



Theoretical and methodological framework for the MOBAK App

Pedagogical strategy for the use of the MOBAK App in school physical education

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Technical sheet

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1. Introduction

Basic motor competencies equip children with the necessary foundation to actively participate in the diversity of movement culture. In the frame of an increasingly evidence-based educational evaluation format, these competencies mirror a shift from input to output orientation, to school effectivity research and thereby, regarding physical education (PE), to a competence-oriented approach (Gogoll, 2014; Neumann, 2013). To back the application (app) development with a broad theoretical and methodological framework, intellectual output 1 of the BMC-EU DigPro project (Basic Motor Competencies in Europe – Digital Promotion) deals with these educational developments and puts these developments into relation with the test and support of basic motor competencies in school contexts.

The so built theoretical framework aims to support the understanding of the later structure and planned content of the MOBAK App and helps to pave the way towards a targeted implementation of the app in learning settings. The framework is generally based on the existing MOBAK test and support concept resulting from the previously conducted BMC-EU project (Scheuer & Heck, 2020a and 2020b). As a follow-up, the BMC-EU DigPro project allows for a refinement, specification, and partial revision.

While European partners have used the MOBAK test and support concept so far exclusively in offline school PE – without putting the use of digital tools in the centre –, the present framework provides the basis for an implementation in a digital form. More precisely, the following theoretical framework consists of information about what competence orientation in PE means (chapter 2), about the MOBAK concept, its dimensions, and test instruments (chapter 3), as well as generally about the MOBAK support framework (chapter 4). Consequently, this framework defines the basis to follow the development of a pedagogical strategy including concrete learning tasks and further support for the later use of the MOBAK App (chapter 5).



2. The Concept of Competence-Orientation

While the curriculum shifted towards competence-oriented approaches in many European countries and beyond, related concepts and requirements have gained importance in order to embed the idea into planning and implementation (Heck & Scheuer, 2020a). Whereas contents of the curricula, even if all competence-oriented, may vary depending on the specific cultural, social, and political background (cf. chapter 2.2) and accordingly also on the individual decision-makers, common elements remain. Thus, competence-orientation may comprehensively be defined as “a curriculum that emphasises the complex outcomes of a learning process (i.e., knowledge, skills, and attitudes to be applied by learners), rather than mainly focused on what learners are expected to learn about in terms of traditionally defined content” (UNESCO International Bureau of Education, 2012).

Choosing certain criteria and goals, flexibility and adaptivity to diverse pupils’ and school contexts constitute further typical elements of competence-oriented curricula. Learning outcomes are considered as essential evidence of having acquired competencies. Consequently, these outcomes also attest to the effectiveness of education systems in delivering quality education and effective learning. Still, the outcome largely depends on the chosen learning contents, how the contents are packaged and presented, how the contents are taught, in which environment the contents are taught, how learners are supported, and how learners’ acquisition is finally verified (Heck & Scheuer, 2020a; UNESCO International Bureau of Education, 2012).

National and regional policies and curricula, thus, only allow for competence-oriented teaching as a necessary basis which, however, still requires a teacher’s motivation and engagement. Accordingly, subject didactics in PE, like in any other subject, shall cover two roles: to contribute to determining educational standards and to develop concepts for competence-oriented teaching (Gogoll & Kurz, 2013). The following two sub-chapters explain what competence-oriented teaching in PE means (chapter 2.1), followed by a chapter which concentrates on national perspectives and their specifics in outlaying PE-related competence orientation (chapter 2.2).

2.1 Competence-Oriented Teaching in Physical Education¹

When referring to competence orientation in PE classes, basic motor competencies form a prerequisite to actively participate in the movement culture. These competencies are sustainably learnable, consider previous experience, and can be improved by practicing. In addition, basic motor competencies are

¹ Large parts of this section are based on the dictionary entry by Heck and Scheuer (2020a) and on results published in the frame of the previous BMC-EU project.

explicitly context-dependent and relate to specific situational requirements of the culture of movement, play, and sport (cp. chapter 2.2; Herrmann, 2018).

When a teacher develops competence-promoting tasks in PE as aimed for in the current project, specific criteria shall be respected. These criteria (Neumann, 2013) are listed in the following and underlined by examples typically occurring in PE classes.

Competence-orientated tasks in PE shall thus...

- ... be based on pupils' prior knowledge and ability: e.g., pupils who have experiences in being in the overhead position generally have less difficulties to learn an upswing. Pupils who are used to being in the water learn easier and faster how to swim;
- ... have potential for differentiation and allow several alternative solutions: e.g., pupils have the chance to develop their own individual ways to jump over a rope or to move forward creatively depending on their abilities;
- ... embrace requirements-oriented tasks: pupils feel more motivated if the movements address their interests and if they have a relation to their life or at least a situational significance, e.g., being competent in cycling on different grounds allows learners to cycle to school or to complete a cycling tour in their free-time;
- ... offer test opportunities: pupils receive individualised feedback or they autonomously evaluate and reflect their learning and performance, e.g., learners have the chance to compare the efficiency of different ways to glide through the water (with arms spread on the side, close to the body, etc.).

Moreover, different categories of competencies in PE exist. Besides the actual practical performance of the specific motor competence, PE curricula of those countries that have implemented a competence-oriented approach (cf. chapter 2.2) embrace personal, social, and methodological aspects as well as theoretical knowledge about a certain subject. This situation clearly characterises PE lessons and distinguishes these lessons from a training or work out in a gym for instance. In addition, the broad range of different aspects leads to an attempt to categorise subject-related competencies in PE. According to Kurz (2008), for instance, different competence areas exist which can be specified and characterised in their potential value for PE:

- self-regulation (willingness);
- motor skill (ability);
- cognitive-reflexive engagement (knowledge).

Another option of differentiation is given by Messmer (2013) who identifies the following aspects as typical competence areas:

- *motor competencies*: Probably the most obvious competence in PE is related to the actual motor performance. Pupils have or fulfil certain individual dispositions or requirements to learn a competence (e.g., to throw or catch a ball).
- *reflexive-cognitive competencies, ability to judge*: Pupils' understanding of a task shall be promoted. This understanding is, however, strongly related to an underlying practical experience. For instance, the requirement to run 30 minutes without a break is related to the extent to which the pupil has experienced fatigue, to the ability to manage energy strategically, and to the pupil's perseverance. Other examples include the comparative evaluation of different possibilities to jump over a box in gymnastics or different ways to throw a ball at a wall and catch the ball bouncing back.
- *playing games and tactical competencies; aesthetic-sensory competencies*: These competencies highlight that the gained knowledge shall be quickly retrievable and creative in the sense of surprising, e.g. a footballer who dribbles through the formation of the opponent's defenders or a dancer who quickly responds to every change of position of her partner.

When it comes to the practical implementation, these categories give room to further develop certain PE tasks and, thereby, enhance motor learning. At the same time, the categories emphasise that motor competence is only one component of PE goals when it comes to competence-oriented teaching.

Besides these general aspects of competence-oriented teaching in PE, its implementation in different countries demonstrates national differences and characteristics, as well as allows for an identification of a common ground.

2.2 National Perspectives on Competence-Oriented Physical Education

In order to provide insights into the diverse implementation range of competence-oriented PE, the different project partner countries (Germany, Netherlands, Austria, Slovakia, Switzerland, and the Czech Republic) were asked to respond to the question of what is meant by competence-oriented PE in supporting basic motor competencies in their respective countries. The following sub-sections focus on different national contexts, embracing both the political and scientific discourse, but mirror the existing diversity in interpreting PE-related competence orientation.

2.2.1 Germany²

There is a broadly accepted definition for competencies in Germany: "Competencies are the cognitive abilities and skills available to or learned by individuals needed to solve specific problems, as well as the associated motivational, volitional, and social dispositions and skills which are required to use the solutions to problems successfully and responsibly in variable situations" (translated from Weinert, 2001, pp. 27-28). The MOBAK concept was developed based on this definition in that basic motor competencies are also defined as learnable dispositions needed to cope with problems or requirements in the motor area. The basic motor competencies are context-dependent and functional and develop from situation-specific requirements in the sport and movement culture (Herrmann et al., 2016). Competence orientation in Germany is accompanied by an output orientation which means that competencies are observable and testable: The extent to which children are motor competent is indicated by how well they can complete the MOBAK tasks.

As already explained previously (cf. chapter 2.1), competence-oriented PE in Germany addresses different aspects of competence. Apart from direct subject-related competencies (in the case of MOBAK: motor competencies), PE teachers teach cross-curricular competencies, e.g. motivational, volitional, and social skills. In such a definition, learning in competence-oriented PE should be understood as an active, self-directed, situational, and constructive process in which learners acquire applicable knowledge, skills, and abilities by incorporating their own prior experience (action orientation, "Handlungsorientierung" in German; Aschebrock et al., 2010). In a more colloquial way, these competencies are also referred to as "Wissen" (knowledge), "Können" (ability) and "Wollen" (intention/volition; Klieme & Hartig, 2007; Ratzmann et al., 2020).

In Germany, each federal state has different curricula. As a consequence, these curricula identify different competencies that need to be developed in PE. For example, in Hesse (federal state in the centre west of Germany), cross-curricular competencies are defined as personal competencies (e.g., self-confidence), social competencies (e.g., empathy), and language skills (e.g., taking part constructively in conversations). Subject-related competencies are movement competencies (e.g., controlling movement according to requirements and vary movement according to the situation), judgment/decision-making competencies (e.g., realistically assess one's own motor ability and act accordingly), and team competencies (cooperate according to requirements) (Hessisches Kultusministerium, 2018). In Hamburg (federal state in the North of Germany), in contrast, cross-curricular competencies include self-concept and motivation (e.g.,

² The concept of competence orientation chosen for this framework is generally based on German literature. Consequently, the first three sections on national aspects of Germany, Austria, and Switzerland directly interrelate to the previously written sub-chapter on competence-orientated teaching in PE (cp. chapter 2.1).

realistically self-assessing own skills), social competencies (e.g., working cooperatively in groups), and competencies concerning learning techniques (e.g., having creative ideas). Language skills (e.g., separate specialised language from everyday language) form a separate domain. In order to provide a further example, subject-related competencies in Hamburg are performing and practising (e.g., sport motor skills are developed through practice and training), designing and performing (e.g., different forms of expression are tested and developed through movement), exploring and venturing (e.g., learners are taken to their own limits), and competing and cooperating (e.g., experiences with regard to competitive sports are made possible) (Freie und Hansestadt Hamburg, 2011). Content, methods, and forms in German PE should, therefore, be chosen and constructed in a way that enables children to acquire competencies in all domains mentioned afore.

2.2.2 Austria³

The national debate in Austria about competencies is ongoing and in close relation to the discussion about educational standards (in German “Bildungsstandards”). According to the Federal Ministry Republic of Austria for Education, Arts and Cultures, competencies are “concretely formulated learning outcomes” that include “cognitive abilities and skills” as well as “motivational and social readiness” (BMUKK, 2013, p. 1). The motor dimension is not addressed in this definition. However, it is important to integrate the motor dimension into the Austrian PE competence model and into the educational standard.

Furthermore, it is important to base the development of the Austrian educational standard on the actual mission of the subject. In this context, the so-called dual mission (in German “Doppelauftrag”) as an education for sport (in German “Erziehung zum Sport”) and education through sport (in German “Erziehung durch Sport”) offered a solid basis for competence-orientation in PE. Kurz (2008, p. 217) expressed this idea as follows: “It is not only important that the pupils learn to run, but also what they learn while running.” Therefore, competence-orientation should help pupils to recognise movement and sports as a cultural value, to critically question it, and to develop an attitude towards movement and sports. This orientation enables pupils to reflexively participate in the modern culture of movement and sports.

The term “competence” is not limited to isolated abilities and skills (“Können”), knowledge (“Wissen”) or attitudes (“Wollen”), but places “Können, Wissen und Wollen” in a larger context of action. It is crucial to transfer abilities, skills, and knowledge to different situations. While solving tasks, motivation, volition,

³The following information is based on the handout „Bildungsstandard für Bewegung und Sport. Handreichung für kompetenzorientiertes Lernen und Lehren“ (Amesberger & Stadler, 2014) and provides insights into the Austrian subject-specific discussion.

and readiness are equally essential in order to be able to demonstrate an existing competence. This means that the ability to act in a self-determined manner must be brought in line with the readiness to assume responsibility.

The educational standard in Austria is an outcome standard defined as a regular standard (“Regelstandard”) and not as a minimum standard (“Minimalstandard”). Regular standards describe an average level of competencies that pupils can both fall below and exceed. This standard concretises objectives for the pedagogical work which are measured by pupils’ learning outcomes. In the case of MOBAK as an instrument to test the minimum standard, pupils should try to exceed the standard when they want to achieve the Austrian educational standard.

Standard- or competence-oriented learning and teaching means a paradigm shift from input to outcome orientation. The focus on learning outcomes emphasises active, self-organised learning in order to achieve the educational standard. The decisive factor are the learning outcomes achieved by the pupils. In this paradigm, the acquired competence matters in the sense of a global ability to act (“Handlungsfähigkeit”). The Austrian competence model (Amesbeger & Stadler, 2014) divides competence into self-competence (“Selbstkompetenz”), social competence (“Sozialkompetenz”), methodical competence (“Methodenkompetenz”), and subject-related competence (“Fachkompetenz”). In these competency areas, MOBAK would be classified as a subject-related competency. The four areas will be briefly explained with regard to PE:

Self-competence is the empowerment to adequately classify personal experience as well as the development of self-efficacy beliefs, self-confidence, and identity. The self-competence includes self-perception, self-knowledge, self-assessment, regulation of attention, motivation, and emotions, expectations of competence and consequences. Furthermore, the ability to contribute one's own qualities, such as appearance, expressiveness, initiative, or creativity.

Social competence refers to skills and attitudes that are necessary for successful social interactions. This competence includes skills for communication and cooperation, conflict skills, teamwork skills, understanding of roles and functions, role distance and identity presentation, leadership skills, integrity skills, empathy, and the ability to act fairly.

Methodical competence comprises the ability to plan, design, organise, apply, and implement learning processes and learning arrangements. This competence includes systematic and creative problem solving as well as the application of learning aids, learning methods, and working techniques. Thus, methodological competence is characterised by “learning to learn”.

Subject-related competence means subject-related knowledge, skills, and abilities. This competence includes specific knowledge and judgment, skills in different movement-related areas (techniques), as well as the necessary basic motor skills which would be the case for MOBAK.

For teachers' planning, teaching, and evaluating, these four competence areas are specified into sub-competencies and descriptors. For example, the subject-related competence is subdivided into the various fields of sports (e.g., invasion games), and concreted as follows: "The pupil is technically able to move with the ball, pass/receive the ball and finish an attack", and described as: "can demonstrate and explain passing and passing the ball in game-like situations." These specifications should help pupils and teachers to work and act in a concrete curriculum according to the competence model. All sub-competencies and descriptors can be found in Amesberger and Stadler (2014).

2.2.3 Switzerland

With the paradigm shift towards competence-oriented PE, the didactic requirements for PE have changed in Switzerland. Guided by competence-orientation, the new curricula for PE which regulate both the objectives and the content have been developed in recent years (D-EDK, 2017; Repubblica e Cantone Ticino, 2022; Secrétariat général de la CIIP, n. d.). These curricula form the binding basis for the implementation of competence-oriented PE which fundamentally aims at participation in the culture of movement and sport and at health-promoting and personality-building aspects.

The curriculum of the German-speaking part of Switzerland, for example, is based on Weinert's (2021) definition of competence as mentioned above. In addition to the previous focus on "ability", the cognitive competence dimension is becoming more central. Motivational and volitional skills play a supporting role in successful learning and action (Ferrari & Baumgartner, 2021). Being competent can be learned and can be tested in coping with a challenge situation, the so-called application situation. This understanding of competence includes not only the "performance" such as the measurement in the long throw, but also the technical ability (implementation of the technique), knowledge (...know the performance determining characteristics) and will (self-assessment). Movement and PE should provide opportunities in application situations for pupils to recognise and assess their own learning and performance growth. (Neumann, 2013).

2.2.4 The Netherlands

In the Netherlands, basic motor competencies are not specifically defined. The goal of PE in the Netherlands is to help children build a broad "Bewegingsrepertoire" which can be roughly translated as a broad set of skills related to movement. This set of skills is further specified into two learning outcomes ("Kerndoelen"). The first goal is to teach children to participate in the local sports and movement culture.

As a result, children should be able to master the basic movement skills for each (local) sport. The second goal focuses on the social aspect of sports. The goal is defined as: Children learn with others to participate respectfully in sports activities. They learn to make agreements and regulate these agreements, they learn to estimate their capabilities and to use this estimate when participating in activities.

These goals give primary school teachers a lot of freedom and possibilities to choose their curriculum and activities. It is clear that PE in the Netherlands does not focus solely on (basic) motor skills, but it puts emphasis on personal and social skills. The last inspection of PE in primary schools showed that tag-playing and ball games with a goal and throwing were activities that teachers spent the most time in, while moving to music, martial arts and running got the least attention (Inspectie van het Onderwijs, 2018). The social competencies were also reviewed, and teachers spent most emphasis on working together according to mutually agreed rules.

Teachers are free to focus on the motor skill they find most important. There are no learning outcomes defined on specific motor skills. The general learning outcome holds a broad definition of the aspects children should learn. This freedom results in a broad spectrum of methods to grade the pupils. Some teachers grade children on motor skills while others grade pupils on social skills or motivation. In order to give more insight into the actual content of the PE lesson, the next part focuses on the pedagogical theories which are most dominant in PE in the Netherlands, and which are taught in PE teacher education. In the Netherlands, self-regulatory skills are important in PE lessons. The child should be able to choose their skill level, order, and speed of development. The physical and social environment should provide the pupil with optimal circumstances. Each activity should, therefore, be arranged in several levels of difficulty to accommodate all children to perform an activity at exactly their level of difficulty. The teacher should provide scaffolding guidance so that children understand the strategies necessary to improve their skills. The most important goal of a teacher is to provide a stimulating pedagogical climate to stimulate learning. Teachers should focus on having a well-maintained relationship with pupils and try to improve their feeling of competence and autonomy. In the Netherlands, it is believed that a good teacher in essence, is a teacher who provides matching tasks, environment, and guidance in a way that guarantees positive experience and growth for each child.

2.2.5 Slovakia

In Slovakia, the concept of basic motor competencies is quite new. Therefore, the concept is at the beginning of the formation in the curricular documents as well as in the teaching practice. Until 2021, there has not been a concept of the basic motor competencies explicitly included into the PE curriculum.

The concept was used implicitly in qualifications, but mostly the teachers considered the qualifications separately and have not been thinking largely about basic motor competencies. However, after participating in the Erasmus+ BMC EU project in 2019, the concept of the basic motor competencies became more visible among the professionals in PE. The accepted concept is based on Herrmann and Gerlach (2014). There is a common understanding that the competencies are context-dependent and functional, and developed from situation-specific requirements in the sport and movement culture (Herrman et al., 2016). However, the correct understanding of the term “basic motor competencies” is currently being discussed as the Slovak PE environment focuses mainly on motor abilities and less on motor skills. This confusion needs to be precisely argued in the practice so that the PE teachers understand the competence-oriented approach. Currently, there is a curricular reform in the process for primary and lower secondary education which provides a good opportunity to explain competence orientation in PE. The curricular documents are using the above-mentioned resources and approaches to present a solid background for the competence-oriented PE. In the upcoming period, a new curriculum for PE is expected which will be most likely more competence-oriented and include a strong didactical and methodological support for PE teachers in order to be able to implement the curriculum in their PE classes.

2.2.6 Czech Republic

The current PE concept in the Czech Republic is complicated, especially in terms of curriculum levels (intended, implemented, achieved, see Keeves & Adams, 1997). Educational goals in the Czech PE curriculum are significantly oriented towards promoting health in the bio-psycho-social context and complies with the orientation towards the PE health concept. The PE content, however, focuses more on physical activities and specific physical activity skills and subject-specific competencies rather than on direct health promotion. Thus, it can be stated that PE in the Czech Republic is currently on the border of a physical and health concept in terms of the content. Hence, research indicates incongruence between the intended (conceptual) curriculum and other curriculum forms. For example, the currently declared health-oriented concept of the Czech PE is not accepted by the public and is largely not being implemented by teachers. Doubts about the effects of the health-oriented concept of PE are raised by the achieved curriculum as the levels of physical activity and the health status of the Czech population are unsatisfactory. Based on these findings, the health-oriented PE concept has proven unsatisfactory, and the new PE concept should be based on competence- and physical-literacy-orientation. Nevertheless, these terms have taken many forms both internationally and locally in Czechia, encompassing different definitions, aims, and content which is problematic. In 2020, the Ministry of Education, Youth and Sport (MEYS) has announced a new cycle of revision for the Czech curriculum documents (Framework

Educational Programmes – FEPs) which will affect the PE curriculum. This project is now referred to as *Revision of the FEP and preparation of the Education Policy Strategy of the Czech Republic until 2030+* (Strategie 2030+, 2020). Currently, expert groups are being established. Their task is to prepare the newly designed curriculum which should stress the competence orientation in PE.

In summary, the concept of competence orientation is generally known in all project countries, but not yet (fully) implemented in all of these countries. Whereas the German-speaking countries (Germany, Switzerland, Austria) demonstrate a longer history and acceptance of including competence ideas in their curricula, the concept is still in its developmental stage in other countries (e.g., Slovakia). Agreement exists, however, about the importance of providing children with a broad basis of motor skills. In addition, the theoretical concept of competence learning found acceptance. Hence, this concept serves as a basis for the further development of the app.

Apart from the exemplary national insights, school performance measures, and in particular the modelling and recording of competencies, have become key contents of educational policy in recent years and across different countries (Klieme et al., 2003). In this context, a particular importance has been addressed to the topic of competence orientation in PE. By supporting the teachers' diagnostic competence (Heck & Scheuer, 2020b), the MOBAK concept allows to support the development and promotion of the pupils' competencies through more individualised learning. In the following chapter, the choice and the content of the concept of basic motor competencies is presented.



3. The MOBAK Concept

Competence orientation is the basis of the MOBAK concept (“Motorische Basiskompetenzen” in German, “basic motor competencies” in English). In the first sub-chapter, basic motor competencies will be explained and further differentiated from basic motor qualifications in order to create a better understanding of the concept (chapter 3.1). This chapter will be followed by a second part where MOBAK is operationalised (chapter 3.2). In a third chapter, possible applications of MOBAK in school settings will be discussed (chapter 3.3). The last sub-chapter focuses on the test instruments, and their implementation will be elaborated (chapter 3.4).

3.1 Basic Motor Competencies and Basic Motor Qualifications

Basic motor competencies are defined as a prerequisite for active participation in the culture of movement, play, and sports. Thus, these competencies ensure that children and adolescents can participate in the education-related processes of this culture (Gogoll, 2012; Herrmann et al., 2015; Kurz & Fritz, 2007; Kurz et al., 2008), and, thereby, built an important pillar in the frame of setting the base for the development of physical literacy (Whitehead, 2010). Basic motor competencies are operationalised as *basic motor qualifications* which express a level of minimum requirements in the form of minimum standards. In this sense, these qualifications determine the lower limit of the ability to move. Basic motor qualifications are not to be confused with motor abilities and sport motor skills (techniques). Unlike motor abilities (strength, speed, coordination, etc.), motor qualifications are complex and context bound. In opposition to movement-specific and process-oriented fundamental movement skills (Barnett et al., 2016), basic motor qualifications are context-specific and product-oriented and are based on pedagogical reflections assuring their curricular validity. Furthermore, these qualifications are more general than specific skills and form a foundation upon which skills and, thus, the further development of competence is built (Scheuer et al., 2017).

Thus, it is not the performance itself (e.g., throwing, catching, bouncing, dribbling) which constitutes the basic motor competencies, but rather the underlying disposition of performance which is required to solve certain types of tasks. The performance behaviour, the observable performances of sportive action, is what is called basic motor qualifications. These qualifications can be formulated as can-do statements (e.g., “can throw”, “can catch”) and build the foundation for indirectly observable basic motor competencies (Herrmann et al., 2016; Herrmann & Seelig, 2017). The following competence structure model specifies the relationship between the (manifest) basic motor qualifications (MOBAQ) and the

(latent) basic motor competencies (MOBAK) (cf. fig. 1). The model shows the two exemplary dimensions of “self-movement”⁴ and “object movement” and a choice of related basic motor qualifications.

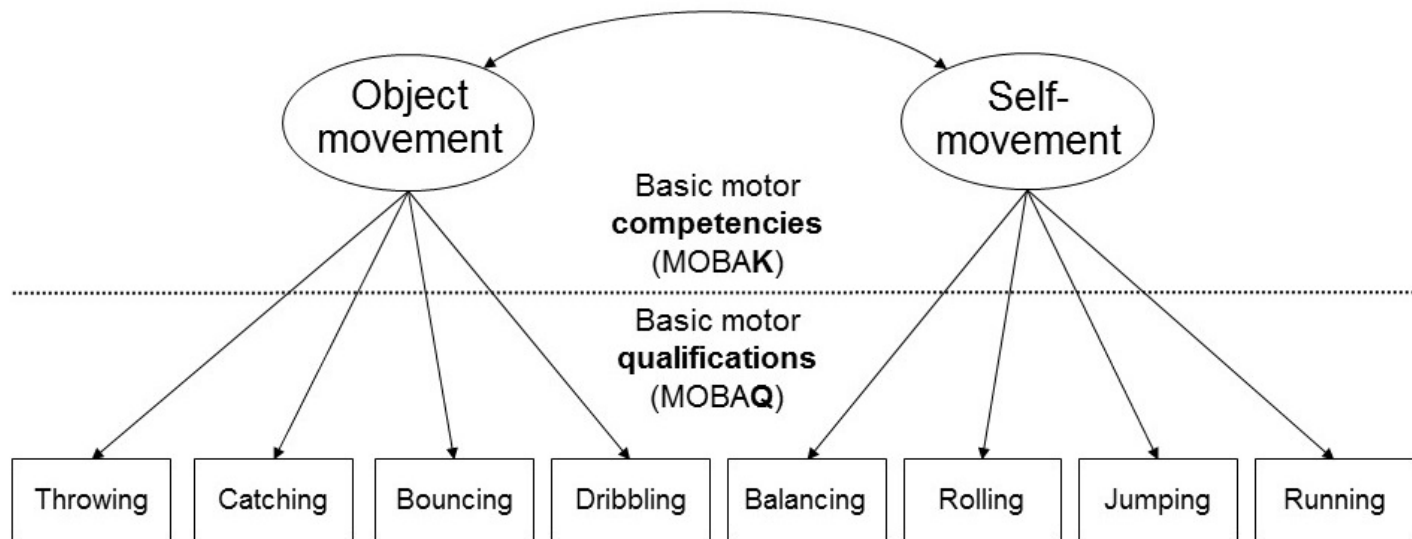


Figure 1: Competency structure model (Herrmann & Gerlach, 2014, p. 325)

Compared to motor skills and capabilities, basic motor competencies refer to a result-oriented and functional coping of motor requirements and tasks (e.g., throwing at a target). In doing so, the basic motor competencies describe a control function which features a task-adequate use of motor capabilities (how much strength does the child have?) and skills (is the child’s throwing technique sufficient?). From a theoretical perspective, the construct of basic motor competencies can be considered as an addition to the constructs of motor capabilities and motor skills that have predominated sports science to date (Gerlach et al., 2017, Herrmann et al., 2016). In the following, the different existing MOBAK dimensions and test instruments will be presented.

3.2 The Operationalisation of MOBAK

In order to develop an appropriate test instrument, a concept is required on which the development of the test tasks will be based on. If one chooses the fundamental movement skills approach, one focuses on the basic motor skills of everyday motor activity and assumes that children acquire a series of motor skills in early childhood that are referred to as fundamental movement skills. These consist of locomotion skills (running, jumping, gliding, etc.), object-control skills (throwing, catching, bouncing, shooting, etc.), and stability skills such as balancing (Burton & Miller, 1998; Clark & Metcalfe, 2002; Haibach et al., 2011; Stodden et al., 2008). These skills are considered to be the basis for the subsequent acquisition of motor

⁴ In the following, the term “self-movement” will be used for this dimension (instead of “locomotion” which is used synonymously by other authors).

and physical activities in the sense of becoming “physically literate” or “physically educated” (Whitehead, 2010). A test that uses fundamental movement skills is, for instance, the Test for Gross Motor Development (Ulrich, 1985) which includes twelve tasks that load on two factors which are called “locomotion” and “object control”. In addition to the concept of motor skills, the MOBAK approach has been developed (Scheuer et al., 2017) and will be the focus of the here presented framework.

In the process of operationalising basic motor competencies in the form of basic motor qualifications as test tasks, questions like what a child at a certain age shall be able to master to actively participate in the sports and movement culture (Kurz et al., 2008) are considered. In order to secure curricular validity, this consideration should be done in close association with the objectives set out in the respective curricula (Scheuer et al., 2017) (cp. chapter 2.2).

In this context, the MOBAK items involve motor tasks that are used to assess basic motor qualifications that “(1) are sufficiently complex and therefore require several motor skills or abilities for their successful execution; (2) are explicitly context dependent and relate to specific situations that are required in the movement, play, and sports culture; (3) represent a consensus on the minimum requirements that children and adolescents need to participate in the culture of human movement in terms of cultural participation; (4) are not bound by any time limits or other measurable limits or expectations except the limits of the minimum standards that are accepted as plausible for the living environment; (5) can in principle be learned sustainably by all children and adolescents, which means that physical prerequisites are not relevant; (6) do not require any specific technical requirements but allow for individual and/or functional solutions; (7) are passed or failed and are thus coded dichotomously” (Scheuer et al., 2017, p. 3). Normative basic motor qualifications are defined as the minimum requirements that should be achieved by all pupils. Pupils who cannot solve MOBAK tasks are considered deficient in the domain of basic motor competencies. Thus, they might have problems as they progress through school, and their participation in the sports, play, and movement culture in society might be in danger. In contrast, results also allow to identify which pupils fit the minimum requirements and which exceed them.

In order to better address and group different basic motor competencies, different MOBAK dimensions can be differentiated including self-movement, object movement, object locomotion, and moving in water (cf. fig. 2). In most countries, only the first two are implemented in practice (e.g., Switzerland, cf. chapter 5.1). Luxembourg, for instance, works with all four dimensions (cf. chapter 5.2).

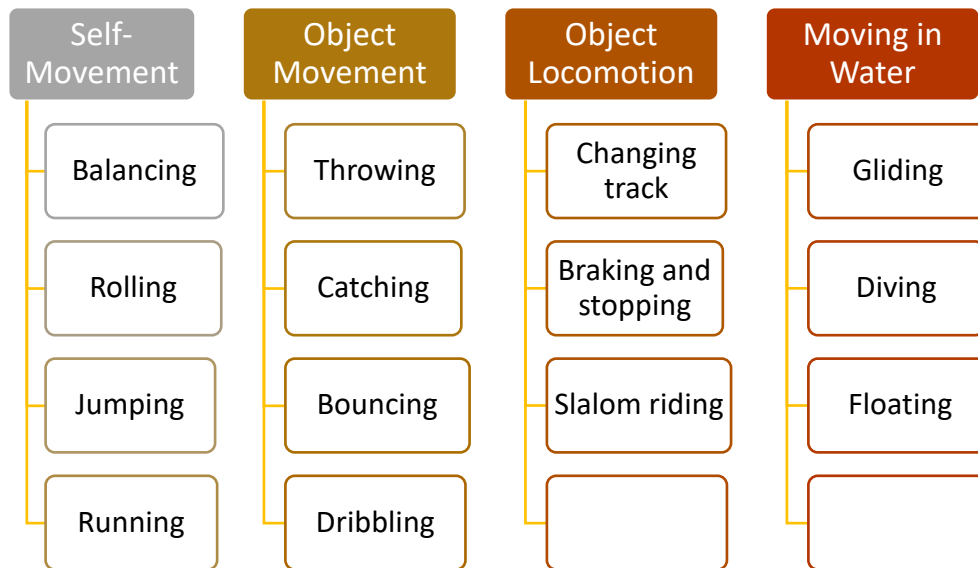


Figure 2. Overview of the four areas of competencies and related examples of corresponding basic motor qualifications (revised version of Scheuer & Heck, 2020a, p. 17)

3.3 The Application of MOBAK in School Settings

Independent from the number of chosen dimensions, the implementation of MOBAK aims at gaining information about children's level of basic motor competencies in order to react in the best possible way to deficits or eligible qualifications. In the form of an educational diagnosis, the test instrument makes it possible to create a motor competence profile for each pupil which allows conclusions about the pupil's strengths and weaknesses. In addition, the test results can be compared to the results of the total sample on class or school level. Thus, a school can assess the extent to which its pupils perform better or worse than other schools in the respective test areas. Based on this, the results at school level allow to initiate and implement targeted measures in terms of evidence-based school development. For example, in the case of weak school results in a competence area, the creation or adaptation of school-internal curricula or targeted school-internal support measures, e.g., in the form of extracurricular physical activity programmes, should be considered.

In terms of educational monitoring, another goal is to regularly survey pupil performance against the background of the educational standards set forth in the curricula. In this context, the identification of possible effects of different variables, such as sex, migration background, membership in a sports club, etc., on the MOBAK test performance is also of interest. Such analyses allow to draw differentiated conclusions on the achievement of educational standards. The main goals of educational monitoring are to provide regular feedback on the performance of the system in terms of pupils' achievement of the educational standards specified in the curricula, and to identify possible correlations between the

observed results and different subpopulations among the participating pupils, such as boys and girls, pupils with and without a migration background, etc. (e.g., Helmke, 2010).

Thus, apart from a pedagogical diagnosis on the individual level, MOBAK also allows comparisons on class and school level as well as embracing a nation-wide monitoring function. The latter can focus on PE only or be linked to results in other subjects. In any case, the basis to gather this information are well-developed test instruments on top of teacher's good diagnostic competence.

3.4 The MOBAK Test Instruments and their Implementation⁵

Basic motor competencies are anchored in different European curricula (cf. chapter 2.2), and are regarded to be the central learning objectives of PE enabling children to play an active part in the culture of sports and exercise. The MOBAK test instruments, thereby, allow the standardised and economical assessment of status and development of basic motor competencies. The obtained information helps educators to tailor lessons to children's needs or to provide educational monitoring (cf. chapter 3.3). Related to children's age range, different test items in different countries exist and have been previously validated (Herrmann, 2018). Using Switzerland as an example (chapter 3.4.1), the development of MOBAK test instruments and their implementation are exemplified. Switzerland was chosen as the testing has already been developed and implemented for some years in this country.

3.4.1 MOBAK Testing Exemplified for Switzerland (MOBAK-CH)

In Switzerland related to children's age range different test items exist:

- The MOBAK-KG test is designed for children younger than 6 years old (4-5 years). These children usually attend the kindergarten.
- The MOBAK-1-2 test instrument is designed for 6- to 7-year-old children in the first and second grade.
- The MOBAK-3-4 test refers to 8- to 9-year-old children in the third and fourth grade.
- The MOBAK-5-6 test instrument is created for 10- to 11-year-old children in the fifth and sixth grade.

The MOBAK test battery embraces the basic motor competencies of "*self-movement*" (e.g., balancing, rolling, running and, jumping) and "*object movement*" (e.g., throwing, catching, bouncing, dribbling).

The difficulty and complexity of the requirements encountered in the MOBAK tasks are adapted to the children's age and grade and increase successively. The assessment of the MOBAK tasks is easily feasible due to dichotomous coding (pass vs. fail). The evaluation is done by summation. In addition to the

⁵ Large parts of this section are based on information given on the MOBAK website <http://mobak.info/mobak/>

materials from the test case, large-scale equipment from the sports hall is needed (long bench, gymnastic mats, etc.).

The MOBAK test battery allows a standardised and economical assessment of basic motor competencies for scientific testing as well as PE teaching practice. The implementation of the instructional MOBAK tasks is quickly and easily achieved in a sports hall. When performing the test, a distinction must be made as to whether it is a scientific test or a test in PE teaching practice.

For tests concerning PE teaching practice, it is recommended for tasks to be divided into several, if possible successive, PE lessons and evaluated individually. The possibility to address only one task exists; not all four tasks have to be tested in one lesson series. The evaluation of the MOBAK test items is easily feasible due to clear standardisation criteria. The evaluation can be carried out on the level of the MOBAK competence areas, e.g., “self-movement” as well as on the level of the MOBAK test items, e.g. throwing. For a testing in scientific settings, it is advised that previously trained staff conducts the MOBAK test. For economic reasons, all test tasks should be addressed in one lesson. The evaluation of the MOBAK test items can be carried out in accordance with the research question of the respective study.

This exemplified approach for testing in Switzerland highlights that the MOBAK testing needs to be adapted for the specific context. As a result, the MOBAK test instruments need to be selected in accordance with the country’s curricula.

4. Learning Tasks in Competence-Oriented Physical Education⁶

After the implementation of the MOBAK test, the focus is on the practical implications, i.e., how the knowledge that the teacher has gained through the test results can be used to methodologically (re-)organise future PE lessons. In the previous BMC-EU project, a general support framework that shall help to find ways to use the test results for the organisation and possible enhancement of future PE lessons has been developed. Leading questions from the teacher's point of view were:

- How can a teacher generally improve the basic motor competencies in a class?
- How can the children's low test results in certain basic motor qualifications be improved?
- Which actions are required when realising high test results in certain basic motor qualifications?

It is essential to bear in mind that the framework is based on a competence-oriented approach as basic motor competencies are considered a requirement for the success of learning strategies in motor learning. The MOBAK test itself aims to measure the children's basic motor competencies. Thus, it is coherent that the support measures are oriented towards competencies as well (Scheuer & Heck, 2020b). Competence is always determined by personal and situational aspects. This means that a child cannot be generally described as motor competent but only as competent to cope with a specific task requirement (in this case provided by the MOBAK test) (Hirtz et al., 1998). Therefore *"a competence orientation in primary school physical education ideally suggests the consideration and development of different functions of tasks: diagnostic tasks, competence acquisition tasks, learning reflection tasks and application tasks"* (Neumann, 2014, p. 176). Whereas the diagnostic tasks are already incorporated in the test phase, the three other tasks identified by Neumann (2014) can be part of the initiatives that follow the test. In the first sub-chapter, the derivation of concrete learning tasks that follow the test implementation is described (chapter 4.1) followed by a second chapter which gives insides into concepts of learning tasks in different countries (chapter 4.2). The modular support toolkit (Scheuer & Heck, 2020a) suggests increasing or decreasing the difficulty of the learning tasks by using pressure conditions. These pressure conditions will be omitted in this project in order to focus on competence orientation and learning tasks.

4.1 Derivation of Learning Tasks

When the overall aim is to develop children's competencies, the creation of learning tasks becomes central (Kleinknecht, 2010). Learning tasks are also called movement tasks in the context of PE lessons

⁶ Large parts of this section are based on results published within the previous BMC-EU project. The parts related to "pressure conditions" are omitted because in the present project the consortium decided to focus on competence orientation and learning tasks only as part of the theoretical and methodological concept.

(Laging, 2006). The task format can be open or closed, and in this context Neuber (2002) distinguishes between a *movement instruction* (requires the learners to follow a certain, given movement form) and a *movement stimulation* (requires learners to engage in exploratory motor action that is usually based on collective thinking and decision-making). The task format possibly simplifies the task analysis (Pfitzner & Aschebrock, 2013), but based on the children's self-reliance a further distinction between movement tasks for guided and for discovery learning seems adequate (Neumann, 2014, p. 176f):

- “A movement task for guided learning requires the motor coping with a given or self-raised movement problem from the learner. For the solution of such movement problems, there are in principle different possible solutions that are pre-structured, prefaced, or planned by the teacher.
- A movement task for discovering learning requires the motor coping with a given or self-raised movement problem from the learner. For the solution of such movement problems, there are in principle various possible solutions which can be discovered by the pupils and can be considered and assessed according to specific criteria depending on the task.”

Both options offer different learning opportunities for children. In order to illustrate these options in more detail, an example will be given for competence-oriented PE with a focus on “balancing”. The related basic motor qualification has been diagnosed by the MOBAK test. On a side note, it shall be mentioned that the focus lies on the pure motor skills and their support in the explanation of this example “balancing”. With regards to “balancing” in regular PE lessons, further decisive educational objectives like “safety”, “helping”, “devices”, “rules”, “creativity”, or “organization” would need to be addressed (Neumann, 2014, p. 177).

The following example is based on a concrete example for a competence-oriented PE class for 7-year-old pupils given by Neumann (2014). The example aims to develop the balance competencies of a child in a PE lesson. The method used in this PE lesson is station work. The task is divided into *competence acquisition*, *learning reflection* and *application*. The following wording of the tasks indicate how the task can be adapted to the pupils' needs.

Competence acquisition task: *“If the balancing station seems too easy for you today, you can try to make balancing harder. There is a bucket at each station with ropes, gymnastic balls, Hacky Sacks⁷ and a tennis ring!”*

Learning reflection task: *“I have noticed that many children are balancing by putting their feet side by side. However, we have seen in the last lesson that this ‘technique’ no longer works if the balancing line gets narrower. Therefore, please check today which stations you already accomplish with the right technique,*

⁷ “Hacky Sack” is the name of a brand of footbag which is the term for a small, round bag filled with dry grain (e.g. rice) or sand, which is kicked into the air as part of a competitive game or as a display of dexterity.

and which stations need more practice. In addition, every child gets a sheet; a pencil is placed at the station!"

I can – checklist⁸

I succeed in...

I'm getting better and better in...

I do not succeed yet in... because...

Application task: "Today we are building five different balancing stations that you have already practiced at in the last few lessons. Please make sure that you design your constructions in line with the rules that we have agreed on. When balancing, please think of the right technique and decide for yourself whether you want to solve the balancing tasks with help, without help, or with an additional task!"⁹

Apart from the adaptations of the tasks, further adjustments of balancing tasks can be made in terms of variations, knowledge and understanding, as well as willingness.

Variations: Instructions can be given to change the balancing direction (e.g., sideways, backwards, or turning around while moving). Moreover, in order to address the pupils' senses, learners can be instructed to balance with closed eyes. In order to increase the difficulty, the environment of the balancing task can be changed, for example, by balancing over a line, a rope, a bench, or a balance beam. Lastly, by using further equipment, the balancing tasks can also be varied. The equipment can either be used to add an additional task while balancing, for example throwing and catching juggling scarves or dribbling a ball, or to balance the equipment in addition to the balancing task, e.g., balancing a Hacky Sack on one's head while balancing over a rope.

Knowledge and Understanding: The knowledge and understanding of balancing tasks can be raised by asking the pupils reflexion questions. These questions can, for instance, include aspects addressing changes in the movement when the task difficulty is increased or decreased (e.g., What changes do you experience when you change the balancing direction?) or the learning process (e.g., When is balancing easy for you and why?).

Willingness: Lastly, pupils' willingness to learn a certain task can be triggered if the awareness of the importance of learning a task is raised. In terms of a balancing task, pupils can, for example, be asked why it is important to learn to balance. Moreover, the willingness can be increased if pupils are involved in the lesson planning and task selection. For example, pupils can be given the chance to choose their own tasks

⁸ A checklist can be presented to the children in written form or with pictures or symbols (for children not yet able to read)

⁹ In the frame of the previous BMC-EU project different concrete learning tasks have been developed as a support tool for teachers (Scheuer & Heck, 2020a).

by allowing them to adapt a task to their own needs (e.g., How can you place the rope on the ground so that it is harder for you to balance?).

4.2 National Perspectives on Learning Tasks

In order to provide a European view, the participating project partners countries were asked to share their understanding of learning tasks in competence-oriented PE as well as about goals of learning tasks in supporting basic motor competencies. The following sub-sections, thus, allow to have a closer look into different national contexts, but also mirror the existing diversity in the general understanding as well as in the support options addressed to learning tasks.

4.2.1 Germany

According to Leisen (2010), learning tasks provide the learning environment for competence development. A learning task is an arrangement of meaningful learning situations that are coordinated in terms of content and requirements. The learners should discover the problem, develop ideas, and evaluate information as independently as possible. In this way, the pupils create and discuss a learning product, define and reflect on the learning gain, and finally practice dealing with knowledge in an active way (Leisen, 2010). In order to allow for competence development, learning tasks are supposed to fulfil various requirements (Pfitzner, 2018): Among other things, these tasks should cognitively activate pupils, should be pupil-oriented, facilitate social interaction, relate to the children's living environment, allow differentiation, should stimulate a learning attitude/motivation, and should be open in a way that allows for multiple solutions. The role of teachers in such learning environments is different from traditional environments. The teachers must find a balance between guidance through instructions and tasks that are as individualised as possible on the one hand, and support learners with follow-up questions and problems that arise on the other hand.

The aim of learning tasks is to stimulate the realisation of movement intentions, the solution of (movement) problems, and the mastering of (sporting) challenging situations (Aschebrock et al., 2010). Therefore, in case of the present project, learning tasks must be designed in such a way that they stimulate the children to acquire basic motor skills "along the way". The key, thus, is to design challenging situations so that they have to be solved with the help of MOBAKs.

Good and interesting learning tasks ensure that pupils deal intensively with a technical content and find productive solutions. Tasks in such a learning context aim at independent, discovering, and researching learning. Mistakes are allowed in the learning process and own solutions can be found (Aschebrock et al., 2010). This type of learning means that learning tasks that require basic motor competencies in order to

solve them must not be too "narrow", but must leave children room for exploration to let them find their own solutions.

4.2.2 Austria

According to the Austrian educational standard (Amesberger & Stadler, 2014), pupils should develop competencies during PE lessons. This development requires a specific design of PE lessons and can be achieved with learning tasks. The PE design should optimally align the objective of promoting competencies. An aligned learning task requires measures to (1) develop pupils' motor skills and abilities (ability), (2) stimulate concept-constructing activities associated with movement (knowledge) and (3) develop the pupils' motivational-volitional attitudes (willingness). The individual willingness is essential when pupils demonstrate an acquired competence in an assessment.

It is crucial to methodically place the three competence components in a larger task-oriented context of action (Amesberger & Stadler, 2014; Niederkofler & Amesberger, 2023). The action context can be established by ensuring that pupils transfer their ability and knowledge to different situations and regulate their motivation and willingness when performing movement and sport-related activities. Therefore, the willingness has an own significance in competence-oriented learning tasks. Only the consideration of individuals' willingness in learning tasks will guarantee pupils' subjective positioning (e.g. attribution of meaning, sense) and pupils' goal orientation in the task execution. Niederkofler and Amesberger (2023) provide an exemplary implementation of the promotion of basic motor competencies in primary school considering pupils' ability, knowledge, and willingness.

4.2.3 Switzerland

In order to take into account the competence orientation, it is important in physical activity and sport lessons to tie in with the previous knowledge and skill level of the pupils. A "learning environment for competence development" (Leisen, 2010, p. 60) should be developed. Through targeted and age-appropriate learning tasks according to the principle of "problem-based learning," the children should "achieve the competencies in the curriculum in an individualised way" (Ferrari & Baumgartner, 2021). The learning tasks are adapted to the learning and developmental level of the children and enable, among other things, an individual promotion of motor skills.

The learning tasks are intended to achieve a learning attitude in the learner by linking to his or her life world, and, thus, arousing interest. The tasks build on the pupils' previous knowledge, offer a variety of possible solutions, and, thus, have a positive effect on motivation. Solution strategies are worked out independently and developed further in dialog with other pupils. In these negotiation processes, children

take responsibility for their own learning which increases motivation (Seiler et al., 2016). As a result, children deal intensively with a technical content and find productive solutions (Ascherbrock et al., 2010). Differentiation enables children to practice individual aspects in a variety of ways which leads to an increase in motor skills. Increasing motor skills is of great importance for mastering further learning tasks or application situations. Learning tasks activate children cognitively-motorically and promote action-oriented learning (Schönfeld, 2021) which leads to the solution of movement problems (Pfitzner & Aschenbrock, 2013). These tasks are designed to facilitate independent and creative approaches alone and in social exchange within a group.

In summary, learning tasks ...

- shall enable children's individual acquisition of competencies,
- shall build and deepen competencies,
- support a transfer of knowledge and not a reproduction of knowledge, and
- enable multiple solution strategies. (Pfitzner & Aschebrock, 2013)

4.2.4 The Netherlands

The goal of physical education lessons in primary schools in the Netherlands is to develop a broad repertoire of movement skills. This comprehensive set of skills equips children to actively engage in a diverse range of movement activities. The repertoire encompasses both motor skills and social skills. In the Netherlands, learning tasks are designed to seamlessly integrate both types of skills with a specific focus on improving targeted abilities within each category.

Moreover, learning tasks are structured to enhance both motor and social skills in pivotal movement and game settings. The objective is to enable children to apply and transfer these acquired skills to various contexts. It is emphasised that learning tasks should take place in settings that are not only age-appropriate but also captivating for the respective age group (Ministry of Education, Culture and Science, 2016). The competences sought are not solely concentrated on motor skills recognising that movement occurs within a broader social context. Social aspects of learning tasks include acquiring skills such as making agreements, fulfilling commitments, and understanding one's role in a social setting. Additionally, values such as cooperation, safety, respect for others' capabilities, and self-discovery are integral components of the learning tasks. The SLO, the National Expert Centre of Curriculum Development, categorises these learning tasks into two types: movement tasks and regulatory tasks.

The motor skill aspect of physical education is further delineated into distinct movement areas known as 'leerlijnen.' Teachers are tasked with structuring their lessons and yearly schedules based on these 'leerlijnen.' It is essential for educators to be cognisant of the regulatory skills associated with each

'leerlijn' and to facilitate learning in both motor and social/regulatory skills. In recent years, there has been an increased recognition of additional requirements for effective learning tasks in the Netherlands. Chief among these is the acknowledgment that enjoyment plays a pivotal role in initiating and sustaining learning among children. Moreover, key themes in the Netherlands regarding the creation of learning tasks encompass ensuring learning occurs at an appropriate level (within the zone of proximity/errorless learning) improving the autonomy of children in learning, promoting implicit learning, incorporating sufficient variations, and progressing logically towards increased complexity (ten Brinke et al., 2017).

4.2.5 Slovakia

Goals of learning tasks in competence-oriented physical education in supporting basic motor competencies

The goals are focused on more complex learning tasks, e.g. using throwing and catching during balancing on a bench or combining rolling with jumping. In addition, the goal is to offer children a choice of equipment and several levels of difficulty where they can choose from. Teachers are encouraged to include more peer-learning so that the children work in pairs or in groups, and can use their knowledge in order to explain the learning task to others or assess the performance of others.

Characteristics of good learning tasks in competence-oriented physical education in supporting basic motor competencies

A good learning task in order to promote basic motor competence involves children's previous experience, motivation to perform a task, knowledge, and skills. For example, a pre-school child can decide how to jump over an obstacle whereas a school child can build an obstacle track and suggest a way to complete the track. Moreover, teachers are suggested to use general recommendations as, for example, the following:

Acquisition	Learning through acquisition is where pupils explore ideas provided by their teachers. Watching demos or videos, practical examples...
Inquiry	Pupil learning through investigation explore, compare, e.g., how to manage the learning task effectively
Discussion	Learning through discussion requires the learner to articulate their ideas and questions, and respond to the ideas and questions from their teachers and/or from their peers. Discussion can include: in-class discussions, group discussions, online asynchronous forums, polling, think-pair-share activities.

Practice	Learning through practice requires learners to respond to tasks set by teachers and adapt their actions to the task goal, and use the feedback provided to improve their next action. Depending on the context, pupils can engage with feedback from self-reflexion, peers, teachers, or from the activity itself.
Collaboration	Pupils work together to understand and respond to a problem as a group. Collaboration is about the process of working together. Pupils negotiate their ideas and practice. Collaborative learning is most effective when pupils challenge each other and provide peer feedback to develop the best output they can.
Production	Learning through production is when pupils must produce an output set by the teacher. Production motivates the learner not through the response from the teacher but in the production of a public output.

Development of learning tasks (Laurillard, 2012)

4.2.6 Czech Republic

What is meant by learning tasks in competence-oriented physical education classes in supporting basic motor competencies?

Competencies are a general set of knowledge, skills, abilities, attitudes, and values which are important for the personal development of an individual and for the individual's participation in society. Their selection and conception are based on values generally accepted in society as well as commonly held assumptions on which competencies contribute to an individual's education (cf. Maňák, 2006), to a contented and successful life, and to strengthening the functions of civil society.

In competence-oriented PE, all elements of Physical Literacy (not only the physical elements) are important.

The elements of Physical Literacy (Vlček, 2019):

- Affective (motivation and confidence)
Motivation and confidence refer to an individual's enthusiasm for, enjoyment of, and self-assurance in adopting physical activity as an integral part of life.
- Physical (physical competence)
Physical competence refers to an individual's ability to develop movement skills and patterns, and the capacity to experience a variety of movement intensities and durations. Enhanced physical competence enables an individual to participate in a wide range of physical activities and settings.
- Cognitive (knowledge and understanding)

Knowledge and understanding includes the ability to identify and express the essential qualities that influence movement, understand the health benefits of an active lifestyle, and appreciate the rules, principles and safety features associated with physical activity in a variety of settings and physical environments.

- Behavioural (engagement in physical activities for life)

Engagement in physical activities for life refers to an individual taking personal responsibility for physical literacy by freely choosing to be active on a regular basis. This involves prioritising and sustaining involvement in a range of meaningful and personally challenging activities as an integral part of one's lifestyle.

Competence orientation in education is relatively new topic in the Czech educational system and only the period after the curriculum revision will show how it will be understood by the professional public and how it will be understood by teachers in practice. Nevertheless, some Czech authors agree that in a competence-oriented approach in PE more responsibility and active involvement on evaluation, individual and groups forms and more formative assessment are the steps leading toward competence acquisition. In their recent work, Scheuer et al. (2021) provide crucial considerations for learning tasks within competence-oriented physical education. The authors emphasise several key principles when implementing these learning tasks such as the importance of designing activities for competencies development that are adaptable and can be modified to suit varying needs and abilities. Activities should not follow a rigid, predetermined path but should allow pupils to explore and implement multiple alternative solutions fostering a more flexible and creative approach to achieving goals.

Competitive environments among pupils should be applied in a way that promotes collaboration rather than fostering a solely individualistic approach. Furthermore, the authors recommend that activities aimed at promoting competencies should have a concrete connection to real-life situations. This approach ensures that the learning outcomes are not only theoretically sound but also applicable and meaningful in practical scenarios.

In summary, the principles of effective competence-oriented physical education emphasise the modifiability of activities, the encouragement of alternative solutions, the promotion of collaboration in competitive environments, and the real-life relevance of competencies-promoting activities.

To sum up, learning tasks are understood similarly by all partner countries although there are some deviations. For example, physical literacy is a key element of Czech PE. Nevertheless, similarities can be found in physical literacy and learning tasks as both concepts aim to promote motor learning by reflecting upon the learning process. For example, physical literacy includes affective and cognitive aspects which

can also be found in the learning tasks which address pupils' knowledge and understanding as well as their willingness. As all partner countries have a similar understanding of learning tasks or use similar concepts, these tasks shall be used as a basis for developing a pedagogical strategy for the use of the MOBAK App.



5. Pedagogical Strategy for the Use of a MOBAK Application in Physical Education

Within the BMC-EU DigPro project, a pedagogical strategy for the use of the MOBAK application in school physical education settings has been developed. The aim of this strategy is to further build on the theoretical and methodological framework for the development of the actual MOBAK application. The pedagogical strategy shall, thus, help to understand the components and functioning of the planned application and relates this application to concrete pedagogical aims. In this project, the pedagogical strategy are the methods used for teaching and learning. These methods will be elaborated further in the upcoming sub-chapters.

The target group for the pedagogical strategy are the future potential users of the MOBAK application including physical education teachers, student teachers, and teacher educators. Besides allowing to develop and implement the interactive MOBAK application, the pedagogical strategy can be used in educational programmes or in teacher education as an example for the implementation of competence-oriented support concepts based on digital supports.

As a first step, the planned MOBAK application will be embedded into the concept of competence orientation (cf. chapter 5.1) followed by a derivation of pedagogical implications and conclusions as a basis for the app development (c.f. chapter 5.2).

5.1 Embedment of the MOBAK App into the Concept of Competence Orientation

While competence-oriented curricula suggest teachers to organise their classes oriented towards the development and promotion of pupils' competencies, the transformation of competence demands into lessons and unit plans remains a challenge. This is true for any school subject, with physical education having its own specific demands on how to arrange teaching and learning processes practically (Scheuer & Heck, 2020b). When planning a competence-oriented physical education lesson series, the focus is first on the learning goals that shall be reached at the end of the series. The goals, however, give room for differentiation as a reaction to pupils' natural heterogeneity. Starting from there, the lessons are planned backwards in a trial to make sure that the respective final competencies are always in the centre, meaning that all main actions are ideally related and leading to this final outcome. The teacher's task accordingly is to view the competence goal and to derive together with the pupils what they need to know, be able to do, and want is needed in order to reach this goal. Whether or to what extent the goal is achieved should ultimately allow for a measurement of the quality of the teaching and/or the development of the pupils' competencies (Neumann, 2013).

In this context, various functions of tasks, can be differentiated: diagnostic tasks, competence acquisition tasks, learning reflection tasks, and application tasks (Neumann, 2014, as cited in Scheuer & Heck, 2020a). However, due to the complexity of preparing a digital tool, only two functions shall be reflected in the MOBAK application: (1) diagnostic tasks and (2) learning tasks. The latter also covers the competence tasks as well as the applications tasks in a broader sense.

With reference to (1): As an initial action, diagnostic tasks allow to measure the status quo of pupils' competencies. This measurement is provided by the test function meaning that the app shall allow to easier process with the practical implementation of the MOBAK test, possibly also without the use of printed material. A second aspect is the collection of the MOBAK test results. Results (on individual or class level) are directly accessible and downloadable via the app including a share function. In a longitudinal view, it would also be desirable to be able to compare results of the same child (while respecting anonymity) after a certain period of lessons or even in a new school year or by sharing results with a teacher colleague who takes over the class in the following school year. A result of a respective competence-oriented test reflects how a child copes with a specific task requirement. This task requirement implies having the related competence to fulfil the task. As a consequence, and depending on the results of the class or of single pupils, support measures are necessary. At this point, the three other task functions are relevant.

With reference to (2): Learning tasks shall initiate and/or foster the pupils' reflexion about their competencies. This reflexion can be reached, for instance, by implementing the use of an "I-can-checklist" which allows the pupil to note down in which task he/she succeeded in, is getting better at and/or fails/does not yet succeed at. Moreover, the checklist includes spaces for the pupils in order to note why they believe that they are improving or what element proves it to them. This type of task is supposed to give an overall picture of the pupil's reflective competencies. Additionally, all learning tasks are complemented with reflexion questions addressing the aspects of knowledge and understanding as well as willingness. The competence acquisition tasks are represented by the included ideas for variation for each learning task (e.g., by increasing or decreasing the distance while throwing a ball at a wall). These suggested variations aim at an acquisition and/or improvement of competencies and ready for use independently of the implementation of the MOBAK test. Finally, application tasks are addressed by supporting the teacher in his/her lesson planning as the teacher creates a learning situation by providing offers for variation with the help of the app. The application of these variations initiates and/or fosters the pupils' self-reliance and self-determination. This initiation or fostering can, for instance, be reached by letting the pupils choose the kind of variation and level of difficulty as well as additional support for a respective task.

In summary, the presented potential uses of the app are based on the concept of competence orientation (cp. #IO1) as they address not only teachers' diagnostic competence but also pupils' motor, cognitive and emotional competencies. As the diagnostic competence could also be combined with pupils' self-assessment, the app might also allow improving pupils' competencies in this regard and further set the base for a comparison of self-perception, perception by others, and test results.

5.2 Derivation of the Pedagogical Strategy for the Design of the MOBAK App

Generally, the MOBAK App fulfils two major functions: 1) enable the teacher to conduct the MOBAK test without printed material and 2) provide digital support measures after the test has been implemented or after a support need has been identified. In both cases the app provides all the information for the implementation (description, required material, social form, etc.). The test function is not a prerequisite for the use of the support function of the app. Both functions can be used independently of each other.

The given modular structure, based on the MOBAK test dimensions (self-movement, object movement, object locomotion, moving in water), and the concept of competence-orientation as a central part of the existing MOBAK support concept (cp. chapter 2), are mirrored in the app. However, only the MOBAK test dimensions self-movement and object movement have been integrated in the app as these are the dimensions that are used in all partner countries. The dimensions object locomotion and moving water are specific for Luxembourg and have, thus, been excluded from the app. Moreover, derivations can be found with reference to the modular support toolkit of previous BMC-EU project (Scheuer & Heck, 2020a). The concept of pressure conditions will not appear in the app structure for reasons of complexity. Nevertheless, the pressure conditions were considered during the development of the learning tasks.

5.2.1 Use of the MOBAK App for Testing Purposes

Taking the children's grade as a starting point (grade 1-2 or grade 3-4), the user is able to choose between the two dimensions self-movement and object movement. Depending on the available time span, either both dimensions can be addressed within a test series or only one dimension can be chosen. The app supports both options while ensuring that within one dimension (e.g., self-movement) all given qualifications (e.g., balancing, rolling, jumping, running) are tested in order to complete the gained feedback for this movement area. Besides the written description, images of the respective test situation within the app allow the teacher to fully understand the required task.

After having fed the app with the pupils' test results, a table summarises the results for an easy overview of pupils' potential needs for support and/or their strength. Moreover, the individual and class results can be shared via e-mail and/or other means with others while respecting the regulations for secured anonymity and data protection.

5.2.2 Use of the MOBAK App for Support Purposes

Independently from having implemented a MOBAK test or not, the app allows the users to access support for the planning of a lesson and/or lesson series. The same structure as for the testing is used by establishing a distinction between designated tasks for self-movement and those for object movement. Within the qualifications (e.g., balancing, rolling, jumping, running), a range of different tasks is provided. Users can choose tasks according to their specific purposes and requirements. These tasks can either be used for a single lesson, be compiled to a lesson with different stations, or tied together as a lesson series. Every learning task card embraces the option to vary the original task in its difficulty and shift the focus to “variations”, “willingness” or “knowledge and understanding”. For instance, the teacher can choose to first concentrate on “variations” within a series of lessons and afterwards on “willingness” and “knowledge and understanding” knowing that all three are automatically jointly addressed in a teaching scenario. Making transparent which general function the lesson takes, helps to make sure that every lesson serves to reach an overall goal.

The lesson planning ideally follows a children-centred principle, allowing pupils to self-evaluate their performance and choose the task variation accordingly. This choice depends on the respective situation in the learning group and on the preferences of both the teacher and the pupils. The same is true for the number of lessons spent on the support and improvement of a chosen qualification or dimension. The teacher can decide to increase or decrease the proposed length of the series of lessons depending on the level of their class and its different pupils.

The frame of the teaching sequence can be built by the initial MOBAK test and a possible re-test. Alternatively, the choice of the support measures can be based on teachers’ diagnoses. In both cases, the gained knowledge about the children’s basic motor competence level can be used to plan a teaching sequence of several lessons. From a long-term perspective, the test division into self-movement and object movement helps to concentrate on the motor competence area. The same appears for the choice of addressed basic motor qualifications (“balancing”, “throwing” etc.). The app helps to make these choices visible.

The options which are provided for selection in the app recommend implementing aspects of competence-oriented teaching. Finally, it is important to emphasise that further didactical, methodological as well as pedagogical decisions remain in the hands of each teacher. As a result, the app supports but can never replace a teacher’s choices and individual decisions. This limitation of the app concerns, for instance, the question whether task variations are organised in the frame of a series of different movement stations where children rotate to or whether different tasks follow each other subsequently and are, thus, first practiced by the whole class before a new task is introduced. Finally, a

“like-function” (heart symbol) allows teachers to create a collection of their favourite learning tasks which makes these tasks more visible and can be used for the lesson planning quicker and easier.

5.3. Conclusion

In conclusion, the concept of competence orientation has been used in several European countries as a basis for the development of state-specific PE curricula. Moreover, this concept has been used as a framework for the development of basic motor competencies. Basic motor competencies are explicitly context-dependent and relate to specific situational requirements of the culture of movement, play, and sport. Therefore, children are required to attain these competencies in order to participate in the sport and movement culture of their respective country. In order to ensure that all children have the chance of participation, the MOBAK approach has been introduced into several European countries. In doing so, several possibilities have been explored in how to expand pupils’ basic motor competencies including the introduction of learning tasks. These learning tasks provide the learning environment for competence development and can be adapted to pupils’ learning processes by addressing the variations, willingness as well as knowledge and understanding.

The competence-orientation approach as well as the learning tasks form the basis for a pedagogical strategy to develop a MOBAK App used in Physical Education. Moreover, the MOBAK App is framed by the MOBAK approach. The strength of the MOBAK App can be found in its union of the diagnostic and lesson planning applications. On the one hand, teachers can use the MOBAK App in order to test and record pupils’ basic motor competencies. On the other hand, teachers can use the MOBAK App to promote pupils’ basic motor competencies by using the app in their lesson planning. The applicability as well as sustainability of the MOBAK App needs to be explored in further studies.

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