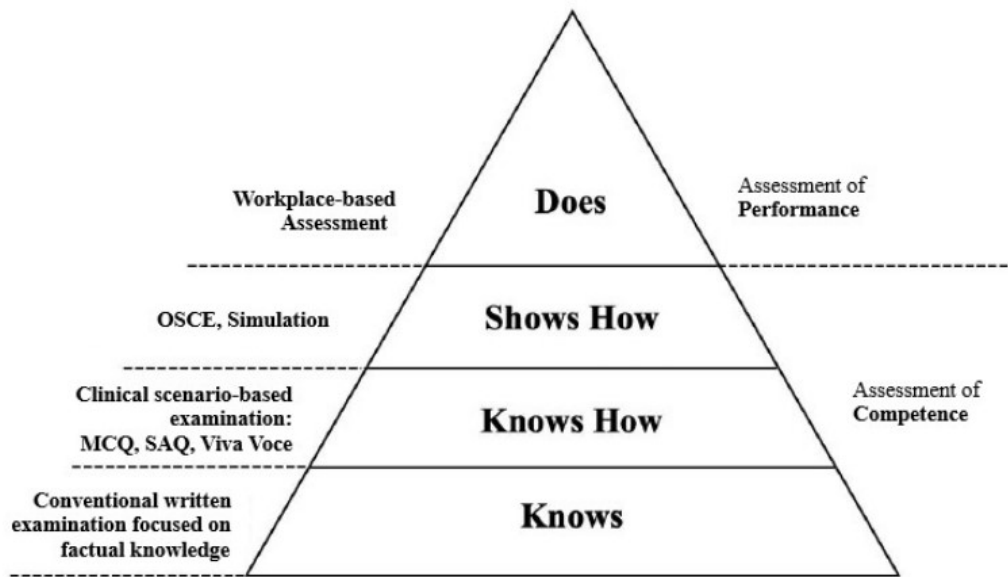


Supplementary material

The supplementary material was provided by the authors and some information may not have been peer reviewed. Any opinions or recommendations discussed are solely those of the author(s) and are not endorsed by the Hong Kong Academy of Medicine and the Hong Kong Medical Association. The Hong Kong Academy of Medicine and the Hong Kong Medical Association disclaim all liability and responsibility arising from any reliance placed on the content.

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<https://doi.org/10.12809/hkmj2311361>.

Supplementary Figure. Assessment of performance and competence in Miller's Pyramid



Abbreviations: MCQ = multiple choice question; OSCE = objective structured clinical examination; SAQ = short answer question

Supplementary Table 1. Categories of workplace-based assessment tools¹ used by Colleges

1. Direct observations	a. Clinical Evaluation Exercise b. Direct Observation of Procedural Skills c. Procedure-Based Assessment d. Anaesthesia List Management Assessment Tool
2. Indirect observation and audit	Case-Based Discussion
3. Multisource feedback	
4. Portfolios and reflective learning tools	

Supplementary Table 2. Issues with implementation of workplace-based assessments

	Issues from literature³⁻⁷	Issues from YFC survey
<p>Domain 1: Innovation characteristics² Innovation source, evidence strength and quality, relative advantage, adaptability, trialability, complexity, design quality and packing, cost</p>	<ul style="list-style-type: none"> • User-friendliness of WBA tools, ease of understanding^{3,4} • Development of shared mental framework among assessors for learner assessments³ • Facilitation by technology-based documentation^{3,4,7} • Implementation of WBA systems requires substantial time and effort³ • Integration and use of assessment data from multiple contexts and different assessors³ • Only multisource feedback provides convincing evidence of effectiveness in improving performance⁴ 	<ul style="list-style-type: none"> • Excessive paperwork represents documentation burden
<p>Domain 2: Outer setting² Training needs and resources, cosmopolitanism, peer pressure, external policies and incentives</p>	<ul style="list-style-type: none"> • Time constraints and competing demands in clinical environment^{3-5,7} • Alignment with organisation's values⁷ 	<ul style="list-style-type: none"> • Lack of protected time to provide feedback
<p>Domain 3: Inner setting² Structural characteristics, networks and communications, culture, implementation climate, readiness for implementation</p>	<ul style="list-style-type: none"> • Value of teaching and feedback⁶ • Importance of WBAs⁶ • Faculty development⁶ • Fixed mindset⁷ 	<ul style="list-style-type: none"> • Perceived lack of organisational support, including demanding clinical workload • Lack of cultural support for feedback

Domain 4: Characteristics of individuals²

Knowledge and beliefs about innovation, self-efficacy, individual stage of change, individual identification with organisation, other personal attributes

- Trainee awareness of the tool's purpose and methods for implementation^{4,5}
- Perception of WBAs as summative assessments of performance^{3,4}
- Only provide snapshots of trainees' performance⁵
- Selection of appropriate and relevant tasks⁴
- Supervisor willingness to become familiar with the tools and engage in medical education^{4,5}
- Supervisor knowledge about the use of WBAs and provision of effective feedback^{4,5}
- Relationship between trainee and trainer^{4,6}
- Scepticism among trainers about the WBA process but perception that WBAs are valid assessment tools⁴
- Fear-of-failure among trainers^{3,4}

- Lack of clarity of purpose
- The term 'assessment' conveys a high-stakes environment

Trainees

- Not ready to take initiative in seeking WBAs
- Reluctance to receive feedback
- Concerns about failing WBAs and how trainers perceive trainee performance
- Relationships with supervisors affect perception of feedback

Trainers

- Conflicting roles as supervisor and trainer
- Standards and practices vary among trainers
- Uncertain how to consistently rate clinical performance in different settings/cases
- Lack of clear definitions and instructions for conducting WBAs
- Lack of standardised templates for WBA documentation

Domain 5: Process²

Planning, engaging, executing, reflecting and evaluating

- Opportunities for trainees and assessors to provide input concerning design of WBA tools and systems³
- Engagement of trainees and trainers³
- Training for trainers⁴
- Formal training for trainees in use of WBAs is key to successful implementation^{3,4}

- Need for more trainer workshops

Abbreviations: WBA = workplace-based assessment; YFC = Younger Fellows Chapter

References

1. Royal College of Physicians and Surgeons of Canada, Royal Australasian College of Physicians, Royal Australasian College of Surgeons. Work-based assessment: a practical guide. 2014. Available from: <https://www.surgeons.org/-/media/Project/RACS/surgeons-org/files/becoming-a-surgeon-trainees/work-based-assessment-a-practical-guide.pdf?rev=64c62242e777411eb43be8ac781dfa4a&hash=DCEE633AC11B7EE63975DF1A6948C99A>. Accessed 7 May 2024.
2. Damschroder LJ, Reardon CM, Lowery JC. The Consolidated Framework for Implementation Research (CFIR). In: Handbook on Implementation Science. Cheltenham: Edward Elgar Publishing; 2020: 88-113.
3. Anderson HL, Kurtz J, West DC. Implementation and use of workplace-based assessment in clinical learning environments: a scoping review. Acad Med 2021;96:S164-74.
4. Massie J, Ali JM. Workplace-based assessment: a review of user perceptions and strategies to address the identified shortcomings. Adv Health Sci Educ Theory Pract 2016;21:455-73.
5. Lörwald AC, Lahner FM, Greif R, Berendonk C, Norcini J, Huwendiek S. Factors influencing the educational impact of Mini-CEX and DOPS: a qualitative synthesis. Med Teach 2018;40:414-20.
6. Lörwald AC, Lahner FM, Mooser B, et al. Influences on the implementation of Mini-CEX and DOPS for postgraduate medical trainees' learning: a grounded theory study. Med Teach 2019;41:448-56.
7. Young JQ, Sugarman R, Schwarz J, O'Sullivan PS. Faculty and resident engagement with a workplace-based assessment tool: use of implementation science to explore enablers and barriers. Acad Med 2020;95:1937-44.