Exploratory Testing: A Multiple Case Study

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The goal of our research study is to investigate the effectiveness of Exploratory Testing as a method for identifying software defects in a higher education settings. To be more specific, the aim of the study is to compare the results of Exploratory Testing with those obtained by using “traditional” scripted testing, and to evaluate the relative effectiveness and thoroughness of these two approaches in detecting and resolving software bugs. Additionally, the study aims to explore the factors that contribute to the success or failure of exploratory testing, like the experience and skills of the testers, the test plan quality and the complexity of the software being tested.

- Research question paragraph

- How does exploratory testing compare to traditional scripted testing in terms of effectiveness in identifying software defects in a higher education setting?

- What factors contribute to the success or failure of exploratory testing in higher education settings?

As far as methodology is concerned, the chosen approach for comparing the efficacy of exploratory testing and scripted testing consists of conducting an experiment in which participants (either software development teams or student) are randomly assigned one of the two testing methods and the number and severity of identified defects are measured. The study is to be conducted in a higher education setting and while the exploratory testing group will receive training on the concept and practice of exploratory testing, the scripted testing group will receive training on writing and executing test scripts. In this context, the data is going to be collected through a combination of observation, test results recordings and surveys given to the participants to notice their point of view of the involved testing methods. To provide a proper answer to the second research question, a qualitative research design is to be used, where interviews are conducted with software development educators, practitioners, and students who have experience with Exploratory Testing in a higher education setting. Thus. The collection of the data is done through semi-structured interviews where participants are asked about their experiences with Exploratory Testing, and their perceptions of its benefits and limitations. The collected data is then analyzed to identify themes and patterns related to the success or failure of exploratory testing and what the exact factors are.

The main metric for comparing the effectiveness of Exploratory Testing to Scripted Testing consists of the number and severity of identified bugs and errors, while secondary metrics may include the time that was required to properly identify and fix the mentioned defects, the code coverage, and the overall user satisfaction. Thus, the results of this comparison may be able to provide insights into which testing method is more effective and efficient for identifying software problems in a higher education setting. To measure the factors that contribute to the success or failure of Exploratory Testing methods, metrics such as the code coverage and the required time to identify defects are also being considered. The time and cost of training is also taken into account, as it can be considered as a metric used to measure the efficacy of exploratory testing and help in pinpointing the factors that contribute to the success of failure of this testing approach in a higher education setting.