Active Learning Approaches Applied in Teaching Agile Methodologies

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Abstract

We need to modernize education to form adaptable leaders who can tackle evolving challenges in our dynamic world. Insper's computer science program is designed to reflect this need with an innovative infrastructure, curriculum, and industry partnerships. We use active learning methodologies to teach agile methodologies and develop soft skills to solve real-world problems. Our focus is on non-violent communication, feedback techniques, and teamwork, along with constant interaction with industry professionals who share their experiences with students. Our goal is to provide students with a well-rounded education that equips them for success in the digital age. This work-in-progress research project describes our approach to teaching and our objective to prepare students for the future in the context of an innovative first semester experience on a CS program.

Keywords: Active Learning; Engineering Education; Developer Life; Agile Methodologies; Soft Skills.

1 Introduction

Computer Science education has been evolving to keep pace with the rapidly changing technology landscape. Venkateswaran (2022) notes that one reason for this evolution is to bridge the gap between industry needs and academic training. Disciplines such as Software Engineering, which were not previously part of the curriculum, are now mandatory, covering topics like Agile Methodology, Scrum, Kanban, and Lean. Soft skills development has also become a major focus, as software engineering professionals often collaborate with people from diverse cultures and time zones.

Active Learning approaches have been used in computer science courses as an alternative to passive and sequential teaching methods. The active learning approaches include hands-on activities, problem-solving, projects, collaboration learning, and other interactive practices.

In this paper, we describe the approaches used to teach agile and develop soft skills in an undergraduate Computer Science course at Insper Institute. The course, called Developer Life, is offered in the first semester of the program, and covers topics such as algorithms, logic, programming, design, agile methods, and soft skills. The course is distributed throughout the semester, with emphasis on hands-on activities, real-world problem-solving, and constant interaction with industry professionals.

2 Literature Review

In recent years, considerable research has discussed and shared active learning practices to teach agile methods and soft skills in computer science courses. This section has described the studies that guided the research.