

Technology Based Assessment ... in Afghanistan



At the DIPF [Centre for Technology-Based Assessment \(TBA Centre\)](#), experts from different disciplines are engaged in collaboratively developing and researching computer-based assessments of learning outcomes. The teams bring together expertise from the fields of psychology, computer sciences, psychometrics and engineering. They support assessments such as the [National Educational Panel Study](#) or the international [PISA studies](#). Recently, the Centre was involved in a project under the lead of the [Deutsche Gesellschaft für Internationale Zusammenarbeit \(GIZ\)](#) to develop a selection procedure for model schools in Afghanistan. [Dr. Jean-Paul Reeff](#) coordinated the TBA Centre's part, while [Angelika Sichma](#) was responsible for processing tasks for the computer-based competency assessments which were developed at DIPF and the University of Luxembourg. We met both Reef and Sichma in Frankfurt.

First of all: what happens at the TBA Centre?

Angelika Sichma: At the TBA Centre, interdisciplinary teams are engaged in working on technology-based methods for the assessment of competencies. For example, we develop computer tasks for large-scale assessments such as PISA, and investigate, for example, how we can use the technical possibilities computer-based assessment offers and how we can design tasks in an even more interactive way. In the field of education, we can expect to see competencies increasingly assessed with computers. Besides conducting research in this field, we also develop our own software, e. g. the [CBA ItemBuilder](#), a so-called authoring tool that can be used to create items, i.e. computer-based tasks. These items will subsequently be implemented in computer-based tests.



Angelika Sichma is a project assistant at the TBA Centre. In the GIZ project "Strengthening of German-supported Schools in Kabul", she implemented tasks for the schools' admission test with the CBA ItemBuilder. Photo: DIPF

Who draws on the TBA Centre's expertise?

Jean-Paul Reeff: We receive commissions and requests for cooperations from different angles. At an international level, for example, from the OECD in the context of [PISA](#) or [PIAAC](#), and in the German-speaking area for instance from the University of Bamberg regarding the [National Educational Panel Study \(NEPS\)](#). A couple of years ago, I was approached by the GIZ, who asked me to compile an expertise for an admission procedure for model schools in Afghanistan. I then recommended the TBA Centre for the technological implementation of the admission test.

Could you explain this project in more detail?

Jean-Paul Reeff: Test developments and follow-up advice concerning the expertise were part of the infrastructure project “Strengthening of German-supported Schools in Kabul” (“Stärkung der von



Jean-Paul Reeff is head of the liaison office International Cooperation in Education at DIPF and Senior Consultant at the Luxembourg International Innovation Management and Consulting S.A. He coordinated the development and operation of the admission tests for the GIZ project “Strengthening of German-supported Schools in Kabul”. Photo: DIPF

Deutschland geförderten Schulen in Kabul”). The German government had commissioned the GIZ to run this project in Afghanistan under the management of Paul Glause. Instructional quality at three model schools in Afghanistan is to be improved by means of training and re-training teachers as well as providing for cutting-edge teaching material and upgrading the schools’ infrastructure. In the latter case, improvements concern the installation of heating systems that will work throughout the year, the construction of gyms or modernisation of technical equipment. The GIZ wanted to identify the most talented students for enrolment in the model schools by means of an admission test. To develop the tasks, my consulting agency and the TBA Centre collaborated with the Department of [Education and Development](#) at DIPF and the [University of Luxembourg](#). Because the aim of the test was to identify high-potential students, I recommended a focus on general rather than domain-specific competencies. To this end, we implemented certain intelligence tests, working memory tests, and problem solving procedures.

Angelika Sichma: At DIPF, [Dr. Patrick Lösche](#) delivered working memory tasks and intelligence test items, while problem solving tasks were contributed by [Professor Dr. Samuel Greiff](#) and his team from the University of Luxembourg. At the TBA Centre, [Robert Baumann](#) and I were in charge of the technical implementation and realisation of the tasks with the ItemBuilder. We subsequently delivered the items and processed the data.

How exactly was the project run?

Jean-Paul Reeff: Fortunately, we were given sufficient time and the GIZ provided appropriate funding for a sound preparation of the admission test. That is, tasks were initially developed in Germany and tested for a first time. We then ran so-called cog labs (cognitive labs) in Kabul. Here, test tasks were solved by a small number of students, while qualitative methods of observation simultaneously served the

purpose of finding out how the students were coping. With this procedure, problems that might occur when working on the tasks can be identified at an early stage. We also ran a comprehensive pilot study two months after the cog labs to control the degree of difficulty and test task parameters. The actual admission test was finally carried out in March 2017.



Girl in so-called cog lab session. Photo: Nasir Mahboob

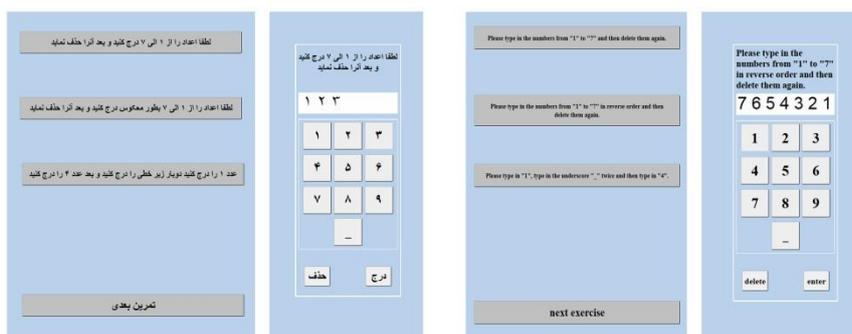


The pilot test. Photo: Nasir Mahboob



The admission test. Photo: Nasir Mahboob

Angelika Sichma: For me, the first step was to implement and align the tasks delivered by the team in the ItemBuilder. The items were then translated into Dari, for which we collaborated with a translator. Of course, the different test rounds led to feedback and modification phases. For example, the cog labs had revealed that the written instructions for solving tasks were rather unsuitable because students with lower reading competence levels were placed at a disadvantage. We therefore decided to produce explanatory videos in Dari to use instead. Moreover, the pilot phase showed that some children had finished working on the tasks very quickly or merely clicked through the items. Therefore, I integrated so-called stoppers and a password for each task, which all students received at the same time in order to proceed. We were thus able to ensure that each student was able to spend the same time on each task. So prior to launching the test properly there was a lot of preparation and collaboration, particularly with our Afghan colleague Nasir Mahboob, who coordinated the project in Afghanistan, too.



Preparation tasks for the admission test, used to enable students to practise the necessary computer skills.

Did you notice any cultural or regional particularities when running the project?

Jean-Paul Reeff: Occasionally, conditions were indeed extraordinary. For example, working memory tasks were designed in a way that a stimulus appeared on a computer screen, e. g. a number, which later had to be repeated in a different sequence. If a student is distracted at the very moment the stimulus appears, this task can no longer be solved. Of course, disturbances might occur anywhere in the world, for instance pacing test administrators or opening doors may distract a student. However, when running the pilot tests, we had chosen a school we thought ideally suited because it is very well organised and hardly ever affected by power failure. This school was, however, situated close to the presidential palace and there is regular noise from low-flying helicopters. That's disruptive! Moreover, security measures at this school are very strict even for Afghanistan, so that we finally decided to conduct the selection procedure in one of the other two model schools: when running the pilot test, one of our colleagues was not admitted to the school one morning because he did not carry a GIZ identity card. He had to wait outside in the cold for an hour. Of course, we could not put 200 children at such a risk. The actual admission test could eventually be carried out without too much disruption. And after the TBA team completed its analyses, the students were allocated to the model schools.

Are the test tasks in Dari now openly accessible?

Angelika Sichma: The tasks are not generally available, they remain under lock. But their compilation has of course considerably contributed to further developing the ItemBuilder. It had previously not been used to create tasks in an Arabic language – a language that is moreover written and read from right to left. We newly programmed all that, and it is currently helpful concerning an OECD study, where items also have to be translated into Dari.

Jean-Paul Reeff: In the case of further implementations of the ItemBuilder in Afghanistan, a long-term goal would be to enable local colleagues to develop tasks with this tool on their own and work independently over a certain period of time.

How can the ItemBuilder generally be used? Is it available to anyone?

Angelika Sichma: The CBA ItemBuilder is an Open Source tool that is developed for empirical educational research. Principally, anyone who would like to use the tool in a scientific context can contact us. Of course, we continually offer updates and provide user support within reasonable limits. After all, we can benefit from any feedback from users and take it into account when further developing the CBA ItemBuilder.

Thank you both very much!

[Further information on the project](#)

[Further information on the TBA Centre](#)

[Further information on the CBA ItemBuilder including video tutorials](#)

Interview: Stephanie Pauly