

A critique of problem-based learning at the University of British Columbia

Is problem-based learning the best way for students to learn the medical curriculum? One medical student doesn't think so.

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Whenever I talk to doctors and professors about the method of teaching they received as students in medical school, they invariably answer that in the “old days,” their medical school curriculum was didactic and entirely lecture based, with no problem-based learning (PBL). How things have changed. Today the University of British Columbia Medical School includes PBL as a major part of the curriculum. In fact, by sequestering 6 hours per week in the schedule of a first- or second-year medical student, PBL usually takes up about as much time as lectures do. Given that PBL is a major part of the curriculum, it makes sense to ask whether this form of educating students is effective. By this I do not just mean asking, “Is it effective?” but, moreover, “Can it be made more effective, or can it be replaced by something more effective?”

This is how PBL is supposed to work: Students are placed in groups of seven or eight, with one tutor. These groups meet every Monday, Wednes-

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day, and Friday morning for 2 hours. Each week the groups tackle a patient case that is written to correlate with the lecture material for the week. For example, if the week's topic is “bleeding disorders,” the lectures will cover bleeding disorders and the PBL case will be related to a patient with a bleeding disorder. However, the groups are only given part of the case information on Monday morning. With the information they have, the students discuss, brainstorm, and problem-solve as a team during the two-hour session. Usually the first item on the agenda is brainstorming a differential diagnosis based on the presenting symptoms of the case. At the end of the Monday session, the group comes up with “learning issues”: topics that the students take home and research independently. These learning issues are usually items from the case that cause confusion or items that would be helpful in understanding the case. For example, a group may decide to research “classification of bleeding disorders,” or “what does MCV mean on a lab test?” The group reunites on Wednesday morning, each student having become wiser and more knowledgeable from doing his or her research. They discuss what they learned from their research, and then the tutor hands out more sheets

that give the students more information about the case. For example, the students may learn the results of the patient's lab tests, or the patient's condition may change, and so on. Wednesday's session ends with the creation of more learning issues by the group; then they go home and do research, and come back on Friday for the final session. At the end of Friday's session, the case is finished, the diagnosis is known, and all is well.

The philosophy behind this process is problem-based, student-directed learning, in which the tutor merely plays the role of facilitator. The tutors have all the case information in their tutor manuals, but they are only encouraged to intervene in the discussion if the students are getting hopelessly off track. If all goes well, the students should learn everything themselves by discussing with one another during the sessions and by doing their independent research outside the sessions.

Unfortunately, idealized PBL and actual PBL are not the same thing by any measure. Because the first PBL session is on Monday morning, the students have not had any lectures on the week's topic, and consequently they have very little idea about what is going on in the case. You might say, “But in the real world, doctors have

little idea about what's going on when they meet a new patient!" This is true. However, in the real world, doctors already have a good knowledge base from which they can draw and apply to the patient. Students lack this knowledge base, and are therefore generally hapless and helpless on Monday morning. For example, the tutor may hand out the first sheet that describes a patient presenting with hemarthrosis. Then the students, having no knowledge of hemarthrosis, do their best to hypothesize, usually incorrectly, about what could be going on. For example, someone might say, "Maybe the patient has a platelet deficiency and his blood can't clot so he's bleeding." For students on Monday morning, before they have had any lectures on the nature of bleeding, this hypothesis is very reasonable. So the rest of the students concur with this hypothesis, and the tutor likely remains silent, fulfilling his or her role as "facilitator." In fact, the tutor may not even know whether this hypothesis is valid or not, because many of the tutors are not physicians. The result is that the group finishes the Monday morning session believing that platelet deficiency (among other things) is a possible cause of hemarthrosis. It is not until during a lecture later that week, or during their independent research, that they realize hemarthrosis is caused by a clotting factor problem, not a platelet problem. Allowing students to speculate about mechanisms of disease is dangerous because they are inevitably going to get wrong ideas in their heads. And wrong ideas can be difficult to get rid of.

PBL is also grossly inefficient in its present form. Monday mornings are especially infamous among students for being a waste of time, for the reasons outlined above. The learning issues the group comes up with are frequently directed at material that is not part of the curriculum, which is no surprise because students generally do not know the details of the curricu-

lum. Other learning issues are covered in lectures. As a result, students spend several hours each week researching topics that they either don't have to know or that they will learn in lecture anyway. This inefficiency is epitom-

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mized by the tutor manual, which is in the tutor's hand throughout each session, and which has in it all the case information that the students need to know. However, the students are strictly prohibited from ever seeing it, even after the case is finished. My question is this: what's wrong with letting the students read the tutor manual? Why does the philosophy behind PBL demand that students receive as little help as possible? Why make students look up the information themselves when it's right there in the tutor manual? You might say, "It's important for students to know how to research!" I agree. But learning how to research, for the purposes of a medical student, requires a few hours per semester at most, not several hours per week.

Fortunately, there are some simple changes that can be made to improve this system. Every once in a while, students are lucky enough to have case workshops, which are in addition to and separate from PBL. These workshops are exactly what PBL should be. First, they are scheduled at the end of the week, after students have a good grip on the material provided in the lectures. Because students already know the week's material, they can do the workshop's several cases in a 2- or 3-hour period, rather than just doing PBL's one case in 6 hours. Doing several cases means more variety of

details, but more importantly, more reinforcement of the week's take-home messages. Second, the workshops are run by people who are there to teach, not to facilitate. Whether it's a professor going through cases with the entire class, or residents who each go through the cases with a small group of students, they are happy to take questions and give explanations. Students leave workshops feeling confident and knowledgeable because they have cemented their week's learning by working through cases with someone who makes sure they understand the important principles. This is the best and most efficient way to learn. Ideally every week in the first 2 years of medical school would look like this: lectures are given for the first few days, in order to provide a solid knowledge base for students; at the end of the week, perhaps on Friday morning for 2 or 3 hours, students work through cases to apply and solidify their knowledge, with the help of professors or tutors who are willing and able to teach, clarify, and correct if necessary. Furthermore, this model is more efficient as cases take 2 or 3 hours total; compare that to the current model, in which one case takes 6 hours plus research time, which for many students is another 6 hours. The time saved could either be filled with more lectures or used as study time.

By using this proposed model, students get the didactic, top-down method of teaching with the lectures—the best way to gain the solid knowledge base that every doctor needs. Students also get a way to test their knowledge by applying it to cases, while still being able to ask for help, and without being forced to speculate and do redundant research.

Disclaimer

Mr Provan acknowledges that he is only familiar with PBL as it is promulgated by UBC and therefore does not mean to critique its use by other medical schools in North America.