

Poster: When Students Meet Developers: Are Barcamps a Format for Interactive Software Engineering Education?

A Teaching Experiment

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ABSTRACT

While barcamps have been adopted as a learning format for IT professionals for some years, only a few examples for their adaptation as a setting in the higher software engineering education domain have been published so far. Therefore, in this paper a teaching experiment of undergraduate students attending a developer barcamp is described and evaluated. While its results are promising in general, the impact of the intrinsic motivation and previous skills of the participants appears to be crucial for the success of the format among students, in particular for non-computer science majors.

CCS CONCEPTS

• **Social and professional topics** → *Software engineering education*;

KEYWORDS

Barcamps, Software Engineering Education, Non-Computer Science Majors, Students' Motivation

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1 INTRODUCTION

Barcamps are informal conferences characterized by a high degree of self-organisation and the absence of a hierarchy among the heterogeneous participants that typically last 2 to 3 days [4]. The actual program is arranged in a get-together at the beginning of each day, where all participants are free to propose an issue that they want to learn about or present in a time slot (called a session)[4]. If there are more proposals than time slots, the participants have to vote for their favorite topics and those that get the most votes are selected, so that the final program of such an “unconference” is unknown in advance [4].

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Barcamps have successfully been adopted as a format for professionals in IT and software development since their invention in 2005, but their application in the context of higher education is a more recent phenomenon [2–5]. Here, the concept of educamps has been proposed to transfer the idea of barcamps to an educational setting [1].

However, the participation of students in a real developer barcamp together with professionals has not been considered as a learning scenario for software development in higher education so far [6, 7].

Therefore, in this paper results from the evaluation of a teaching experiment are presented in which a group of undergraduate students attended a developer barcamp to analyse its feasibility, impact and benefits from the students' perspective.¹

2 RESEARCH DESIGN

The goal of the experiment was to explore developer barcamps as a format for undergraduate students in non-computer science majors to acquire or improve skills on software development. The design of the teaching experiment is illustrated in figure 1. The convenience sample is a group of 8 third-year non-computer science major undergraduates, who had basic knowledge in software development. They study Information Management Automotive (IMA), Information Management and Corporate Communications (IMUK) or Business Information Systems Engineering (WIF). The evaluation was performed using paper-based questionnaires, which were transcribed and analyzed using MAXQDA12².

3 RESULTS AND IMPLICATIONS

Expectations: The first questionnaire revealed that none of the participants visited a barcamp before and none of them took part in the official online poll of the organizers to determine relevant topics for the sessions prior to the barcamp. Regarding their perception of team work, they considered the opportunity to share opinions and complement each other as positive aspects, while the strong dependency on the sociability of the group members can pose a risk. Nonetheless, all participants looked forward to the interactive format and wanted to learn more about topics such as GUI testing, Big Data, or Javascript.

Experiences: After the camp all students stated they achieved their learning goals and felt satisfied with their personal outcome. In contrast, 6 out of 8 students said that many of the session topics were too complex, especially in sessions of a rather theoretical

¹<https://developercamp.io/>

²<https://www.maxqda.de/>

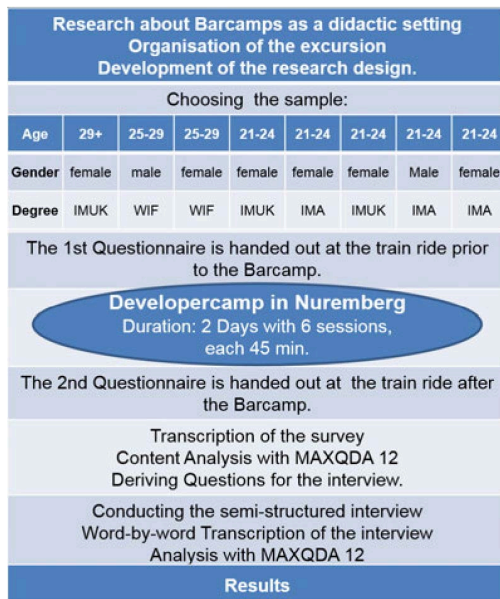


Figure 1: Design and execution of the teaching experiment. Steps performed in sequential order from top to bottom.

nature. Also, only one of the students actively contributed in one session. When asked to compare learning in their courses with that at the barcamp, the most prominent differentiation was the opportunity to choose a topic of one's interest and the voluntary nature of the sessions. Even though they would all visit a barcamp again, they concordantly agreed that more advanced students from higher semesters with more knowledge on software development would be more suitable for this format.

3.1 Semi-Structured In-Depth Interview

To get a deeper insight into the underlying reasons for the survey results, we performed a semi-structured interview with one of the participants. The interviewee was chosen, because her point of view due to her status as both a student and tutor was deemed to be of special interest and an addition to the written surveys.

She considers her programming skills good, but below a professional level. However, she felt fully accepted by the other participants with an academic or professional background and described the atmosphere as very open and authentic.

She felt like it was easier to ask questions during the barcamp sessions than in class, because she was not afraid "to ask something stupid". She felt motivated by "genuine interest", different from the "forced interest" in the university. According to her the voluntary participation and freedom of choice are the best features of a barcamp, which are not given if there is any form of examination.

When asked about her opinion on the feasibility of a comparable format in an educational context, she stated that she cannot imagine all of the students would benefit from this scenario since it requires sincere interest in software development.

3.2 Discussion and Limitations

Discussion: The lack of engagement into planning their activities prior to the camp indicates a deficiency in self-organisation among the undergraduate students. It is also interesting that the students look forward to the interaction and knowledge exchange while having ambiguous opinions about teamwork and their own skills. The responses on comparing the different learning scenarios reveal surprising inhibitions concerning active participation in the educational context, which are reduced in voluntary settings.

Limitations: The validity of the results presented is very limited due to the singularity of the teaching experiment and the small sample. In addition, the participants consisted of a convenience sample of volunteers, so they were interested in the topic in general, which might add a bias to the results. Also we were not able to measure the achieved learning outcomes with an objective instrument like an exam.

4 CONCLUSION

In conclusion, in this paper we presented results from an explorative teaching experiment on the feasibility, impact and benefits of using barcamps as a learning setting in undergraduate software development education for non-computer science majors.

While all participants liked the setting and atmosphere of the developer barcamp, they engaged on varying degrees. In general, the required pure intrinsic motivation to learn and interact was considered positive by the participants, but they themselves did not feel capable of contributing a lot during the sessions.

Therefore, the intrinsic motivation and previous skills of the participants appear to be crucial for the success of the format among students, in particular for those from non-computer science majors.

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