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Assessment for growth: fostering student learning through assessment innovations in medical education

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Part I: Very short answer question

Chapter 5

**Bridging assessment and clinical practice:
The added value of very short answer questions
in medical education**

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Introduction

Assessment plays a critical role in the career of medical doctors, influencing not only the preparedness of students for clinical practice but also shaping the ongoing development of clinical reasoning skills in future physicians. Not all healthcare professionals who are involved in assessing medical students or residents have received formal training in educational methodologies. For decades, medical education has relied predominantly on multiple-choice questions (MCQs) for assessment. While MCQs are praised for their reliability and ease of automated grading, they have limitations. Specifically, they often fail to adequately assess higher-order cognitive skills, such as clinical reasoning and problem-solving, and can promote superficial learning approaches that do not translate well into real-world patient care [1-3]. The concept of '*assessment drives learning*' highlights how the format and design of assessments influence the way students engage with learning material. Given the limitations of MCQs, there is a growing need for alternative question formats that better promote deep learning and better prepare students for the clinical challenges they will face [4]. Very short answer questions (VSAQs)—open-ended questions that require a concise response of 1–4 words—have been proposed as promising alternative. VSAQs may better promote deep learning and simulate real-world clinical reasoning, as students must actively retrieve and articulate answers without the cues present in MCQs. This article explores the potential of VSAQs to improve medical education and how they may ultimately contribute to enhanced patient care.

The purpose and impact of assessment in medical education

Assessment serves various purposes. The most familiar is summative assessment, measuring whether students have acquired sufficient knowledge to meet certain academic or professional standards. This '*assessment of learning*' results in grades or credits and is used to certify competence at various stages of medical training. However, there is a growing emphasis on the formative role, in which assessments guide students' learning and help them improve through feedback—known as '*assessment for learning*' [5]. Practice tests, used as formative assessments, enable retrieval practice, where students actively recall information from memory rather than passively reviewing material. For example, students might self-assess by quizzing themselves on the steps for managing a patient with sepsis, rather than rereading lecture notes. Retrieval practice, also known as the testing effect, strengthens memory and promote long-term retention, which is crucial for applying core clinical knowledge in clinical practice [6]. Understanding the different functions of assessment is relevant not only for those involved in teaching and assessing medical students and residents, but also for all clinicians, as it underscores the importance of assessment as a tool for lifelong learning.

High-quality assessment requires carefully constructed questions that consistently measure the intended knowledge (reliability) and align with learning objectives (validity). This principle of '*constructive alignment*' [7] ensures assessments to support and enhance learning. However, the effectiveness of assessment also depends on the design of the question formats used, which can significantly impact both their validity and the level of understanding they aim to measure.

Limitations of the traditional assessment question format

Traditionally, written assessments in medical education mainly consist of MCQs. These questions offer high reliability, and ease of marking for large student cohorts [8]. However, their reliance on recognition-

based learning strategies enables students to pass exams through surface-level preparation, often by recognizing correct answers rather than deeply understanding the material [1, 3]. Additionally, cues in the question or answer options can enable students to deduce correct answers without fully grasping the subject matter. This reliance on recognition or cues diminishes the discriminative power of MCQs to distinguish between students who truly understand the material and those who do not [9, 10].

Exploring new question formats: the Very Short Answer Question

With the increased adoption of digital testing, other question formats that were once impractical due to time and resource constraints, such as the labor-intensive process of manual marking, have become more accessible. One promising alternative is the Very Short Answer Question (VSAQ) (Figure 1). Advances in digital grading have made the use of VSAQs more feasible, even for large-scale assessments. VSAQs are particularly well-suited to medical education because they combine the depth of open-ended questions with marking efficiency approaching that of MCQs.

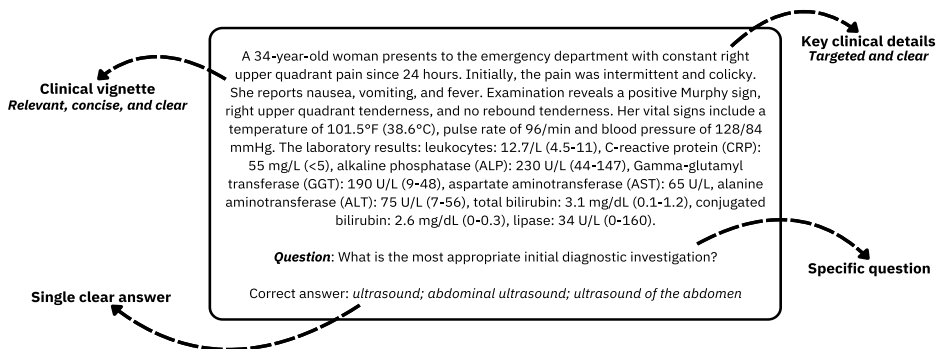


Figure 1. Example of a well-crafted very short answer question

VSAQs offer several advantages. Firstly, by requiring students to generate an answer rather than select one, they promote deeper cognitive processing [1, 11]. Moreover, VSAQs have higher discriminative power than MCQs, as they eliminate cues and minimize guessing. This enables more accurate differentiation between students who truly understand the material and those who do not [9, 10, 12]. VSAQs are also shown to be more reliable than MCQs, which might be explained by reducing the impact of partial knowledge, where students might guess correctly without a complete understanding [9, 10]. Additionally, VSAQ answers provide valuable insights into student misconceptions, cognitive processes, and errors. Unlike MCQs, which may mask gaps in understanding due to guessing or recognition of correct answers, VSAQs allow teachers to observe how students approach a clinical case and construct their answers. This richer understanding offers opportunities for targeted feedback to students and helps teachers identify areas where clinical teaching can be improved [1, 13, 14].

Another important advantage of VSAQs is their alignment with real-world clinical practice. In the clinical settings, doctors are seldomly presented with multiple-choice options to guide their decisions.

Instead, they must recall information from memory and apply it to new complex situations without external prompts [2]. VSAQs mimic this authentic cognitive process more closely than MCQs, providing a more relevant and effective assessment method for clinicians. Additionally, some topics cannot be effectively assessed using MCQs due to the difficulty in designing questions with plausible distractors. As a result, the questions risk focusing on testing less relevant, detailed factual knowledge rather than assessing core knowledge [13]. VSAQs help overcome this limitation, allowing for the assessment of essential knowledge without the need for other (incorrect) answer options. Furthermore, for teachers, VSAQs can simplify the question writing process. Creating plausible but incorrect distractors for MCQs is often challenging and time-consuming, whereas VSAQs eliminate this requirement, allowing for more efficient question development.

Despite their advantages, VSAQs also come with certain challenges. Writing effective VSAQs requires careful attention, as vague or ambiguous phrasing can create uncertainty for students, especially those accustomed to MCQs. Uncertainty often arises when students are unclear about the desired level of specificity in their responses. To address this, it is essential to provide clear, specific lead-ins for each question particularly when they are unsure about the desired level of specificity in their responses [9, 13]. For instance, the question *'What is the first-choice treatment?'* for a patient with hypertension is too broadly stated, leaving it unclear whether lifestyle measures or medication are being referred to. A clearer alternative would be *'What is the most appropriate pharmacological treatment?'* (also see *Figure 1* for an example). Furthermore, it is important to ensure that the knowledge being assessed is relevant and necessary to recall from memory — focusing on core clinical knowledge rather than peripheral details. Aligning the type of knowledge assessed with the most suitable question format is critical for creating meaningful and effective assessments.

Implementing VSAQs into the medical curriculum: strategies for success

Although VSAQs show promise, their adoption remains limited, particularly in medical education, where MCQs dominate. One concern is the time and effort required for grading. However, advances in digital testing systems have significantly reduced the burden of grading, enabling efficient grading even for large cohorts. Recent studies demonstrate that VSAQs can be graded with an average of two minutes per question for a cohort of approximately 350 medical students [9, 10]. Artificial intelligence advancements could further reduce grading times, potentially making VSAQs as efficient as MCQs [15]. Moreover, VSAQs eliminate the need to create plausible distractors—a particularly time-consuming and challenging aspect of MCQ development—giving teachers greater flexibility to focus on designing meaningful and targeted assessment questions.

Faculty resistance may also arise from a lack of familiarity with the VSAQ format. Workshop sessions can help overcome this barrier, equipping teachers with the skills needed to design effective VSAQs and integrate them into the curriculum. Similarly, students might initially perceive VSAQs as more challenging than MCQs. However, with appropriate preparation, practice tests, and guidance, they can recognize the long-term benefits of this question format. Simultaneously, these VSAQ practice tests can provide valuable feedback for identifying knowledge gaps and uncover misconceptions [13, 14]. Several tips have been published on how to implement VSAQs in the curriculum [13].

Conclusion

Assessment is a pivotal element of medical education, shaping both student learning and clinical preparedness. While MCQs have long dominated this space due to their reliability and practicality, they often fail to assess higher-order thinking and can encourage surface learning. VSAQs address these limitations by requiring active recall, encouraging active learning, motivate students to thoroughly understand the study material, and mirroring the clinical practice. VSAQs also offer teachers valuable insights into student misconceptions and cognitive processes, enabling targeted feedback and improved teaching strategies. Although concerns about grading time and unfamiliarity with the format exist, advances in digital testing and emerging technologies are making VSAQs increasingly practical for large-scale assessments. Additionally, VSAQs simplify question design by eliminating the need for plausible distractors, further enhancing their feasibility. For clinical doctors involved in teaching and assessment, VSAQs provide an effective way to foster meaningful learning and better prepare students for the clinical practice, ultimately enhancing both education and patient care.

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