

Catrin Grieshaber
Matrikelnummer: 15-641-723
Masterstudium Sport, Bewegung und Gesundheit
Sportwissenschaft



University
of Basel

Department of
Sport, Exercise and Health

**Development of a «physical education» toolkit
for *KaziKidz* Grade R, validated based on the Namibian curriculum**

Master Thesis

Submitted to the Department of Sport, Exercise and Health at the University of Basel

Erstgutachter: Prof. Dr. Uwe Pühse

Basel, August 2021

Acknowledgement

The last year, and thus the process and course of this master thesis, were marked by ever-changing circumstances due to the pandemic. I don't take it for granted that Olivier and I were given the opportunity to become a part of the *KaziBantu* project during this time of uncertainty.

First, I would like to thank my supervisor Prof. Dr. Uwe Phüse, Head of Department and Principal Investigator of the *KaziBantu* project for this unique opportunity, his trust, and his support.

My warmest thanks also go to Dr. Ivan Müller. His guidance, support, and enormous commitment during the whole process were great. Thanks to his open and encouraging nature I felt part of a team where people work on an equal footing and pursue the same goal. Further thanks go to Jan Degen. Together with Dr. Ivan Müller, he introduced me to the work of an internationally operating project. Both were always there for advice and I highly appreciate their openness to ideas and comments.

I would also like to express my gratitude to Ronelle Malan-Swart. Her expertise was incredibly valuable for this master thesis. As we were unable to travel to Namibia ourselves, she answered all our questions regarding the Namibian culture and the education system with great patience.

I could not have imagined a better team partner than my dear fellow student Olivier Küng. With his light-hearted, uncomplicated, and confident nature in every situation, Olivier was a huge inspiration to me. I thank him for the great teamwork where, even during stressful periods, laughter never came too short.

Finally, I would like to thank my dear friend Melanie Thommen and my mother Rita Grieshaber. As primary school teacher and occupational therapist for children respectively, they both have a lot of experience with the age-related characteristics of preschool children and were always there to support me with their expertise and creative ideas.

Abstract

Background: As low- and middle-income countries (LMICs) evolve socio-economically, traditional lifestyles and diets are changing, leading to increasing physical inactivity among a large proportion of children. Many LMICs are currently affected by the dual burden of communicable diseases (CD) and non-communicable diseases (NCD). One cause of many non-communicable diseases can be physical inactivity, which the *KaziBantu* project was launched in South Africa in 2017 to address. Its goal is to achieve long-term positive changes in the health of school children and teachers in resource-poor areas. With *KaziKidz*, the project has created a holistic educational and teaching tool that supports and promotes a healthy lifestyle from childhood to adolescence in a playful way. The focus of this master thesis was on the development of a *KaziKidz* toolkit for preschool age, which was adapted to the Namibian curriculum and developed in cooperation with the University of Namibia (UNAM). It provides a basis for possible future collaboration with low-resource schools in Namibia.

Methods: The development of a toolkit for *KaziKidz* Grade R, validated against the Namibian curriculum, was preceded by an extensive literature review on the state of health in Namibia on age-related characteristics of Grade R children and on the Namibian education system and teachers working in that system. Various resources were used to develop the lessons, such as the Namibian pre-primary curriculum and teacher's manual, expert opinions from UNAM were included and their and our own practical experiences, as well as academic literature on physical education in these schools.

Results: The result of this master's thesis is a first version of 32 lesson plans for teaching physical education in preschool Grade R. They have been designed in a graphic and drawing style, are appropriate for the age group of young children, have been adapted to the Namibian pre-primary curriculum and take into account the environmental factors of low-resource schools. To ensure compatibility, the structure and design of the toolkit is the same as the existing *KaziKidz* Grade 1-7 toolkit.

Conclusion: In LMICs, about 50% of children do not achieve the recommended 60 minutes of moderate to vigorous physical activity per day. School is an ideal setting to increase physical activity in everyday life. The *KaziKidz* physical education toolkit can help Grade R learners from disadvantaged schools in rural areas of Namibia to improve their physical and mental health in a fun way.

Zusammenfassung

Hintergrund: Mit der sozioökonomischen Entwicklung der Länder mit niedrigem und mittlerem Einkommen (LMICs) ändern sich die traditionellen Lebens- und Ernährungsgewohnheiten, was bei einem großen Teil der Kinder zu zunehmender Bewegungsarmut führt. Viele LMICs sind derzeit von der Doppelbelastung durch übertragbare Krankheiten (CD) und nicht übertragbare Krankheiten (NCD) betroffen. Eine Ursache für viele nicht übertragbare Krankheiten kann körperliche Inaktivität sein, gegen die das Projekt *KaziBantu* 2017 in Südafrika gestartet wurde. Sein Ziel ist es, die Gesundheit von Schulkindern und Lehrern in ressourcenarmen Gebieten langfristig positiv zu verändern. Mit *KaziKidz* hat das Projekt ein ganzheitliches Bildungs- und Lehrinstrument geschaffen, das auf spielerische Weise einen gesunden Lebensstil von der Kindheit bis zur Jugend unterstützt und fördert. Der Schwerpunkt dieser Masterarbeit lag auf der Entwicklung eines *KaziKidz*-Toolkits für das Vorschulalter, das an den namibischen Lehrplan angepasst und in Zusammenarbeit mit der Universität von Namibia (UNAM) entwickelt wurde. Es bietet eine Grundlage für eine mögliche künftige Zusammenarbeit mit Schulen mit geringen Ressourcen in Namibia.

Methoden: Der Entwicklung eines Toolkits für *KaziKidz* Grade R, das anhand des namibischen Lehrplans validiert wurde, ging eine umfassende Literaturrecherche zum Gesundheitszustand in Namibia, zu altersbezogenen Merkmalen von Kindern der Klasse R sowie zum namibischen Bildungssystem und den darin tätigen Lehrpersonen voraus. Für die Entwicklung der Lektionen wurden verschiedene Ressourcen verwendet, wie der namibische Vorschullehrplan und das Lehrpersonenhandbuch, Expert*innenmeinungen der UNAM, ihre und unsere eigenen praktischen Erfahrungen sowie wissenschaftliche Literatur über den Sportunterricht in diesen Schulen.

Ergebnisse: Das Ergebnis dieser Masterarbeit ist eine erste Version von 32 Unterrichtsplänen für den Sportunterricht in der Vorschulklasse R. Sie wurden in einem grafischen und zeichnerischen Stil entworfen, sind für die Altersgruppe der Kleinkinder geeignet, wurden an den namibischen Vorschullehrplan angepasst und berücksichtigen die Umweltfaktoren von Schulen mit geringen Ressourcen. Um die Kompatibilität zu gewährleisten, sind Struktur und Design des Toolkits identisch mit dem bestehenden *KaziKidz* Toolkit für die Klassen 1-7.

Schlussfolgerung: In LMICs erreichen etwa 50 % der Kinder die empfohlenen 60 Minuten mäßige bis intensive körperliche Aktivität pro Tag nicht. Die Schule ist ein idealer Ort, um die körperliche Aktivität im Alltag zu steigern. Das *KaziKidz*-Toolkit für den Sportunterricht kann Schüler*innen der Klasse R aus benachteiligten Schulen in ländlichen Gebieten Namibias dabei helfen, ihre körperliche und geistige Gesundheit auf spielerische Art und Weise zu verbessern.

Résumé

Contexte: À mesure que les pays à revenu faible ou intermédiaire (PRFM) évoluent sur le plan socio-économique, les modes de vie et les régimes alimentaires traditionnels changent, ce qui entraîne une augmentation de l'inactivité physique chez une grande partie des enfants. De nombreux PFR-PRI sont actuellement affectés par la double charge des maladies transmissibles (MC) et des maladies non transmissibles (MNT). L'une des causes de nombreuses maladies non transmissibles peut être la sédentarité, à laquelle le projet *KaziBantu* a été lancé en Afrique du Sud en 2017 pour y remédier. Son objectif est d'obtenir des changements positifs à long terme dans la santé des écoliers et des enseignants dans les zones pauvres en ressources. Avec *KaziKidz*, le projet a créé un outil éducatif et pédagogique holistique qui soutient et promeut un mode de vie sain de l'enfance à l'adolescence de manière ludique. Cette thèse de master s'est concentrée sur le développement d'une boîte à outils *KaziKidz* pour l'âge préscolaire, qui a été adaptée au programme scolaire namibien et développée en coopération avec l'Université de Namibie (UNAM). Elle fournit une base pour une éventuelle collaboration future avec des écoles à faibles ressources en Namibie.

Méthodes: Le développement d'un kit d'outils pour *KaziKidz* Grade R, validé par rapport au programme scolaire namibien, a été précédé d'une analyse documentaire approfondie sur l'état de santé en Namibie, sur les caractéristiques liées à l'âge des enfants Grade R et sur le système éducatif namibien et les enseignants travaillant dans ce système. Diverses ressources ont été utilisées pour développer les leçons, telles que le programme d'enseignement pré-primaire namibien et le manuel de l'enseignant, les avis d'experts de l'UNAM ont été inclus et leurs et nos propres expériences pratiques, ainsi que la littérature académique sur l'éducation physique dans ces écoles.

Résultats: Le résultat de cette thèse de maîtrise est une première version de 32 plans de leçons pour l'enseignement de l'éducation physique dans les écoles maternelles de niveau R. Ils ont été conçus dans un style graphique et de dessin, sont appropriés pour le groupe d'âge des jeunes enfants, ont été adaptés au curriculum pré-primaire namibien et prennent en compte les facteurs environnementaux des écoles à faibles ressources. Pour assurer la compatibilité, la structure et la conception de la boîte à outils sont les mêmes que celles de la boîte à outils *KaziKidz* existante pour les classes 1 à 7.

Conclusion: Dans les PRFM, environ 50% des enfants n'atteignent pas les 60 minutes recommandées d'activité physique modérée à vigoureuse par jour. L'école est un cadre idéal pour augmenter l'activité physique au quotidien. La boîte à outils d'éducation physique *KaziKidz* peut aider les apprenants du niveau R des écoles défavorisées des zones rurales de Namibie à améliorer leur santé physique et mentale de manière ludique.

Table of Contents

1	Introduction.....	9
2	Health state in the Namibian population.....	11
3	Grade R Children	13
3.1	Motor Ontogenesis of Humans	14
3.2	General Characteristics of Early Childhood	14
4	The Namibian Education Sector	16
4.1	Physical Education in Namibia.....	17
4.2	Health, Hygiene and Nutrition at schools	17
4.3	Teachers and the environment they work in.....	18
4.4	Structure of Basic Education in Namibia.....	21
4.5	Pre-primary education – Grade R	21
4.6	Year Plan of Grade R.....	24
4.7	Learner-centred approach	25
5	Methods.....	27
5.1	Ronelle Malan-Swart	27
5.2	Influence of Covid-19	27
5.3	Literature research	28
5.4	Structure of the toolkit	29
5.5	Additional material and storytelling	31
5.6	Intensive development phase	32
5.7	Revision	33
6	Results.....	34
6.1	Exemplary lesson: Physical education lesson 02.....	34
6.2	Exemplary lesson: Physical education lesson 25.....	38
6.3	Exemplary lesson: Nutrition lesson 04	42
7	Discussion.....	45
7.1	Strengths in pre-primary education and aspects to be improved	45
7.2	Strengths and limitations of the <i>KaziKidz</i> toolkit for Grade R	46
8	Conclusion and Outlook	47
9	Bibliography	48

List of Abbreviations

B.Ed.	<i>Bachelor of Education</i>
BETD	<i>Basic Education Teacher Diploma</i>
CAPS	<i>Curriculum and Assessment Policy Statement</i>
CD	<i>Communicable Disease</i>
CHF	<i>Swiss Franc</i>
DASH	<i>Disease, Activity and Schoolchildren's Health</i>
GDP	<i>Gross Domestic Product</i>
HHN	<i>Health Hygiene and Nutrition</i>
HPP	<i>Harambee Prosperity Plan</i>
IECD	<i>Integrated Early Childhood Development</i>
LCE	<i>Learner Centred Education</i>
LMIC	<i>Low and middle income country</i>
MoEAC	<i>Ministry of Education, Arts and Culture</i>
MoHSS	<i>Ministry of Health and Social Services</i>
MVPA	<i>Moderate to Vigorous intensity Physical Activity</i>
NAD	<i>Namibian Dollar</i>
NCD	<i>Non Communicable Disease</i>
NDP	<i>National Development Plan</i>
NSFP	<i>Namibian School Feeding Programme</i>
PA	<i>Physical Activity</i>
PE	<i>Physical Education</i>
SDG	<i>Sustainable Development Goal</i>
SFP	<i>School Feeding Programme</i>
UNAM	<i>University of Namibia</i>
UNESCO	<i>United Nations Educational Scientific and Cultural Organization</i>
UNICEF	<i>United Nations International Children's Found</i>
WASH	<i>Water, Sanitation and Hygiene</i>
WHO	<i>World Health Organization</i>

Content of Tables

Table 1: Learning content for Physical Education Grade R (Ministry of Education, 2015, p. 22-23)	22
Table 2: Summary of the Year Plan (Ministry of Education, 2014, p. 15).....	24

Table of Figures

Figure 1: Logo of the UNESCO Chair «Physical Activity and Health in Educational Settings»	9
Figure 2: Namibia's geographical position (own illustration with Canva).....	11

Figure 3: Proportional Mortality (WHO, 2018b).....	12
Figure 4: The five pillars of the HPP2 (Republic of Namibia, 2021, p. 10).....	20
Figure 5: 7-day average of confirmed new infections per million inhabitants (SRF, 2021) ...	27
Figure 6: Lesson Tracker Physical Education (own illustration based on KaziBantu, 2020) .	30
Figure 7: Lesson Tracker Health, Hygiene & Nutrition (own illustration based on KaziBantu, 2020)	31
Figure 8: Physical Education sample lesson 02 (own illustration based on KaziBantu, 2020)	36
Figure 9: Physical Education sample lesson 02 (own illustration based on KaziBantu, 2020)	37
Figure 11: Physical Education sample lesson 25 (own illustration based on KaziBantu, 2020)	39
Figure 12: Physical Education sample lesson 02 (own illustration based on KaziBantu, 2020)	40
Figure 10: Physical Education Assessment (own illustration based on KaziBantu, 2020)	41
Figure 13: Snakes and Ladders game (own illustration with Canva)	42
Figure 14: Nutrition sample lesson 04 (own illustration based on KaziBantu, 2020)	43
Figure 15: Nutrition sample lesson 04 (own illustration based on KaziBantu, 2020)	44
Figure 16: Allocation to education as share of the total budget (UNICEF, 2018, p. 7)	45

1 Introduction

Long-lasting positive changes in health of schoolchildren and teachers in low-resource settings – the aim and contribution of the *KaziBantu* project. It all started with the DASH (Disease, Activity and Schoolchildren's Health) study in 2014, where representatives from the Nelson Mandela University, the University of Basel and the Swiss Tropical and Public Health Institute partnered up to contribute to the improvement of the health and well-being of schoolchildren in disadvantaged neighbourhoods from Port Elizabeth, South Africa. The study explored the implementation of a multi-fold school-based intervention toolkit, which comprised the four elements: health and hygiene lessons (1), nutritional supplementation and deworming (2), weekly physical activity (3) and dancing-to-music lessons (4). As the DASH project was completed in 2017, it is continued by the *KaziBantu* project from there onwards.

The *KaziBantu* project benefits from the extensive findings of the DASH study and therefore is able to further consolidate the practice of a healthy and active life of schoolchildren and teachers (Pühse et al., 2017). Since 2019, the *KaziBantu* project is implemented under the UNESCO Chair on «Physical Activity and Health in Educational Settings» and is part of the UNITWIN/UNESCO Chairs Programme (Department of Sport, Exercise and Health, 2020). To date, the *KaziBantu* project has contributed to establishing a healthier and more active lifestyle for schoolchildren and teachers in disadvantaged areas of South Africa. With *KaziKidz*, the project has created a holistic educational and teaching tool, which can be used by teachers without time-consuming preparation time. The teaching material contains lessons on Physical Education (PE), Health, Hygiene and Nutrition and Moving-to-Music for one complete calendar year for Grade 1-7. Its aim is to encourage and promote in a joyful manner a healthy lifestyle throughout childhood into adolescence. The *KaziKidz* teaching material is aligned with the South Africa's Curriculum and Assessment Policy Statement (CAPS) and therefore suitable to be integrated into school routine without neglecting any other subject.



Figure 1: Logo of the UNESCO Chair «Physical Activity and Health in Educational Settings»

The relevance of PE in everyday school life becomes evident taking scientific research into account: Lucht (2020) emphasises the importance of physical activity during school time from different perspectives: From a sports science point of view it is argued that physical activity increases cerebral blood flow and thus raises the level of attention. From a neuroscientist's point of view it is assumed that physical activities train the brain's adaptability and thus its plasticity. Psychologically speaking movement affects emotional balance and can have positive effects on self-efficacy and self-esteem. Looking at the worldwide trend of decreasing physical activity of children, low- and middle-income countries (LMICs) are experiencing a double burden (Pühse et al., 2017). The health sector has to deal with the existing burden of communicable diseases (CDs) (e.g. malaria or intestinal parasitic infections) on the one hand, and on the other hand with non-communicable diseases (NCDs) (e.g. hypertension), with a disease profile that is relatively «new» to LMICs, and typical for western countries. With the socio-economic

development of LMICs traditional lifestyles and diets are changing and lead to NCDs and obesity-related conditions such as cardiovascular diseases and diabetes (Müller et al., 2019). To address this double burden the World Health Organization (WHO) is addressing inactivity as an underlying cause for many NCDs and promotes its agenda for lifelong healthy living. In the long term the WHO aims to prevent rising costs related to physical inactivity and negative impacts on health systems, economic development, the environment, community well-being, and quality of life. Through the four following objectives the WHO strives to reduce physical inactivity by 15% until 2030: create active societies (1), develop active environments (2), contribute to active people (3), and create active systems (4) (World Health Organization (WHO), 2018a). Not only the WHO but also other international agencies for policy reforms, such as United Nations Educational Scientific and Cultural Organization (UNESCO) and United Nations International Children's Fund (UNICEF), turned their focus on PE trying to make their contribution to the Sustainable Development Goals (SDGs), mainly SDG 3 – Good Health and Well-being, and SDG 4 – Quality Education (Burnett, 2020). Similar to the meaning of PE in the context of the SDGs, Namibia Vision 2030 (Government of the Republic of Namibia, 2004), which is a policy framework for long-term national development in Namibia, is convinced that PE can contribute meaningfully to behavioural lifestyle changes in Namibia. A society based on knowledge, where knowledge is created and where this knowledge is used to improve the quality of life for everyone, is where the Namibian Government sees Namibia by the year 2030 (Government of the Republic of Namibia, 2004). But how to develop this society of the future? Central would certainly be a high level of human resource development, which is provided by basic education. Basic Education in Namibia, for example, is defined by the Basic Education Act 2020 (Office of the Prime Minister, 2020) as Grade 1–12. Every person between the age of 7 to 16 has the right for free basic education. Since October 2008 a pre-primary school year for five to six-year-old children became a new part of the basic education. The pre-primary school year, also called Reception Year or Grade R, is not yet a prerequisite to enter Grade 1 (Ministry of Education, Arts and Culture, 2016). The purpose of Grade R is to prepare children to enter Grade 1 and to lay a solid foundation for structured learning. Through integrated play-based activities Grade R teachers expose learners in the fields to mathematics, language, and life skills (Ministry of Education, 2015).

As the *KaziBantu* project developed a holistic educational and teaching tool for Grade 1–7, the *KaziKidz* teaching tool will be extended by Grade R. The development of a «physical education» toolkit for *KaziKidz* Grade R, validated based on the Namibian curriculum, will be the focal point of this master thesis presented here.

2 Health state in the Namibian population

As the key focus of this master thesis is on Grade R, the following will mainly refer to this age group and PE will be further developed with reference to this age group.

Namibia is located in the sub-Saharan region of southern Africa and shares borders with Angola, Zambia, Botswana and South Africa. In the west, the country borders the Atlantic Ocean and the Namibian capital Windhoek is located in the centre of the country (*figure 2*). It is an arid to semi-arid country with the Namib Desert along its west coast and the Kalahari Desert in the east. Until the First World War, Namibia, at this time called South West Africa, was a colonial possession of Germany and later was administered by South Africa. Namibia is one of Africa's youngest nations and became independent only in 1990 (Dowling & Pforr, 2021; Penn, 2008).

Namibia has a small population of about 2.5 million people of whom two-thirds live in rural areas, predominantly in the northern and north-eastern regions where rainfall is more plentiful. Due to political stability and sound economic management Namibia today is an upper-middle income country (Christians, 2020; Dowling & Pforr, 2021; The World Bank, 2021). How equitable or inequitable respectively, the income of a country is distributed in the population can be measured with the Gini coefficient. It ranges from 0 (complete equality) to 1 (complete inequality) (Farris, 2010). The EU's mean Gini coefficient in 2020 was at 0.3. Namibia's Gini coefficient of 0.59 in 2020 shows the high inequality of its income distribution. Globally only South Africa has a higher Gini coefficient (Statista, 2021). Despite the notable progress in reducing poverty since its independence in 1990, still 17.4% of Namibians live below the national poverty line (\$5.5/person/day). The World Bank (2021) estimates the Namibian poverty rate to increase to around 64% with the upper middle-income poverty line until 2022. People living under the national poverty line has reached a record-high of 1.6 million in 2020 already. This can partly be explained by the negative impacts of COVID-19 but also by severe drought conditions in 2019 which led to severe decline in harvests, and by reduced global demand and falling prices in the mining sector. The weak growth of Namibia combined with the negative impacts of the COVID-19 pandemic put social development progress highly at risk (The World Bank, 2021).

Like many other low- and middle-income countries (LMICs) Namibia is undergoing an epidemiological transition from CDs to NCDs. With socioeconomic development traditional lifestyles are changing and in addition to existing challenges stemming from infectious diseases, NCDs are rapidly becoming prominent. The countries concerned have to experience a double burden in the face of weak health systems (Pühse et al., 2017) and according to

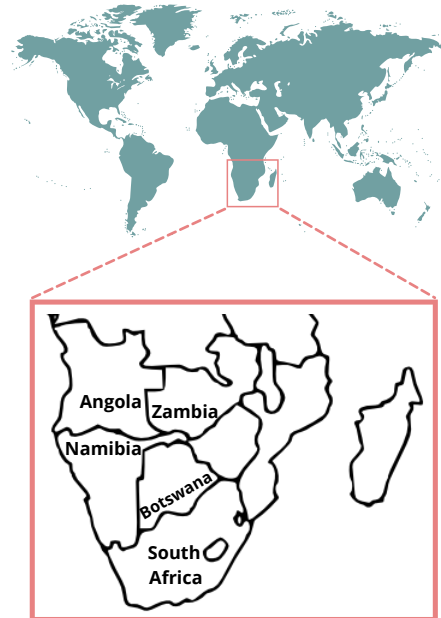


Figure 2: Namibia's geographical position (own illustration with Canva)

Christians (2020) they will continue to face this double burden for some time as seen with, for example, new outbreaks of Hepatitis E and the mortality rate NCDs accounted for. In 2018 the WHO published country profiles which show the country's proportional mortality. According to Namibia's country profile NCDs accounted for 41% of all deaths in 2016 (figure 3). Of all NCDs, cardiovascular

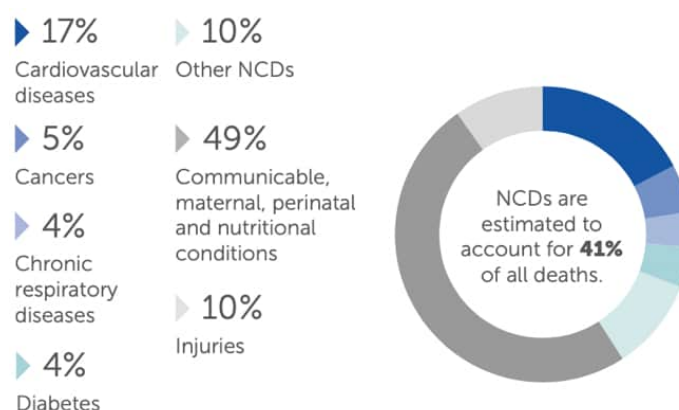


Figure 3: Proportional Mortality (WHO, 2018b)

diseases were the leading cause of death at 17%, followed by cancer (5%), chronic respiratory diseases (4%) diabetes (4%), and other NCDs (10%) (World Health Organization (WHO), 2018b). In 2017 the Namibian government published the first national strategic plan for the prevention and control of NCDs. According to this strategic plan there are four main behavioural risk factors which are responsible for the major NCDs causing a significant proportion of morbidity and mortality in Namibia: harmful use of tobacco (-products), harmful use of alcohol, unhealthy diet, and physical inactivity. The Ministry of Health and Social Services (MoHSS) emphasises that previous health promotion programmes to reduce NCDs have not been effective. Poor coordination, low budget, and the health system as a whole have not led to satisfactory results. New approaches must be cost-effective and focus on prevention and control of NCDs. Further, the MoHSS emphasises that NCDs often first appear in adulthood, but the exposition to the risk factors begins in early life and need to be reduced from early childhood. One way to sustainably create health promoting environments from early childhood is to strengthen nutrition and physical activity programs in schools, including pre-primary schools, and include these programs in the curriculum (Ministry of Health and Social Services, 2017).

3 Grade R Children

From our perspective, it is crucial to develop an age-appropriate physical education tool, which is based on scientific insights to fulfil the needs of five to six-year-old children and their teachers. In order to meet this requirement, physical education in children aged five to six is being discussed and verified on a scientific basis in this master thesis presented here.

The most recent WHO guidelines on physical activity and sedentary behaviour for children aged 5–17 recommend an average of at least 60 minutes of moderate-to-vigorous intensity physical activity (MVPA) per day. The main part of this PA should be aerobic. Furthermore, the WHO recommends to incorporate vigorous-intensity aerobic activities and muscle and bone strengthening activities on at least three days per week. According to the WHO (2020), these recommendations apply to all children and adolescents of all abilities regardless of their gender, their cultural background or socio-economic status.

Comparing the WHO guidelines to national guidelines, significant differences in recommendations concerning frequency and duration of physical activity can be observed. These differences occur mainly in nations where children and adolescents get divided into more age groups than just the one by the WHO (age 5–17). In Germany, for example, the Federal Ministry for Health categorizes children between the ages of four to seven into a separate age group. At the age of Grade R learners, German children are recommended to be physically active 180 minutes per day (Bundeszentrale für gesundheitliche Aufklärung (BZgA), 2017) which is three times the WHO recommendations. The Swiss Federal Office of Public Health also differentiates more age groups within children and adolescents than the WHO. As a result, Swiss children of a comparable age group are recommended a significantly higher amount of physical activity than one hour per day, as recommended by the WHO guidelines (Bundesamt für Gesundheit (BAG), 2020). However, it is agreed that all children aged five to six need physical activity and that the increasing sedentary lifestyle of children should give way to an active lifestyle where physical activity should be integrated into children's everyday life whenever it is possible (Graf et al., 2017). Children can be physically active throughout the day in a variety of ways including play, transportation, planned exercise, physical education, in the context of family, community, or at school (WHO, 2010).

Despite the scientific findings on positive effects of PA on physical health, cognition, and mental health, globally around 50% of the children do not reach 60 minutes MVPA per day (Griffiths et al., 2013). The average classroom time of seven to eight hours per day takes up most of the children's sedentary time (Mantjes et al., 2012). Spending the majority of the day at school, school settings would provide the ideal environments and possibilities to increase PA (Norris et al., 2020). With the *KaziKidz* educational and teaching tool for Grade R the *KaziBantu* project tries to contribute to support Grade R learners to be physically more active during school time and therefore improve physical health, cognition, and mental health.

3.1 Motor Ontogenesis of Humans

Motor ontogenesis is the lifelong age-related individual development of humans with regard to distinguishable but ultimately inseparable sub-areas. The first of these sub-areas comprises the ontogenetic process of change in humans related to their physical-sporting activities and generally to movement behaviour, e.g. the need for PA and play activities in early childhood or the very diverse movement behaviour in the ageing process across all genders. The second sub-area deals with ontogenetic changes in the acquisition of movements and posture as well as the availability of movement skills and their qualitative and quantitative characteristics. Examples are the acquisition of basic forms of movement such as running and throwing as well as their qualitative and quantitative characteristics in the course of life. The third and last sub-area covers the age-related control and functional processes on the «inside» which underlie the motor «outside events» and make them possible in the first place. Sports science is primarily concerned with the age- and gender-specific development of coordinative and conditional abilities (Meinel & Schnabel, 2018).

For the present work, the age of five to six years, or the sixth to seventh year of life, is particularly relevant. According to Meinel and Schnabel (2018) this is the life phase of early childhood, often called preschool-age and includes three- to six-year-old children or the fourth to seventh year of life. It is the phase of perfecting diverse forms of movement as well as the acquisition of elementary movement combinations (Geraedts, 2020; Meinel & Schnabel, 2018).

3.2 General Characteristics of Early Childhood

From the fifth year of life, i.e. after the child has turned four, significant changes for motor ontogenesis become noticeable due to the child's physical developments. The children change from the toddler-type with a rather large head and relatively massive torso to the schoolchild-type which appears more balanced and harmonious in terms of body proportions (Meinel & Schnabel, 2018). Lowering the body's centre of gravity results in a more stable equilibrium position, which improves the force-load ratio, which has a positive effect on the child's motor performance (Keller, 2006). As in the previous phase of life, i.e. infancy, there is also a strong need for PA and play activities in this phase of life. In contrast to the toddler, the rapid shifting of interest decreases in preschool children which means that the preschool child no longer switches between play activities as frequently as he/she does during infancy. The pre-school child stays with one play activity more persistently and deals with difficulties more perseveringly (Meinel & Schnabel, 2018). This is due to the fact that during this phase of life the brain shows enormous growth, especially the neuron growth in the frontal areas of the brain, where the control of organisational and action planning as well as emotions and the power of concentration are located (Geraedts, 2020). The increased perseverance and ability to concentrate are extremely important for school readiness and are among the main criteria for school enrolment. The remarkable linguistic progress of preschool children should also be emphasised which significantly increases the quality of communication and additionally improves the conditions for motor development (Meinel & Schnabel, 2018).

As mentioned before, this is the time for perfecting multiple movements and acquiring first movement combinations. This development manifests itself mainly in three directions: the children increase their performance quantitatively (1), they improve their movements qualitatively (2), and they can use the different movement forms variably (3). The acquisition of first movement combinations are mostly combinations that are linked to walking or running, for example walking in combination with carrying, bouncing, or throwing. During this phase of life and in relation to these three areas of activity gender-specific differences are still very small. If a child is trained intensively in sports it can acquire significantly more complex movement combinations from the age of four. However, the aim of this work is to reach children who are untrained in sports which is why the content is limited to those children. The movements of five- to six-year-olds become larger in range of motion and the children's movements become more powerful, structured, and rhythmic. Especially movements that are used in everyday life can already be performed in a relatively secure and coordinated way at preschool age (e.g. the sense of balance is trained by daily walking). Through this and newly developed fine motor movements the first movement combinations can be practised, such as throwing and catching. But the children are still unsure in performing movements that are far away from everyday life (Geraedts, 2020; Meinel & Schnabel, 2018).

In summary, the period from the age of five onwards, can be described as the phase of life where the urge for movement is enormously high and the phase is characterised by increased consistency. At this age, the drive to perform in play or competition also sets in, as well as the extensive increase in the ability to speak and think. In order to promote the motor development of preschool children it is therefore essential to offer the children as much freedom of movement as possible in an environment where extensive and varied play is possible. In addition, the preschool children should be enabled to play in groups as well. Playing in a group corresponds to the children's strong need for sociability and, in contrast to playing alone, significantly more motor impulses and stimuli. Also, examples for imitation are created. Movement activities in children's facilities should focus on basic forms of movement such as walking, climbing, running, jumping, balancing, rolling, throwing, and catching. This is achievable if the children's practicing is varied, extensive, and the demands are increased according to their development. From the age of five this also includes movement combinations and small initial competitions. Movement corrections should be kept to a minimum, as the ability of pre-school children to implement such movement corrections is still relatively limited. Instead, means of acoustic-rhythmic guidance should be used frequently, such as clapping or pronouncing words rhythmically (Geraedts, 2020; Meinel & Schnabel, 2018). According to Frey and Mengelkamp (2007), conditions are optimal during the preschool phase of life for building sustainable skills in the areas of cognitive, social, and motor development. Therefore, physical activities, playing, and sports are crucial for the motor development of pre-school children and their well-being in later life.

4 The Namibian Education Sector

As mentioned in the introduction, Namibia Vision 2030 highly acknowledges the fundamental meaning of access to quality education for everyone to improve quality of life for all Namibians. Over the past 15 years, Namibia has made significant steps towards the goal «education for all». In 2013 universal free primary education was introduced and three years later universal free secondary education. Looking at the government expenditure on education UNICEF commends the Namibian Government and classifies the spending as adequate as it shows a strong positive relationship with the gross domestic product (GDP). The real government expenditure on education increased from NAD 62'133 in 2008/09 to NAD 12'210 million in 2014/15 which corresponds to 9.2% of GDP and around 24.7% of total government expenditure of the same years. No other sector receives a greater share of the government expenditure. Despite the overall adequate expenditure on education, the «Public Expenditure Review of the Basic Education Sector in Namibia» reveals two big issues: First, the budget allocation favours primary and secondary education and neglects pre-primary education to a vast extend. Second, the review reveals that the majority of government expenditure on education are spent on staff which negatively impacts the resources for learning and teaching materials, maintenance of facilities and assistive technologies for disabled learners (Ministry of Education, Arts and Culture & UNICEF, 2017).

The move of the responsibility for pre-primary education from the Ministry of Gender Equality and Child Welfare to the MoEAC indicates the growing attention and awareness of the importance to what happens before the children enter Grade 1. Since 2008, when free pre-primary education was implemented, enrolment numbers increased rapidly from 3'146 in 2008 to 31'932 in 2015. Despite these increasing numbers only 1.3% of total education expenditure goes to pre-primary education, whereas primary education receives 48.9% and secondary education 22.7%. This is disproportionate considering that the pre-primary cohort is at least as big as most older cohorts are. Comparing the per unit costs for pre-primary and primary and secondary education respectively, the uneven distribution becomes even more evident. In 2014 the average unit cost in primary school was NAD 13'785 (~ CHF 827), for secondary school the unit cost was slightly lower at NAD 13'486 (~ CHF 809). Whereas the unit cost to provide pre-primary education was only around NAD 5'334 (~ CHF 327). These numbers show that the expenditure and budget allocation favours primary and secondary education, neglecting pre-primary education (Ministry of Education, Arts and Culture & UNICEF, 2017).

The *KaziBantu* project tries to address this urgent need for an affordable method to promote lifelong healthy living in low-resource school settings. With the *KaziKidz* educational and teaching tool for Grade R, the *KaziBantu* project will be able to support Grade R teachers to incorporate PE into daily pre-primary routine and thereby provide an age-appropriate education for Grade R children. Through the validation of the tool based on the Namibian curriculum, and taking into account socio-economic and environmental factors, the tool will be suitable and effective best possible in any Namibian pre-primary context.

4.1 Physical Education in Namibia

«Physical education consists of physical activities which, apart from developing psycho-motor skills, also develop self-esteem through an appreciation and enjoyment of one's body. The learner experiences how a balanced relationship between mind, body and emotions is essential for wellness, learns how to maintain fitness throughout life, develops social skills through cooperation and positive competition with others, and is motivated to continue a lifestyle of lifelong physical activity. Learners' reflections on what they experience develop their understanding of themselves, of the importance of lifelong physical activity, and of how the latter contributes to health and wellness.»

(Ministry of Education, Arts and Culture, 2016, p. 14)

According to the definition of the curriculum, PE in Namibia should contribute to the holistic development of the learners. The definition of PE was formulated uniformly by the MoEAC for each of the four phases of basic education. The study of Tomaz, et al. (2019) aimed to describe the physical activity environment in early child education settings in LMICs and rural communities and identified factors associated with such settings and physical activity (PA). Results of the study are concerning seeing five-year-old children sitting indoors the majority of the time and already having transitioned to formal schooling. Possible reasons are the absence of fixed play equipment and/or the lack of outdoor space dedicated to play. It may also be due to the lack of training of the teachers on how to incorporate PA into their daily schedule. Teachers should be trained to implement physical activity in an appropriate way regarding the environment in which they work (Tomaz et al., 2019). Also van der Walt, Plastow and Unger (2020) see an urgent need for improvements of health and academic outcomes in LMICs. In their study they found a high prevalence of motor skill impairment among Grade R learners visiting no-fee schools that result mainly from two factors: children in no-fee schools showed lower body mass and height and they lacked playground opportunities. The study further emphasizes the need of developing an affordable method to implement and improve motor skills among Grade R learners and thereby help to get a better educational future (van der Walt et al., 2020).

4.2 Health, Hygiene and Nutrition at schools

Scientists agree on the fact that early child health and nutrition are crucial for their development, growth, and later outcomes such as school attainment, cognitive abilities, earnings, and productivity (Asuman et al., 2020). Therefore, Currie & Almond (2011) emphasize the importance of investments to break persisting health inequalities. Fostering healthy eating habits at schools and promoting health education including proper hygiene is one of the vehicles the Namibian government is currently using to sustainably improve public health and lower health inequalities. Besides the inclusion of health, hygiene and nutrition (HHN) lessons to the curriculum of every Grade, the establishment of water, sanitation and hygiene (WASH)

facilities are planned to be expanded during the next four years (Ministry of Education, Arts and Culture, 2019).

Child malnutrition is still endemic and pervasive across the sub-Saharan Africa and high among low socio-economic groups (Asuman et al., 2020). The term of malnutrition includes both under- and over-nutrition. It can be an imbalance, deficiency or excess of nutrients which causes measurable ill effects. One effect of malnutrition is lower participation, concentration, and learning at school. To ensure inclusive quality education for all children and lower inequalities in access to learning opportunities the government is strengthening the Namibian school feeding programme (NSFP). The NSFP is offering one mid-morning meal, which is a hot porridge made from fortified maize blend. Today the NSFP covers 80% of all pre-primary and primary schools in Namibia, but only around one-third of those participating schools actually provide meals every day. Sometimes procurement is difficult and deliveries arrive in delay (Ministry of Education, Arts and Culture & UNICEF, 2017). To react to this problem and ensure sustainability the School Feeding Policy 2019 is trying to link local smallholder farmers with the NSFP. This linkage would further bring diversity to school meals and support local farmers (Ministry of Education, Arts and Culture, 2019). Verguet et al. (2020) examined costs and benefits of SFP. Benefits were categorized in health and nutrition, education, social protection, and local farming. They found that for every dollar invested in SFP there was at least 7 dollars of return together in the four mentioned categories above. They conclude that SFP are an effective way to generate intersectoral benefits and thus promote socioeconomic development (Verguet et al., 2020).

The topic of HHN is strongly anchored in the Namibian pre-primary syllabus. According to the syllabus, at the end of Grade R all children should be aware of the importance of their own basic health and nutrition (Ministry of Education, 2015). As HHN is closely linked to PE, the *KaziKidz* teaching tool also includes six ready-to-use and age-appropriate lessons to create awareness in children for their health behaviour.

4.3 Teachers and the environment they work in

Despite the highest budgetary allocations since Namibia's independence in 1990 and the high relevance of education in all National Development Plans and Namibia's Vision 2030, the education sector still remains characterized by poor learning outcomes from pre-primary to Grade 12 and by high dropout and repetition rates. These are consequences of a combination of inequitable distribution of both human and financial resources (Ministry of Education, Arts and Culture & UNICEF, 2017).

As Namibia is very vast and sparsely populated it is difficult to offer quality education in every remote area. On the one hand qualified teachers often are reluctant to accept positions in remote areas and on the other hand there is a lack of boarding facilities within an appropriate distance to school for learners, especially in rural areas. The high rate of unqualified teachers in rural areas has led to a learning deficit which is also related to the low socio-economic status of the children and the high rates of teacher turnover in such areas. But the shortage of qualified teachers and having to remain within the budget made such appointments of temporary

teachers, who earn only two-thirds of a permanent teachers' salary, inevitable. Another alarming fact is the low spending on pre-primary education with less than 1% of all salaries paid to teachers. Assuming equal attention to pre-primary education, expenditure for pre-primary teachers' salaries should be at 8% (Ministry of Education, Arts and Culture & UNICEF, 2017).

To counteract the high rate of unqualified teachers a new Bachelor of Education Pre-Primary and Lower Primary (B.Ed. Pre- and Lower Primary) was introduced in 2011. Before that, there was the three-year diploma course Basic Education Teacher Diploma (BETD) which was the national and common preparation for teachers for Grade 1 to 10. The new B.Ed. (Pre- and lower Primary) is a four-year professional degree program preparing students to teach children from pre-primary to Grade 4. The aim of this new B.Ed. degree program is to ensure quality teacher education and the provision of qualified teachers for every grade. Especially the learner-centred approach, which is promoted and required by the MoE for pre- and lower-primary since 1993, gets taught to the teachers which was not visible in the curriculum of the BETD. Students usually were not explained the methodologies, objectives, and ways to implement learner-centredness during everyday school life (Ministry of Education & National Institute for Educational Development (NIED), 2009; Mwala, 2019). The Faculty of Education of the UNAM summarizes the goals of the new B.Ed. degree program as followed:

"The mission of teacher education is to provide all the children and young people of Namibia with competent, fully qualified, committed teachers, so that their education is equitable, relevant, meaningful, of high quality, and is conducted in a stimulating and supportive atmosphere."

(University of Namibia, 2019, p. 102)

The authors of the Public Expenditure Review are concerned when looking at the high number of currently temporary teachers who are now studying to obtain permanent positions. This trend will not only increase their professional knowledge but will also increase expenditures on personnel. As mentioned in *chapter 4*, the expenditure on personnel is already relatively high and has already negative impacts on resources for teaching and learning materials. It is therefore crucial to keep an eye on expenditure allocations and prevent further cutbacks in resources for learning and teaching materials, maintenance of facilities, and assistive technologies for disabled learners. Otherwise the quality teacher education will have an unintended effect and will not result in quality education for everyone (Ministry of Education, Arts and Culture & UNICEF, 2017).

At the beginning of 2021 the Namibian Government published the Harambee Prosperity Plan II (HPP2) 2021–2025, the action plan towards economic recovery and inclusive growth, that replaces the HPP1 (2016-2020). It is an ambitious four-year plan and should complement the existing National Development Plan (NDP) and «Vision 2030» to drive positive changes in priority areas where insufficient development has taken place so far (Keller, 2017). The HPP2 retains the five pillars of the HPP1 (figure 3).

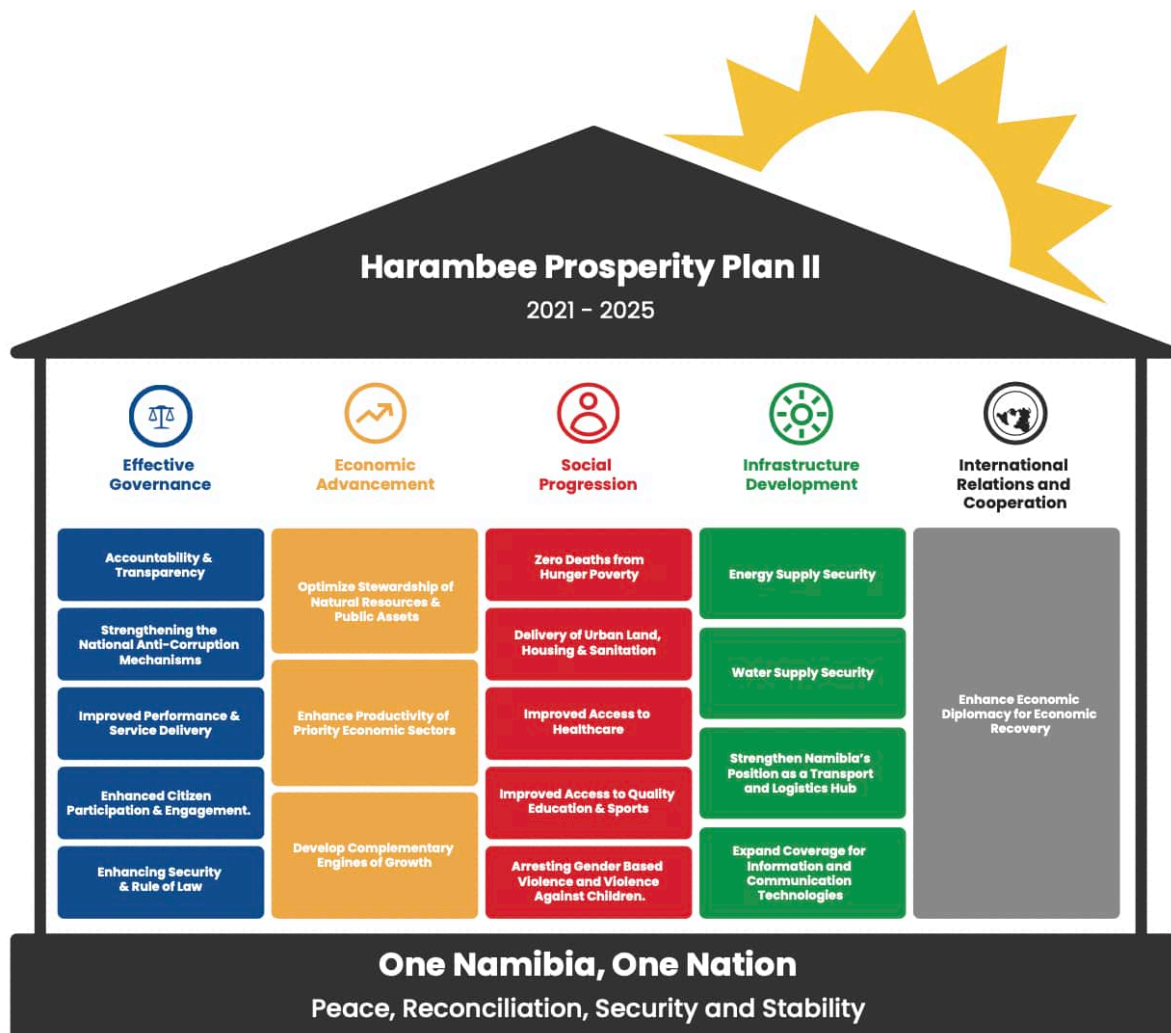


Figure 4: The five pillars of the HPP2 (Republic of Namibia, 2021, p. 10)

Analysing the current situation of the Social Progression in Namibia, the Namibian Government included goal 4 into the Social Progression pillar of the HPP2, namely «Improved Access to Quality Education and Sports». According to the HPP2 the country is facing enormous backlogs in school facilities. Countrywide there is a lack of over 5'000 additional classrooms and most schools require hostel facilities. Especially since the Covid-19 pandemic started, shortages of basic infrastructure like electricity and internet as well as sanitation and water at schools became evident and widely problematic. Only 89.4% of schools have access to water supply. Further, the government emphasizes the high disparities between urban and rural areas concerning school dropouts, access to Integrated Early Childhood Development (IECD), and the high number of underqualified teachers. All the named problems threaten

Namibia's Vision 2030 and show that still not all children begin life at same levels and inequalities persist and could even aggravate in the long term if the country does not act. To achieve equity and equal access to opportunities for everyone, the Namibian government wants to pursue goal 4 of the HPP2 plan with the following four activities:

- Activity 1: Improve and Expand Educational Infrastructure and Physical Facilities
- Activity 2: Integrated Early Childhood Development (IECD)
- Activity 3: Improve Quality of Education
- Activity 4: Professionalization of Sports

Some of the specific actions the Namibian government wants to undertake to achieve goal 4 of the Social Progression pillar are to construct 4'300 ablution facilities and 480 new classrooms by the end of 2025, develop integrated physical education and school sport policy, increase sports infrastructure construction and improve the quality of training of educators prescribing minimum standards for the profession from IECD to university lecturers (Republic of Namibia, 2021, 50-51), to name only a few.

In response to doubts about the feasibility of the target set the President Geingob's Economic Advisor, James Mnyupe, said:

I think it's as realistic as you and I would like it to be. We have put in place various mechanisms to try and deliver beyond our potential. Our potential right now is very physically constrained but we have to deliver beyond that by partnering with people from around the world."

(Mnyupe 2021, cited by Hamutenya, 2021)

4.4 Structure of Basic Education in Namibia

Basic education in Namibia is implemented in four phases: The first phase is Junior Primary and consists of Pre-Primary and Grade 13. Then children continue with basic education in Senior Primary (Grade 4–7). This is followed by the Junior Secondary (Grade 8–9), followed by the Senior Secondary (Grade 10–11 with grade 12 being added if the learner wishes to go to university). Pre-primary education is not yet a prerequisite to enter Grade 1, as mentioned before, and is not yet available to all five to six-year old children. According to the Ministry of Education, Arts and Culture (MoEAC), pre-primary education will be made available to everyone as soon as possible because it is shown that children that attended pre-primary education achieve better progress and become better in formal education compared to those who have not (Ministry of Education, Arts and Culture, 2016).

4.5 Pre-primary education – Grade R

To prepare the children for Grade 1, Grade R teachers teach the five to six-year-old children in every Developing Area defined by the pre-primary syllabus consisting of the following six: Cognitive Development (1), Emotional Development (2), Social Development (3), Aesthetic Development (4), Spiritual and Ethical Development (5), and Physical Development (6). Sub-

areas of Physical Development are Gross Motor Development, Fine Muscle Development, Body Awareness, and Spatial Awareness. The end-of-year competencies concerning the developing area of Physical Development of Grade-R learners is the capability of participating in different physical activities that promote motor development and movement. *Table 1* shows in detail the learning objectives and competences for Grade R learners for the Developing Area Physical Education.

Table 1: Learning content for Physical Education Grade R (Ministry of Education, 2015, p. 22-23)

Themes and Topics	Learning Objectives	Competencies
Gross Motor Development		
Gross motor movements	<ul style="list-style-type: none"> - have effective control over and coordination of the larger muscles of the body - gain good muscle growth and motor coordination 	<ul style="list-style-type: none"> - demonstrate accurate movement of the larger muscles of the body, e.g., arms and legs - carry out daily tasks with vigour and alertness
Balance	<ul style="list-style-type: none"> - sustain control of the body when using both sides simultaneously, individually, or alternately 	<ul style="list-style-type: none"> - hold the body in the correct position with minimal support in the performance of various tasks and balancing exercises - acquire smooth co-ordinated movements which allow them to move with self-assurance
Coordination	<ul style="list-style-type: none"> - move the muscles to function in a skilled, harmonious pattern 	<ul style="list-style-type: none"> - perform coordinated, symmetrical movements of all body parts - participate successfully in games, sports, and dance
Eye-hand coordination	<ul style="list-style-type: none"> - perform movements with the hands as directed by the eyes 	<ul style="list-style-type: none"> - control the movement and direction of the body using arms, hands and fingers as directed by eyes
Eye-foot coordination	<ul style="list-style-type: none"> - visually steer the movement of the feet 	<ul style="list-style-type: none"> - control the movement and direction of the body using legs and feet as directed by the eyes

Themes and Topics	Learning Objectives	Competencies
Rhythm	<ul style="list-style-type: none"> - develop a sense of rhythmic timing through coordinated body movements 	<ul style="list-style-type: none"> - demonstrate gross motor activities through sensory (auditory and visual) stimuli, e.g., music, clapping, etc.
Fine Muscle Development		
Fine muscle control, movement, and rhythm	<ul style="list-style-type: none"> - have sufficient control and coordination of the small muscles of the body, e.g., fingers, tongue, eyes 	<ul style="list-style-type: none"> - manipulate small objects and control writing materials - control eye and tongue movements - have appropriate control to start and stop an activity - relate fine motor activities to auditory stimuli, e.g., music, clapping, etc.
Body Awareness		
Body concept	<ul style="list-style-type: none"> - have knowledge of the body, including an inner awareness of the body and its relationship to objects 	<ul style="list-style-type: none"> - control the body in such a manner that they can move around freely, avoiding obstacles - demonstrate through movement the body's relationship to space
Body knowledge	<ul style="list-style-type: none"> - understand that the body has different parts that perform different functions 	<ul style="list-style-type: none"> - name the body parts and their functions - indicate where parts are attached to one another - move specific body parts in unison (harmonious movements) and discord (disharmony)
Dominance	<ul style="list-style-type: none"> - develop a preference for using one particular hand, foot, eye or side of the body 	<ul style="list-style-type: none"> - perform activities with the preferred hand, foot and/or eye

Themes and Topics	Learning Objectives	Competencies
Laterality and directionality and crossing the mid-line	<ul style="list-style-type: none"> - develop an inner awareness of the left and right sides and the mid-line of the body - experience direction in the external world in relation to themselves 	<ul style="list-style-type: none"> - name the right and left parts of their own and others' bodies - cross the vertical middle line of the body - indicate direction of movement or of static objects in relation to themselves
Spatial Awareness		
Position in Space	<ul style="list-style-type: none"> - develop an awareness of the own body in its surrounding 	<ul style="list-style-type: none"> - the child can move in its surrounding avoiding objects and other people - the child can move in different directions and in different pathways
Spatial Relations	<ul style="list-style-type: none"> - experience the spatial relation between objects, people and oneself 	<ul style="list-style-type: none"> - the child perceives objects as being behind, in front of, above, below or alongside him/her, near and far

4.6 Year Plan of Grade R

The year plan is structured in three terms as shown in *Table 2*. During one term, three themes need to be covered. It is recommended to spend about one month on each of them. In addition, four sub-themes must be integrated during all three terms. However, these sub-themes remain identical throughout the whole year. The nine main themes accompany children through the learning process of getting to know their environment, entitled environmental learning, and contribute to the holistic development of the children. The themes are structured from small to big. Starting with the first theme «Myself», children's environment will continually be embraced in an increasing radius until they finally arrive at their wider environment with animals and plants at the end of the third term (Ministry of Education, 2014).

Table 2: Summary of the Year Plan (Ministry of Education, 2014, p. 15)

Term 1	Term 2	Term 3
Theme 1: Myself	Theme 4: My Home	Theme 7: Animals
Theme 2: My Body	Theme 5: My School	Theme 8: Water
Theme 3: My Family	Theme 6: My Community	Theme 9: Plants
Integrated Themes	Integrated Themes	Integrated Themes

Term 1	Term 2	Term 3
Theme 10: The Weather	Theme 10: The Weather	Theme 10: The Weather
Theme 11: Health	Theme 11: Health	Theme 11: Health
Theme 12: Safety	Theme 12: Safety	Theme 12: Safety
Theme 13: Special Occasions	Theme 13: Special Occasions	Theme 13: Special Occasions

During every term there should be three assessments. The three assessments will then be summarized in one complete assessment per term. At the end of the year there will be three complete assessments. These assessments show the child's actual level of achievement regarding the Basic Competencies of the syllabus. They are conducted during everyday lessons according to the 3-point assessment scale (3 points: fully mastered, 2 points: almost mastered, 1 point: not yet mastered), while children are carrying on with their usual outside and classroom activities (Ministry of Education, 2014).

4.7 Learner-centred approach

Before Namibia gained its independency in 1990, the purpose of schooling was the selection and education of an elite. To redress the legacy of apartheid the new education policy formulated the four fundamental goals: access, equity, quality, and democracy in education. The new policy on education was adopted in 1993. It is built on inclusive and learner-centred education (LCE) (Ministry of Education, 1993). The concept of LCE is nothing new and mainly originates from the work of John Dewey (1938) and Lev Vygotsky (1978). Today the learner-centred approach is very well established in most western countries at all levels of education and the European Union, Canada, and the United States spent a lot of resources on promoting this approach within their countries (de la Sablonnière et al., 2009). Through its encouragement of cooperative learning, practicing of active learning, and the high promotion of lasting and deep learning, the literature suggests learner-centredness to provide better quality of education compared to the teacher-centred approach (cf. Gelisli, 2009). Around 1990 the first concerns about the appropriateness of learner-centred approaches in educational environments with low resources, big classes, and unqualified teachers appeared (Shah, 2019). Other scientists, e.g. Brodie et al. (2002), disagree with this binary view. They do agree with the fact that teachers' perception and implementation of learner-centredness is influenced by their access to resources, subject knowledge, prior qualifications, and their very own characteristics. But they claim that with quality teachers' education learner-centred education can be implemented equally successful in low-resource settings as in high-resource settings (Brodie et al., 2002).

In the Namibian context inclusive and learner-centred education are defined by the Office of the Prime Minister as follows:

«inclusive education» means a process of -

- (a) addressing and responding to the diversity of needs of all children and adults through increasing participation in learning, cultures and communities;*
- (b) reducing and eliminating exclusion from the education system; and*
- (c) involving changes and modification in content, approaches, structures and strategies, with a common vision which covers all children of appropriate age range and a conviction that it is the responsibility of the regular system to educate all children irrespective of ability, disability, economic or social status;*

«learner-centred education»

means a teaching and learning approach which focuses on addressing the specific needs and interests of the individual learner by shifting the focus of teaching and learning from the teacher to the learner;

(Office of the Prime Minister, 2020, p. 8)

Both, the Pre-Primary Teachers' Manual, and the Pre-Primary Syllabus are aimed to pre-primary teachers and inform them about these principles and how they should be implemented. Child-centred education, what it is called within the two mentioned documents, is an approach where the children learn from each other, their own, and the teacher. It is an approach where: *«Teachers prepare an environment that allows the children to learn through active exploration and interaction with other children (...) by: - doing, moving, manipulating, exploring and discovering the world around them.»*

(Ministry of Education, 2014, p. 10)

5 Methods

The following chapter provides an overview of the product development process, the unexpected changes and circumstances along the way, and the used tools. Further, there is a detailed presentation and explanation of one exemplary lesson plan (all the lesson plans can be found in the appendix).

5.1 Ronelle Malan-Swart

Ronelle Malan-Swart is a lecturer at the Department of Mathematics, Science and Sport Education at the Faculty for Education, the biggest faculty of the University of Namibia (UNAM). With her we have a highly qualified and experienced person in the *KaziKidz* team who is working and living in Namibia and knows the Namibian education system in and out. Throughout the development of the teaching tool several questions arose which could not be answered through research. These were questions like: How does a Namibian physical education lesson in pre-primary look like in practice? To what extent do teachers adhere to the prescribed curriculum in reality? To answer these kinds of questions, knowledge and experience in local practices were needed. Further, she agreed on doing the revision of all the planned lessons. Through her revision the development of a toolkit which will be useful, feasible, and in line with the Namibian curriculum can be guaranteed. During the planning of the lesson tracker the exchange with Ronelle was particularly important, as the lesson tracker is the cornerstone of the toolkit.

5.2 Influence of Covid-19

Starting this master thesis we were aware that the pandemic will have an impact on the course of this work in one way or another. Nevertheless, we were hoping, that the situation will allow us to visit Namibia and allow us to experience the pre-primary environment, talk and work with the teachers and children on site. It certainly would have been a great enrichment and an important source of information for the development and planning of the toolkit. Unfortunately, the Covid-situation made it impossible

to travel to Africa and it would have been irresponsible and risky (SRF, 2021). Therefore, our exchange with the Namibian colleagues was limited to video calls and e-mails.

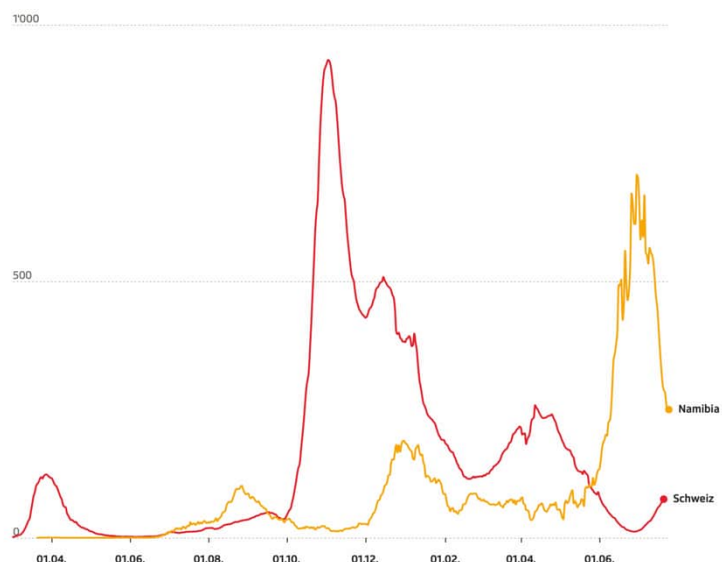


Figure 5: 7-day average of confirmed new infections per million inhabitants (SRF, 2021)

This spring Covid-19 and other circumstances forced one of our Namibian colleagues to stay in hospital for a long period of time. Her health is still critical, and her recovery is our top priority. As soon as she has fully recovered she will revision the lesson plans we sent her. Only after her revision and the following revision on our part we will be able to send the lessons to the South African creative agency «Rooftop Productions». This is the reason why we are not yet able to present the finalized product.

5.3 Literature research

The development of a «physical education» toolkit for *KaziKidz* Grade R, validated based on the Namibian curriculum, brings together the interests and needs of three main actors: the Grade R children, their teachers, and the Namibian educational policy. To fulfill every actor's interests, detailed and specific knowledge on each of them is required.

To have an initial overview and to be able to develop a toolkit which fits with the Namibian environment I started off with the research about Namibia's geography, demography, and its socio-economic status. Further, I searched for data on the health status of Namibia's population, especially of the Namibian children at the age of five to six. I endeavored to use the most recent figures and data when possible. Unfortunately, sometimes there is no up-to-date data or at least no access. Concerning some topics the most recent data are from 2014 (e.g., numbers on governmental expenditures). The most important sources of information for current figures on the Namibian population and its health status were official documents published by the WHO and UNICEF.

In order to develop an age-appropriate teaching tool the research on children at the age of five to six was crucial. To understand what the needs and abilities of Grade R children are I mainly focused on the work of Meinel & Schnabel (2018) and Geraedts (2020).

As the teaching tool is based on the Namibian curriculum a great part of research time went into examining the Namibian educational policy and the detailed analysis of the official documents of the MoEAC, the pre-primary syllabus, and the pre-primary teachers manual. These two documents set the frame for the planning of the lessons, regarding the year plan, the lesson structure, content, competencies, and teaching methods. Besides the detailed knowledge about the current curriculum it was important to see and understand the difficulties the educational sector is currently facing, how problems are solved, where the educational policies came from, and most importantly, where they are headed to. As the Namibian education system underwent several reforms during the past 20 years there is an enormous amount of official documents and revised forms of these documents which made it complicated to extract the most relevant ones. Also, the number of national development plans and official documents on national goals is relatively high and the linkages between these documents often are unclear which made it difficult to rate their actual relevance. Nevertheless, this part of the literature research helped understanding the environment the teachers work in and what teachers might find helpful.

5.4 Structure of the toolkit

As the toolkit for Grade R is an extension to the existing *KaziKidz* toolkit Grades 1–7, the same structure and design was used. The *KaziKidz* toolkit for Grade R comprises 32 PE lessons, 32 Moving-to-Music lessons and six HHN lessons. The focal point of this master thesis is the development of the 32 PE lessons. Olivier Küng created the Moving-to-Music lessons and the six HHN lessons were divided between the both of us. Olivier was responsible for three lessons focusing on health and hygiene, and I focused on the three nutrition lessons.

To create a toolkit which is useful, practicable, and fits perfectly with the Namibian curriculum, the detailed analysis of the Grade R curriculum described in *chapter 4.6* was fundamental. Considering the year plan, the themes of «environmental learning» and the competencies Grade R children should master at the end of the year, I compiled a first version of the lesson tracker. After some adjustments proposed by Ronelle Malan-Swart, I finalized the final version shown in *figure 6*.



Lesson tracker

Physical Education - Grade R



This overview table should facilitate the tracking of the lessons and assessments.

Component	Term	Lesson Number	Theme	Lesson Content	Date
Physical Education	Term 1	Lesson 1	Myself	Body knowledge	
		Lesson 2	Myself	Body knowledge	
		Lesson 3	Myself	Body knowledge	
		Lesson 4	My Body	Body concept	
		Lesson 5	My Body	Body concept	
		Lesson 6	My Body	Body concept	
		Lesson 7	My Body	Body concept	
		Lesson 8	My Family	Eye-hand-coordination	
		Lesson 9	My Family	Eye-hand-coordination	
		Lesson 10	My Family	Eye-foot-coordination	
		Lesson 11	My Family	Eye-foot-coordination	
	Term 2	Lesson 12	My Home	Gross motor movements	
		Lesson 13	My Home	Gross motor movements	
		Lesson 14	My Home	Gross motor movements	
		Lesson 15	My School	Laterality/Directionality	
		Lesson 16	My School	Laterality/Directionality	
		Lesson 17	My School	Fine muscle movements	
		Lesson 18	My school	Fine muscle movements	
		Lesson 19	My Community	Laterality/Directionality	
		Lesson 20	My Community	Laterality/Directionality	
		Lesson 21	My Community	Coordination	
		Lesson 22	My Community	Coordination	
	Term 3	Lesson 23	Animals	Balance	
		Lesson 24	Animals	Balance	
		Lesson 25	Animals	Position in space	
		Lesson 26	Animals	Position in space	
		Lesson 27	Water	Gross motor movements	
		Lesson 28	Water	Gross motor movements	
		Lesson 29	Water	Gross motor movements	
		Lesson 30	Plants	Fine muscle control	
		Lesson 31	Plants	Fine muscle control	
		Lesson 32	Plants	Gross motor movements	

Figure 6: Lesson Tracker Physical Education (own illustration based on KaziBantu, 2020)



Lesson tracker

Health, Hygiene and Nutrition - Grade R



This overview table should facilitate the tracking of the lessons and assessments.

Component	Term	Lesson Number	Theme	Lesson Content	Date
Health, Hygiene, Nutrition	Term 1	Lesson 1	Hygiene	Germs vs. Super V	
		Lesson 2	Nutrition	What is nutrition?	
	Term 2	Lesson 3	Hygiene	Let's wash our hands	
		Lesson 4	Nutrition	Healthy and unhealthy food	
	Term 3	Lesson 5	Hygiene	Healthy lifestyle	
		Lesson 6	Nutrition	Where does your food come from?	

Figure 7: Lesson Tracker Health, Hygiene & Nutrition (own illustration based on KaziBantu, 2020)

The duration of the lessons was fixed to 30 minutes to correspond to the Grade R daily schedule given by the MoECA. This is one of the main differences to the toolkit for the higher Grades, as the lessons are 40 minutes for the older children. The lesson structure with introduction, main part, and cool down was maintained and the different indications were adopted as well. The high conformity with the existing *KaziKidz* toolkit regarding the layout and structure simplifies the implementation for the teachers.

5.5 Additional material and storytelling

As mentioned before, in many pre-primary schools in Namibia resources of all types are very low and there may be a lack of material, e.g., not enough balls for every child or enough jumping ropes or hoops. Therefore, my main concern was to plan games and activities which can be implemented with a minimum to no material. Nevertheless, it is important for children to play and learn in diverse and varied ways. Therefore, some of the lessons include templates or posters which are enriching a game or activity. For example, there is a template of a so-called movement-dice. The teacher needs to cut and put together the movement-dice before the start of the lesson. The dice can be reused for multiple lessons. Therefore, the additional materials help the teacher to enrich the learning process of the children but does not ask for a lot of extra preparation time.

The Pre-Primary Teachers' Manual emphasizes the importance of storytelling during learning processes of Grade R children. It states that telling stories in all ways (e.g. reading, roleplay) promotes the children's listening skills and literacy. Nicolopoulou et al. (2006) investigated storytelling and story-acting, which combines narrative and play, in low-income preschools.

Their findings confirm the beneficial impact on the children's learning process and development in different areas (e.g., enthusiasm, creativity, comprehension, language development). Therefore, the *KaziKidz* toolkit includes several games and activities which combine stories and movements. Additionally, the toolkit offers some posters with illustrations matching the story of a game or activity. The main character of most stories is *Kazi* the lion, the mascot of the whole *KaziKidz* teaching tool.

The three lessons about nutrition include step-by-step instructions for the teachers and prepared worksheets and templates for board games and cards. The lessons about nutrition also have a three-part structure. The lessons always start with a group discussion. During the discussion or conversation the teacher guides the children towards the topic and supports them with specific questions or illustrations offered by the toolkit. Either during the main part or the wrap up of each lesson there is at least one activity included which allows the children to move, change position, and interact with each other. This corresponds to the needs of the children, lowers their sedentary time, and complies with the age-specific recommendations of the WHO.

5.6 Intensive development phase

To develop and plan the lessons it was important to Olivier and me, to exchange ideas and work closely together. It guaranteed that at the end the three parts of the toolkit complement each other. Because of Covid-19 all university facilities were closed, so each of us rented a desk at the coworking space «Impact Hub» in Basel. This phase started in January 2021 and took three months.

In total the lesson plans include 54 different games and activities. The cognitive and motor skill level of the lesson content is based on the detailed literature research described in *chapter 3* and on the Pre-Primary Syllabus and the Teachers' Manual. Apart from own ideas, experiences, books, and online platforms, I got inspiration for the games and activities from different people working in the pedagogical field. I consulted them on their practical experience with five to six years old children. Their practical knowledge was a valuable addition to my planning and drew attention to factors like the difficulty level of games, behavioural patterns of a group of children at that age, or the limited attention span of children.

Chapter 3.1 and *3.2* describe the age of Grade R children as the time of perfecting multiple movements and acquiring first movement combinations. Both, perfecting movements and acquiring first movement combinations, take practice. Therefore, I decided to repeat each game or activity at least two to three times throughout the year, sometimes with increasing difficulty level. Further, I decided to integrate some of the games and activities of the *KaziKidz* teaching tool Grade 1 but in simplified forms.

There were two aspects that were a lot more challenging as I thought they would be: First, the limited infrastructure and play material. I am used to perfectly equipped gyms with several balls of different sizes and materials, soft underground, and enough material for every child. A lot of games and actions had to be modified to create a toolkit which is useful and feasible to every pre-primary school in Namibia, no matter how many resources they have. If some specific

material is needed during lessons I proposed an alternative to either do it yourself or modify the game so the material is no longer essential.

The second challenging factor during the planning of the lessons was the useful and reasonable integration of all themes given by the MoECA (e.g., my community, my home). Themes like My Body or Animals were easier to combine with PE. As the themes accompany all subjects and not only PE, I decided to primarily cover the different competencies and in second place find matching themes. There were a few cases where the combination of the theme and the competency would have been forced and would not have contributed to the competence acquisition. In those cases, I focused on the competency rather than the theme. This is not in contradiction to the curriculum. The Teachers' Manual says that not every lesson has to be based on one of the themes.

Games and activities are easier to explain and understand when the explanation comes with an illustration. For better comprehensibility I made a sketch for each game form or picked out an explanatory image from the internet. The final product will not show my sketches but professional versions of them in a uniform style realized by Rooftop Productions.

5.7 Revision

As mentioned in 5.1, Covid-19 had a severe impact on the revision process. This part of the work has been unpredictably delayed due to the illness of a team member and is not yet finished. However, feedback on the lesson plans cannot and should not be dispensed with, as this is fundamental for checking the feasibility, utility, and comprehensibility of the lesson plans. Therefore, the revision and the finalization of the *KaziKidz* teaching tool Grade R will be completed in the near future but at the moment we are not able to predict the exact time.

6 Results

Since I cannot present a final version of the finished toolkit for Grade R at this point of the process, I inserted three of my planned lessons into the layout of the already existing *KaziKidz* teaching toolkit. I used Canva, a graphic design platform, for the creation of visual content. This version of the lesson plans serves for better illustration purposes of the results only and will exclusively be used for the results section of this master thesis.

In this chapter three sample lessons are presented to explain in depth how the content of all lessons came about, on what considerations the forms of action are based, and how their use can be justified. The choice of the sample lessons is random. The way the individual lessons were planned can be applied to all 32 or 36 lessons respectively.

In order to plan PE lessons which contribute to the end of the year competencies of the learners given by the Namibian pre-primary syllabus, it was crucial to have the same understanding of those competencies as the MoEAC. *Table 1* contains the definitions of the different competencies in the Namibian pre-primary context. Based on these and on the detailed literature research on pre-primary aged children I chose forms of activities which promote and challenge the demanded competencies.

As explained in *chapter 4.6* one assessment per term is mandatory. It shows the child's level of achievement regarding the basic competencies of the syllabus. In Grade R the learners' achievements are rated according to the 3-point assessment scale (Ministry of Education, 2014).

6.1 Exemplary lesson: Physical education lesson 02

Looking at lesson 02 in figure 8 the demanded development skill is «body knowledge» which is part of the sub-area «body awareness». According to the definition of the MoEAC body knowledge includes naming the parts of the body and their functions and indicating where the body parts are attached to one another. Further, it means to be able to move specific body parts in unison and discord.

The action form during the introduction of lesson 02 is originally called «Simon says». I decided to change it to «*Kazi* says», as the mascot *Kazi* accompanies the children throughout the whole pre-primary year. The game roughly consists of the teacher giving commands and the children carrying them out. However, the commands should only be carried out if it is introduced with «*Kazi* says...». The game works well to promote body knowledge when the commands include the names of the body parts. «*Kazi* says...» is easy to adapt to different learning levels and teachers can choose to add more rules or give more or less complicated commands. Since it demands experience to come up with adequate adaptations for games spontaneously, and not every teacher can draw on such experience, the lesson plans provide some options for adaption. Further, each lesson plan tells the teacher what the goal of the game is and what they have to watch out for during this action form. I decided to use the section «What to watch for» as a form of passing on tips and tricks for the implementation of each game. Some of them are mistakes I or other teachers made while doing the games with a class

or group, some of them are simple reminders to not forget anything during preparation, and others are reminders where to put the focus of the game.

In lesson 02 the main part consists of a form of relay race. The children have to collect puzzle pieces during the relay race and put them together in each group. The puzzle shows the image of a child and *Kazi*. The puzzle is a great opportunity to learn in an age-appropriate way where each part of the body is attached.

The cool down of lesson 02 is a relaxation routine which brings calm to the class on the one hand and further improves the children's body awareness on the other hand. The cool down does not always consist of a relaxation routine. It can also consist of a circle game or a short group mission where the whole class has to work together.



Body knowledge

Theme: Myself

Equipment

- Cones
- Puzzles (Additional teaching material)

Kazi says

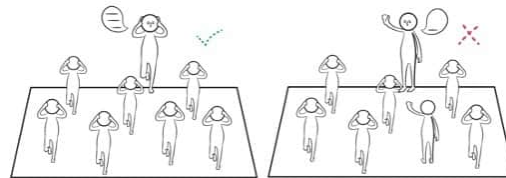
Introduction
Time: ~ 5 min

How to conduct

You take on the role of Kazi. Kazi gives instructions, each including a body part. But the instructions should only be carried out by the class, if the instruction begins with the words: "Kazi says..."

Possible instructions: Kazi says... (or without the instruction)

- ...stand on one leg
- ...lay on your back
- ...touch your nose
- ...jump up and down
- ...do one jumping jack
- ...touch your toes (...)



It is possible to add the following rule: Children who execute a command, without you saying the introduction "Kazi says...", they are eliminated of the game.

Goal of the game

Name the body parts and move specific body parts.

What to watch for: Integrate all the body parts and combine different body parts within one instruction.

Which part is missing?

Main part
Time: ~ 20 min

What you need: Puzzles (cut them out before the lesson starts)

How to play

Form groups of about 6 to 8 children. The groups line up next to each other and form a row. At the other end of the playing area, there must be as many puzzles scattered on the floor as there are groups participating. All the pieces are wildly mixed up.

At the start signal, the first of each group runs to the puzzle pieces and brings back one piece. By giving the next child a high five, he/she may then run and also fetch a puzzle piece. If a child uncovers a puzzle piece with a body part that his/her group already has, he/she puts it back on the floor face down and runs back empty-handed. It is only allowed to uncover one piece at a time.

At the end, each group should have put together a complete picture of Kazi and his friend with all their body parts. As soon as the puzzle is completed, the whole group has to sit down in a row. The group completing and sitting first wins this relay race.

If you have enough time, you can do a second round.

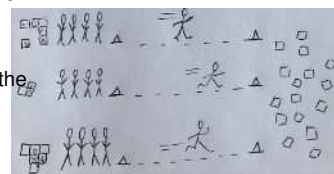


Figure 8: Physical Education sample lesson 02 (own illustration based on KaziBantu, 2020)

Which part is missing?

Continued

Goal of the game

Learners learn which body part belongs where and improve their body knowledge.

What to watch for: Keep an eye on uncovering only one puzzle piece at a time.

Relax your body

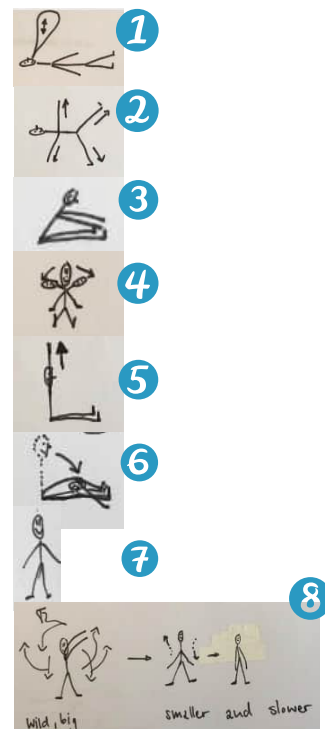
Cool down
Time: ~ 5 min

How to conduct

Learners stand in a circle. You give instructions for simple relaxation and stretching exercises. Pay attention to the exact names of the body parts concerned.

Possible instructions could be:

1. Lie down on your back and breathe in and out very slowly.
2. Pull both your arms and legs as far away from your body as possible. As if someone would pull on your feet and hands.
3. Now slowly sit up and touch your toes with your fingers.
4. Place your hands beside your hip and slowly try to touch your shoulder with your ear. Now touch with your other ear your other shoulder.
5. Sit upright and try to reach the sky with both of your hands.
6. Now release your arms and let your upper body sink over your legs and if you can, let your forehead touch your knees.
7. Come back to an upright position and slowly stand up.
8. Imagine being a tree rooted to the ground, and your arms being the branches moving in the wind: At first there is a heavy storm (do big and wild movements with your arms), then the wind becomes weaker and weaker until the storm subsides completely (movements get smaller and smaller and slow down until standing still).



Goal of the game

Listen to instructions and move specific parts of the body.

What to watch for: Try to talk slowly and make sure the learners can follow along.

Figure 9: Physical Education sample lesson 02 (own illustration based on KaziBantu, 2020)

6.2 Exemplary lesson: Physical education lesson 25

The main focus of lesson 25 is «position in space» combined with «water», the theme of environmental learning. As shown in *table 1* in *chapter 4.5*, the sub-area spatial awareness consists of the two development skills «position in space» and «spatial relations». Because those two skills are very similar, and hardly exist without each other, I summarized them under «position in space». In the pre-primary context «position in space» means to move in ones surrounding avoiding objects and other people. Further the children should experience the spatial relation between objects, other people, and themselves.

Lesson 25 starts with a popular swiss snowboard warm-up game. It perfectly fits with «position in space» and the theme «water». During this warm-up game the children have to wash an imaginary elephant. For example, they have to wash the elephant's back. To do so, they jump up to reach it, or they form a circle with their arms and run forwards and backwards to wash the elephant's trunk. The children develop an idea of the relation between their body and the elephant's body, and they become aware of their own body moving in its surrounding. Avoiding obstacles while moving freely is the main focus of the game «catch the tail» during the main part of the lesson. The cool down of this lesson takes up the water theme again and trains the children's awareness of their own and others' bodies in space.



Position in space

Theme: Water

Equipment

- Cords
- Cones

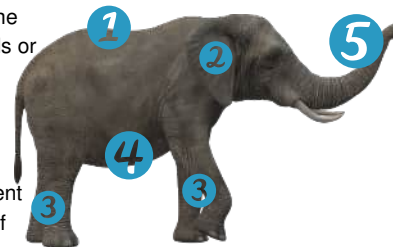
Wash the dirty elephant

Introduction
Time: ~ 5 min

How to conduct

While washing elephants, the group stands in a circle. Everybody has to imagine that there is a huge and dirty elephant in the middle of the circle, which urgently needs to be washed. The following commands or actions can be carried out:

1. Washing the back: jump up and try to get to the back
2. Washing behind the ears: folding the ears forward and washing behind them
3. Washing the legs: kneel down and perform the washing movement for the four feet and legs. Climb through the legs and make yourself small.
4. Washing the belly: lay on your back to get to the belly.
5. Wash the elephant's trunk: form a circle with both arms and wash the trunk from top to bottom.



You can also ask the children, if there is more dirt anywhere on the elephant and let them be creative with matching movements.

Goal of the game

Repeat body parts and start moving.

What to watch for: Make big movements.

Catch the tail

Main part
Time: ~ 15 min

What you need: 1 cord per child, cones

How to play

Form 2 groups and mark out the playing area clearly. Every learner puts a piece of cord (or a small towel) into his trousers, so it can be seen easily. The goal is to collect as many cords as possible. When a child lost his/her cord, he/she has to stand still immediately. He/she can be freed, when one of his/her team members gives him/her a cord he/she collected. The game is finished, when one group has all the cords or you simply stop the game at one point and count the cords of each group.



Figure 10: Physical Education sample lesson 25 (own illustration based on KaziBantu, 2020)

Catch the tail

Continued

Goal of the game

The learners perceive where their body is in space in relation to the other learners on the playing area.

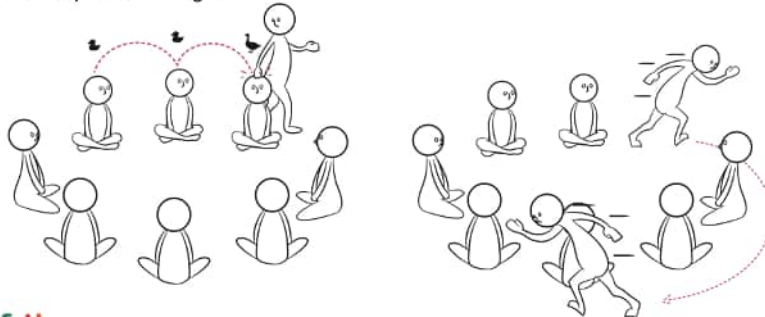
What to watch for: This game often becomes quite competitive. Remind the learners to be gentle with one another.

Duck duck goose

Cool down
Time: ~ 10 min

How to play

All children sit in a circle except one, the farmer. The farmer walks around the circle and taps each player on the head saying 'duck' each time. Suddenly the farmer says 'goose'. The child who is named goose has to run after the farmer, trying to tag him/her before he/she takes his/her spot. If the goose can not tag the farmer, he/she becomes the farmer walking around and saying 'duck, duck, goose'. When the farmer gets tagged by the goose, he/she has to try again.



Goal of the game

The learners have to be aware of their position in relation to the other learners and react and realize quickly where to run to.

What to watch for: If a child loses more than two times, designate a new learner to be the farmer.

Figure 11: Physical Education sample lesson 02 (own illustration based on KaziBantu, 2020)



Assessment: Physical education

First and last name: _____

Date: _____

Class: _____

Sub-Area of Physical Education	Term 1	Term 2	Term 3	Notes
Gross Motor Development <ul style="list-style-type: none"> - Gross motor movements - Balance - Coordination - Eye-hand coordination - Eye-foot coordination 				
Fine Muscle Development <ul style="list-style-type: none"> - Fine muscle control - Fine muscle movement 				
Body Awareness <ul style="list-style-type: none"> - Body concept - Body knowledge - Laterality / Directionality 				
Spatial Awareness <ul style="list-style-type: none"> - Position in space - Spatial relations 				
Total Points				
Mark				

General comments:

Three point assessment scale for Grade R			
3 Points	Fully mastered	FM	The child achieved the competency very well.
2 Points	Almost mastered	AM	The child partly achieved the competency.
1 Point	Not yet mastered	NM	The child has not achieved the majority of the competency.

Figure 12: Physical Education Assessment (own illustration based on KaziBantu, 2020)

6.3 Exemplary lesson: Nutrition lesson 04

To cover all the aspects of nutrition asked by the MoEAC I subordinated them to the three lesson topics: What is Nutrition?, Healthy and Unhealthy Food, and Where does your Food come from?. Each of the three nutrition lessons starts off with a group discussion during which the children are asked stimulating and introductory questions. The main part consists of either a group game or a worksheet with exercises which are attractive and fun to solve for pre-primary aged children.

For lesson 04 I planned and designed a snakes and ladders game which the whole class can play together. Simply put, healthy food brings the children faster to the finish line, unhealthy food thwarts them. The teacher takes the roll of the moderator and therefore is able to pause the game for short inputs about the food if wished or necessary.

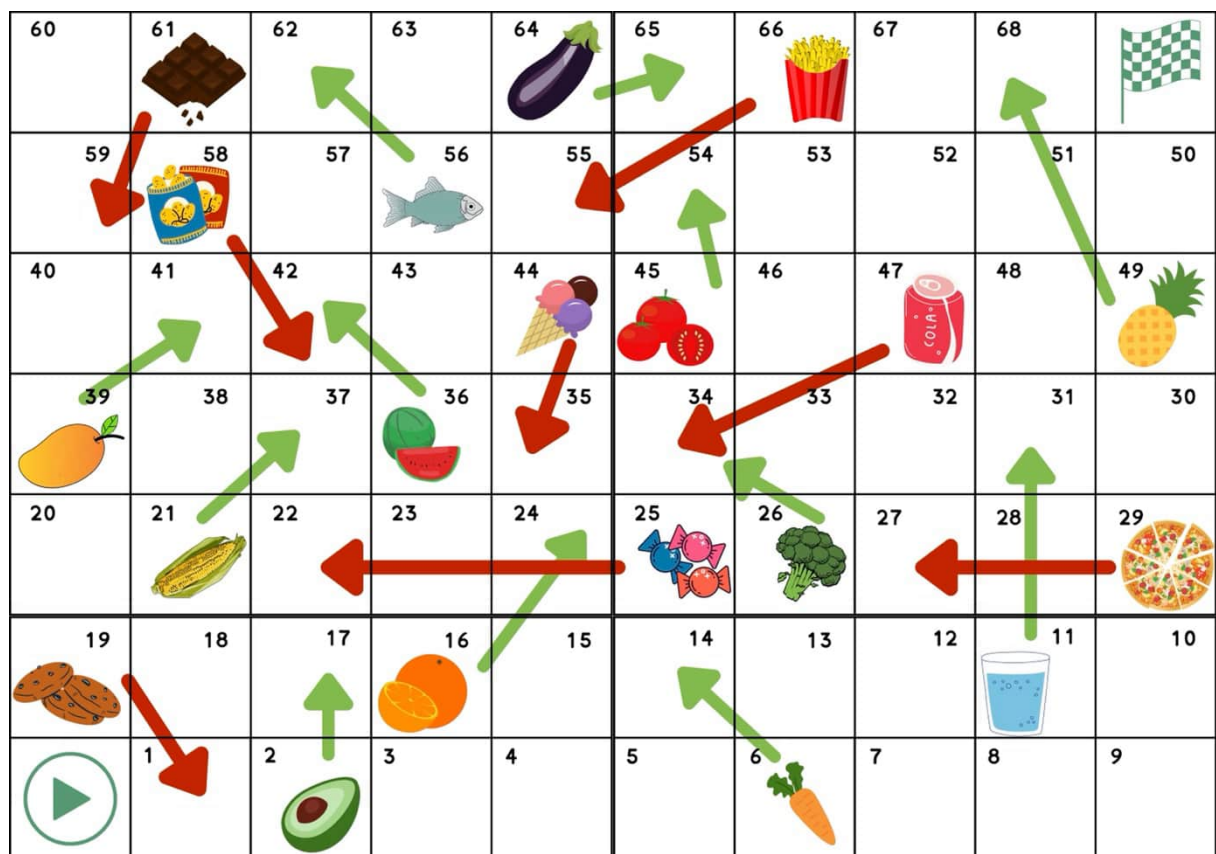



Figure 13: Snakes and Ladders game (own illustration with Canva)



Nutrition

Healthy and unhealthy food

Grade R | Lesson 4 | Time: 30 min

Materials

- Snakes and Ladders Poster
- 1 Dice (template)

- 2-3 game pieces (magnets or removable notes)

Aim

- Understand the difference between healthy and unhealthy food
- Understand why it is important to eat healthy food

Let's talk about healthy & unhealthy food

Introduction
Time: ~ 5 min

Group discussion

To approach the important topic of healthy and unhealthy food, start with the following questions:

? Do you know the difference between healthy and unhealthy food?

You can explain it to the learners in a very simple way: Healthy food helps us to grow, to get strong bones, to be able to think, it gives us the energy to play and learn, and it helps that our body works properly.

💡 Unhealthy food can help as well, but not for a very long time. If we eat too much unhealthy food, our body cannot work as good as it can with healthy food and some unhealthy food even harms the body and makes our own body unhealthy. Too much sugar for example can be very harmful for the teeth.

? Can you give examples for healthy/unhealthy food?

💡 If the learners have difficulties to give examples, you can ask them about specific foods for example: "is an apple healthy?" That will make it easier for the learners.

? What is your favourite unhealthy food?
What is your favourite healthy food?

What to watch for: Do not rush and give the learners enough time to think about the questions.

Figure 14: Nutrition sample lesson 04 (own illustration based on KaziBantu, 2020)

Snakes and ladders

Main part
Time: ~ 20 min

What you need: Snakes and ladders poster, 1 dice, 2-3 game pieces

How to conduct

Play the Snakes and Ladders game with the children.

- Hang up the 'Snakes and Ladders-Poster' so everyone can see it well and prepare a dice and game pieces (if you have different magnets you can take those or just take some removable notes and write the name of the groups). If you do not have a dice, there is a handicraft template to make one easily.
- Depending on the class size, divide the class into two or three groups and give each group a food name (e.g. Team Pizza, Team Spaghetti and Team Sandwich).
- One child per group steps forward and rolls the dice and tells everyone what number he/she rolled for his/her group. You move this group's playing piece and count the spaces (invite the children to count with you).
- Make sure you always tell the learners on which food-space the Team XY landed (e.g. Team Sandwich eats an apple).
- If a playing piece lands on an 'action-space', make sure the learners understand why they win or lose spaces (e.g. Team Spaghetti ate too much unhealthy chocolate cookies and they have to go back to the 'melon-space').
- The first group arriving at the finish line, ate the most healthy foods!

Goal of the game

The learners get a feeling for healthy and unhealthy food and that they should not eat too much unhealthy foods.

What to watch for: Make sure the children take turns within the groups to roll the dice.

Summary

Wrap up
Time: ~ 5 min

Group discussion

- ? Ask the children, what they remember from this lesson and let them collect arguments why it is important to eat and drink healthy.

What to watch for: During the Wrap up it is important, that the learners pay attention to what the other children and you are saying. So make sure that there are as little distractions as possible.

Figure 15: Nutrition sample lesson 04 (own illustration based on KaziBantu, 2020)

7 Discussion

7.1 Strengths in pre-primary education and aspects to be improved

The detailed research on the Namibian education system and the governmental efforts to achieve access to quality education for all revealed some very positive as well as some more negative aspects. The high priority the Namibian government accredits to quality education for everyone is clearly positive. Also, the national expenditure on education is proportionate to the GDP. Further, the implementation of the new B.Ed. Pre- and Lower Primary shows the awareness about the issue with the high number of unqualified teachers in pre- and lower primary. Going deeper into the numbers and documents concerning the national expenditures on education, it becomes evident that the budgetary allocation is uneven and neglects Grade R. In 2013/2014 pre-primary education received 0,2% of total national budget, doubled to 0.4% in 2015/2016 and declined to 0.3% of total national budget in 2017/2018 (UNICEF, 2018).

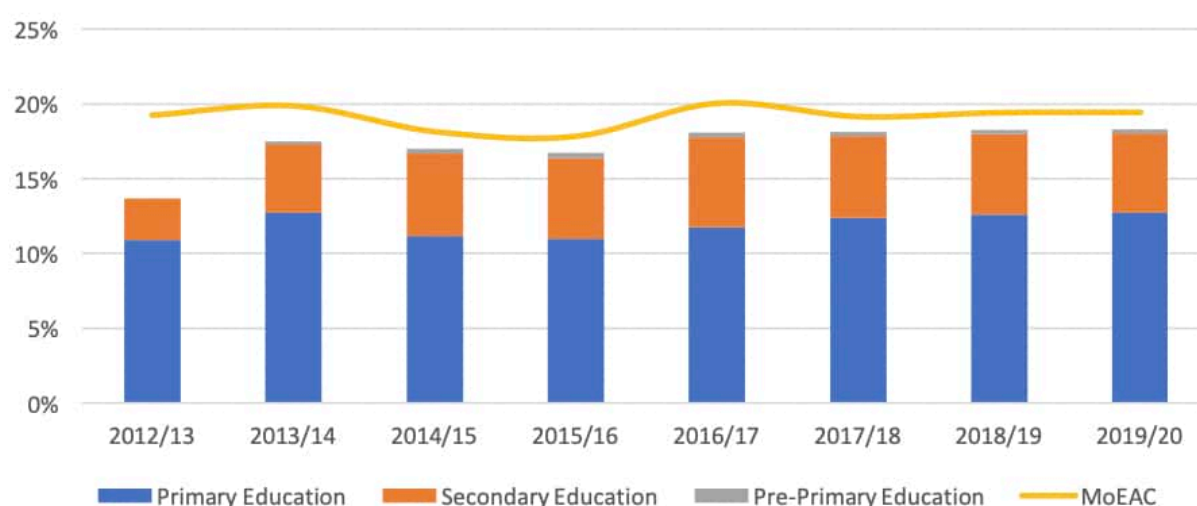


Figure 16: Allocation to education as share of the total budget (UNICEF, 2018, p. 7)

Another issue concerning the budgetary allocation are the relatively high teacher salaries of basic education teachers (pre-primary teachers earn unproportionally less than basic education teachers). The high expenditure on salaries is on the expense on teaching and learning material which is negatively correlated to learning outcomes. With the new B.Ed. program the problem about the lack of qualified teachers will diminish. But as qualified teachers cost more the issue about high salary expenses will grow. Both, the declining expenditure on pre-primary education and the main driver of overspending, the personnel expenditure, call for a near-term solution. Relating thereto is the problem of the uneven distribution of qualified teachers. There are not enough incentives for qualified teachers to work in rural areas. This goes against the national goal of access to quality education for everyone and requires actions from the governmental side. UNICEF calls for reviewing the pre-primary education system to improve funding and efficiencies in service delivery. UNICEF furthermore highlights the importance of equitable distribution of teachers with an appropriate number in each school and across all regions of the country (UNICEF, 2018).

The Fifth National Development Plan (NDP5), the HPP I/II and Namibia's Vision 2030 are action plans for national development. They include ambitious and extensive goals towards better quality of life for all Namibians. The fixed targets are numerous, and it is difficult to keep track of the current actions going on. For example, the HPPII includes some highly set goals (e.g., the construction of 4'300 ablution facilities and 480 classrooms). Only time will show to what extent these highly set goals will be achieved and if they have positive impact on pre-primary teachers' and learners' everyday life. The fact that pre-primary education only gets mentioned in relation to improving tertiary education is concerning. The HPP2 has no specific activities formulated regarding pre-primary infrastructure, such as playground facilities and learning materials, which is an indication for the ongoing preferential treatment for primary, secondary, and tertiary education and the neglect of pre-primary education. The evaluation of newly introduced actions and programmes as well as of existing practices is crucial for the achievement of the envisaged goals. Otherwise, under- and overspending will persist and along that contribute to inequality in education.

7.2 Strengths and limitations of the *KaziKidz* toolkit for Grade R

The *KaziKidz* toolkit for Grade R will not be able to redress the grievances within the Namibian pre-primary education. But it will help teachers, qualified or unqualified, to convey PE and HHN in an age-appropriate way to Grade R children. Offering this toolkit, we hope to eliminate obstacles for teachers to implement PE, such as preparation time, difficulties to integrate PE in everyday school life, lack of knowledge or ideas, or other personal reasons. The toolkit shall be considered as an offer for teachers. It is also possible for teachers to use it as a collection of ideas for action forms which are based on the curriculum and age appropriate. Another strength of the toolkit is the feasibility for every school, whether it is a low-resource school or a school with higher resource availability. The download of the toolkit will be free and the teaching materials, which are used during the planned lessons, are basic materials exclusively or easy to replace with self-made alternatives.

As mentioned before, the pandemic made it impossible to test the toolkit on site. Testing the planned lessons in Namibia would have given a valuable feedback on the lesson plans and for sure would have revealed some weaknesses which were to be revised. To get an idea of suggestions of improvement from Namibian teachers and learners, I used the survey results of the pilot testing of *KaziKidz* lessons in 2018. The survey results gave some indications what aspects of the toolkit need to be considered. Analyzing the teachers' feedback the most important aspects to be improved were the following: game explanations need to be very clear and easy to understand, preparation time must be kept on a minimal level, and the needed materials have to be available. The learners' feedback included personal perceptions about the difficulty level and the fun factor of the lessons. Learners perceived the lessons rather easy but very fun. Both, the teachers' and the learners' feedback on the *KaziKidz* lessons of previous years, were taken into account for the planning of the Grade R toolkit. Together with the upcoming revision of the lessons the maximum potential of the lesson plans, under the current Covid-situation, will be exploited and will result in an useful and feasible teaching toolkit.

8 Conclusion and Outlook

The DASH study, conducted in disadvantaged neighbourhoods in Port Elizabeth, South Africa, showed that the health of children and their teachers in low-resource settings can be improved by school-based health interventions. The *KaziBantu* project builds on this evidence and continues to create health-promoting environments for schoolchildren and their teachers. With the *KaziKidz* toolkit for Grade 1–7, the *KaziBantu* project developed a holistic educational and teaching tool which is free and available for everyone and aligned with South Africa's curriculum.

In the context of this master thesis, together with the master thesis of Olivier Küng, the toolkit will be extended with Grade R, the pre-primary year which prepares five to six year old children for primary school. Grade R is not yet compulsory neither in South Africa nor in Namibia. However, the aim of both countries is to make Grade R compulsory as soon as possible. This is because children who have attended Grade R showed better progress and became better in formal education than those who have not attended pre-primary education.

Since the toolkit for Grade R still needs to be revised and finalized, I am not able to discuss any outcome at this point. After the joint revision phase with our Namibian colleagues and the finalization by our South African graphic design partner the next steps would be to test the toolkit at different Namibian low-resource schools. After the implementation and testing of the planned lessons feedbacks from both sides, Grade R teachers and children, will be fundamental and helpful to evaluate the *KaziKidz* toolkit for Grade R.

We hope the *KaziKidz* toolkit for Grade R will help and encourage teachers to educate and promote their learners' health literacy in means for long-lasting positive effects on the children's well-being and quality of life.

9 Bibliography

- Asuman, D., Ackah, C. G., Fenny, A. P., & Agyire-Tettey, F. (2020). Assessing socioeconomic inequalities in the reduction of child stunting in sub-Saharan Africa. *Journal of Public Health (Germany)*, 28(5), 563–573.
- Brodie, K., Lelliott, A., & Davis, H. (2002). Forms and substance in learner-centred teaching: Teachers' take-up from an in-service programme in South Africa. *Teaching and Teacher Education*, 18(5), 541–559.
- Bundesamt für Gesundheit (BAG). (2020). *Bewegungsempfehlungen*. Bundesamt für Gesundheit BAG. <https://www.bag.admin.ch/bag/de/home/gesund-leben/gesundheitsfoerderung-und-praevention/bewegungsfoerderung/bewegungsempfehlungen.html>
- Bundeszentrale für gesundheitliche Aufklärung (BZgA). (2017). *Nationale Empfehlungen für Bewegung und Bewegungsförderung*. Bundesministerium für Gesundheit. <https://www.bzga.de/infomaterialien/fachpublikationen/sonderheft-03-nationale-empfehlungen-fuer-bewegung-und-bewegungsfoerderung/>
- Burnett, C. (2020). A national study on the state and status of physical education in South African public schools. *Physical Education and Sport Pedagogy*, 26(2), 1–18.
- Christians, F. (2020). Country profile—Primary healthcare and family medicine in Namibia. *African Journal of Primary Health Care & Family Medicine*, 12(1), 1–3.
- Currie, J., & Almond, D. (2011). Chapter 15 - Human capital development before age five. In D. Card & O. Ashenfelter (Hrsg.), *Handbook of Labor Economics* (Bd. 4, S. 1315–1486). Elsevier.
- de la Sablonnière, R., Taylor, D. M., & Sadykova, N. (2009). Challenges of applying a student-centered approach to learning in the context of education in Kyrgyzstan. *International Journal of Educational Development*, 29(6), 628–634.

- Department of Sport, Exercise and Health. (2020). *Overview of the Chair*. UNESCO Chair on «Physical Activity and Health in Educational Settings». <https://unesco-chair.dsbg.unibas.ch/en/overview/>
- Dewey, J. (1938). *Experience and Education*. Macmillan.
- Dowling, R., & Pforr, C. (2021). Geotourism – a sustainable development option for Namibia. *Journal of Ecotourism*, Online-Veröffentlichung. <https://doi.org/10.1080/14724049.2021.1910699>
- Farris, F. A. (2010). The Gini Index and Measures of Inequality. *The American Mathematical Monthly*, 117(10), 851–864.
- Government of the Republic of Namibia. (2004). *Namibia Vision 2030: Policy Framework for Long-Term National Development*. Namprint.
- Hamutenya, M. (2021, 13. March). HPP II targets N\$28 billion projects. *Windhoek Observer*. <https://www.observer24.com/na/hpp-ii-targets-n28-billion-projects/>
- KaziBantu. (2020). *Grade 1: KaziKidz Teaching Material*. KaziBantu.
- Keller, T. W. (2017). *Der Harambee Prosperity Plan: Papiertiger oder potentieller Entwicklungsmotor für Namibia?* Konrad-Adenauer-Stiftung. https://www.kas.de/documents/252038/253252/7_dokument_dok_pdf_49475_1.pdf/26e96184-33ad-e4de-d9da-a6717132901f?version=1.0&t=1539648887252
- Lucht, M. (2020). Körperliche Bewegung in der Bildungstechnologie. In H. Niegemann & A. Weinberger (Hrsg.), *Handbuch Bildungstechnologie: Konzeption und Einsatz digitaler Lernumgebungen* (S. 605–627). Springer Berlin Heidelberg.
- Ministry of Education. (1993). *Toward Education for All: A Development Brief for Education, Culture, and Training*. Gamsberg Macmillan.
- Ministry of Education. (2014). *Junior Primary Phase: Pre-Primary Teachers' Manual*. National Institute for Educational Development (NIED).

- Ministry of Education. (2015). *Junior Primary Phase: Pre-Primary Syllabus*. National Institute for Educational Development (NIED).
- Ministry of Education, Arts and Culture. (2016). *National Curriculum for Basic Education*. National Institute for Educational Development (NIED).
- Ministry of Education, Arts and Culture. (2017). *A public expenditure review of the basic education sector in Namibia*. Republic of Namibia & UNICEF.
- Ministry of Education, Arts and Culture. (2019). *Namibia School Feeding Policy 2019*. Republic of Namibia.
- Ministry of Education, & National Institute for Educational Development (NIED). (2009). *The National Curriculum for Basic Education*. National Institute for Educational Development (NIED).
- Ministry of Health and Social Services. (2017). *National Multisectoral Strategic Plan for Prevention and Control of Non-Communicable Diseases (NCDs) in Namibia 2017/18 – 2021/22*. Ministry of Health and Social Services.
- Müller, I., Schindler, C., Adams, L., Endes, K., Gall, S., Gerber, M., Htun, N. S. N., Nqweniso, S., Joubert, N., Probst-Hensch, N., du Randt, R., Seelig, H., Smith, D., Steinmann, P., Utzinger, J., Yap, P., Walter, C., & Pühse, U. (2019). Effect of a Multidimensional Physical Activity Intervention on Body Mass Index, Skinfolds and Fitness in South African Children: Results from a Cluster-Randomised Controlled Trial. *International Journal of Environmental Research and Public Health*, 16(2), 232.
- Mwala, M. E. (2019). *An Investigation into the Implementation of the Bachelor of Education (Pre-Primary and Lower Primary) Curriculum in Namibia* [Dissertation Presented for the Degree of Doctorate of Philosophy (Curriculum Studies)]. Stellenbosch University.

- Nicolopoulou, A., McDowell, J., & Brockmeyer, C. (2006). Narrative play and emergent literacy: Storytelling and story-acting. In D. Singer, R. Michnick Golinkoff, & H. Sharp (Hrsg.), *Play = Learning: How Play Motivates and Enhances Children's Cognitive and Social-Emotional Growth* (S. 124–143). Oxford University Press.
- Office of the Prime Minister. (2020). Basic Education Act 2020. *Government Gazette of the Republic of Namibia*.
- Penn, H. (2008). Working On the Impossible: Early childhood policies in Namibia. *Childhood*, 15(3), 379–395.
- Pühse, U., Walter, C., du Randt, R., Utzinger, J., & Gerber, M. (2017). *DASH - Disease, Activity and Schoolchildren's Health 2014-2017*. KaziBantu.
- Republic of Namibia. (2021). *Harambee Prosperity Plan II: 2021-2025*. Republic of Namibia.
- Shah, R. K. (2019). Child-Centered Education: Criticisms. *Shanlax International Journal of Education*, 8(1), 22–37.
- SRF. (2021). *Coronavirus weltweit—Die internationale Lage in der Übersicht*. Schweizer Radio und Fernsehen (SRF). <https://www.srf.ch/news/international/coronavirus-weltweit-die-internationale-lage-in-der-uebersicht-3>
- Statista. (2021). *Ranking of the Gini index by country 2020*. Statista. <https://www.statista.com/forecasts/1171540/gini-index-by-country>
- The World Bank. (2021). *The World Bank in Namibia*. The World Bank. <https://www.worldbank.org/en/country/namibia/overview>
- UNICEF. (2018). *Children and the Namibian Budget: Basic Education*. UNICEF.
- University of Namibia. (2019). *Faculty of Education - Prospectus 2019*. UNAM.
- Verguet, S., Limasalle, P., Chakrabarti, A., Husain, A., Burbano, C., Drake, L., & Bundy, D. A. P. (2020). The Broader Economic Value of School Feeding Programs in Low- and

- Middle-Income Countries: Estimating the Multi-Sectoral Returns to Public Health, Human Capital, Social Protection, and the Local Economy. *Frontiers in Public Health*, Online Veröffentlichung. <https://doi.org/10.3389/fpubh.2020.587046>
- Vygotsky, L. (1978). *Mind and society: Development of higher psychological processes*. Harvard University Press.
- World Health Organization (WHO). (2018a). *Global action plan on physical activity 2018-2030: More active people for a healthier world*. WHO.
- World Health Organization (WHO). (2018b). *Noncommunicable Diseases (NCD) Country Profiles - Namibia*. WHO.

Declaration of Authenticity – Selbstständigkeitserklärung

I Catrin Grieshaber hereby certify that this submitted master thesis is my own work and I have not used any other sources than those indicated. All passages taken verbatim or analogous from sources have been cited. Furthermore, I confirm that the submitted work has not been submitted to another university or institution of higher education, seminar, project or thesis or as part of such work. I am aware that plagiarism according to § 25 of the regulations for the Master's programme "Sport, Exercise and Health" at the Faculty of Medicine of the University of Basel dated 19 December 2016 is considered unfair examination behaviour and I am aware of the consequences of such behaviour.

Ich, Catrin Grieshaber versichere hiermit, dass ich die vorgelegte Arbeit selbstständig angefertigt und keine anderen als die in der Arbeit angegebenen Hilfsmittel benutzt habe. Alle Stellen, die wörtlich oder sinngemäss aus Quellen entnommen wurden, habe ich als solche gekennzeichnet. Darüber hinaus bestätige ich, dass die vorgelegte Arbeit nicht an einer anderen Hochschule als Seminar-, Projekt- oder Abschlussarbeit oder als Teil solcher Arbeiten eingereicht wurde. Ich bin mir bewusst, dass Plagiate gemäss § 25 der Ordnung für das Masterstudium «Sport, Bewegung und Gesundheit» an der Medizinischen Fakultät der Universität Basel vom 19. Dezember 2016 als unlauteres Prüfungsverhalten gewertet werden und kenne die Konsequenzen eines solchen Handelns.

Date: 15.08.2021

Signature:



I hereby confirm that the publication of this thesis or parts of its contents - also in excerpts or as summaries or in raw data form - as well as the transfer of the copyright (also free of charge) to publishers or third parties always requires the consent of the reviewer.

Hiermit bestätige ich, Catrin Grieshaber, dass die Publikation der vorliegenden Arbeit oder Teile des Inhalts – auch in Auszügen beziehungsweise als Zusammenfassungen oder in Rohdatenform – sowie die Abgabe der Autorenrechte (auch unentgeltlich) an Verlage oder Dritte stets der Einwilligung des Gutachters bedarf.

Date: 15.08.2021

Signature:

