

# Editorial

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Problem Based Learning (PBL) has gained interest in engineering schools around the world. Thus, it is important to present a methodology for the study of PBL in engineering education. I am very grateful to Professors Anette Kolmos, Erik de Graaff and Xiangyun Du for suggesting and guest editing the current issue on this timely topic.

PBL, like any other tool or strategy, requires evidence to verify whether it is successful, and to explore its limitations. There are variations, both in the way we understand it and how it is applied. The popularity of the term could lead to the labelling of various approaches as PBL, although in some cases, they are far from it. Thus, one has to be careful when assessing an approach that has been described as being project-based learning. One has to be even more careful when comparing the results from different fields of study to those of engineering, not to mention among various engineering disciplines.

At one period of time, I suppose, all learning was purely problem-based. With the accumulation of knowledge it becomes less useful to *discover* all of what was discovered before. In a formal learning environment, the modern use of the term *problem-based learning* is attributed to researchers from the medical school of McMaster University in Hamilton, Ontario, Canada. However, the idea perhaps dates back to the early engineers who learned how to build pyramids, roads, bridges, etc. It could also be suggested that the formal approach finds roots in the methods of Socrates. Engineering educators could borrow another rediscovered idea: evidence-based medicine, EBM, which owes its modern origin to researchers, once again from McMaster University. Ironically the modern EBM is based on techniques from engineering, science, and statistics.

One may then ask why did engineering education deviate from problem-based and evidence-based concepts which have roots in the discipline of engineering. A possible reason would be the domination of the culture of expediency and mass-production in many societies. Perhaps one could parallel the rediscovery of these education concepts with the rediscovery, so far by a limited number of individuals, that the important characteristics of food include being nutritious and delicious rather than being merely massive and quick.

This issue of the IJEE also includes papers that address a variety of topics of interest to a wide range of engineering educators with the concept of evidence-based engineering education in mind.

Once again, I am very grateful to the guest-editors, and to the authors of all the papers in this issue. I hope the readers find these papers useful, informative and thought provoking.

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