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See One, Do One, Teach One?

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INTRODUCTION

Physicians, even those in non-academic roles, are involved daily in teaching, be it imparting knowledge and skills to junior physicians, teaching non-physician colleagues or in counselling patients and their families. Teaching is entrenched in being a doctor, after all the word doctor is derived from the Latin word docere which means to teach.[1] Anaesthesia is no exception to this, with education being a major component of domain 11 of the Fellowship of the College of Anaesthetists of South Africa curriculum (FCA).[2]

"See one, do one, teach one," is a phrase that resonates throughout the various fields of medicine. This phrase implies that the knowledge and skills one acquires in their training is sufficient to make them an effective teacher, and for many years this approach has been accepted as the standard.[3] This approach is not without drawbacks; a qualitative study by Irby[4] evaluated professors in medicine (none of whom had training in medical education) and found that on average it took 5 to 7 years to develop a comfortable teaching style, needless to say that this is a slow process.[4] Clinical teaching (particularly at a post-graduate level) occurs at the same time a clinical work delivery, teaching in this setting is challenging as teaching and patient care must run concurrently.[5] This is particularly evident in the operating theatre where the anaesthesiologist has to manage the patient, equipment and surgeon interaction, this becomes especially difficult when there are staff shortages and one anaesthesiologist must oversee many juniors [6] Due to these pressures teaching and learning usually become secondary activities and learning opportunities often go a miss. Lastly the landscape of medical curricula is constantly evolving[3], as such teachers should evolve with it. See one, do one, teach one; is not the best we can do.

In the pursuit of excellence in anaesthesia, faculty development in education is paramount. We should expose educators to innovative teaching methods, through programs designed to improve their capabilities as educators.[3] Clinician educators have limited (if any) training in medical education, psychology and methodology.[7] The nature of adult education, is such that most of the learning is self-directed and learners pursue studies and topics that are of interest to them, as a result many educators can get away with poor teaching practices.[8]

Multiple medical education programs exist worldwide, varying from short courses and workshops to master's degrees and doctorates. These are aimed at improving the quality of medical education and empowering educators to excel in teaching and training. Which is necessary as several studies have shown that in self-evaluation, clinician educators tend to rate themselves higher than the students they teach.[9-12]

An international survey of medical educators found that the top 3 challenges they faced were; lack of recognition of involvement in education as compared to clinical work, lack of funding for medical education and lack of faculty development in medical education.[13]

THE GOOD TEACHER

Mastering anaesthesia requires expertise in three main learning areas: cognitive, psychomotor and non-technical skills,[14] the 'good' teacher must lead their student into achieving these competencies.

Cleave-Hogg and Benedict[15] performed a qualitative study to identify characteristics of "Good" anaesthesia teachers, by interviewing academic faculty who had been identified as good through student ratings. The teachers identified six characteristics necessary for good teaching, namely:

- Identify the resident's basic level of knowledge
- Help the resident develop an operating room action/organization plan
- Start with current medical case and review the resident's organizational plan
- Challenge the resident to be prepared for the unexpected
- Direct the resident to reflect on organization and implementation of a plan
- Provide immediate and honest feedback in a constructive manner[15]

Despite recognising the importance of feedback, the teachers in the Cleave-Hogg study admitted that providing feedback was one of the areas which they found most challenging, these sentiments are also echoed by participants in a South African study by Naicker et al.[15,16]

A more recent study at Stanford University evaluated anaesthesia residents' perspective on what makes a good anaesthesia teacher in the operating room,[5] the following are the 13 top ranking characteristics identified by the residents in this study:

- **Autonomy** – step back and let resident work through
- **Reasoning** – explain why attending does things
- **Context** – teach something relevant to the case
- **Commitment** –take time to teach
- **Literature** – bring relevant papers
- **Prior knowledge** – assess the baseline level
- **Flexibility** – be open to trying different approaches
- Focus on just a few learning points
- **Reflection** – ask resident questions
- **Provide real** - time feedback
- **Teach back** – ask residents to explain what they were taught in their own words
- **Belonging** – facilitate communication with the operating room team
- **Psychological safety** – be open and approachable
- **Equanimity** – stay calm and collected
- Select proper timing for instruction when the resident is not occupied with patient care
- **Visualization** – use graphs or diagrams
- Specify learning goals ahead of time[5]

Whilst the study done at Stanford University identified more characteristics of a good teacher, there is significant overlap between the two groups. Yet again provision of feedback is highlighted as an important characteristic, this is an area which requires particular attention especially as the FCA curriculum moves towards Work-based Assessments.

To produce excellent teachers a concerted effort in training and educating teachers needs to be made.

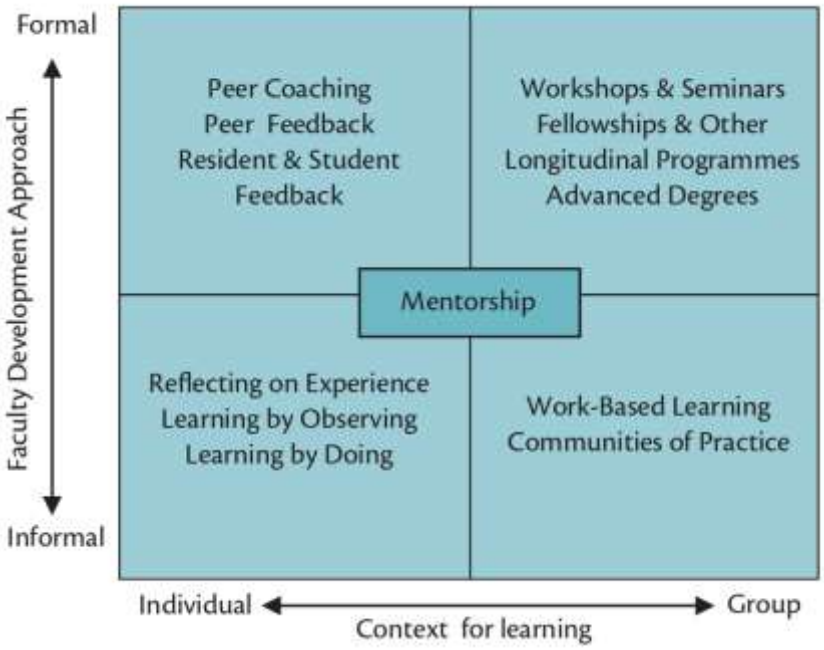
FACULTY DEVELOPMENT

Faculty development refers to measures and activities used by institutions to develop and grow teachers in their various roles. In response to the increasing complexity of medical education there has been an increase in the number of faculty development programs. Literature has shown positive change in the behaviour, knowledge, skills and attitudes of faculty members who participate in faculty development programs.[17]

Faculty development programs can improve teaching efficacy through gains in knowledge and skills about teaching and learning, curriculum design and delivery, learning, assessments and evaluations, leadership, administrations, and research. These can be targeted at the individual or groups, and they can be used as an instrument to bring about institutional change.[18] Importantly faculty development is not a once off attendance to a workshop or seminar but is an ongoing process to improve ones' effectiveness as a clinical teacher.

There are a wide range of faculty development options which can be tailored towards the individual based or groups based on their needs and institutional goals. Figure 1. Depicts a schematic on various methods of development for groups and individuals, both formal and informal. Some of these methods will be detailed below.

***Figure 1**: Faculty Development Methods*



Kieran (2013)[18]

Learning from Experience

Also referred to as 'learning on the job' this form of learning is vital to self-renewal and improvement, it is often not categorised as a form of faculty development. [18]This is how most clinicians learn to teach. This form of learning can further be divided into, learning by doing, learning by observation, and learning by reflection. This method although critical for individual growth, is challenging to promote on at an institutional level as if can be difficult to show that learning has occurred, some ways around this are logging of teaching encounters, narrative teaching portfolios and critical incident monitoring and reflection. Furthermore, teachers' personal experience can identify challenges and areas of future development.

Peer-to-Peer Learning

The form of learning is characterised by the teacher receiving feedback on their teaching from colleagues or those they are teaching. Naicker et al.[16] showed that although anaesthesiology trainers rated their knowledge, attitudes and practices of feedback highly, this was in contrary to current feedback practices and challenges noted. Furthermore, this study found that half the trainers had difficulty giving negative feedback.[16] So whilst peer-to-peer learning is an attractive option the feedback culture in our setting needs to improve to enhance this form of learning.

Learning from Structured Activities

These are the most common activities, these consist of seminars, workshops, courses, fellowships and advanced degrees and diplomas. Workshops and seminars are typically used to equip teachers with new skills in preparation of changes in curricula or changes in the teaching and learning environment. These activities promote learning via various methods (lectures, group discussions exercises and so forth).[18]
The need for medical pedagogical standards and professionalisation of medical education, has led to the increasing popularity of advanced degrees and certificates in medical education. The programs provide foundations for educational and teaching theory and practice and equip clinicians for research in medical education. Importantly they develop leaders in medical education who may go in to influence change and development at an institutional level.[18]

Mentorship

Teachers have frequently cited mentorship as one of the most important ways in which to become a better teacher, mentors provide guidance, support, direction, and expertise. They have an understanding of the organisational culture and can impart this knowledge to those they mentor and often have established networks which then can introduce their mentees to.[18]

Work-based Learning

Most of clinical teaching happens in the workplace it therefore makes sense that learning about teaching should also take place in the workplace. Historically faculty development activities take place in away from the workplace, and they onus is on the clinicians to take what have learnt and apply it in the context within which they operate. Learning is enhanced when it occurs in the workplace, teachers can refine their techniques.[18]

FACULTY DEVELOPMENT PROGRAMS

There a numerous courses aimed at teaching the teacher, in deciding what course to partake in it is important to understand exactly what the course has to offer and objectives or competencies you are trying to achieve.[19] Questions in Box 1 may assist one in determining what course is right for them. Box 2 lists various activities that can help develops certain teaching competencies.

Box 1 Question to Ask Oneself

1. What do I want to be able to do differently?
2. What knowledge do I want to gain? (eg. Teaching techniques & methods, learning processes.)
3. Do I need development in specific areas? (eg. Producing a lecture, teaching in a group setting)
4. Do I need to learn to give and receive

Adapted from Millard (2000)[19]

BOX 2 Faculty Development Activities

- Completing courses or formal qualifications on teaching and education
- Attendance at sessions on aspects of teaching, such as lecturing, running tutorials
- Having one's own teaching observed and commented upon
- Observing others teaching (learning by example)
- Reflecting on one's own teaching
- Studying student feedback to identify what students report as being helpful and unhelpful to their learning
- Mentoring of a new teacher by an experienced colleague

Adapted from Millard (2000)[19]

Many international and South African universities offer courses aimed at health care professional who have an interest, are involved, wish develops or become experts in medical education. The University of Cape Town (UCT), University of the Witwatersrand (WITS), University of the Free State (UFS) and Foundation for Professional Development all offer diplomas in health sciences education.[20-23] These programs typically take one to two years for completion and are a blend of online and contact learning, with exception of the FPD program which is completely by e-learning.[20-23]

These diplomas are not exclusively aimed at physicians but rather at all health care professionals involved in education. Deterrents from enrolment in such diplomas is the cost involved, for example the FPD program costs R31 000. These diplomas are also the minimum requirement for those wishing to pursue masters or doctorate level studies in health sciences education, in addition to WITS, UCT and UFS, Stellenbosch University and University of the North-West also offer PHD and masters programs.[22-25]

Whilst these programs are great for the enthusiast who wants to become an expert in medical education, they are too advanced for most clinicians for whom teaching is an add-on to their clinical duties. Secondly these programs are not specific to anaesthetist, or even physicians for that matter, and as such their appeal is greater for those with an education interest that goes beyond their field of practice.

Most universities offer faculty development programs to develop academic staff as higher education teachers. The University of KwaZulu-Natal (UKZN) offers a program called the University Education Induction Program. It is aimed at new academic staff and those seeking development.[26] The program consists of four modules:

- Assessing Learning in Higher Education
- Teaching and Learning in Higher Education
- Designing and Evaluating Curricula in Higher Education
- Supervising Research in Higher Education

Each module is runs online over 3 days (3 hours per day) and in 2022 it cost R7 380.[26] Whilst this is potentially a good platform for clinicians holding academic positions in the university, it does not address the needs of most clinicians.

Teaching is an important competency for registrars to develop, registrars are involved in teaching of medical students, interns and even junior registrars. Some authors estimate that registrars can spend up to 25% of their time teaching,[27,28] therefore teaching registrars to become effective teachers should be a priority. To this end, Stellenbosch University offers their registrars the opportunity to develop their teaching skills in their course ‘Registrar as Teacher’. The course is designed for registrars but is available to all clinicians, it is a 3 hour practical course in clinical teaching.[29] Theoretically a similar course could be offered to registrars and clinicians at UKZN, it has the potential to meet the FCA curriculum objectives, due to its practical and short nature it serves as an appetiser for those with an interest in clinical teaching without overwhelming those with a limited desire to teach.

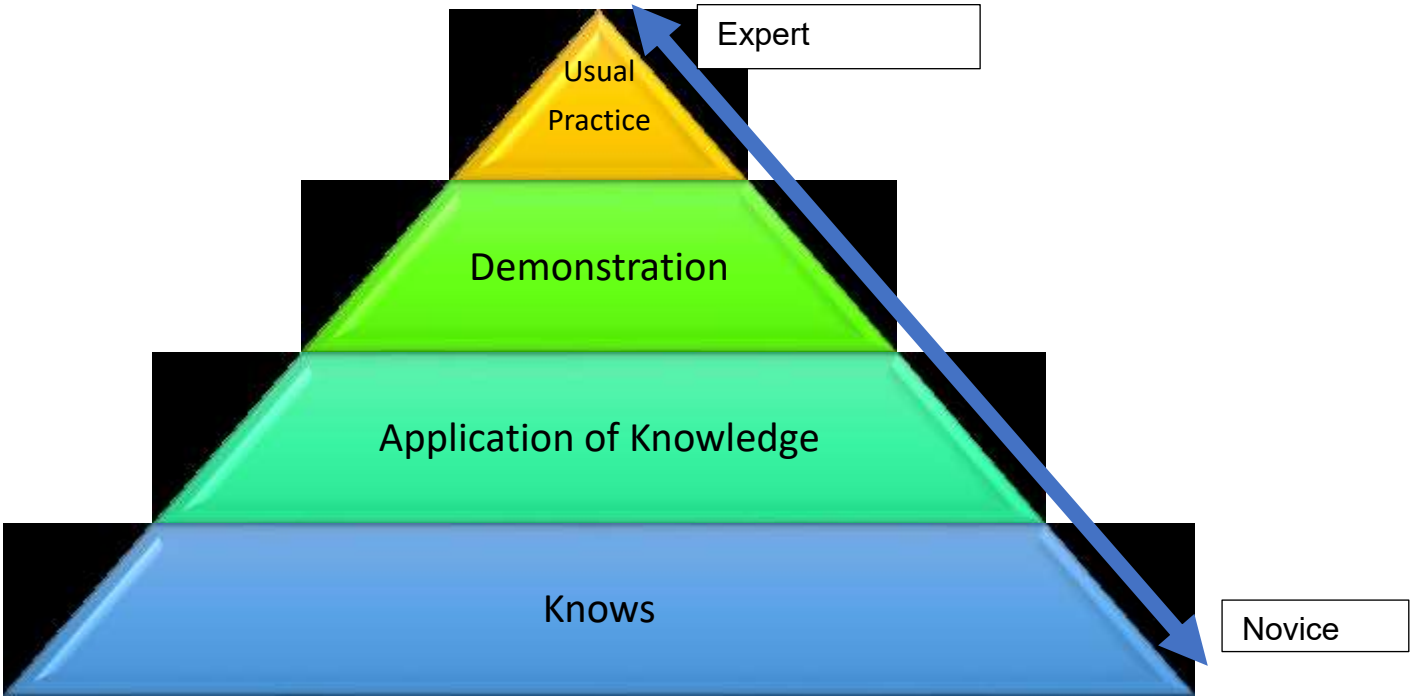
Any new faculty development program aimed at anaesthesiologists should incorporate training of the medical educators in work-based assessments.

PREPARING FOR WORK-BASED ASSESSMENTS

Miller[30] describes four levels of assessment (fig 2.); knows, knows how, shows how and does. He argues that to get a true reflect of a candidate's abilities, the candidate must be assessed in all for levels.[18,30]

- Know: forms the base of the pyramid, this level assesses the candidate's ability to recall information (eg. multiple choice questions).
- Knows How: is the second tier, this level assesses the application of knowledge (eg. case presentation)
- Shows How: is the third tier, this level assesses ability to demonstrate or simulate behaviour (eg. objective structured clinical exam)
- Does: The top tier of the pyramid, assesses what the candidate does in daily practice (eg. work based assessments)[18,30]

Figure 2. *Miller's Pyramid of Assessment*



Adapted from Miller (1990)[30]

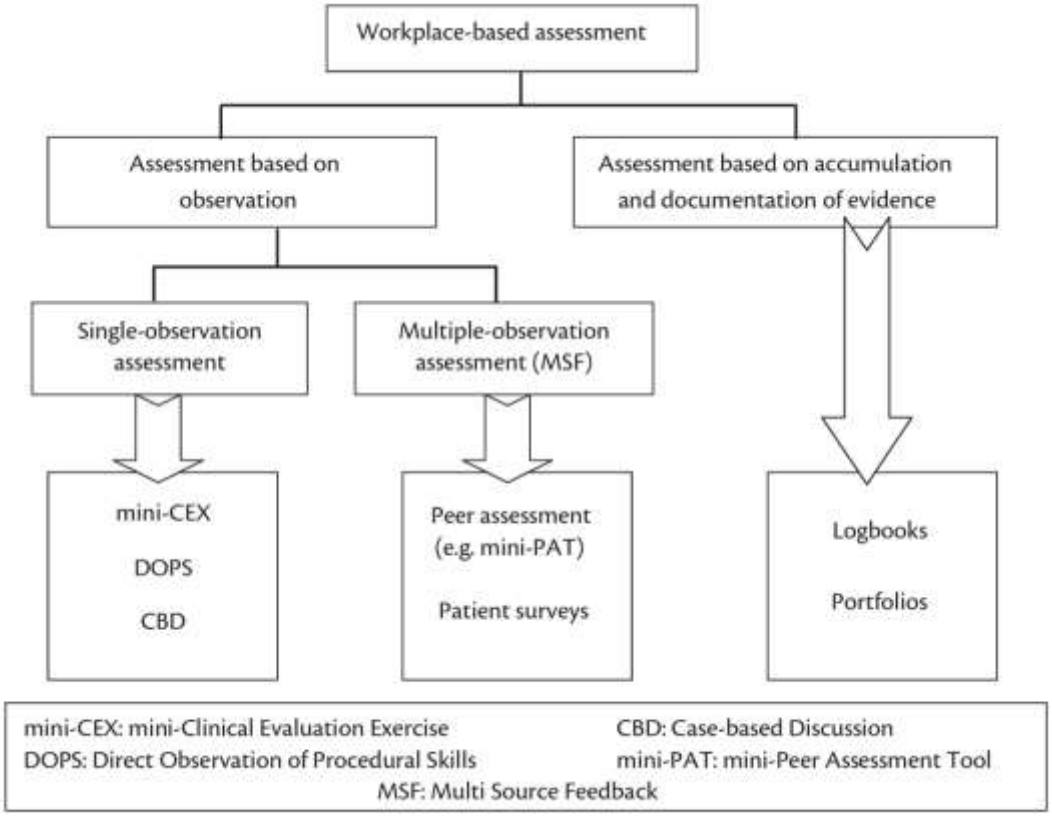
The trend with assessment in medical education is moving towards gathering evidence of clinical competence and professionalism rather than one's ability to pass an exam. Historically more emphasis has been placed on one's ability to pass and exams than in assessing competence in the role they are being trained for.[31]

The current FCA curriculum is expected to be updated, one of the major changes to be implemented is the introduction and incorporation of work-based assessment (WBA) into curriculum. This change requires that medical educators and assessors be trained in the work-based assessment.

WBA refers to a form of assessments or examinations, conducted in the candidates workplace, with available resources (human and equipment), during the course of their usual work schedule.[18] They have been successfully incorporated in postgraduate anaesthesia training in several countries, including Australia, New Zealand and the United Kingdom.

Various assessment techniques are utilised (fig 2.) to determine the competency of the candidate, who assesses the candidate varies depending on the assessment technique used. Assessors may include specialists (senior and junior), peers (fellow trainees), non-physician or non-anaesthetic colleagues (nurses, surgeons, and allied healthcare professionals) and even patients.

Fig 2. *Workplace-based Assessment Techniques*[18]



In 2012 the Australian and New Zealand College of Anaesthetist (ANZCA) introduced a new curriculum, which included WBAs. Prior to introduction of this curriculum ANZCA facilitated WBA training for supervisors and assessors through workshops, ANZCA continues to provide training for assessors. Even though it would be ideal, ANZCA does not make it compulsory for all assessors to receive WBA training as it would not be feasible.

A similar pragmatism should be adopted with the implementation of WBA by the College of Anaesthetist of South Africa; however, it is imperative that training programs are available for all levels of assessors. Furthermore, the individual universities should institute programs to bridge any gaps in the training of supervisors and assessors.

CONCLUSION

“The quality of teaching is not likely to become optimal until the instructors themselves are schooled in the science of imparting knowledge.” - Malcolm Bateson

Teaching and learning are complex processes that form an integral part of the practice of most doctors. Little training is offered to clinicians to prepare them for this role. Although learning on the job is one of the ways in which clinicians develop their teaching, it is far from optimal. See one, do one, teach one just isn’t good enough.

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