

A new approach to aid in-class activity and examinations of students

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Using modern technologies can have very positive impact in learning process. Previous research projects showed that using interactive tests can help with preparation of students for lectures [1] [2]. Students are better prepared and thus have better final results. Using modern interactive learning tools have also advantages from the teacher's view. These systems can reduce time spent with preparing tests and with some organizational stuff, so the teachers can focus more on teaching.

Some of the teacher's most time consuming activities include preparing and evaluating of tests. They have to prepare more versions of the test, evaluate each test and another issue is potential loss, falsification or damage of paper tests. Another problem is student's problematic handwriting.

Students and teachers use various examination tools for student learning and examination [1]. Our faculty utilizes systems such as Moodle [2]¹, Peoplia², AIS³, ASQ [4], Alef [3], Alef-tng⁴ and special custom systems like OSA server. Students are sometimes confused, because they are supposed to use too many different systems through semester. We designed and implemented learning and examination system, which takes all advantages of other similar faculty systems and brings some new innovative functionality. One of the significant innovations is that our system supports mobile devices, because nowadays, almost every student has at least one mobile device. Since we are using responsive web design techniques, almost every device is capable to work with our application.

Our solution brings almost same learning features as in previous versions of Alef (Adaptive Learning Framework), which was successfully used in some courses over past years. Majority of new features are related with examinations, for example management of tests, writing tests and evaluation of tests. Tests are started directly during the class by teacher. After starting the test, teacher shares private access key for test with students. Therefore, only students attending the class have access to that test. Cheating is minimized because our solution includes logging of restricted attempts. Test security is covered also by our recommendation system which generates different

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¹ <http://moodle.fiit.stuba.sk>

² <https://www.peoplia.org/fiit>

³ <https://www.is.stuba.sk>

⁴ <https://aleftng.fiit.stuba.sk>

questions each time and creates unique test for each student. Thanks to using university LDAP, our system does not need separate user accounts. The flow of our application is visualized in Figure 1.

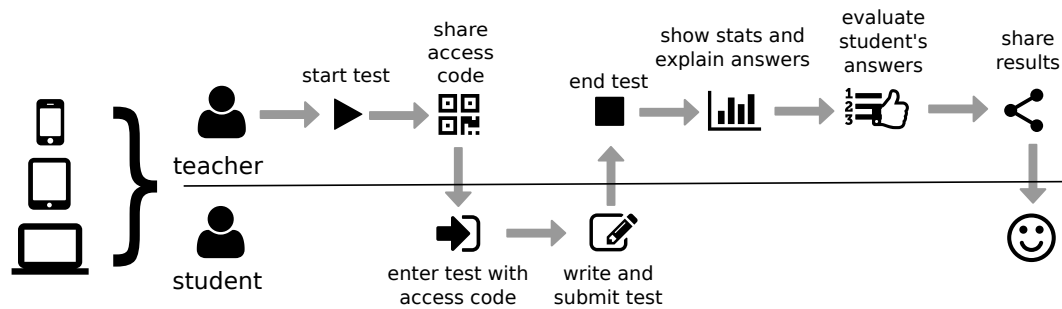


Figure 1. Process of examination using designed system

System automatically evaluates all questions with available answers (single or multi choice). Other types of questions, such as evaluating questions, open text questions or photo answer questions, are evaluated manually by teacher. After finishing the test, teacher can show test's statistics. These statistics are supposed to bring quick feedback and start discussion about test and its correct answers. Teacher should explain why one answer is correct and the other one is incorrect. Considering that teacher do not know which questions will be chosen for test, teacher has to prepare for any questions relevant with current topics. Ultimate goal of this project is to persuade students to continuously prepare to each class, because they know there can be test during the class, where they can get some reward. Recent studies reveal lots of benefits of continuous learning. Continuous learning helps remember more information, more precisely and for longer-term. Our system can also be used as universal attendance system, because test completion serves also as a mark in attendance. Thanks to many export features, some data can be imported into AIS.

Our vision is to make classes more attractive, easier to learn and more entertaining. We want to make revolution in learning. We are also researching impact of modern teaching methods on educational process and student results. To transform the vision to reality we are using faculty system called Alef-TNG. Our goal is to remake this system to be more user-friendly, adaptive and support more types of questions. Thanks to innovative features, our system improves whole educational process for everybody participating in this process.

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