Advances in Medical Education and Practice

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LETTER

Rote learning: a necessary evil

This article was published in the following Dove Press journal:
Advances in Medical Education and Practice
2 August 2016
Number of times this article has been viewed

Robert Kwan
Cecilia Mafe

Faculty of Medicine, Imperial College London, London, UK

Dear editor

We read with great interest the short report by Sayma and William[1] exploring the teaching of physical examinations to junior medical students. The article highlights many salient points in aiding the memory and understanding of practical medicine and preparation of the clinical years ahead for preclinical medical students. The excellent use of interesting and engaging cases in teaching the physical examination is to be lauded, however, there is some debate to be had over the distaste for rote learning expressed in the article which we believe to be not ideal, but essential in progressing through medical school.

As final year medical students from Imperial College Medical School, London, who did not receive teaching on physical examinations until the third year of medical school – our first year in hospital – we applaud the recent efforts to apply more practical based learning sessions for our younger peers. Fresh out of school, these students are often itching to learn practical procedures, yet are met in more traditional medical schools with a hefty weight of core science that is a far cry from their aspirational dreams. The application of core clinical cases with the use of "famous" cases, making the learning scenarios humorous and engaging is a popular technique in medical schools, making the sessions more fun and interactive resulting in improved enthusiasm and recall.

Despite our appreciation of the article, which we feel is a valuable addition to promoting new styles of education, we believe the distain for rote learning (defined as "learning by repetition rather than by really understanding it")[2] expressed in the article is misplaced. Sayma and William correctly identify rote learning as a less efficient way of learning and this has been shown to be the case in other studies.[3] The drive for full understanding of medical concepts, however, has two fundamental flaws.

First, as the authors acknowledge themselves, a vast amount of knowledge is required to understand all components of a physical examination. Their results reflect this with nine out of the 20 students in the first cohort feeling overwhelmed by the amount of knowledge required. We feel a method of piling information upon students so that they can look for, recognize, and understand all the differentials for all the signs in a physical examination is asking the students to run before they can walk. As doctors and intellectuals we love working from first principals where the answers can be deduced from basic knowledge; however, in a rapid-paced physical examination superficial knowledge needs to be gleaned before more complex deep understanding can consolidate this learning and there often is no time to work back to first principals

Correspondence: Robert Kwan
Imperial College London, South Kensington Campus, Exhibition Road, London SW7 2AZ, UK
Tel +44 20 7589 5111
Email Robert.kwan10@imperial.ac.uk

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Dovepress
http://dx.doi.org/10.2147/AMEP.S115838

for every sign you encounter, although there would be in an ideal world.

Second, medical concepts are littered with myriad idiopathy, and thus understanding of why particular signs occur is impossible however hard a student may try to learn this. As students, soon to be doctors, we are very familiar with proposed theories of why signs occur which have little basis in fact, for example, the examiners favorite sign – clubbing, whose pathophysiology remains shrouded in mystery.[4] Learning the physical examination is much the same as learning scales on a musical instrument where muscle memory needs to be trained and in place before more complex melodies can be performed and this has been shown to have scientific merit.[5] This unfortunately requires rote learning which is tedious but essential in honing practical skills so that further detailed knowledge can be built upon this foundation.

The core concept of a core clinical case based approach outlined in this article is an excellent idea, regardless of our disputes with some of the claims made in the article. As an introduction to the physical examination and also as an aide memoire for history taking, the techniques proposed are a popular way to educate students in an entertaining fashion. The drive to teach concepts that will lead to understanding and thus better utilization and recall is the most efficient and effective method, however a combination of learning styles is generally required if one is to have a wholesome repertoire of skills to practice as a doctor. We believe that rote learning is still unfortunately an essential part of medical school and will remain that way for the foreseeable future.

Disclosure

The authors report no conflicts of interest in this communication.

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Author response

Meelad Sayma
Hywel Rhys Williams

Peninsula College of Medicine and Dentistry, Plymouth, UK

Correspondence: Meelad Sayma
Knowledge Spa, Royal Cornwall Hospital Trust, Treliske,
Truro TR1 3HD, UK
Email Meelad.sayam@students.pcmd.ac.uk

Dear editor

Thank you for the opportunity to respond to the letter we received regarding our article entitled: "A new method for teaching physical examination to junior medical students". As the title suggests, our intention was to develop a more effective model for teaching. We are very glad to hear that fellow medical students have critically engaged with our work. This encourages a process of collaboration that inevitably leads to a better end product. However, in order for such collaboration to proceed in a productive way, it is necessary that those contributing to the discussion have a correct understanding of the conclusions that we reached, in particular, with regards to our evaluation of the role of rote learning. Therefore, in the interests of promoting a constructive discussion, we feel it is necessary to isolate and draw attention to particular points made in our original article.

Kwan and Mafe are quick to emphasize the importance of rote learning in achieving academic success at medical school. This is suggested to be in opposition to the position we took, characterized as a "distaste" or "distain" for rote learning. It is true that we noted some limitations of rote learning, such as its reduced efficiency. This is something Kwan and Mafe also felt important to acknowledge. However, our criticism of rote learning went no further than this. In our article, we were also keen to acknowledge the "a necessary form of learning in order to excel at medical school".[1] Therefore, though Kwan and Mafe's letter was pitched to contradict our article, in substance, it shows nothing but agreement. For the avoidance of further confusion, the stance we take on wrote learning is that it is fundamentally necessary in order for medical students to achieve success at medical school, however it has limitations given the breadth and depth of knowledge medical students are required to recall.

Kwan and Mafe go on to identify two potential flaws in our method, an example of these is illustrated in the quote "we feel a method of piling information upon students so that they can look for, recognize, and understand all the differentials for all the signs in a physical exam is asking the students to run before they can walk". We feel however that these flaws miss what the teaching method intends to do. This article advocates the use of "core clinical cases to 'trigger' student identification of pertinent points during physical examination of each joint". This is not asking students to recognize and identify all differentials but focus on a small number of commonly presenting conditions that have memorable signs – with the aim of aiding recall of key physical examination maneuvres (eg, using the awareness of acute pancreatitis to be reminded to inspect the abdomen in a gastroenterology examination for Grey Turner's sign, without necessarily being expected to know each differential for this sign) – this is a key takeaway message of the article, as oppose to focusing on the depth of clinical knowledge expected in the later years of medical school.[2]

We would once again like to take this opportunity to express how glad we are to hear fellow medical students also taking an interest in the structure of their own curriculum. Our concern with regards to Kwan and Mafe's current contribution is that it is built on a misunderstanding of our position on rote learning. We thoroughly encourage them to continue to engage with literature concerning medical teaching and we would particularly be interested in learning of results of the application of our model, as set out in our article, in 'more traditional' medical schools such as Imperial College Medical School. We invite Kwan and Mafe, or any other interested senior medical students, to work toward further developing an effective model for teaching.

Disclosure

The authors report no conflicts of interest in this communication.

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