Author’s response to reviews

Title: A searchable database of medical education objectives - creating a comparable gold standard

Authors:
Sage Arbor (sagearbor@gmail.com)
Sam Brooks (sbrks2013@gmail.com)
Namita Biala (namita.biala@gmail.com)

Version: 2 Date: 05 Jan 2018

Author’s response to reviews:

1. The abstract requires the following headings 'Background', 'Main Body' and 'Conclusion' – DONE

2. Please include all authors institutional names and emails on the title page – DONE

3. After the conclusion please include a list of abbreviations used in the manuscript – DONE

4. Please re-write the author's contributions in line with ICMJE guidelines. Please list authors by their initials and ensure that all authors satisfy point 2 of this document - http://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html – DONE

To qualify as an author an individual must have

Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND

Drafting the work or revising it critically for important intellectual content; AND
Final approval of the version to be published; AND

Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

And please be specific how each author has matched the criteria above

5. Also, in the author contributions declaration please include a statement that all author's have read and approved the author's guidelines

BMC Medical Education operates a policy of open peer review, which means that you will be able to see the names of the reviewers who provided the reports via the online peer review system. We encourage you to also view the reports there, via the action links on the left-hand side of the page, to see the names of the reviewers.

Sami Shaban (Reviewer 3): I have four main points to discuss, the last one being the major one:

1. Minor point: The use of the bin and binnable is an old database term and for this this paper it's probably better to use category and categorize. This is really up to the authors though.

Changed to word category in all except one case in which I thought the term binnable was better.

2. I'm not sure why there is a focus in the paper on the first two years as the authors go beyond the basic sciences and add clinical disciplines into the database such as Internal Medicine.

I added discussion of the comparison between medical education in the United States vs other parts of the world (e.g. Europe). In a broad sense I explicitly stated the content focus of the first
two years in the American system, but then broadened that out to make the point this content (in the database) represents the total knowledge needed by the end of medical school and that content should be the same globally.

3. The issues that Reviewer 1 has raised have been addressed. Great

4. The issues that Reviewer 2 has raised are more fundamental and conceptual and have mostly been addressed but I agree with this reviewer's concerns and believe the paper needs a bit more. Hope these points will help in clarifying what I think your actions and response should be to reviewer 2's comments (there are three main points to be addressed, 12, 13 and 15):

12. "How is your work relevant to medical educators outside the US?" It seems you responded by adding google translation capability to the website. While interesting and beneficial to non-English speaking medical educators, I don't think this was the intention of the reviewer. Rather, medical education is fundamentally different in the US compared to outside the US. It's a graduate program in the US and an undergraduate program outside the US. So, the discipline objectives would be very different especially for the first two years.

See #15 below

13. "Cases". Yes, this is addressed in you response to Reviewer1-Q7 but should be expanded. List each case or utility separately and expand on them. Provide some usage counts for each of these cases. I believe this is important and will add value to the paper.

This database was a tool developed to be used by multiple schools but that will not happen until after publication. Therefore the only “usage counts” I could give would be from internal use of the database during development and while I waited for publication. While I had mentioned these I expanded this section to have more detail pasted below.
While the database has been “leaked” to a few colleagues at other schools during development, it has mainly been used at Marian University’s College of Osteopathic Medicine (COM), and mainly in the courses the developing faculty member (a biochemist) lectured in. Objectives have been searched for an initial foundational scientific knowledge course and biological system courses that followed: cardiac, pulmonary, renal, neuroscience, ear eyes nose and throat, dermatology, immunology, gastrointestinal, endocrine, metabolism, reproduction, and psychiatry. As a case example the psychiatry/behavioral course at Marian University was particularly heavy with external lecturers in the spring of 2017 and the database was used extensively. For that course all content (every sentence) from the psychiatry section of the First Aid board review book was mapped to a specific lecture in the course, and then much of that content had a corresponding objective from the database mapped to it. External lecturers were given all the content they were expected to deliver as well as suggested objectives. There were multiple changes made from the prior year, such as different lectures giving content, so a causal improvement due to the database’s use cannot be made. Yet it seems worthy to note that in the first step board test (COMLEX step 1) taken shortly after this psychiatry/behavioral course the Marian University COM scores on the behavioral section improved from 460 to 602 in the early summer of 2016 and 2017 respectively (the national averages were 506 and 588 in 2016 and 2017 respectively). This represents a move from 0.25 standard deviations below the national average to 0.08 standard deviations above the national average and was that year’s greatest improvement in any discipline compared to the previous year’s class.

15. This is similar to 12 and you have really not addressed this fully. Look at a few medical school curricula from non-US programs and compare and contrast with US programs in terms of discipline objectives. A statement about how applicable this website is to an international audience would be useful.

I added a discussion about the differences between medical schools between countries and framed the content of the database as the “final amount of knowledge that should be known/delivered before a student attains a medical degree” which should be applicable in all countries. Pasted below.

Medical school degree programs in different countries have durations that differ by multiple years but the final content of knowledge needed to be a doctor should be equivalent in depth and breadth.
The content of the database is derived from scientific societies based in the United States targeting medical students in the four year United States programs. In the United States medical school system there is usually a more rigorous structure during the first two largely didactic years, which is when content is tightly tied to objectives, and hence most of the database covers this medical education content. The latter two years of education in this system still has objectives covered in the database but they are less numerous and more broad.

Therefore, while the database should prove useful in other systems the year of education the objectives will map to will be different. For example, in Europe medical school is a longer program (6 years) starting in undergraduate years and can begin directly out of high school, therefore many of the objectives in this database may be too detailed for early years of a European education, or could be split up over more time.

The database does represent the final amount of knowledge that should be known/delivered before a student attains a medical degree.