

“Showing the Best Version of Yourself”: The Importance of Dynamic Assessment for Trainees Undergoing Workplace-Based Assessments in Postgraduate Training

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Abstract

Workplace-based assessments (WPBAs) in postgraduate training may not always provide an accurate representation of a trainee’s capability to perform a given task, or a true measure of a trainee’s overall competence in clinical practice settings. This article describes how trainers can use a theory-driven and evidence-based intervention called dynamic assessment for providing an individual with the best opportunity to demonstrate a more accurate representation of their performance, and ultimately present the best version of themselves when undergoing an observed WPBA, such as a Direct Observation of Procedural Skills (DOPS) or Mini Consultation Evaluation Exercise (MiniCEX). Dynamic assessment simultaneously combines educational support with assessment as the trainee undergoes the WPBA by using focussed questions as prompts to facilitate an individual trainee’s essential coordination of their motivational and thinking processes since this is often challenged during assessments. In addition, the response to the prompts can also provide trainers with information to inform specific feedback for future professional development.

Key words: workplace-based assessment; dynamic assessment; metacognition; assessment

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Introduction

Workplace-based assessments (WPBAs) are widely used across many clinical specialities in postgraduate training, with the intention to provide an authentic assessment of a trainee’s performance on a specific clinical workplace task, such as venous cannulation or management of a patient with multiple health conditions (Anderson et al, 2021). A review of a trainee’s performance across a variety of WPBAs conducted over the previous year of training contributes to the Annual Review of Competency Progression (ARCP), which is a formal process that determines an individual’s readiness to progress on their programme. Trainees are expected to achieve an appropriate standard of performance, or competence across a series of WPBAs, and failure to meet this requirement at the ARCP, can result in delayed progression on their training programme. A recent survey among postgraduate trainees highlighted that two widely observed WPBAs (Direct Observation of

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Procedural Skills (DOPS) and Mini Consultation Evaluation Exercise (MiniCEX)) and a discussion WPBA (Case-based Discussion (CbD)) were not considered to be a true measure of their competence on identical tasks performed normally in clinical practice (Cheston et al, 2022).

Although WPBAs are mainly used as a method for assessing competence, they also provide a valuable opportunity for identifying where trainees need early educational support through specific and receive targeted feedback to achieve the required performance standards for demonstrating competence at a given stage in training (Anderson et al, 2021). However, trainees consider that current ways in which WPBAs are delivered may not always be as useful to them for enhancing their clinical and professional development, nor mitigate the risk of them achieving a good outcome at the ARCP (Cheston et al, 2022; Taylor et al, 2014).

In this article, we share our experiences of adapting and implementing a theory-driven and evidence-based intervention called dynamic assessment as a practical approach for addressing these main challenges experienced by trainees undergoing the main observed WPBAs, such DOPS or MiniCEX, in postgraduate training.

The Importance of Dynamic Assessment in the Assessment of Learners

Dynamic assessment has been widely implemented in several important areas in children's education including mathematical problem solving (Ukobizaba et al, 2021) second language (Orellana et al, 2019) and reading (Wood et al, 2024). These reviews and meta-analyses of studies have highlighted its usefulness as an approach for demonstrating a more accurate representation of an individual's performance but also improving the longer-term performance, especially for novice learners.

Dynamic assessment is a hands-on, practical educational support intervention that enables teachers to provide a learner with the best opportunity to perform a given task during an assessment (Cho and Josol, 2021). A unique feature of dynamic assessment is that it simultaneously combines the provision of educational support alongside the delivery of assessment during the same session.

A dynamic assessment is an interactive process between learner and teacher, with the teacher asking a series of focussed questions as the learner performs a given task during an assessment. These questions act as prompts to support the learner in the essential coordination of their motivational and thinking processes as they perform the task (Anton and Garcia, 2022). The prompts can act as a "kick start" for enabling the learner to demonstrate a more accurate representation of their performance and are particularly useful when the teacher is aware that there is hesitancy in performing the task or the learner's performance does not appear to be appropriate for the task. After employing these prompts, the individual is assessed by the teacher and a decision has been made about their standard of performance. The response to the prompts can also provide the teacher with information to inform specific feedback for informing development.

Understanding the Mental Processes during the Performance of a WPBA

Effective use of dynamic assessment requires trainers to have a practical understanding of the educational theory about how trainee's coordinate their motivational and thinking (also called cognitive) processes when performing a task as they undergo a WPBA. Some of the terms used to describe mental processes may be unfamiliar to trainers but understanding how to practically apply these terms is essential for providing effective dynamic assessment.

Research across several disciplines and different learner types (e.g., age, gender and cultural background) suggests that metacognitive processes are a major contributor to differences in performance across individuals (Ohtani and Hisasaka, 2018), including medical education (Lee, 2022). Metacognitive processes, which can be simply defined as "thinking about thinking" (Dennis and Somerville, 2023), enable an individual to analyse, plan, monitor and reflect over a task, and are fundamental for the coordination of the motivational and cognitive processes required to effectively or successfully complete a task (Cecilio-Fernandes et al, 2023; Stanton et al, 2021).

The four metacognitive processes (analysis, planning, monitoring, and reflection) and the required motivational and cognitive processes for successful performance of a task are described in greater depth below:

(1) Analysis

When faced with a task, such as performing an intravenous cannulation or a consultation with a new patient with a headache, the trainee first analyses the demands on their motivational and cognitive processes that they expect will be required for achieving a successful outcome. For example, the trainee may be very familiar with the task and feel that it can be easily completed (motivational processes) since they possess the required knowledge and/or techniques, such as the sequence of steps in the insertion of an intravenous cannula or the steps in a consultation to establish a clinical diagnosis (cognitive processes). However, if the trainee has never previously encountered the task, they may feel that they cannot achieve a successful outcome (motivational processes) and will also need to apply and adapt their previous knowledge and/or techniques to the new task (cognitive processes).

(2) Planning

During this phase, the trainee chooses and integrates appropriate motivational and cognitive processes for effectively performing the task. An essential motivational process is the trainee's self-efficacy beliefs, and these are related to the extent to which they feel capable of performing the task. The cognitive processes in this phase have a focus on the recall of the required knowledge and technique(s) for task completion, such as the anatomical landmarks in the forearm and sequence of steps in the insertion of an intravenous cannula, or alternative sites in there is an unsuccessful attempt. Similarly, for the trainee to conduct an appropriate consultation with a new patient with a headache, the focus of cognitive processes is the recall of the required knowledge and technique(s), such as the different causes of a

headache and the sequence of steps in conducting a consultation that considers the key features of the differential diagnosis of a headache and also the patient's ideas and concerns.

(3) Monitoring

Whilst performing the task, the trainee continuously checks and adjusts their chosen motivational and cognitive processes towards achieving a successful outcome. This monitoring is essential for a successful performance since it provides the trainee with an opportunity to dynamically “fine tune” their motivational and cognitive processes during their performance (Nelson and Narens, 1994). For example, the trainee may be unable to successfully cannulate the vein despite puncturing the skin (cognitive processes), and they may consequently feel anxious about any discomfort experienced by the patient, which can further impair their performance (motivational processes). Similarly, the trainee may find that the patient is reluctant to answer questions about any psycho-social problems as a causation of their headache (cognitive processes), which can further impair their performance (motivational processes). Having awareness of their motivational and cognitive processes during the performance of the task provides the trainee with an opportunity to recall similar situations in which they have been successful (motivational processes) and to consider using alternative techniques (cognitive processes). These techniques may be based on their experience of previous cannulations, such as straightening the arm or fixing the vein, or asking others for advice. Similarly, the trainee may have experience of using several other questions that can be used to probe psycho-social problems.

(4) Reflection

After completing the task, the learner can reflect on their choice of motivational and cognitive processes that were used during the recent performance and make decisions about continuing, adapting or dropping the future use of these processes in similar or different situations. Novice trainees can best develop their capacity for self-reflection, and evolve their use of these processes, through instruction or repeated experiences on task.

It is important to consider the trainee's motivational process of attributional beliefs since these can influence their preparation for future tasks. These beliefs may be “controllable”, with success, or lack of success, in achieving a task being attributed to the choice of cognitive processes (Bandhu et al, 2024). In contrast, these may be “uncontrollable” and their success, or lack of success, attributed by trainees to factors outside their control, such as luck or the “wrong type” of patient. For example, the trainee may consider that their inability to successfully cannulate the vein was due to excessive mobility of the vein or that the patient's apparent reluctance to discuss psycho-social problems was that they have “something to hide”. An essential role of trainers is therefore to encourage trainees to adopt a “growth mindset”, where the emphasis is on future improvement and focussed on “controllable” attributional beliefs (Dweck, 2016). This approach also develops the trainee's metacognitive coordination of their motivational and cognitive processes when performing a task (Chouvalova et al, 2024). For example, the trainee can be

encouraged to consider alternative techniques for intravenous cannulation or asking alternative questions about a patient's psycho-social background.

Practical Use of Dynamic Assessment for WPBAs

Dynamic assessment provides the trainee with the best opportunity to demonstrate a more accurate measure of their competence and it also provides trainers with a transparent educational support intervention that combines both the teaching and assessment functions of a WPBA. Building a supportive relationship between the trainer and trainee throughout the dynamic assessment process is also crucial as it ensures the trainee can engage more openly in this process. This relationship reduces anxiety and increases confidence, which can enable the trainee to demonstrate their true competence (Matthews et al, 1999).

The phases and activities for conducting a dynamic assessment for clinical observation type of WPBAs are described below:

(a) Before the task

It is important that trainees are aware of the “rules of the game” for the assessment, including the assessment format and the expected standard of performance to demonstrate competence (GMC, 2023). For example, the trainee may be unaware, or their colleagues have provided misinformation, about the format of the WPBA, such as a DOPS or MiniCEX, and also what is expected when they perform an intravenous cannulation or conduct a consultation with a new patient with a headache. This information should be provided by the trainer. Without this information, the trainee may make an inappropriate analysis of the task, and subsequently deploy inappropriate or ineffective motivational and cognitive processes required for performing the task.

(b) Immediately prior to commencing the task

The trainer can ask several focussed questions that can also act as a prompt to identify the trainee's metacognitive processes of analysis and planning, and also their associated motivational and cognitive processes.

Illustrative examples of the use of focussed questions as prompts are presented for two widely used clinical observation types of WPBA, such as DOPS (Table 1) and MiniCEX (Table 2). The wording of the focussed questions as prompts in the illustrative examples can be easily modified by the trainer for specific types of procedures or consultations.

An important consideration is if the learner has been identified as having a low confidence in performing the task. In this situation, the trainer can intervene at this moment in time by supporting the learner to recall previous situations in which they have successfully achieved similar tasks, in order to boost their confidence appropriately.

(c) During the performance of the task

The trainer actively observes the trainee's performance and can ask several focussed questions as prompts for the trainee's metacognitive process of monitoring their chosen motivational and cognitive processes on the performance of the task.

Table 1. Illustrative questions as prompts for Direct Observation of Procedural Skills (DOPS).

Phase of performance	Mental process	Questions as prompt
Immediately before	Metacognitive—Analysis and Planning	What do you need to do for successfully perform the procedure?
	Motivational (to enhance self-efficacy beliefs)	How confident are you that you can successfully perform the procedure? How have you successfully performed the procedure in a clinical setting?
	Cognitive	What knowledge and technique(s) are you going to use for successfully performing the procedure?
During	Metacognitive—monitoring	How is performing the procedure going? Do you think you have made any errors or mistakes so far?
	Motivational (to enhance self-efficacy beliefs)	How confident are you that you can successfully perform the procedure? How have you successfully performed the procedure in a clinical setting?
	Cognitive	How successful is your chosen technique(s) for performing the procedure at the moment? What changes do you need to make to your plan for performing the procedure?
Immediately after	Metacognitive—reflection	How well do you think you have performed the procedure and was it of the required standard? What changes would you like to have made for when you performed the procedure? How will you approach performing the procedure in the future?
	Motivational (to enhance a “growth mindset”)	What will you do to be successful when undertaking a similar procedure in the future?
	Cognitive	What knowledge or technique(s) will you need to successfully perform a similar procedure in the future?

Illustrative examples of the use of focussed questions as prompts are presented for a DOPS (Table 1) but for a MiniCEX it is more appropriate to use these questions immediately after the completion of the task so as not to interrupt any unconscious and unobservable cognitive processing which takes place during clinical reasoning (Table 2).

Table 2. Illustrative questions as prompts for Mini Consultation Evaluation Exercise (MiniCEX).

Phase of performance	Mental process	Question as prompt
Immediately before	Metacognitive—Analysis and Planning	What do you need to do for successfully undertaking the consultation?
	Motivational (to enhance self-efficacy beliefs)	How confident are you that you can successfully undertake the consultation? How have you successfully undertaken consultations previously?
	Cognitive	What approach(es) will you use for undertaking the consultation?
Immediately after	Metacognitive—reflection, including monitoring	Were there any times during the consultation when you thought that your approach was not successful? If so, what did you do? How well do you think you have been at undertaking the consultation and was it of the required standard? What changes would you like to have made to your approach for undertaking the consultation? How will you undertake similar consultations in the future?
	Motivational (to enhance a “growth mindset”)	What will you do to be successful when undertaking a similar consultation in the future?
	Cognitive	What knowledge or approach are you going to need for successfully undertaking a similar consultation the future?

(d) Immediately after the completion of the task

The trainer can ask several focussed questions as prompts related to the trainee’s metacognitive process of reflection, with a focus on their motivational process of attributional beliefs, and their current and future use of cognitive processes, including knowledge and technique(s). These questions are very important since their focus is on the trainee’s internal feedback, which is essential for continuing professional development (Nicol, 2021). Internal feedback stimulates further learning by increasing the trainee’s metacognitive process of awareness about the extent to which their performance during the task, and their choice of motivational and cognitive processes both before the task and also any modifications made during the task, have been successful or not. The information obtained from the focussed questions as prompts can be used immediately after the completion of the task in the next the review phase to provide external feedback to the trainee.

If the trainee has “uncontrollable” attributional beliefs about their performance, especially if they have not successfully achieved the task, the trainer can intervene in this phase since these beliefs can significantly alter their motivation for further

learning. An important aspect of supporting the trainee with these attributional beliefs is to help them recognise that they can develop the appropriate knowledge or technique(s) by engaging in further learning opportunities. Without this recognition, the trainee is unlikely to have a “growth mindset” for further learning in the next phase of review.

(e) Review

At the end of the dynamic assessment, the trainer can make an assessment of the trainee’s performance of the task, with this performance being considered as a more accurate representation of their capability. In addition, the trainer can use the assessment to inform external feedback for developing the trainee’s future performance on the same, or similar, tasks.

The main practical steps for the trainer when conducting a dynamic assessment for clinical observation type of WPBAs are:

Step 1

Make an initial overall assessment of the trainee’s performance of the clinical task, such as intravenous cannulation or consultation with a patient with a headache, against the specific performance criteria of the observed WPBA. Each observed WPBA will usually have specific performance criteria that are mapped against the capabilities provided in relevant documents for each speciality in hospital medicine. This performance and its assessment can be considered as the best opportunity for the trainee to demonstrate a more accurate representation of their capability since during the observed WPBA they have been provided with the appropriate educational support from the trainer to enable this opportunity. Examples of this educational support include:

- Increased awareness of the expected requirements of the assessment before they commence the WPBA.
- During the observed WPBA, the focussed questions can act as a prompt, or “kick start”, to offer the trainee an opportunity to actively modify their metacognitive, motivational and cognitive processes during their performance the task. As a consequence of these modifications, an associated change in performance may, or may not, be observed by the trainer. In addition, the trainee’s answers to the questions offer the trainee an opportunity to provide further information and explanation of their actions. This additional information also provides an opportunity for the trainee to demonstrate their capability, with an explanation of why they may have taken, or not taken, a particular action that was not observed by the trainer.

Step 2

Integrate the information about the trainee’s performance and response to the focussed questions as a prompt that has been obtained from Step 1 to inform specific external feedback. Information obtained will include the extent of use of the trainee’s different metacognitive, motivational and cognitive processes as they perform the task and undergo the WPBA. The trainer can then provide feedback with practical advice on how to develop the trainee’s metacognitive, motivational and cognitive processes that are required for a successful performance. For example, advice on the development of metacognitive processes may include the need to develop planning before beginning a task, and advice on the development of cognitive

processes, including the need to acquire new knowledge or to develop a specific technique. For example, the trainee can consider alternative techniques for intravenous cannulation or asking alternative questions about a patient's psycho-social background. We recommend that feedback is given using best practice guidelines (Lefroy et al, 2015).

The Challenges of Implementing Dynamic Assessment for WPBAs

An important challenge for implementing dynamic assessment is that it may be perceived by trainers as not being greatly different from their current assessment and feedback approaches. However, we consider that dynamic assessment has two important differences and these offer distinct advantages for when a trainee undergoes an observed WPBA:

(1) The main focus is on providing each trainee with the best opportunity to demonstrate a more accurate representation of their performance through conversation, dialogue and making explicit their “non-observable thinking” as they complete a given task.

(2) Trainers can obtain a greater understanding of an individual trainee, including their essential metacognitive processes and how they modify their motivational and cognitive processes that influence performance, and also the educational support that is required to develop these processes.

An additional challenge is that many trainers will require professional development in the implementation of dynamic assessment due to lack of familiarity with this approach, including the use of focussed questions as prompts. Trainers rarely provide support in the effective use of metacognitive processes despite it being considered highly useful by trainees for their professional development (Leggett, 2016). Also, an important barrier is the perceived expected time and workload constraints, but with experience we have found that a dynamic assessment can be easily integrated into an observed WPBA, such as DOPS or MiniCEX, and completed within an extra 5 minutes. We also encourage trainers to adapt the timing and wording of the focussed questions as prompts to align with their preferred style, the context and the specific requirements of the WPBA.

There are a complex mix of factors that influence an individual trainee's learning potential and during their performance of a task in an observed WPBA. We recommend that trainers are also aware of important psycho-social factors (Lock and Carrieri, 2022), which need to be addressed by appropriate wellbeing support, and neurodiversity learning factors (Granger et al, 2023), which also need appropriate support.

Finally, trainees may be reluctant to engage in using dynamic assessment. This is an important challenge and may be resolved by the trainer providing information about the benefits of this approach, including a more accurate assessment of their competence and increased information for enhancing their professional development. An additional approach, in which the trainee compares their own performance and competence between two WPBAs on two separate occasions, can be

useful for overcoming reluctance. This approach can increase motivational processes, with the trainee becoming aware of their progressive professional development over time (Hughes, 2011).

Conclusion

Dynamic assessment provides the trainee with the best opportunity to demonstrate a more accurate measure of their competence and it also provides trainers with a transparent educational support intervention that combines both the teaching and assessment functions of an observed WPBA, such as DOPS or MiniCEX. The focus of the trainer is identifying the extent to which the trainee responds to a series of focussed questions as prompts, with the expectation that these will facilitate the trainee's metacognitive, motivational and cognitive processes but also enhance their performance of the task. The response to the prompts related to the trainee's mental processes can identify specific areas that require further educational support.

We have shared our early experience of using dynamic assessment in an attempt to address the main challenges currently experienced by trainees undergoing WPBAs in postgraduate training. Further development and evaluation of dynamic assessment is recommended, with adaptation and implementation across the different observed WPBAs and also the variety of other WPBAs in different specialities, including Cbd. Evaluation can initially focus on both the enablers and barriers for implementing dynamic assessment in practice but it will also be important to consider its effectiveness in addressing the current challenges for trainees and the impact of enhanced feedback on their long-term professional development during training.

Key Points

- Workplace-based assessments (WPBAs) may not be an accurate representation of a trainee's performance and a true measure of their competence.
- Dynamic assessment provides a theory-driven and evidence-based practical intervention that can help trainees present their best performance and accurately reflect their competence during assessments.
- Trainers can help trainees present their best performance by using focussed questions as prompts, which enhance metacognitive, motivational, and cognitive processes.
- The trainee's responses to prompts can reveal specific areas requiring additional educational support, helping tailor the training process.

Availability of Data and Materials

Not applicable.

Author Contributions

JS, DC-F, RP made substantial contributions to the conceptualisation of the article and drafting the manuscript. All authors contributed to important editorial changes in the manuscript. All authors read and approved the final manuscript. All authors have participated sufficiently in the work and agreed to be accountable for all aspects of the work.

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Conflict of Interest

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