The theoretical framework in papers about project and problem based learning used by researchers in Brazil

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Abstract

The aim of this work is to present the results of a survey conducted to identify the theoretical framework, which have been used in the classroom's experiences with Project Based Learning (PjBL) and Problem Based Learning (PBL) by Brazilian teachers and researchers in Engineering Education. To identify the theoretical foundation it was used works published in proceedings, from 2008 up to 2012, on Brazilian Congress on Engineering Education – COBENGE, a researcher's forum of Engineering Education in Brazil. Furthermore, was used the contribution of discussion that happened on a Directed Session, on the last edition of COBENGE, in 2013. This meeting was all dedicated to discuss this theme from five works, some of them that have reporting experiences using PBL and others that present some thoughts about the theoretical framework used on PBL or PjBL.

The importance of this research lies in the fact that knowing these references contributes to the construction of a more consistent research area. The previous knowledge built by researchers who pored over the problem of learning and have been cited to support and interpret the results of experiences of PBL and PjBL by Brazilian researchers, can help to understand what are the main ideas that have been linked to these strategies and even improve these experiences toward a better learning. This knowledge is often built from knowledge of different areas. The Education frequently uses the knowledge from sociology, psychology and others, establishing metaphors to facilitate understanding of classroom phenomena. Thus, the ideas and the results from others researchers are a benchmark from which the research/teacher will conduct its analysis and apply changes. In turn, this theoretical framework will also create a research's field, in which, researchers can exchange experiences, using a common language. The data of meeting were recorded and from them were identified categories used to draw a frame with the main ideas, and its authors, that influence the works with PBL and PjBL in Brazil. In order to do the analysis the authors used the content analysis method, which seeks to examine the contents of communications beyond its immediate meaning. The results show that the main authors quoted by Brazilian researchers on PBL and PjBL in Engineering Education, are authors in the field of Education, Psychology, Philosophy and Epistemology, being some of them cited by bring the constructivism ideas to these strategies. These references allow creating a theoretical scenario in which these strategies are framed: discovery learning; meaningful learning; lifelong learning; active student participation in learning process; environments supported by problems; etc. All of them are concepts that emerge from those authors and, in turn, share the idea that learning should be student-centred, who is the actor and author from his repertoire of knowledge. These ideas have connected the constructivism to PBL and PjBL with the purpose of organize schoolwork, create interpretive schemes to the students and a most critical and creative knowledge about the world. Beyond the ideas presented, a further discussion of elements of these authors and theories can still be performed, deepening the analysis of PBL/PjBL's experiences, an objective to be pursued and which should be part of the concerns of the researchers on Engineering Education.

Keywords: problem based learning; project based learning; symposium information; project approaches.