Unveiling the Teaching Methods Adopted in DevOps Courses

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***Abstract.** DevOps practices arose to coordinate development and operation teams and ensure rapid and reliable new software releases. Although there is a considerable demand for preparing new professionals in these practices, fewer studies investigate teaching methods in DevOps Education. Our dissertation investigates the teaching methods reported in the literature and in interviews with DevOps educators. We also studied their connection with DevOps educational challenges. Our results indicate teaching DevOps by adopting practical teaching methods in a collaborative learning environment.*

***Resumo.** As práticas DevOps surgiram para coordenar as equipes de desenvolvimento e operação e garantir a rapidez e confiabilidade de novas versões de um sistema de software. Embora exista uma demanda considerável para a preparação de novos profissionais nessas práticas, poucos estudos investigam métodos de ensino na Educação DevOps. Esta dissertação investiga os métodos de ensino relatados na literatura e em entrevistas com educadores DevOps. Para ambos os casos, estudamos a sua relação com desafios de ensino de práticas DevOps. Nossos achados sugerem que os educadores deveriam favorecer métodos de ensino práticos para ensinar DevOps, inseridos num ambiente de aprendizagem colaborativa.*

1. Introduction

DevOps (Development and Operations) has emerged as an effort to respond to the need for agility in software companies. It aims to reduce the time between propagating new code to the production environment. Consequently, these code changes are made available to users more quickly. For this reason, there is a considerable request for DevOps professionals, with many related job postings.

Investing in DevOps teaching is a recommended approach with the potential to address and mitigate the industry demand. Educators guide the students throughout the learning process, using the proper teaching methods and supplying appropriate learning conditions [Kilamo et al. 2012]. Nevertheless, as a new research area, limited research focuses on teaching methods in DevOps Education [Ferino et al. 2021]. This represents a challenge for educators when planning DevOps courses since they could be unaware of available and recommended teaching approaches.

This dissertation aims to improve the teaching of DevOps by studying the teaching strategies employed in existing courses, including blends of teaching methods. This research focuses on helping DevOps educators during course planning.

2. Methodology

Our work includes analyses of teaching methods in the DevOps teaching literature and interviews with DevOps educators. First, we extracted the teaching methods from 33 primary studies, 18 from Fernandes et al. [Fernandes et al. 2020]. We also evaluate the educational challenges identified in those empirical studies, checking any mitigation strategy to deal with these challenges. Second, we extracted the teaching methods from 14 interviews from Fernandes et al. [Fernandes et al. 2022]. We also identified links between challenges and recommendations that contain teaching methods in their recommendations. Finally, we compare the results extracted from the systematic literature review and interviews.

3. Conclusion

Our dissertation investigates teaching methods in DevOps Education based on teaching experiences from different sources. The results suggest educators favor practical methods to teach DevOps, building a collaborative learning environment. Although this approach requires more workload than traditional lecture teaching, it enables students to experiment and reflect on the DevOps implementation challenges.

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