Universidade Federal do Pampa

STUDENTS' PERCEPTIONS ON PBL INTEGRATION IN A SE UNDERGRADUATE PROGRAM

This briefing reports the students' perceptions regarding PBL integration into a Software Engineering Undergraduate Degree Program at Federal University of Pampa - UniPampa. This integration is done through six courses, called Problem-Solving (PS), distributed in the first six semesters.

FINDINGS

The students´ perceptions were collected and analyzed according to the general learning objectives of the curriculum PS courses:

1. Establishing a relationship between Software Engineering theory and practice, producing perceivable results that demonstrate the skills developed by the students;

2. Developing the ability to work collaboratively in order to solve the proposed problem;

3. Developing a proactive attitude in the search for knowledge to solve problems.

The research involved 122 participants (students and bachelors). The participants were divided into four categories: Initial, Intermediate, Final, or Bachelor.

The Initial category is composed by the responses from students who are at the beginning of the program and, therefore, only attended the PS I and/or II.

The Intermediate category consists of the responses from students who attended to the PS III and/or IV.

Responses from students who have attended the PS V and/or VI were grouped in the Final category.

The Bachelor category is composed by the responses from participants who have obtained their Bachelor's degree.

Learning Objective 1:

- 86% of respondents agreed they can apply and acquire theoretical knowledge in the practice of problem-solving, 9% are indifferent and 5% disagree;
- This statement has greater consensus among respondents, indicating they realize that the problem-solving contributes to the learning of theory through practice.

Learning Objective 2:

- 64% of respondents agreed, 21% are indifferent and 15% disagree;
- This statement had the lowest percentage of respondents who agreed, thus signaling that teamwork is still, for some respondents, a challenge in PS courses.

Learning Objective 3:

- 79% of respondents agree in the PS courses they are encouraged to search solutions for the proposed problems, 14% are indifferent and 7% disagree;
- Therefore, the majority of respondents perceive themselves acting actively in the search for solutions to the presented problems.

Differences among the respondents of different levels:

- The objective 1 has a percentage above 78% of agreement in all categories;
- The Initial and Bachelor categories where 91% and 100% of respondents, respectively, agreed that they can apply and acquire theoretical knowledge in the practice of problem-solving;
- Respondents from Final and Bachelor categories have higher percentage of agreement with the objective 2 than the Initial and Intermediate categories;
- The percentage of respondents who agreed they are encouraged to seek solutions to the proposed problems (S3) is 100% in the Bachelor category and 82% in the Initial category.

Based on the respondents' perception, we concluded the objectives of PBL adoption in the Software Engineering program curriculum have been achieved. However, there is room for improvement, especially in relation to collaborative work.

Some hypotheses can be raised to explain why the statement about collaborative work have the lowest level of agreement among students:

(1) conditioning to work individually;

(2) the complexity of the group work, which involves dealing with communication, negotiation, organization, and people with different knowledge backgrounds and experiences;

(3) little maturity to resolve conflicts;

(4) discontinuance of group members during the process of solving a problem;

(5) strategies for setting up working groups.

Keywords:

Problem-Based Learning, Software Engineering Undergraduate Degree Program, PBL integrated into the Curriculum.

Who is this briefing for?

Software engineering academics who want to make decisions about PBL adoption into the curriculum.

Where the findings come from?

All findings of this briefing were extracted from a research instrument applied by Guedes *et al.* to both undergraduate students and bachelors in the program.

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What is included in this briefing?

Main findings of the research instrument applied to the participants.

by Guedes *et al.*

ORIGINAL RESEARCH REFERENCE

Gilleanes Thorwald Araujo Guedes, Andréa Saabedra Bordin, Aline Vieira de Mello, Amanda Miencke Melo. **PBL Integration into a Software Engineering Undergraduate Degree Program Curriculum: An Analysis of the Students' Perceptions.** Proceedings of SBES'17, Fortaleza, CE, Brazil, September 20–22, 2017. DOI: https://doi.org/10.1145/3131151.3131178.