MOBAQ-LUX8 – Elaboration of competence-oriented test items for 8-year-old Luxembourgish students

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Introduction

The University of Luxembourg conducts the project of Basic Motor Qualifications (MOBAQ) in order to gather more information on the motor status and potential deficiencies of young students at the age of 8 years. The MOBAQ-concept is an innovative competence oriented approach to evaluate basic motor qualifications of students permitting PE teachers to foster students individually (DMS, 2012).

Aims of the project

The first step of the project is to elaborate competence-oriented test items according to the MOBAQ-approach (Kurz & Fritz, 2007) and according to quality criteria of standardized tests. A next step is to use the test battery in a pilot study to establish a diagnosis tool for pedagogical purposes in several school classes of the class level 2 in elementary school in Luxembourg. Those results should help to identify students with remediation needs on school and classroom level, in order to be able to suggest specific services and offers to students and their parents.

Theoretical background

In opposition to usual approaches based on abilities and the statistical legitimation of minimal standards (e. g. skill-oriented test batteries), the MOBAQ-approach fixes normatively basic motor qualifications as minimal requirements for students to be able to participate in the movement culture. In accordance to the MOBAQ-approach, a basic motor qualification can be described as a motor task that (1) is sufficiently complex, in order that students have to provide ability, knowledge, and motivation to master it (2) is related to a specific context or domain and thus can be defined as a competence; (3) is usually codified in a binary way, e. g. can only be passed or not passed (Kurz & Fritz, 2007; Kurz et al., 2012a; Kurz et al., 2012b).

Criteria for MOBAQ-Test-Items

This approach and the experiences made during the development of MOBAQ-NRW and MOBAQ-LUX have led to several criteria for MOBAQ-test-items (Kurz et al., 2012a): (1) There is a consensus of the minimal requirements for children or adolescents to be able to participate in the culture of human motion in the sense of cultural participation; (2) the test situations do not demand specific technical requirements but are designed functionally in order to give place for individual solutions; (3) the limitations of the minimal standard are accepted as verisimilar for the living environment and have no time or other measurable limits or expectations; (4) all qualifications needed to solve a problem can principally be learned or reached by all children or adolescents, which means that their physical requirements are not

relevant and that the needed learning places are reachable for everyone. Further relevant criteria are an easy-made planning and organization of the tests, high movement intensity during test situations, the need of concentration to solve the test situation and enough time for practice before the tests.

Conception of the MOBAQ-LUX8 test instrument

The test items have been developed and applied by the Team MOBAQ-LUX8, PE students in seminars and PE teachers involved in the project. The adaptation and improvement of the test was done through feedback by field reports of practical use of the test items followed by group discussions and expert meetings. The objective is a final test version of at least five test items in every test dimension (details about the dimensions will follow below) of the test construct. Table 1 describes the time schedule of the MOBAQ-LUX8 project.

Table 1

Project phases in MOBAQ-LUX8

Project phases	Objectives	Topics	Timeline
Preparation	• How must test items be constructed according to the MOBAQ approach? • Which qualifications should 8 year-old children accomplish?	• 1. Expert Meeting • Teacher questionnaire	01-04/ 2012
Conception of the test instrument	• Development of test items • Substancial validation by experts	• 1. phase pre-tests • 2. phase pre-tests incl. feedback from teachers and students • 2. Expert Meeting	05/2012-08/2013
Study I	• Scientific validation of the test instrument	• Pre-test on a sample of n = 150 • Adaptation of the test instrument	09/2013-03/2014
Study II	• Advancement and optimizing of the test instrument in practical conditions • Testing of the influence of control variables	• Instruction of the teachers • Supervision of the executing schools • Feedback by teachers • Improvement of the test instructions • Final report on Study I and II	04-09/ 2014
Implementation on a national level	• Familiarization and implementation of MOBAQ-LUX8	• Instruction of the teachers • Supervision of the executing schools • Systematic study of data and feedback to schools	Start 09/2014

Due to the above-named specific MOBAQ-criteria, the process of test item development revealed to be very complex. Figure 1 shows the different stages in this process.

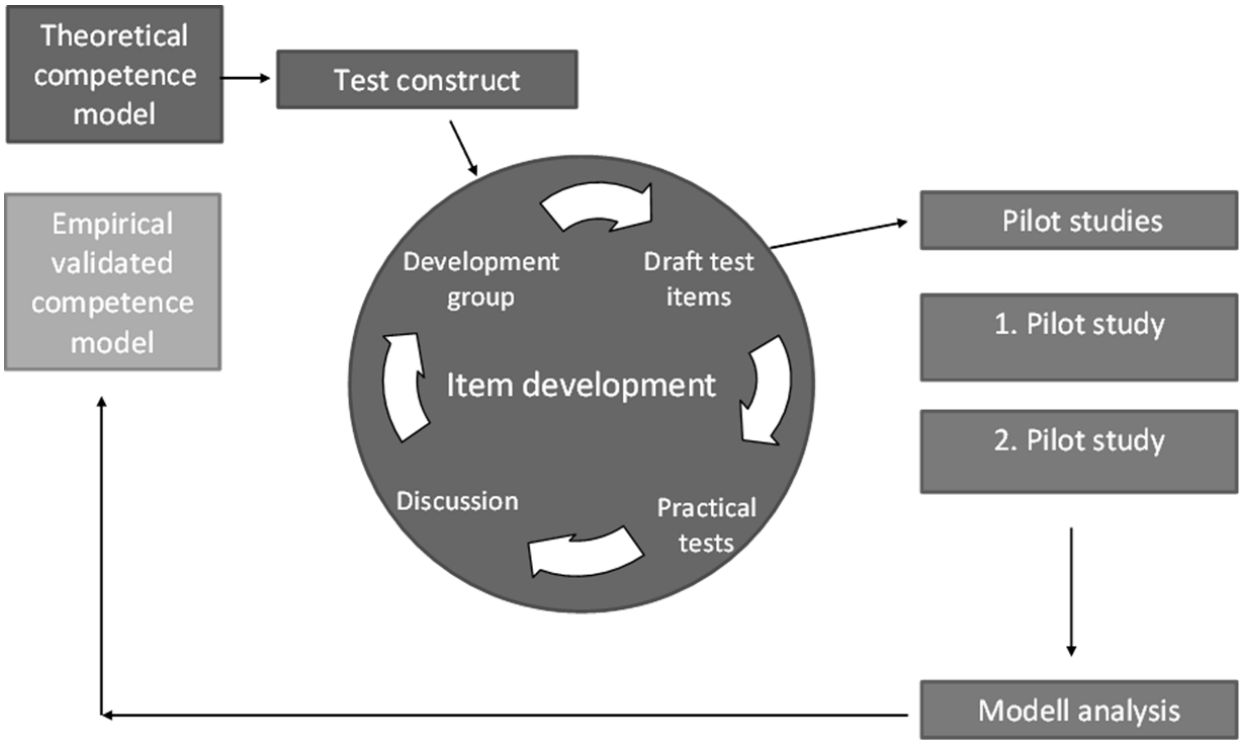

Figure 1

Process of test and item development (mod. from Knigge 2010)

Test dimensions

The test construction as described above consists of 6 test dimensions: (1) Running and jumping; (2) Moving on equipment; (3) Playing with balls; (4) Playing with small devices; (5) Moving in water and (6) Rolling and sliding. Each test dimension counts 5 test items, as e. g. the test dimension *"Moving on equipment"*: (1) Balancing; (2) Climbing; (3) Swinging; (4) Stabilizing and (5) Rotating. Figure 2 and table 2 give some idea and information about test item *„Balancing"*.

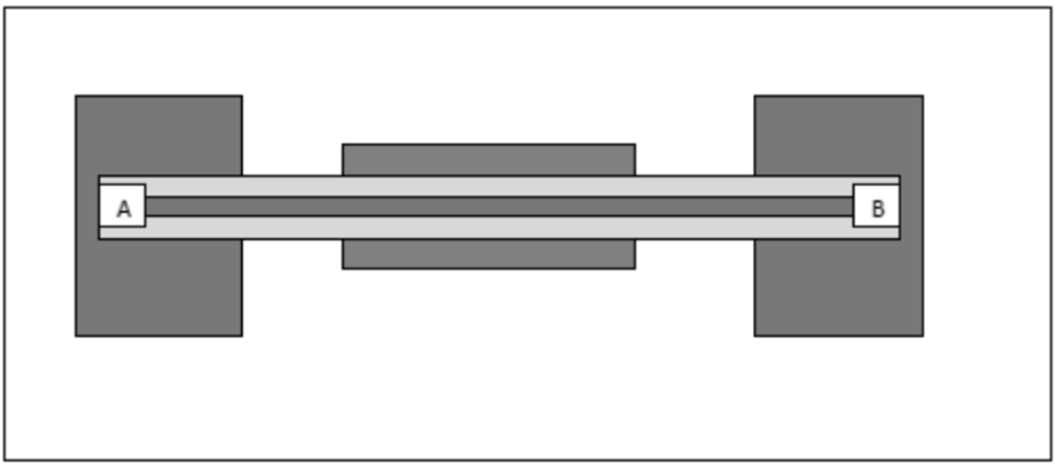

Figure 2

Item "Balancing": Test situation

Students have to cross a seesaw, consisting of a gymnastic bench lying on springboard, from A to B and back to A without leaving the bench.

Table 2

Item "Balancing": Criteria of passing and failing

Pass	Fail
✓ The child crosses the gymnastic bench from A to B and back to A without leaving the gymnastic bench. ✓ The child turns at point B without leaving the gymnastic bench.	(A) The child aborts the attempt by leaving the gymnastic bench.

Validation of the MOBAQ-LUX8 test instrument

The validation of the test instrument will be realized in two studies. In study I a pre-test will validate MOBAQ-LUX8 scientifically in order to develop an adequate test design (including a test manual and materials for teacher training). Test data of a sample of about 150 students in 9 classes will allow to validate empirically the test construction, to select and revise test items and to optimize the test instructions. Classical test criteria will be validated as described in table 3.

Table 3

Test Quality Criteria

Validity	• Content validity: rating of the items by experts • Construct validity: correlation analysis in the test dimensions to test the item characteristics • Criterion validity: teacher rating / assignment in PE
Reliability	• Re-test in one class
Objectivity	• Standardization to assure objectivity in implementation, analysis and interpretation • Rater compliance in assessment of video recording of min. 20 students

In study II, the impact of possibly relevant variables (e.g., gender, physical activity, social and economic background, migration background) will be taken into consideration, as well as in comparison to other tests. Furthermore, confirmatory factor analysis (CFA) and exploratory factor analysis (EFA) will be conducted using the study data.

Discussion and outlook

At this point of the project, it has to be said that the MOBAQ-LUX8 test construction follows rather a pragmatic than a model driven approach in the development of the test items. Thus, the process of test conception appears as difficult and compromise has to be found between the requirements of test standardization and test feasibility.

In the future, the development of motor diagnostic tools to support PE teachers in their work with students with remediation needs identified by MOBAQ tests will be more important, as well as the conception of specific CPD courses for PE teachers.

Finally, the repeated use of standardized MOBAQ tests for monitoring purposes is a further possible outcome, this in order to gather relevant information and an overview of the actual level of qualifications of Luxembourgish students.

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