The Perceptions of Engineering Teachers on A “Practice What You Preach” PLE Training Program

Samuel Ribeiro Tavares* and Léa Paz da Silva†

*Universidade Nove de Julho, São Paulo, Brazil
E-mail: samueltavares@yahoo.com

†Universidade Nove de Julho, São Paulo, Brazil
E-mail: leapazsilva@gmail.com
Abstract: This study means to contribute to the theoretical foundations and practical applications of the PLE (Project-Led Education) methodology, which is still very incipient, and requires much discussion about how and with what results it has been being used in Engineering programs throughout the world. This paper offers a conceptual model of Engineering teachers’ necessary competencies in PLE developed by eight teachers from one of those three Universities studied by Tavares & Campos (2013), who decided to prepare themselves for the PLE methodology new teaching roles, through a training program designed on the basis of PLE methodology itself, which would allow them to experience the PLE methodology from their students’ perspective. A synthesis on the teachers’ perceptions about the training program, obtained through a Likert scale questionnaire, and confirmed through observation and unstructured interviews, indicated that a teachers training based on the PLE methodology can be an effective way for Universities to help them understand students’ and teachers’ roles in this new educational methodology.

Keywords: Engineering Teaching, Engineering Learning, Problem-Based Learning, Project-Led Education, Teachers Training.
23.1 Background

Informal talks with many of the teachers who took part in the research indicated that they (almost secretly) felt unable to adequately implement the PBL and PLE methodologies’ theory and practice in their classes, and, among the possible reasons for this, it stood out their perception that it was because they had been taught in the traditional way.

Exploring this point a little further, it was common ground that, as students, they had not been stimulated to comprehensively acquire Knowledge; that they had always worked alone or in ill-formed groups; and that they lacked the experience of critical thinking and problem solving, together with sharing common objectives and results (as required in the PBL and PLE methodologies), and so, as teachers, the concept of tutoring (supporting students’ cognitive/social skills development) was almost alien to them.

This led the authors to the idea of creating an opportunity where some of those teachers could practice what they were preaching in their classrooms, and to experience the PLE proposal as students, so that they could become aware of the opportunities and difficulties of intense team work, strict timelines, real life problems and interdisciplinary knowledge.
23.2 Purpose/Hypothesis

The purpose of this paper is to report the experience of preparing eight teachers from one of the three Universities studied by Tavares and Campos (2013) to take on their new roles in the PLE methodology, through a training program designed on the basis of the PLE methodology itself, in order to provide them with the experience of practicing what they preach.

The main research question was “Can a teachers training program based on the PLE methodology be an effective way for Universities to help them understand students’ and teachers’ roles in this new educational methodology?”

23.3 Design/Method

As method of approach¹ this study was developed under the inductive method²; as method of procedure³, this investigation embraced the monographic method²; as method of investigation⁴, this research adopted the case study².

From among the different techniques for data collection, this study relied on observation, unstructured interviews and a Likert scale closed-question questionnaire⁵; and, with regard to the techniques for data analysis, mainly the quantitative (the objective numerically expressed analysis of observed phenomena)⁶ treatment was applied.
For the organization of the training program Weenk and friends’ principles\textsuperscript{7} were followed, since they provide Engineering teachers with the opportunity of experiencing PLE learning from their students’ viewpoint: in a five session course participants underwent teamwork project development and management, whose final deliverable was the presentation of a conceptual model of Engineering teachers’ necessary competencies in PLE.

23.4 Results

Following the PLE methodology – marked by mutual cognitive and social interaction – participants, after collecting and analyzing data and information that could lead to the development of a conceptual model of Engineering teachers’ necessary competencies in PLE, arrived to the idea expressed in Figure 23.1.

Results of the answers provided by the participants in the Likert scale closed-question questionnaire are showed in Figure 46.1:

Analysis of the answers in the Graph of the Figure 23.2 revealed that: A) 70% of the participants totally agreed that the training program was designed to ensure content integration (questions 1, 2, 3); B) 75% of the participants totally agreed that the training program was guided by the project management methodology (questions 4, 5, 6); C) 85% of the participants totally agreed that
teamwork was an essential part of the training program (questions 7, 8, 9); D) 100% of the participants totally agreed that the tutor had to exercise the competences of coaching, facilitation and management in the training program (questions 10, 11, 12); and E) 85% of the participants totally agreed that the
training program was an effective way to understand learning and teaching in the PLE methodology (questions 13, 14, 15).

Participants' main ideas collected in the unstructured interviews general guidelines are: A) class time devoted to application of concepts by the participants and more time for one-on-one teacher-participant interaction are the most positive aspect(s) of the educational approach adopted by the training course to the PLE methodology; B) limited time frame for the scale of the task is the least positive aspect(s) of the educational approach adopted by the training course to the PLE methodology; and C) adjustment of time frame to the scale of the task is a suggestion for improving the educational approach adopted by the training course to the PLE methodology.

23.5 Conclusions

In face of the collected data, it is possible to infer that the answer to this research's main question is yes, a teachers training based on the PLE methodology can be an effective way for Universities to help them understand students' and teachers' roles in this new educational methodology.
Bibliography


