

## Letter to Editor



# Qualifying online assessment during COVID-19 pandemic: Reflecting on our experience under the cognitive lens of Miller's pyramid

Dinesh Kumar<sup>1\*</sup> , Rajasekhar Sajja SN<sup>1</sup> <sup>1</sup>Department of Anatomy, Jawaharlal Institute of Postgraduate Medical Education and Research, Puducherry, India

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The coronavirus disease 2019 (COVID-19) outbreak has disrupted educational paradigms. Medical academic institutions have embraced a massive shift in terms of teaching online sessions, and have adopted and adapted telecommunication platforms. Medical schools have used both synchronous and asynchronous modalities of teaching. However, questions remain around the transfer of knowledge on the students' part: in remote settings, student understanding cannot be monitored easily as before. This problem is complicated by online assessments, both formative and summative.<sup>1</sup> During online discourse, 'assessment' has faced multiple challenges: (a) many teachers are not comfortable utilizing the current technologies, which calls for a fast-tracked faculty development program regarding online assessment; (b) the rigour, validity and reliability of online assessments are often viewed with scepticism owing in part to a lack of a setting standards; and (c) students' academic integrity while attending online examinations is highly variable and this can compromise the fairness and authenticity of assessment.<sup>2</sup> In other words, the assessment bar should neither be lowered too much, entitling all students to attain a passing grade, nor so complex as to confuse and demotivate the students. Either of these threatens the evolving dream of competency-based medical education with online or remote components. To help address these complications, some universities have switched to competency-based assignments instead of summative assessments.<sup>3,4</sup> However, keeping in mind the majority of institutes all over the world are using objectively structured practical/clinical examination (OSPE/OSCE) as the prime modality of online assessment, we will examine ways of using the principles of Miller's pyramid when applied to online assessment.

Objective structuring of questions is beneficial for tele-assessment because it has a more or less equitable array of

standardised test questions for all candidates and a stable construct validity.<sup>5</sup> From the various frameworks available for assessing a particular skill or competence, the pyramid constituted by Miller<sup>6</sup> is time tested and widely accepted due to its hierarchical nature of progression from factual knowledge ("to know") to the ability to practice ("to do"). Unfortunately, online assessment, by virtue of students being at a distance, faces issues of restricting assessment to the lowest rung of the pyramid through only testing the cognitive base and ignoring students' reasoning abilities. For example, conventional theory examinations test cognitive principles using written assessments. Similarly, preclinical practical examinations are based on the 'steeple-chase' model whereby students cross-stipulate a number of sections in a fixed period and the evaluation is done using a standardized checklist. When the theory examination was converted from written questions to MCQs (conducted via the Canvas<sup>®</sup> platform) the cognitive base was not addressed as an outcome. Similarly, when the practical examination was converted to series of factual/ image-based viva questions (conducted using the Zoom<sup>®</sup> platform), only the distal outcome of the process was discernible, and it was not possible for teachers to differentially analyse students based on their reasoning abilities.<sup>7</sup> It was observed that these assessments were able to provide only low-stakes score metrics and could not enable us to make high-stakes decisions (pass or fail) because of the risks associated with the reliability of decision.<sup>8</sup> Some examiners also expressed serious concerns that students were simultaneously referring to books and online sources during the assessment. Because of the difficulty in monitoring such activities, this has called into question the very 'purpose' of assessment.<sup>9</sup> Thus, conducting 'authentic' online assessment could be regarded as chasing a magical deer, in a sense, since at the outset it appears to provide us with a lot of opportunities

\*Corresponding author: Dinesh Kumar, [dinesh.88560@gmail.com](mailto:dinesh.88560@gmail.com)

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and at the same time it poses critical questions regarding its validity and reliability. Few are of the opinion that standard open-book examinations for testing problem-solving skills akin to clinico-pathological conferences coupled with competency-based assignments might enable the testing of the higher rungs of Miller's pyramid compared to non-authentic 'namesake' online assessments.<sup>3,10</sup> However, for novice learners such as first-year students, online assignments may be of considerable benefit. The faculty members should reach a consensus on what to expect from students at the end of the process and figure out which tasks require significant cognitive exercise. These tasks may be assessed using designated rubrics and marks thus allotted accordingly. Giving un-annotated images of models for labelling, creating MCQs, flashcards, model making with available materials, and short seminars on key topics, etc., are some of the pertinent options.

To conclude, COVID-19 has thrown us into a 'zone of unplanned educational disruption'. On one hand, we need to sustain our academic routines to the best of our abilities using feasible technologies. On the other hand, these measures should not be a mere eye-wash. Assessing learning outcomes is imperative and should be titrated according to the educational philosophy of the department. Any assessment should not be technologically demanding for either faculty or students and likewise it should not be simply a merry-go-round exercise for students. Brainstorming regarding components that need to be assessed, how to assess and how to authentically grade students might give us an optimal pattern that is adaptable to specific circumstances which can either be used as a short-term solution or integrated longitudinally.

#### **Ethical approval**

Not applicable.

#### **Competing interests**

None to be declared.

#### **Authors' Contributions**

DK has defined the concept, done literature search and designed the manuscript. R. S. S. S. N. has contributed towards manuscript preparation, edited and helped in terms of technical inputs

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