



## The Transformative Impact of Stealth Assessment on Medical Education

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### Abstract

This Letter explores the transformative impact of stealth assessment on medical education and its potential to enhance learning outcomes. Stealth assessment, an innovative approach, subtly measures students' learning progress while the students interact with rich and engaging environments, seamlessly integrating assessment within authentic learning activities. By mirroring the testing scenario with the learning format, stealth assessment mitigates test-related anxiety and promotes continuous engagement in training. It also plays a pivotal role in evaluating non-cognitive skills and attributes, such as empathy and ethical decision-making, which are often overlooked by traditional testing methods. Stealth assessment offers advantages in scalability and efficiency, leveraging technology and automation to streamline data analysis and feedback generation. The adoption of stealth assessment in medical education holds the promise of nurturing self-directed learning, reflective practices, and the development of nuanced skills necessary for medical practice, ultimately producing competent and well-rounded healthcare professionals.

**Keywords:** Evaluation, Cognitive skills, Learning, Artificial intelligence, Assessment

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Please cite this paper as:  
Habibi A, Toofaninejad E, Rahimi SA, Kalantarion M. The Transformative Impact of Stealth Assessment on Medical Education. J Adv Med Educ Prof. 2024;12(3):208-210. DOI: 10.30476/JAMP.2024.101479.1931.

**Received:** 23 January 2024  
**Accepted:** 18 February 2024

### Introduction

The progressive evolution of medical education has created a growing demand for assessment methodologies that effectively evaluate learners' competencies in complex domains such as clinical reasoning, communication, physical examination, and professionalism. Traditional evaluation methods often fall short in capturing the depth and breadth of students' abilities. In this context, stealth assessment emerges as a promising and innovative approach to meet this demand. This commentary explores the transformative impact

of stealth assessment on medical education and its potential to enhance learning outcomes.

### Main Body

Stealth assessment, an evidence-based method that subtly measures students' learning progress while they interact with rich and engaging environments, holds significant promise (1). Moreover, this assessment method mitigates test-related anxiety by framing assessments as habitual learning opportunities centered on self-enhancement. By mirroring the testing scenario with the learning format, students are

continually engaged in their training, avoiding a singular fixation on exam performance. However, it is imperative to deliberately structure stealth assessment activities in alignment with defined learning objectives. Faculty members also necessitate training to offer constructive and actionable feedback derived from stealth assessment data. Unlike traditional testing methods, stealth assessments are seamlessly integrated into authentic learning activities like simulations, game-based learning environments and clinical experiences. For example, a simulated patient encounter can assess communication and diagnostic skills without an obvious test structure (2-4).

Furthermore, stealth assessment plays a pivotal role in nurturing essential non-cognitive skills and attributes among medical learners. Traditional testing methods tend to concentrate primarily on the acquisition of factual knowledge and technical proficiencies, often overlooking critical facets such as empathy, cultural competence, and ethical decision-making (5). Stealth assessment addresses this gap by enabling the evaluation of these crucial attributes through the observation of learners' conduct and interactions within genuine clinical contexts. Noteworthy examples include the utilization of video games to explore creativity within the realm of stealth assessment (6). By seamlessly integrating the assessment of non-cognitive skills into the learning process, stealth assessment contributes to the cultivation of well-rounded healthcare professionals. These individuals not only possess the requisite clinical expertise but also demonstrate the interpersonal skills essential for delivering effective patient care and engaging in collaborative endeavors within multidisciplinary healthcare teams (7). Embedded assessments of this nature enable performance evaluation in a natural context, providing an authentic snapshot of learners' abilities. This helps identify knowledge and skill gaps at an earlier stage, guiding teaching interventions and feedback.

Stealth assessment presents distinct advantages concerning scalability and efficiency in the realm of education. By seamlessly integrating assessment within authentic learning activities, it obviates the necessity for discrete and labor-intensive evaluation procedures. Medical educators can leverage Artificial Intelligence (AI) technology to automate specific facets of formative assessment, including data analysis and feedback generation. The process of automating assessment comprises key components: embedding it within digital platforms, employing the Evidence-centered design (ECD) framework,

and ensuring continuous feedback loops. Diligent attention to these elements streamlines the design and implementation of stealth assessment, empowering medical educators to adeptly amass and analyze substantial data volumes while delivering timely and precisely tailored feedback to learners. The inherent scalability of stealth assessment renders it particularly valuable for educational programs catering to a substantial learner base. This scalability equips educators to proficiently assess individual progress and facilitate personalized development trajectories. AI tools, such as automated speech analysis or patient note evaluation, further augment this process by discerning learners' strengths and areas for improvement, enhancing the overall efficacy of the assessment endeavor (8).

## Conclusion

Stealth assessment represents a powerful tool for ongoing formative evaluation that seamlessly integrates into the learning process. Its transformative impact on medical education lies in nurturing self-directed learning, promoting reflective practices, and fostering the development of nuanced skills necessary for medical practice. As we shape the future generation of medical professionals, the adoption of stealth assessment stands as an elegant solution to enhance learning outcomes and produce competent and well-rounded healthcare professionals.

## Authors' Contribution

Conceptualization: AH, MK. Data curation: AH, MK, ET, SR. Methodology/formal analysis/validation: AH, MK, ET, SR. Writing – review & editing AH, MK, ET, SR

## Conflict of Interest

The authors declare no conflicts of interest.

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