

Bundling Efforts – How to offer quizzes as a service for lecturers

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Abstract: At the FAU the beginner lectures in Analysis and Linear Algebra are held by different professors every year. So a professor who would create a quiz could only benefit from it once. As a result most professors refrained from offering quizzes out of time reasons. Thus a central position was introduced to bundle efforts and to offer and maintain quizzes for the professors to use in their lectures. Supported by the E-Learning Project QuiS, accompanying quizzes for the above lectures were realized.

Keywords: online test; question categorizing; formative assessment

Initial Situation and Goal

At the FAU the beginner lectures in Analysis and Linear Algebra are held by different professors every year. So a professor who would create a quiz fitting his lecture could only benefit from it once. As a result professors seldomly offer quizzes or if they do, they are not used again.

Thus the e-learning coordinator for mathematics, below referred to as project manager, initiated a project to prepare, document and provide questions in one central place and to create new question pools and quizzes for the regular use by the lecturers of the Mathematics Department for the teaching in Analysis and Linear Algebra and improve the start of the first-year students.

Steps

After funding and support was assured by the BMBF³-project QuiS, the project manager and the associated assistants first categorized the questions. These included STACK questions, but also questions like multiple choice and gap questions in StudOn, the Learning Management System at the FAU, which is based on ILIAS. An extra documentation in excel gave an overview of the questions and documented the revision status.

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Second, a design guideline for question creation was defined. It described how to write the question title, give points, choose the adequate question type and how to implement it.

Third, quizzes were created for Analysis and Linear Algebra by the project manager. Thus some new questions were created too and categorized. In the end the lectures in Analysis I and Linear Algebra I were supported with 223 questions in 29 quizzes and the lectures in Analysis II and Linear Algebra II were supported with 113 questions in 14 quizzes. 783 questions were categorized and sorted in question pools.

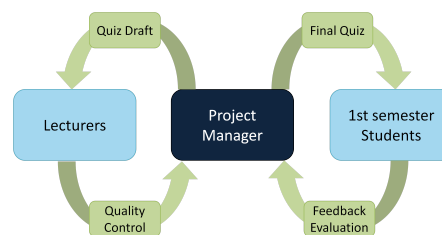


Fig. 1: Work cycle for the creation of quizzes

Forth, the work cycle for each quiz came into play (see figure 1). The quiz drafts were checked by the professors who then gave quality feedback to the project manager. The project manager implemented the feedback and gave the final quiz to the students. After practising their skills with the quizzes, the students could also give feedback on each test. The project manager revised the feedback and communicated the necessary changes of content, design and question type to the associated assistant.

Fifth, the whole quiz support was evaluated among the students. About 20% of the students, who used the offer, gave feedback and acknowledged that the quizzes were a sensible and helpful addition to the lecture. They would recommend them to repeat the content of teaching, to check the knowledge and apply it. They only wished for a working solution. After that was implemented, it led to a negative development: students directly consulted the solution without trying to find the answers themselves. This was changed in the next cycle: students now only get feedback if they give an answer. If they answer wrong, specific hints are provided.

Conclusion

The service to provide professors not only with questions, but also with quizzes was seen very positive and the amount of effort for the professors was deemed justifiable. The effort for the project manager on the other hand was unexpectedly high. To create and control the quizzes one has to acquire the knowledge of a very good lecturer for this specific lecture and dive deep into the teaching content to avoid mathematical mistakes and to assure the didactic quality. The support from QuiS and the contact to the QuiS- and StudOn-Team was essential and very helpful. Since the quizzes were well received by students and lecturers, the question pool will be extended and e-exams will be introduced at the Department of Mathematics summer 2020 as a pilot project.