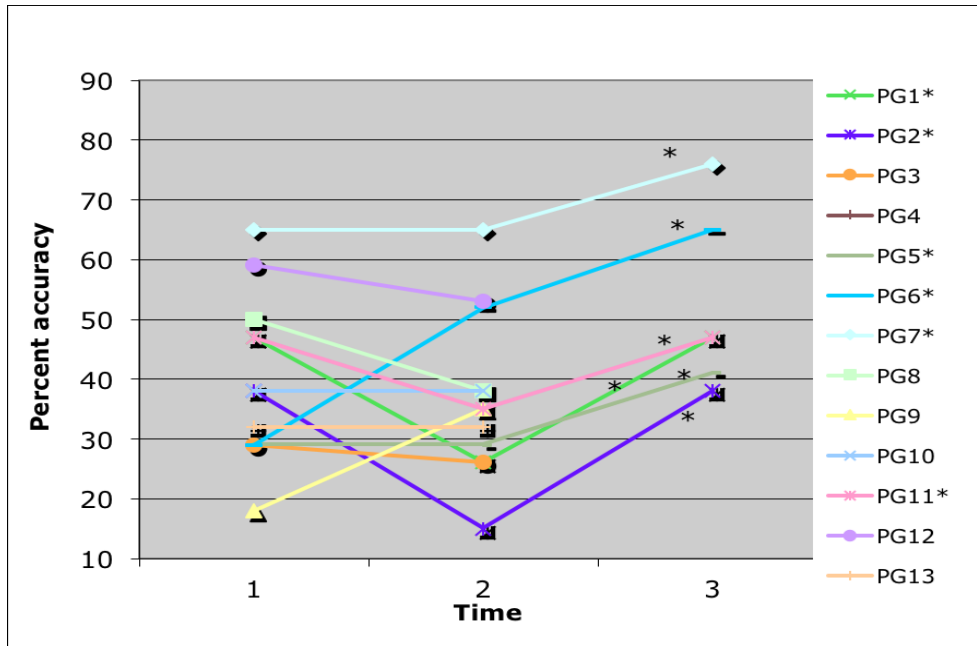
clinical teacher attributes for Video 1: "Jippy" before and after the
workshop and at the end of semester.
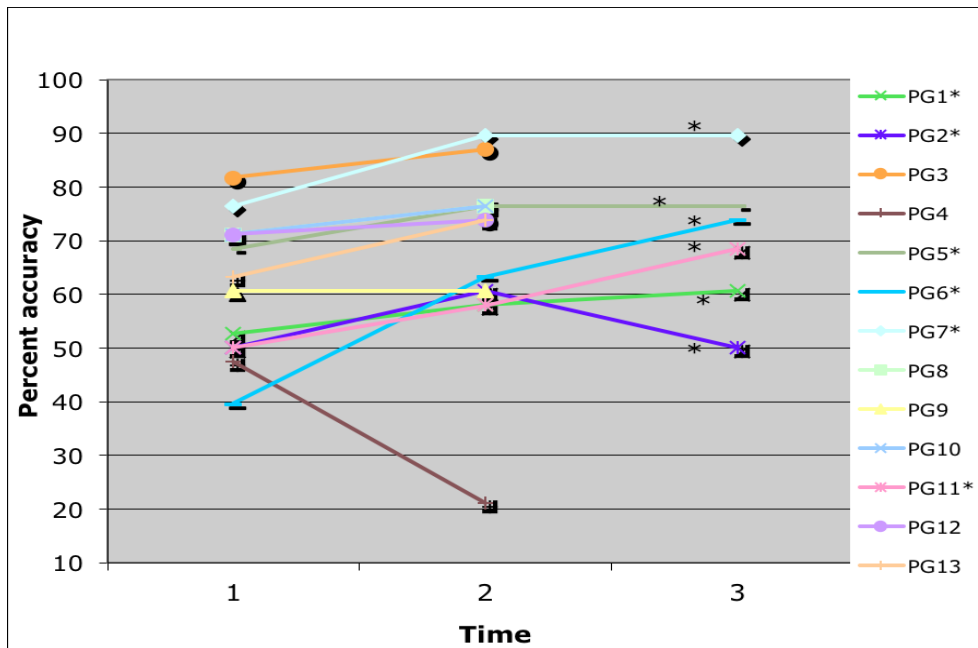
Time 1: beginning of workshop; Time 2: end of workshop; Time 3: end of semester: 14 weeks post-workshop. * PG-clinical
teachers who supervised UG clinic sessions for the semester. The median and range of percent accuracy for experienced-
clinical teachers was 69.5%% and 21-74% respectively (see Table 4).

Identification and classification of UG clinical assessment criteria was difficult for both PG-
and experienced-clinical teachers (refer Table 4 and Fig 2, 3 and 4). There was
considerable variation in the PG-clinical teachers accuracy of identification and
classification and noting of UG behaviours in the different videos (range: Video 1: '*Jippy*':
26-76%; Video 2: '*Jason*': 28-93%; and Video 3: '*Yola*': 20-50%). The accuracy of PGs'
scores was best for '*Jason*' and '*Jippy*' and worst for '*Yola*' (Figs 3 and 4). A similar
pattern of scores was achieved by the experienced clinical teachers (Table 4). This is
consistent with the increasing complexity of the clinical situation depicted in '*Yola*'.
Accuracy of scoring for the workshop post-test decreased on average across the PG-
clinical teachers for the different videos. There was no consistent trend in accuracy for the
different PG-clinical teachers across the different times or videos.

Figure 2.   Percent accuracy of PG-clinical teachers for identifying and classifying
UG-student performance for Video 1: 'Jippy' before and after the
workshop and at the end of semester.

Time 1: beginning of workshop; Time 2: end of workshop; Time 3: end of semester, 14 weeks post-workshop. * PG-clinical teachers who supervised UG clinic sessions for the semester. The median and range of percent accuracy for experienced-clinical teachers was 41% and 24-65% respectively (see Table 4).
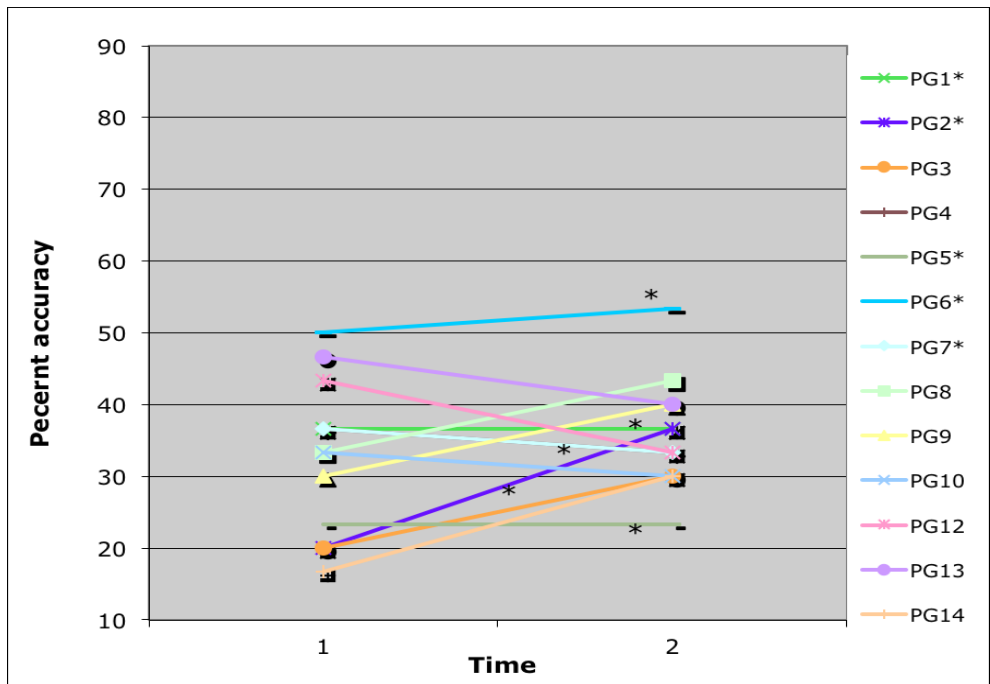
Figure 3. Percent accuracy of PG-clinical teachers for identifying and classifying UG-student performance for Video 2: '*Jason*' before and after the workshop.
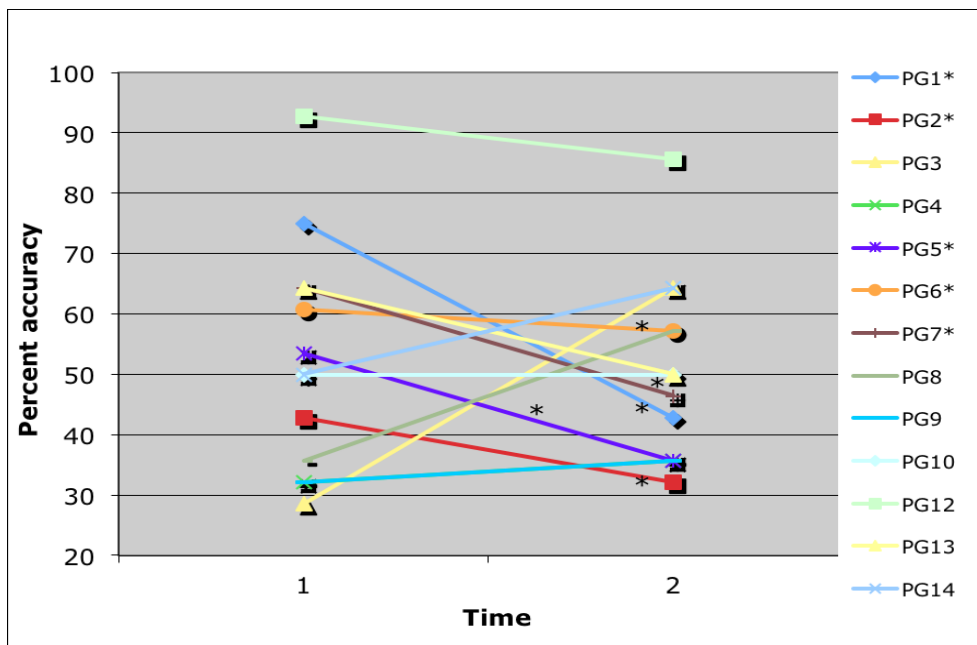
Time 1: beginning of workshop; Time 2: end of workshop. *PG-clinical teachers who supervised UG clinic sessions for the semester. The video '*Jason*' was not assessed by the experienced-clinical teachers, therefore no comparison was available.

Figure 4.   Percent accuracy of PG-clinical teachers for identifying and classifying UG-student performance for Video 3: '*Yola*' before and after the workshop.

Time 1: beginning of workshop; Time 2: end of workshop. * PG-clinical teachers who supervised UG clinic sessions for the semester. The median and range of percent accuracy for experienced-clinical teachers was 27% and 23-33% respectively (see Table 4).

Some of the PG-clinical teachers who supervised UGs clinic sessions for the semester performed better at identifying and classifying UG clinical assessment criteria in the post-test after participating in clinical teaching for one semester (14 weeks) (refer Fig 2: PG5, PG6, PG7). However, there was no improvement in the end of the semester post-test for the remaining PG-clinical teachers (PG 1, PG2, PG11) by comparison with their score in the pre-test, prior to the workshop.

Discussion

The PG-clinical teachers perceived the workshop and programme useful in supporting them in their role as clinical teachers, particularly in relation to their role in assessing UGs' clinical performance and providing feedback. This is consistent with reports of professional development activities for clinical teachers (Steinert et al., 2006). As the PG-clinical teachers were all studying full-time in intensive clinical specialty programmes, involving significant clinical and research commitments, they had significant time constraints. As a

result they were only available for one-day for the workshop activities. Despite their strong support for the workshop, it was clear that they preferred that the activities be broken up over at least two sessions. However, it is unlikely that all PGs would have been able to attend two sessions, considering their commitments. This is supported by the limited numbers of PG-clinical teachers who participated in all the subsequent online activities and mentor meetings, despite their ongoing clinical teaching commitments. PGs time constraints is a significant issue for providing ongoing support for all PGs in their teaching roles, particularly for PGs in professional programmes. This issue could be managed by either payment for attendance at these professional development activities (Percy et al., 2008), credit towards their continuing professional development requirements and/or formal recognition of this key aspect of their professional development by incorporating it into their programmes. However, while PGs clinic and research demands are given higher priority, it is unlikely this would improve participation, unless PGs were considering an academic career.

It was clear that PG- and experienced-clinical teachers found it difficult to identify and classify behaviours depicted in the test-videos, particularly those of UGs. It is possible that the activity to develop participants ability to recognise and note UGs performance based on the UG clinical assessment criteria, i.e., performance dimension training (Holmboe et al., 2004; Woehr & Huffcutt, 1994) was inadequate. It may be necessary for participants to define and develop criteria for UG performance (Holmboe et al., 2004) rather than review and discuss pre-developed criteria (Woehr & Huffcutt, 1994). The decision to only include review and discussion was made in light of the limited time available for the workshop. Similarly, the opportunities for developing participant observation skills may have been too short to achieve learning, particularly in terms of practice at identifying and classifying UG behaviours. For example, participants observed, noted and discussed three videos during the workshop, as well as the three test-videos though there was no discussion of these test-videos. However, only videos were used in the current study, the participants were not required to provide direct feedback to any UGs, and they did not observe colleagues completing observations and providing feedback (Holmboe et al., 2004). These latter aspects may have been critical in enabling reflection from different perspectives followed by discussion and experimentation with newly developed frameworks (Kolb, 1984) thereby reinforcing their learning related to the UG clinical assessment criteria and standards of

performance. There is some support for the need for more practice and reflection to assist in the identification and classification of UG behaviours as demonstrated by improved performances by some PG-clinical teachers who were clinical teachers for the semester. While it was neither feasible nor sustainable to use a series of live standardised patients and UGs completing clinical tasks in the workshop, this could be built into the programme whereby PG-clinical teachers observe colleagues teaching in clinic, i.e., observe others completing observations and providing feedback to UGs, followed by discussion and reflection with a mentor.

The variability in responses in assessing UG performance between videos and the apparent lack of transfer of learning following practice and discussion of the UG clinical assessment criteria, may relate to case specificity. Specifically, performance of a task on one case is not predictive of performance on a similar task in a different case (Newble, 2004; Swanson, Norman & Linn, 1995). As a result, greater practice with a broader range of clinical activities, with subsequent greater sampling would be needed. It is also feasible that PG-clinical teachers were too tired to 'perform' at the end of the workshop. This is supported by participant suggestions that the workshop be divided into two shorter workshops. Furthermore, all newly enrolled PGs were required to attend the workshop, therefore those PGs (n=7) who were not teaching in clinic may have considered the activities irrelevant (Gelula & Yudkowsky, 2003) and therefore, not engaged fully in the activities.

Consistent with other studies (Holmboe et al., 2004; Newble, Hoare, & Sheldrake, 1980), the process used for the assessment exercises was structured with standardised instructions and lists of clinical assessment criteria for UGs and clinical teacher attributes. While these lists are consistent with other clinical assessment processes (Norcini & Burch, 2007; Prescott-Clements, van der Vleuten, Schuwirth, Hurst, & Rennie, 2008), it is possible that the complete list of dimensions from the four core UG clinical assessment criteria and clinical teacher attributes was difficult to use. For example, 16 dimensions for UGs and 20 dimensions for clinical teachers were listed compared with 11 to 16 dimensions in similar assessment formats (Norcini & Burch, 2007; Prescott-Clements et al., 2008). So even though not all of the dimensions were depicted in each video, there may have been too many dimensions for PG- and experienced-clinical teachers to observe and accurately note the examples, without more practice.

Other limitations to this study were that only a small sample of PG-clinical teachers participated, precluding use of statistical analyses. We only used three experienced-clinical teachers to assess videos to provide a 'gold' standard. The variation in the responses by these experienced-clinical teachers made interpretation of the learning effect of repeated viewings of the test-videos difficult to assess. From the data obtained, we also do not know if learning from these activities transfers to improved clinical teaching and assessment in the clinic (Steinert et al., 2006). To evaluate this, we need further evaluation data, e.g., UG evaluations of clinical teachers and observation of teachers in clinic.

Implications for practice

With respect to PG-clinical teacher training, these results indicate a number of changes to the workshop should be implemented. These changes include: breaking up the workshop over a few weeks/months with more reflective activities (Gelula & Yudkowsky, 2003; Steinert et al., 2006); using more explicit discussion of the meaning of the UG clinical assessment criteria and standards (Holmboe et al., 2004; Rust et al., 2003), and/or involving participants in defining the UG clinical assessment criteria and standards (Holmboe et al., 2004); analysis of a larger range of UG clinical situations in the workshop, through observation of colleagues in clinic (Holmboe et al., 2004) plus the requirement for giving feedback to UGs with review of reasons for ratings (Holmboe et al., 2004); and supplement the workshop activities with experience of teaching in clinic.

Implications for practice in terms of evaluation of clinical teacher training programs include the need to review the standards for the tests. Specifically, the 'gold' standard we had used for assessing the UGs and clinical teacher performances as depicted in the test-videos may not be achievable, i.e., correctly identifying and classifying the subset of the dimensions portrayed in the videos. We need to identify the 'critical' aspects for UGs and clinical teacher performances in each video using an expert-clinical teacher panel to develop a consensus view. We would then need to derive an average of experienced-clinical teacher assessments, e.g., 8-10 clinical teachers from different year levels to set a

minimum standard for the different videos (Swanson, et al., 1995). In selecting experienced-clinical teachers for deriving minimum standards for the tests, we would need to select experienced-clinical teachers who have been shown to be consistent for identifying standards (Newble, et al., 1980). The other implication of these results is that these videos may be useful as tools for needs analyses for PG- and other part-time clinical teachers, to enable us to tailor our training specific to the needs of different groups of clinical teachers.

There are also implications of these findings on how we complete our clinical assessment of UGs in Adelaide. We need to implement more structured approaches than our current practice, e.g., the Mini-Clinical Evaluation Exercise or Longitudinal Evaluation of Performance, Direct Observation of Procedural Skills and Multi-Source Feedback using the Mini-Peer Assessment Tool (Norcini & Burch, 2007; Prescott-Clements et al., 2008). However, while these approaches may address aspects related to the accuracy of our clinical teacher assessments, we still need to provide training for our clinical teachers in these approaches.

Conclusions

PG-clinical teachers' perceptions of the workshop and programme were positive in supporting them in their role as clinical teachers. This was consistent with evidence of learning related to identification and classification of attributes for clinical teacher performance in the test-videos. However, PG-clinical teachers identification and classification of UG clinical assessment criteria presented in the test-videos was limited. Participation in the workshop/programme activities did not consistently improve PG-clinical teachers' assessment of UG performance in the test-videos. Opportunities for more practice, discussion and reflection are suggested for effective training of PGs for their role as clinical teachers. Review of our approach for identifying and classifying UG performance is also needed.

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Supporting postgraduate students in their role as clinical teachers:
A pilot study.   *SEDA/PESTLHE Special Edition:*
                                                                   Supporting GTA's Who Teach

References

Anderson, V. (2007). Contingent and marginalised? Academic development and part-time teachers. *International Journal for Academic Development*, 12(2), 111-121.

Australian Dental Council. (2010). *Professional attributes and competencies of the newly qualified dentist*. Australia. Retrieved August 2013 from http://www.adc.org.au/index.php?id=14

BLASST. (n.d.) *The sessional staff standards framework*. Retrieved August 2013 from http://blasst.edu.au/framework.html

Belfield, C., Thomas, H., Bullock, A., Eynon, R., & Wall, D. (2001). Measuring effectiveness for best evidence medical education: a discussion. *Medical Teacher*, 23(2), 164–170.

Biggs, J. (2003). *Teaching for quality learning at university*. Buckingham, UK: SRHE and Open University Press.

Bowen, J.L., & Irby, D.M. (2002). Assessing quality and costs of education in the ambulatory setting: a review of the literature. *Academic Medicine*, 77(7), 621-80.

Bryson, C. (2006). *Supporting and developing higher education part-time teachers (PTT): Programme of commissioned research: Report 2: Recent and current major initiatives on supporting and developing PTT*. Retrieved August 2013 from http://www.heacademy.ac.uk/resources/detail/recent_and_current_major_initiatives

Chalmers, D., Herbert, D., Hannam, R., Smeal, G., & Whelan, K. (2003a). *Training, support and management of sessional teaching staff: A review of literature*. Australian Universities Teaching Committee. Retrieved August 2013 from research.uow.edu.au/class/pdf/AUTC_SS_Lit_Review.pdf

Chalmers, D., Herbert, D., Hannam, R., Smeal, G., & Whelan, K. (2003b). *Training, support and management of sessional teaching staff: Final report.* Australian Universities Teaching Committee. Retrieved August 2013 from http://www.olt.gov.au/resources?text=sessional staff

Commission on Dental Accreditation. (2010). *Accreditation standards for dental education programs.* American Dental Association. Retrieved August 2013 from http://www.ada.org/316.aspx

Cowpe, J., Plasschaert, A., Harzer, W., Vinkka-Puhakka, H., & Walmsley, A.D. (2010). Profile and competences for the graduating European dentist - update 2009. *European Journal of Dental Education.* 14, 193-202.

Dental Board of Australia. (n.d.) *Code of conduct for registered health practitioners.* Retrieved August 2013 from http://www.dentalboard.gov.au/Codes-Guidelines/Policies-Codes-Guidelines.aspx

Gelula, M.H., & Yudkowsky, R. (2003). Using standardised students in faculty development workshops to improve clinical teaching skills. *Medical Education,* 37, 621-629.

Griffith III, C.H., Wilson, J.F., Haist, S.A., & Ramsbottom-Lucier M. (1998). Do students who work with better housestaff in their medicine clerkships learn more? *Academic Medicine,* 73(10), S57-59.

Haden, N.K., Weaver, R.G., & Valachovic, R.W. (2002). Meeting the demand for future dental school faculty: trends, challenges, and responses. *Journal of Dental Education,* 66(9), 1102-1113.

Harden RM and Crosby J 2000 AMEE Guide No 20: The good teacher is more than a lecturer: the twelve roles of the teacher. *Medical Teacher 22(4) 334-347.*

Health Workforce Australia. (2013). *National clinical supervision competency resource. Validation edition - May 2013.* Retrieved August 2013 from http://www.hwa.gov.au/work-programs/clinical-training-reform/clinical-supervision-support-program/competency-resource

Heo, S-M., Kim, K.J., Kawamura, M., & Komabayashi, T. (2004). Comparison of the dental education systems in Korea and Japan. *International Dental Journal,* 54, 70-72.

Holmboe, E.S., Hawkins, R.E., & Huot, S.J. (2004). Effects of training in direct observation of medical residents' clinical competence. A randomised trial. *American College of Physicians,* 140, 874-881.

Kimber, M. (2003). The 'tenured' core and the tenous periphery: the casualisation of academic work in Australian universities. *Journal of Higher Education Policy and Management,* 25(1), 45-50.

Kolb, D.A. (1984). *Experiential learning: experience as the source of learning and development.* Englewood Cliffs, NJ: Prentice Hall. Retrieved August 2013 from http://www.learningfromexperience.com/images/uploads/process-of-experiential-learning.pdf

Komabayashi, T., Raghuraman, K., Raghuraman, R., Toda, S., Kawamura, M., Levine, S.M., et al. (2005). Dental education in India and Japan: implications for U.S. dental programs for foreign-trained dentists. *Journal of Dental Education.* 69(4), 461-469.

Ladyshewsky, R. (1995). *Clinical teaching.* Campbelltown, HERSDA.

Lake, F.R. (2004). Teaching on the run tips: doctors as teachers. *Medical Journal of Australia*. 180, 415-416.

Manogue, M., Brown, G., & Foster, H. (2001). Clinical assessment of dental students: values and practices of teachers in restorative dentistry. *Medical Education,* 35, 364-370.

May, R., Strachan, G., Broadbent, K., & Peetz, D. (2011). The casual approach to university teaching; time for a re-think? In: K. Krause, M. Buckridge, C. Grimmer, & S. Purbrick-Illek (Eds), *Research and Development in Higher Education: Reshaping Higher Education: Proceedings from the 34th HERDSA Annual International 2011 Conference* (pp.188-197). Milperra: HERDSA.

McLean, M., Cilliers, F., & Van Wky, J.M. (2008). Faculty development: yesterday, today and tomorrow. *Medical Teacher,* 30, 555-584.

Newble, D. (2004). Techniques for measuring clinical competence: objective structured clinical examinations. *Medical Education,* 38, 199-203.

Newble, D.I., Hoare, J., & Sheldrake, P.F. (1980). The selection and training of examiners for clinical examinations. *Medical Education,* 14, 345-349.

Norcini, J., & Burch, V. (2007). Workplace-based assessment as an educational tool: AMEE Guide No. 31. *Medical Teacher, 29*, 855-871.

O'Donovan, B., Price, M., & Rust, C. (2004). Know what I mean? Enhancing student understanding of assessment standards and criteria. *Teaching in Higher Education,* 9(3), 325-335.

O'Sullivan, P.S., & Irby, D.M. (2011). Reframing research on faculty development. *Academic Medicine,* 86(4), 421-428.

Percy, A., Scoufis, M., Parry, S., Goody, A., Hicks, M., Macdonald, I., et al. (2008). *The RED Report, Recognition – Enhancement – Development: The contribution of sessional teachers to higher education.* Sydney: Australian Learning and Teaching Council. Retrieved August 2013 from http://www.olt.gov.au/resources?text=sessional teaching

Prescott-Clements, L.E., van der Vleuten, C.P.M., Schuwirth, L.W.T., Hurst, Y., & Rennie, J.S. (2008). Evidence of validity within workplace assessment: the Longitudinal Evaluation of Performance (LEP). *Medical Education*, 42, 488-495.

Price, M., & Rust, C. (1999). The experience of introducing a common criteria assessment grid across an academic department. *Quality in Higher Education,* 5(2), 133-144.

Ramsden, P. (2003). Assessing for understanding. In: *Learning to teach in higher education* (2nd ed., pp. 176-206). London: Routledge Farmer.

Redwood, C., Winning, T., Lekkas, D., & Townsend, G. (2010). Improving clinical assessment: Evaluating students' ability to identify and apply clinical criteria. *European Journal of Dental Education.* 14(3),136-144.

Rust, C., O'Donovan, B., & Price, M. (2005). A social constructivist assessment process model: how the research literature shows us this could be best practice. *Assessment & Evaluation in Higher Education,* 30(3), 231-240.

Rust, C., Price, M., & O'Donovan, B. (2003). Improving students' learning by developing their understanding of assessment criteria and processes. *Assessment & Evaluation in Higher Education,* 28, 147-164.

Steinert, Y., Mann, K., Centeno, A., Dolmans, D., Spencer, J., Gelula, M., et al. (2006). A systematic review of faculty development initiatives designed to improve teaching effectiveness in medical education: BEME Guide No. 8. *Medical Teacher,* 28(6), 497-526.

Stern, D.T., Williams, B.C., Gill, A., Gruppen, L.D., Woolliscroft, J.O., & Grum, C.M. (2000). Is there a relationship between attending physicians' and residents' teaching skills and students' examination scores? *Academic Medicine,* 75(11), 1144-1146.

Swanson, D.B., Norman, G.R., & Linn, R.L. (1995). Performance-based assessment: Lessons from the health professions. *Educational Researcher,* 24(5), 5-11, 35.

Tedesco, L.A. (1995). Issues in dental curriculum development and change. *Journal of Dental Education,* 59(1), 97-147.

Tedesco, L., Martin, M., Banday, N., Clarke, M., DeCamplain, R., Fazekas, A., et al. (2002). Scholarship and the university. *European Journal of Dental Education,* 6(Suppl 3), 86-96.
Thackwary, B. (1997). Kirkpatrick…. In: *Effective evaluation of training and development in higher education* (pp17-23). London: Kogan Page.

Townsend, G.C., Winning, T.A., Wetherell, J.D., & Mullins, G.A. (1997). New PBL dental curriculum at The University of Adelaide. *Journal of Dental Education,* 61(4), 374-387.

Wetherell, J., Mullins, G., & Hirsch, R. (1999). Self-assessment in a problem-based learning curriculum in dentistry. *European Journal of Dental Education,* 3, 97-105.

Williams, R.G., Klamen, D.A., & McGaghie, W.C. (2003). Cognitive, social and environmental sources of bias in clinical performance ratings. *Teaching and Learning in Medicine.* 15(4), 270-292.

Winning, T.A., Lim, E., & Townsend, G. (2005). Student experiences of assessment in two problem-based dental curricula: Adelaide and Dublin. *Assessment & Evaluation in Higher Education,* 30(5), 487-503.

Woehr, D.J., & Huffcutt, A.I. (1994). Rater training for performance appraisal: a quantitative review. *Journal of Occupational and Organizational Psychology,* 67, 189-205.

Appendix 1.

Outline of the content of the one-day workshop*.

Activity	Processes	Timing
Review of Workshop Aim and Objectives	Review of table that linked overall aim to workshop objectives and related outcomes achieved following completion of the workshop, aligned with planned learning activities and evaluation.	10 min
Review of Problem-based Learning (PBL) and Assessment	Review of handout summarising What is PBL?, How PBL relates to clinic? & Why adopt PBL?; small group discussion (3-4 PGs) re previous assessment experience, feedback re purposes and characteristics of effective assessment.	20 min
Exercise 1: *Applying Criteria and Standards: Simple Restorative Procedures*	Small group discussion & recording of written feedback and grades for examples of tooth preparations (2) & restorations (2); class review of responses with feedback using handout of satisfactory and unsatisfactory aspects of examples, reference to relevant resources provided.	40 min
Exercise 2: *Consistency and Fairness of Assessment & Applying All Criteria: 'Rachel and Anthony, 2nd y dental students'*	Observation of videos (2), individually make notes using criteria checklist re clinical teacher's or UG's performance for first video; for second video, swap focus and monitor other person (clinical teacher of UG) in video; review of class response of evaluations of UG and clinical teacher in each video; feedback by review of handout with summary of behaviours and standards demonstrated by UG and clinical teacher in each video; analysis of examples of UG and clinical teacher feedback and practice at writing own feedback for UG in each video; review of class examples and feedback, reference to relevant resources provided.	45 min
Exercise 3: *Applying Criteria: Recording and Reporting*	Review of examples of patient records from UG clinic, individual recording of feedback to UG regarding amendments needed; review of class response and feedback re accuracy of records and reference to relevant resources provided.	25 min
Exercise 4a: *Addressing All Criteria and Standards; Respect for Patients; Dealing with Aggressive Students: 'Robert,*	Observation of video, individually make notes using criteria checklist of UG's and clinical teacher's performance; review of class response of evaluations of UG and clinical teacher; feedback by review of handout with summary of behaviours and standards demonstrated by UG and clinical teacher, reference to relevant resources provided.	35 min

4th y dental student'		
Exercise 4b: *Providing Effective Written Feedback (for 'Robert')*	Record own comments as clinical teacher for 'Robert' using standard clinic feedback form that has Robert's notes re his performance; small group discussion of examples of completed clinic feedback forms demonstrating examples of good to inadequate quality written feedback from clinical teachers; class review of features of quality written feedback; feedback using handout of relevant resources.	40 min
Exercise 5: *Time Management*	Small group analysis of sequence of critical incidents that arise over the course of a clinic session; class review and feedback on groups' decisions made as each incident arises; review of methods to prevent incidents using handout of relevant resources.	45 min
Question & Answer; Review of Workshop	Group questions and discussion re issues raised; summary of key areas addressed; reminder re sources of support and resources available.	10 min

* The workshop was facilitated by the authors who were subject coordinators and/or experienced clinical teachers.