

**THE PERSPECTIVES OF STAKEHOLDERS ABOUT THE IMPACT OF
INCORPORATING CHESS INTO THE CURRICULUM PRACTICE IN KING
CETSHWAYO DISTRICT PRIMARY SCHOOLS**

by

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Declaration

I, NtandokaMenzi Penelope Dlamini declare that the study, THE PERSPECTIVES OF STAKEHOLDERS ABOUT THE IMPACT OF INCORPORATING CHESS INTO THE CURRICULUM PRACTICE IN KING CETSHWAYO DISTRICT PRIMARY SCHOOL is my own work and all cited and quoted sources have been acknowledged. This study is being submitted for the degree of Doctor of Education in the Department of Curriculum Studies, Faculty of Education at the University of Zululand.

A handwritten signature in black ink, appearing to read 'NtandokaMenzi Penelope Dlamini', written over a horizontal line.

Signature

22 December 2018

Date

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Abstract

The continuous protest from various quarters of society about the weakening education standard are a concern. Chess has been found to be a solution to remedy this problem in many countries through studies testing its effectiveness on the learners. However, very little is said about the teachers who are key in the success of this integration. This study aimed at getting the perspectives of the stakeholders regarding the incorporation of chess into the curriculum in the four subjects in the Foundation Phase, namely, isiZulu, English, Mathematics and Life skills.

This qualitative design research looks at the perspectives of the stakeholders about the impact of incorporating chess into the curriculum practice through the Tsogo Sun Moves for Life programme piloted in the King Cetshwayo district. Through interviews, observations and document analysis, this study acquired the insights of 14 teachers who work as Tsogo Sun Moves for Life facilitators in schools under the programme, the district official who is tasked with ensuring that the curriculum is well delivered in schools, and the Tsogo Sun Moves for Life co-ordinator who assist the facilitators in incorporating chess into the curriculum.

The study reveals that teachers find chess to be helpful as it helps the learners learn better while having fun, their attention span is increased, and they tend to concentrate better when chess is integrated. However, the teachers face many challenges as they struggle to merge chess into the curriculum, from those who view it as an add-on detached from the curriculum, and therefore see it as additional workload for them. The language used in the chess instruction appeared to be a challenge as the chess resources are not written in the learners' home language.

Key words: chess, curriculum reform, Foundation Phase, critical thinking, numeracy, literacy, Tsogo Sun Moves for Life, MiniChess

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CHAPTER 1

AN OVERVIEW OF THE STUDY

1.1 Introduction

South African schools are not performing well academically, especially those located in rural areas and townships as compared to multiracial schools (former Model C schools), located in urban areas (van der Berg, 2007). Van der Berg explains that this poor performance of South African schools is even lower than most of its African counterparts, given the fact that South Africa has more educated parents and has less acute poverty. South African history has positive trends, but the legacy of low quality education, especially in previously disadvantaged schools, is still prominent (van der Berg, Taylor, Gustafsson, Spaull and Armstrong, 2011). As the matriculation results of the country keep decreasing, so do the results in King Cetshwayo District. The Basic Education Department started working on transforming the level of education in the country shortly after the country was declared democratic in 1994, and it is still trying to develop new and viable strategies to enhance the education level in the country. To measure its progress, the Department put in place an Annual Nation Assessment (ANA) which focuses on numeracy and literacy (English and mathematics). Education may just be the answer to unlock the locks of poverty. People involved in the schools have to play their part in improving the level of education, and enhance teaching and learning in the institution (Naidu, Joubert, Mestry, Mosoge and Ngcobo, 2008). A study conducted by the Southern and Eastern African Consortium for Monitoring Educational Quality, SACMEQ (2011) of African countries' Grade 6 learners' performance in Mathematics and English reveals that this country performs poorly in both these subjects as it was at the bottom, outshone by most African countries. This shows that learners start struggling in the lower grades. In Grade 6 you would expect learners to do well since the load is still not much in that grade. According to the competency levels of SACMEC, learners below level 3 show that they have clearly not mastered the basics, and are therefore considered functionally illiterate and innumerate. However, the South African quality of education varies as there are two subsystems that are functioning in the country, the historically black and the former Model C

schools (Van der Berg et al, 2011). The problem of below average performance in literacy and numeracy is visible in the historically black schools, while the former Model C schools' performance can be compared to that in developed countries (Van der berg et al., 2011). Van der Berg et al. (2011, p. 2) explain that "early primary school children in historically black schools already carry an educational backlog equivalent to well over two years' worth of learning." This calls for intervention in South African historically black primary schools so as to remedy the situation, and thus enhance the quality of education for the learners.

The Basic Education Department is working vigorously on improving teaching and learning in the country's schools. Among many strategies that have been introduced by the Department is chess in primary schools. Chess has been found to be one of the tools that help learners with numeracy and literacy, which is why it has been introduced in schools. Christiaen and Verhofstadt, (1981) explain that introducing chess in primary schools can have a significant impact on their children's learning, especially in literacy and numeracy. The Chess-in-the-Schools programme is one strategy used in New York to improve learners' learning skills (Forrest, Davidson, Shucksmith and Glendinning, 2005). These authors explain that this programme shows a year-on-year improvement of 5.37% against the country's average, while those not involved in chess showed no improvement at all (Margulies, n.d.). In another study investigating the impact of 120 hours of chess instruction on the achievement of mathematics in rural, predominantly Black American secondary schools, results showed that chess players scored significantly when compared to a control group of non-chess players (Smith and Cage, 2000). However, chess is just a board game and some people might feel that there are other board games that would teach learners more significant skills than chess. Just like any sporting code that other learners do not enjoy taking part in, adding chess to the curriculum would force the learners to like this sport, which one might see it as unfair, especially because there are many different sporting codes that would help the learners just as much.

With all the great results of chess in increasing learners' performance in numeracy and literacy, the South African Department of Basic Education introduced a programme known as Moves for Life to help with the hope of improving the country's

level of education. This programme is aimed at the training in chess of both learners and teachers as an intervention for science education and maths. By September 2014 the programme had spread to many parts of the country, with over 31 000 learners and 900 teachers in 100 schools (*Engineering News*, 2014). The chess programme was introduced in the Richards Bay and Nkandla areas in 2009, but the schools piloted have not yet shown any noticeable improvements in either literacy or numeracy. This motivated the researcher to carry out this study to get the insights of the stakeholders in the incorporation of chess into the curriculum, the teachers (the curriculum implementers), the district office (teachers' support structure) and Tsogo Sun Moves for Life (the programme provider). The South African curriculum has changed several times in less than twenty-two years (since 1996), requiring teachers to keep updating themselves so as to stay in line with what is current in the industry (van der Berg, 2007). This might be the reason for the schools not yielding any positive results in spite of chess being active in them.

Chess is a rare sport, especially in the country's black communities, unlike other sporting codes like soccer or netball. Its incorporation in the curriculum means training the teachers to coach the learners, and this might just be extra work to the teachers, who are already faced with congested classrooms, insufficient learning and teaching support materials (LTSM), and a heavy workload, among other problems. The programme trains teachers, but after working hours. It is because of the benefits of chess seen elsewhere and the continual protest about poor performance of learners in numeracy and literacy that the researcher deemed it necessary to conduct an investigation into the impact caused by the incorporation of chess into King Cetshwayo District primary schools, and investigate its effectiveness. This research seeks to answer this question: would the incorporation of chess into the primary schools in King Cetshwayo Education District be effective?

1.2 Background: The Incooperation of chess into the curriculum

It is the wish of every country to deliver quality education in all its schools. Unfortunately, it does not always happen, especially in a country like South Africa. which has past injustices to cater for. However, the Republic of South African

Constitution (1996) clearly states that every citizen has a right to education, and there must be equal opportunities given to all South African children. The country still has to recover from past injustices which are still evident in South African schools even after 22 years of democracy. Taylor and Yu (2009) mention that South Africa is still a country seen as having two school systems, a situation which unfortunately detracts from the country's educational quality; those school systems being the historically disadvantaged and historically advantaged. The disadvantaged ones serve mainly African and Coloured learners, and the previously advantaged serve white and Asian learners. The injustices of the past have left a permanent mark of illiteracy on the previously disadvantaged schools that even after twenty years of democracy are still visible (van der Berg, 2007). It is unfortunate that the highest percentage of South African learners are in rural and semi-urban areas, which is where these previously disadvantaged schools are located (van der Berg et al, 2011). These schools are characterised by poor performance of learners in numeracy and literacy, which has caused the migration of some learners to previously advantaged schools, joining whites and Indians (Taylor, 2011). The fact that these learners were previously disadvantaged puts them at the further disadvantage of performing poorly academically because of less exposure to enriched experiences; hence they have a language barrier and poor problem-solving skills (Gratz, 2000; Leroy and Symes, 2001). Van der Berg et al. (2011) explain that primary school learners carry this burden all their schooling years, which always puts them at a disadvantage compared to their peers from previously advantaged schools.

Learners perform badly because of the education they have received from their childhood. All children are capable of performing well academically if they are given quality education and a conducive environment. According to Wilson (2000), learners have the ability to learn how to learn if they are taught strategies that enhance their learning abilities through stimulating their thinking skills. This explains the low performance of learners taught by poorly trained teachers in the country's rural and semi-urban areas as compared to the better performing ones taught by well-trained teachers in those urban schools which are referred to as former Model C schools. The way these learners are performing in literacy and numeracy shows that they are at risk of failure. Sapp in Hong and Bart (2007) defines learners at risk as those who perform

poorly academically and those who are one or more years behind their age or competency level than other learners their age. The main reason learners perform poorly is because they lack problem-solving skills; they end up using previous responses which were unsuccessful; they need the same intervention as learners with disabilities (Hong and Bart, 2007). These learners tend to have cognitive challenges, which is what chess can supposedly assist in. Basically, the game of chess would teach these learners about positioning, analysing moves, sequences and evaluating their moves (Bart, 2004). A study conducted by Hong and Bart (2007) concludes that chess instruction might just be the solution to assist learners performing poorly to keep up with the curriculum and learn high order cognitive skills. The Blooms Taxonomy used when preparing assessments for learners as per the Curriculum and Assessment Policy Statement (CAPS). This is used to accommodate weak learners, but has its shortcomings as it does not train the learners in high order cognitive thinking, but makes the situation worse. However, Feuerstein (1988) claims that this problem can be resolved by creating enriched environments for the learners through teaching cognitive skills by playing chess, which is way better than the current teaching methods of drilling and direct instruction. Although these repetitive drilling methods are popularly used by teachers worldwide, they have been found to limit learners from accessing challenging tasks by underestimating their abilities and preventing them from undertaking meaningful tasks (Hong and Bart, 2007). Meyers (2005) and Ibrahim (2014) explain that chess helps learners perform better in numeracy and literacy.

In order to assist the learners to improve in numeracy and literacy, chess has been seen as a great initiative that yields great results, especially if it is taught in primary school. Ibrahim (2014) states that chess has long been seen as a solution to assisting learners improve their focus, memory, mental and analytic skills. Forrest et al. (2005) point out that chess in primary schools is becoming popular, and has a significant impact on the performance of learners in numeracy and literacy. If children are taught chess at a very young age, they will enjoy being at school and develop a love of school because they will associate it with chess, which is fun. The magnificence of chess as a tool for teaching is that it teaches while learners are playing. The game of chess, like any other sporting code, brings together learners of different ages, racial groups, gender and abilities. Ibrahim (2014) states that apart from developing a love for school

and creating friendship in children, another reason for teaching them young is because their mental development is quicker than adults'. Storey (2000) advises that chess be used in the curriculum as it has been shown to work when taught in school. He explains that learners at risk can benefit even more as chess has benefited even children with disabilities. The game of chess enables learners to achieve goals, attain self-regulative learning and have good problem-solving skills (Hong and Bart, 2007). These skills are essential for children to enable them to think better at school and make good decisions about their lives, equipping them for the workplace after their schooling. Ibrahim (2014) summarises the benefits of chess as enabling those who play it, including children, to focus, visualize, think ahead, weigh options, think abstractly, and plan.

America's Foundation for Chess (AF4C) teaches children as young as seven to play chess, working with just the Grade 2 and Grade 3 learners under The First Move Curriculum, which aims at improving the learners' level of thinking, increase their maths and reading ability and build self-confidence (Bruer, 1998; Fischer, 2006). Another state that has seen the impact of chess and has adopted it into its curriculum is New York, which had introduced a "Chess-in-the-Schools" programme with the same aim of improving the annual scores of its learners (Forrest et al., 2005). A study conducted by Hong and Bart in 2007 in Seoul, South Korea, consisting of learners at risk from three different primary schools over a period of three months, with 12 separate lessons with three segments each – i.e. reviewing, lecturing and chess playing – showed positive results. None of the learners had ever played chess before. The aim of the study was to examine the cognitive effects of chess instruction on students at risk for academic failure. Hong and Bart (2007) state that the results of the study revealed a lack of cognitive skills in the learners, and although they had gained some over the three months, the results also showed that learners at risk need more time to develop these skills. Research about chess has been conducted worldwide, including in the African continent; in Congo, known then as Zaire, a two-year study was conducted by D. Frank with a group of 92 teenagers. The study revealed that the test group had improved significantly in spatial abilities, numeracy and literacy compared to the control group (Ibrahim, 2014).

Chess exists in some schools as a sporting code like rugby, soccer or netball, but not all the learners are able to take part because chess is perceived to be a game for the academically gifted. Bilalic and McLeod (n.d.) call chess the “king among board games” (p. 3). Some learners who perform poorly academically can be assisted to improve by the skills chess teaches, but never get the opportunity because they are afraid to take part in the team of “smart” learners. Players in other sporting codes, like athletics, can console themselves after losing, claiming they are not as fast as their opponents, but in chess it is very hard for one to accept that another person is more intelligent than you (Bilalic and McLeod, n.d.). Chess seems to be associated a lot with intelligence, yet literature shows that one can be taught to master the skills of playing chess and then be referred to and be seen as smart.

Incorporating chess into the curriculum would mean every child would have an opportunity to learn chess and enjoy all the benefits that come with this game, which include developing cognitive skills, increased self-motivation, and improved behaviour and attendance at school (Ibrahim, 2014). Since some children are unable to join a school's chess club, the game should be brought into the classroom for the benefit of all the learners who might not have thought of or been able to join chess on their own. Govender (2013) explains that the South African curriculum has had problems in planning and implementation. The country's previous curriculum distribution and application was not carefully thought through, planned and resourced, which caused stress on the part of teachers who had to implement it. The end product was learners' poor academic performance. The incorporation of chess into the curriculum can assist in rescuing South African learners from disaster.

South Africa has joined many countries in using chess to improve the performance of learners, especially in previously disadvantaged primary schools, through a programme called Moves for Life. It was launched in South Africa by President Jacob Zuma in October 2010 (Kobese, 2010). The programme was first introduced in primary schools in Gauteng. It continued to spread, and by 2011 it had been introduced in 15 primary schools in the Richards Bay and Nkandla Circuits of the King Cetshwayo District. Unfortunately, the programme has since been withdrawn in two primary schools in Richards Bay, but two other primary schools have been found to replace

them. This programme trains teachers to be chess coaches, and offers them teaching materials to be used in chess lessons. It is sponsored by one of the biggest industries in Richards Bay, South 32, which was known as BHP Billiton when the programme started. While this initiative sounds phenomenal, the continually changing curriculum in South Africa may pose a challenge to teachers.

1.3 Statement of the Problem

Children begin school as young as five because their parents want to help them learn to fit into this world. However, not all learners are able to learn what is taught at school. The school and the parents then have to come together to find a way to help their children learn what is being taught to them. The main aim of schools is to ensure that learners get educated, but the level of education offered differs depending on how well the school functions. The school management team (SMT), teachers, learners and even the parents strive for schools which offer quality education. The South African Department of Basic Education keeps introducing different strategies to improve learners' results. One of the strategies introduced by the Department is the incorporation of the game of chess into the curriculum. With this initiative the Department hopes to assist learners, especially in mathematics and English, as chess has been found to help greatly in these two subjects. Williams (2014) states that over 30 countries worldwide have already incorporated chess into their curricular. Williams (2014) states that the first years in the Foundation Phase are the best time to introduce chess to learners because their minds at this time are ripe for the development of thinking skills.

The incorporation of chess into the curriculum can assist greatly in the lower grades since a teacher has his/her own class, and has to teach all the subjects. Smith and Cage (2000) add that the game of chess helps in good visual memory, calculating quickly, concentrating well, and thinking logically. Teachers in the Foundation Phase teach four subjects: numeracy, life skills, English and isiZulu. Introducing chess to the learners might seem to have positive results, but it might also be a problematic addition to the already full schedule of the Foundation Phase teachers. This study therefore sought to answer the following research question:

What are the perspectives of stakeholders about the impact of incorporating chess into the curriculum practice in King Cetshwayo District primary schools?

This main research question was explored through the following sub-questions:

- What is the role played by chess in enhancing learning in primary schools?
- Are there any effects of chess instruction on the development of learners' cognitive abilities?
- Which strategies can be employed to incorporate chess into teaching and learning in schools?
- How do the teachers perceive the incorporation of chess into the curriculum?
- Does incorporating chess into the curriculum improve learners' academic performance?

1.4 Objectives of the Study

The study sought to achieve the following objectives:

- 1.4.1 To establish the role played by chess in enhancing learning in primary schools.
- 1.4.2 To determine the effects of chess instruction on the development of learners' cognitive abilities.
- 1.4.3 To determine strategies that can be employed to incorporate chess into the teaching and learning process in schools.
- 1.4.4 To determine the perceptions of teachers towards incorporating chess into the curriculum.
- 1.4.5 To find out if incorporating chess into the curriculum improves learners' academic performance.

1.5 Intended contribution to the body of knowledge

When the study has been completed, it will help with literature looking into the opportunities for using chess as a way of helping learners learn better, especially in

mathematics and English. The literature reviewed shows clearly that chess is more than just a game or sporting code as it also helps in improving the cognitive ability of low-performing learners, and advancing the average ones to reach the desired outcomes. (Williams, 2014). The study will assist the King Cetshwayo District in improving their continually dropping annual results since it is based in this district, especially in Richards Bay and Nkandla Circuits. However, the study looks at chess in schools in general, and thus will be helpful even in schools outside these districts, but of the same kind. This study hopes to distinguish chess as being more than just a game, but an indispensable educational activity in King Cetshwayo District schools.

1.6 Definition of Operational Terms

1.6.1 Curriculum Practice

Curriculum by itself is defined by Taylor and Richards (2018) as the educational experiences to be provided which include the content of education, course of study, subjects to be studies, subject matter and educational activities. Curriculum practice in this study refers to the instructional aspect of the curriculum rather than the curriculum content; the method and procedures followed by teachers in curriculum delivery.

1.6.2 Chess

Is a classic strategy game played by two opponents each with sixteen either black or white pieces on a chessboard with an aim of capturing the opponent's pieces and ultimately putting the opponents' King under attack such that it is left with no legal move it can make (FIDE, 2018).

1.6.3 Stakeholders

Paine (2009) defines stakeholders as individuals with an interest in the success of an organization in fulfilling its mission, delivering envisioned outcomes and maintaining the viability of its products and services over time. Stakeholders in education are learners, parents, school staff, circuit staff, district staff, business community and other community members (Paine, 2009). In this study however, stakeholders refer to the teachers involved in the Tsogo Sun Moves for Life programme, the district office and Tsogo Sun Moves for Life Coordinator.

1.7 The Structure of the Study

Chapter 1: Introduction

Chapter 1 is the introduction to the study where the researcher presents the problem investigated, its background, aims and objectives, and outlines its contribution to the body of knowledge.

Chapter 2: Literature review

The chapter provides the theoretical background of the study and reviews the literature on the inclusion of chess in education.

Chapter 3: Research methodology

The chapter covers the research design and methodology of the study in detail.

Chapter 4: Findings

The chapter presents the findings from the data collected.

Chapter 5: Discussions

The chapter discusses the findings of the study, and links them with the literature. It also states the findings' implications.

Chapter 6: Summary, conclusion, limitations and recommendations

In chapter 6, the summary, conclusion, limitation of the study and recommendations are discussed.

1.8 Conclusion

This chapter has given the background of the study, and explained the need for it to be conducted. It has also outlined the study's aims and objectives.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Relevant literature was visited to get more information on whether chess has been incorporated into the school curricula of other countries, and how it has resulted. Studies reviewed look at chess at an international level so that experiences in other countries are compared with those in South Africa and possibly in this district. These studies will help identify topics covered on the subject and opportunities for future studies. This chapter comprises four sections: the first discusses the theoretical framework underpinning the study; the second deals with the need for chess in the country's education system; the third looks at the history of chess incorporation in the curriculum and outcomes in other countries; and the last section deals with how teachers perceive this programme as part of the curriculum.

Chess in it is already used to help learners improve their results, especially in numeracy and literacy. Numerous studies from different decades prove that chess does indeed assist learners in attaining knowledge (Christiaen and Verholfstadt, 1978; Liptrap, 1998; Bart and Artherton, 2004). Based on the results of various research, chess might just be the solution for many schools experiencing problems in teaching and learning.

2.2 Theoretical Framework

This study is underpinned by the constructivist theory. Morrison and Collins (1996) and Riesbect (1996) describe this theory as based on knowledge constructed by the learners from their experiences. The researcher believes that people perceive the world differently depending on how they see the matter at hand. at that time. The researcher allowed multiple meanings of participants, thus approaching reality from a constructivist point of view. Christie (2005) affirms that it is experience that helps one construct new knowledge. Learning happens through familiarities. The game of chess aims at the same goal, working through the mind of the child to be able to enrich and

develop it such that it is able to generate new ideas. However, conducive environments are needed for learners to be able to make sense of the world based on what they know. Over the years, education has shifted from traditional to constructivist teaching (Driver, 1995; von Glasersfeld, 1995). On this view, Khalid and Azeem (2012) expatiate that constructivism activates the student's innate curiosity about the world to observe how things work. Constructivists argue that the exposure of learners to a supportive and guiding environment helps them to be able to use what they know to construct new understandings of the world. Grennon, Brooks and Brooks (1999) assert that learners are able to generate new information through coaching.

Constructivism focuses on the construction of knowledge rather than its production. Piaget (2013) explains that children are able to link new knowledge to prior knowledge, thus making learners construct knowledge and not acquire it. This in turn helps learners extend their way of thinking and develop their cognitive levels beyond the information provided to them. Hoadley (2011) agrees that the shift in education in this century from traditional to constructivist was a necessity. Christie (2005) describes the goal of constructivism as a way of encouraging learners to use their experiences to make sense of the world they live in, and create new knowledge using what is known to them. Teachers are there to support and guide learners to generate new ways of thinking. The incorporation of chess into the curriculum helps in developing the learners' cognitive skills, enabling them to easily construct new knowledge using skills taught in the game of chess.

The researcher aimed at collecting more information on the topic of chess in King Cetshwayo District as no literature on it was found, which implies it has never been studied. This new knowledge can be used by the Department of Basic Education in improving the academic performance of the learners in the district, and by Moves for Life to improve the implementation of their programme.

2.3 Challenges in South African public education

It is the wish of every country to deliver quality education in all its schools. Unfortunately, it does not always happen. especially in a country like South Africa which has past injustices to cater for. However, the Republic of South African] Constitution (1996) clearly states that every citizen has a right to education, and equal opportunities should be given to all South African children. The country still has to recover from past injustices which are evident in South African schools even after 24 years of democracy. Taylor and Yu (2009) say that South Africa is still a country seen as having two school systems, a situation that detracts from the country's educational quality – those school systems being the historically disadvantaged and historically advantaged. The disadvantaged ones serve mainly the African and Coloured learners, while the previously advantaged serve white and Asian learners. The injustices of the past left a permanent mark of illiteracy in the previously disadvantaged schools that even after 24 years of democracy are still visible (van der Berg, 2007). It is unfortunate that most South African learners are in rural and semi-urban areas, which is where these previously disadvantaged schools are located (van der Berg et al., 2011). These schools are characterized by poor performance of learners in literacy and numeracy, which has caused some learners to migrate to previously advantaged schools, joining whites and Indians (Taylor, 2011). The fact that these learners were previously disadvantaged puts them already at the disadvantage of performing poorly academically because of less exposure to enriched experiences; hence they have a language barrier and poor problem-solving skills (Gratz, 2000; Leroy and Symes, 2001). Van der Berg et al. (2011) explain that primary school learners carry this burden all their schooling years, which always puts them at a disadvantage as compared to their peers from previously advantaged schools.

Learners perform badly because of the education they have received from their childhood. All children are capable of performing well academically if they are given quality education and a conducive environment. According to Wilson (2000), learners have the ability to learn how to learn if they are taught strategies that enhance their learning abilities through stimulating their thinking skills. This explains the low performance of learners taught by poorly trained teachers in the country's rural and

semi-urban areas as compared to the better performing ones taught by well-trained teachers in urban schools, the former Model C schools. The way these learners are performing in literacy and numeracy shows that they are at risk of failure. Sapp in Hong and Bart (2007) defines learners at risk as those who perform poorly academically, and those who are one or more years behind their age or competency level than other learners of their age.

The main reason the learners perform poorly is because they lack problem-solving skills, and end up using previously employed responses which were unsuccessful. they need the same intervention as learners with disabilities (Hong and Bart, 2007). These learners tend to have cognitive challenges, which is what chess can supposedly assist in. Basically, the game of chess would teach these learners about positioning, analysing moves, sequences and evaluating their moves (Bart, 2004). A study conducted by Hong and Bart (2007) concludes that chess instruction might just be the solution to assist learners performing poorly to help them keep up with the curriculum and learn high-order cognitive skills. Bloom's taxonomy, used when preparing assessments for learners as per the country's Curriculum and Assessment Policy Statement (CAPS), stresses that a good assessment is the one with 30% low order questions, 50% middle order and only 20% high order questions at the cognitive levels. This assessment is used to accommodate the weak learners, but it has its shortcomings, which might be the reason it keeps being revised (Nash, 2011).

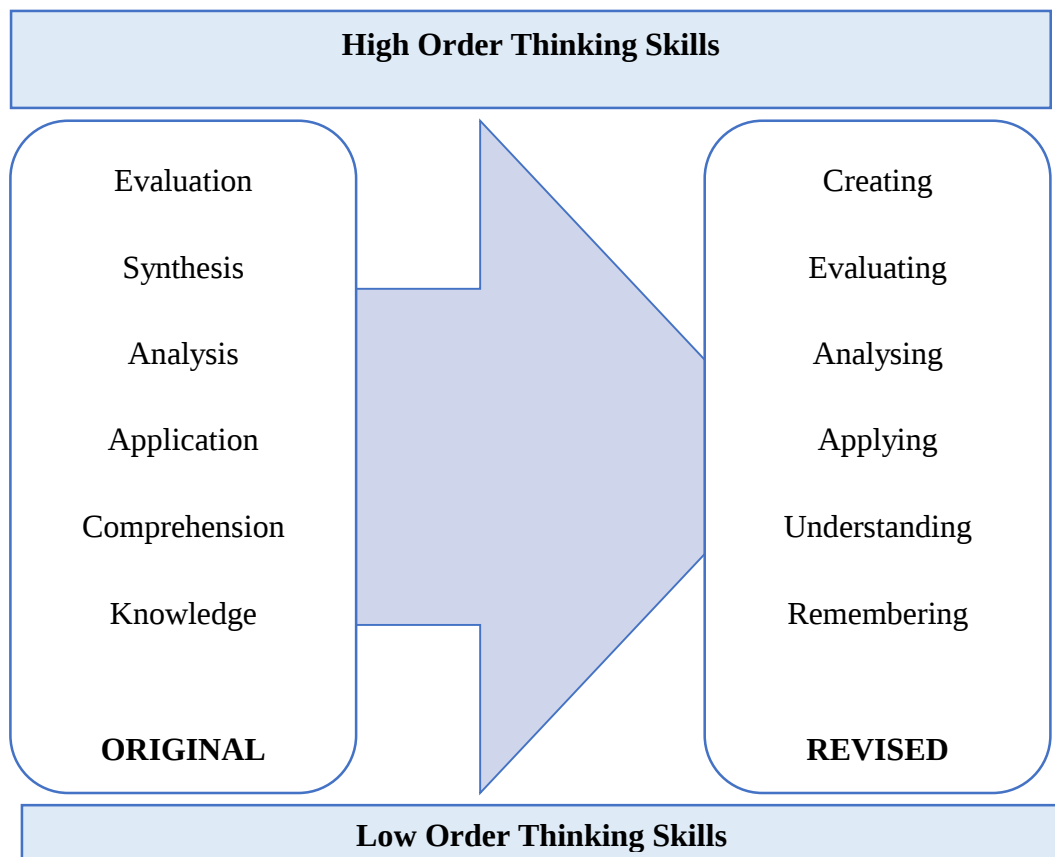


Figure 2.1: Bloom's Taxonomy original and revised versions (Nash, 2011).

Nash explains that besides the fact that very few teachers use Bloom's Taxonomy well, it does not train the learners' high order cognitive thinking, and does not solve the problem of learners improving in thinking skills, but makes the situation worse. This explains the low performance displayed by South African learners in standardized assessments like The Annual National Assessment. Meyers (2005) claims that this problem can be resolved by creating enriched environments for the learners through teaching cognitive skills like playing chess, which is better than the current teaching methods of drilling and direct instruction. Although these repetitive drilling methods are popularly used by teachers worldwide, they have been found to limit learners from accessing challenging tasks by underestimating their abilities and preventing them from attaining meaningful tasks (Hong and Bart, 2007). Meyer (2005) explains that chess helps increase the performance of learners in numeracy and literacy through:

- Providing a greater quantity of problems for practice
- Creating a pattern or thinking system that breeds success
- Offering immediate rewards for problem-solving

- Accommodating all modality strengths

Another factor contributing towards the poor quality of learners in South Africa is the lack of proper training in tertiary institutions. This in turn causes major problems in the country's education as all the professions depend on teachers (Nenty, Moyo and Phuti, 2015). An intervention to remedy the situation in schools is possible in bringing chess coaches to assist the teachers in teaching the learners by teaching the game to both.

Division in the South African education system is another factor which has contributed to the poor performance of some learners, especially in the rural areas. The previously advantaged are a majority in the cities, and the previously disadvantaged are found in their great numbers in the rural areas. The availability of learning, teaching and support materials (LTSM) is still inadequate in the rural areas compared to the urban areas. A study by Makeleni (2013) reveals that underdeveloped rural areas are still faced with a shortage of classrooms, no libraries and no textbooks, among other problems that might contribute to their teachers' failure to properly implement the curriculum as expected by the Department of Basic Education.

The continual changes in the curriculum also play a role in the inability of the learners to perform well academically. In 1994 there were elections which brought about democracy and equality to all the citizens of the country, which meant that there must be equal education for all. In order to remedy the injustices of the past while providing for the needs of the 21st century, and establishing a platform of equality for all citizens as the South African Constitution's preamble states; the Department of Basic Education introduced Curriculum 2005 which was meant to make South African education democratic, and ensure equality for all in correcting the education system of apartheid (Jansen, 2004). Curriculum 2005 adopted an Outcomes Based Education (OBE) approach. OBE was driven mainly by the need to correct inequalities in the treatment of genders and races by focusing on a transformative curriculum (Jansen, 2004). It noticeably did address past injustices as the country saw learners of different racial groups in the same class. However, OBE failed to improve education as teachers did not change their classroom practices (Vendayar and Killen, 2003; Jansen, 2004). It must be said that the outcomes-based approach was widely

criticized, mainly for being based on mistaken assumptions on what was actually taking place in the classrooms. It was for this reason that Jansen (2004) said the system is doomed to fail. It can be argued, though, that all teachers face challenges in curriculum delivery, whether in developed or developing countries. Because of the problems in implementing Curriculum 2005 in South Africa, a review committee was established by the Minister of Education which revealed that teachers were struggling to implement it. It is not surprising, as policies imposed on employees by employers do have a tendency to fail. Smith (2001) concurs that it is usually the national department that makes policies for the teachers in schools. Wong and Pang (n.d.) explain that the failure of teachers to use such policies comes from the lack of ownership that teachers feel.

The Department of Basic Education then introduced CAPS accompanied by workbooks to ensure that teachers have all the resources they need to deliver quality education and produce the best learners ready for the workplace. Unfortunately, there is still an education quality crisis in this country regardless of the means tried. The segregation of education departments in South Africa may have ended 25 years ago but the scars are evident even today. Van der Berg (2007) indicates that previously black and Coloured schools are still outperformed by white and Indian schools, and this has caused South Africa as a country to be behind other, even poorer, African countries.

The lack of enriched experiences for many children who join the schools from poor families are evident in their lack of problem-solving and literacy skills (Gratz, 2000). While this is a challenge for all children, literature shows that the challenge is greater in children from poor families (Gratz, 2000). Enriched experiences are a result of enriched environments which have a distinctive development in the brain by promoting thinking at a higher level (Bruer, 1998; Cotlin, 1999). Wealthy families are able to support their children with the resources they need, including colouring books, while young; some even read their children bedtime stories, which helps impart the culture of learning to the children, but impoverished families worry about what they will eat that night. Leroy and Symes (2001) affirm that children from impoverished neighbourhoods and families begin school at the risk of failure. This is because they

have limited opportunities to learn language, sharpen perceptions and grow other high order cognitive processes. They end up struggling to think independently and have a hard time solving problems.

2.3 Tsogo Sun Moves for Life's chess programme

Moves for Life is a chess programme originally developed by a charity organization in Ireland with the aim of reaching out to schoolgoing children, and providing them with at least four years of chess education (O'Connell, 2011). This organization believes that children well equipped for the 21st century must be able to adjust socially, and be healthy and intelligent. Moves for Life has convinced many education ministries and departments around the world to buy into their idea of teaching through chess; the Turkish Ministry of Education started a plan to teach chess to all primary school children in their country with the aim of making them intelligent citizens. In America, New York's budget for its Chess-in-Schools programme increased drastically in support of the work done by the federation concerned. In South Africa, the Department of Basic Education has also joined the programme targeting the Foundation Phase learners in Grades 1, 2 and 3 in primary public schools. This chess programme collaborated with a non-profit organisation, Tsogo Sun, authorized by the Department of Basic Education since it works in schools and is connected to the Kasparov Foundation; the programme is called Tsogo Sun Moves for Life (Tsogo Sun, 2015). This programme was warmly welcomed by President Jacob G. Zuma when it was launched in 2010. Since its launch, it has reached more than 56 schools, trained approximately 500 teachers, and has impacted on the lives of 21 300 learners in South Africa (Tsogo Sun, 2015).

According to Tsogo Sun (2015), Moves for Life is currently in only three provinces, Gauteng, KwaZulu Natal and Western Cape. In Gauteng – Pretoria, Uitkyk, Mamelodi and Eesterust – the programme was started in 2008, and has been going strong. In KwaZulu Natal, the programme is only in one district, King Cetshwayo, but it is hoped that it will grow if the results are positive.

2.4 The history of chess

Chess is a game that has long been used to compete not only for fun and prizes in tournaments, but also for improvement in academic performance. It is a board game that involves strategies; invented in India approximately 1500 years ago (Meyers, 2005). Meyers explains that the game was developed after a request by the royal family to come up with a way to teach the royal children to become better thinkers and generals on the battlefield. He says that since then, chess has spread to all parts of the world, and is used in clubs, by teachers in schools, and in libraries, more than 70 of them in America. Today chess is played in all the continents of the world (Ferguson, 1995). The well-known chess organization, The Kasparov Chess Foundation Africa, was launched in 2012 in South Africa, serving the entire African continent, supporting chess developments for individuals, private foundations, corporate sponsors and local government (Kasparov Chess Foundation Africa, n.d.). The organization aims at bringing chess to as many schools as possible in the African continent so that it will be part of their curriculum. In South Africa, the KwaZulu-Natal Chess Association, in partnership with the Department of Sport and Recreation, have started clubs in almost all the 11 districts in the province. This started as a 2016 summer holiday programme, but it has grown and attracted many players to the game, and has been added to the South African Local Government Association games played annually.

Chess has contributed in the classrooms since it was introduced through helping learners improve, not only academically, but socially (Meyers, 2005). One aspect which makes chess different from other games is that it attaches a number to a player, showing from a distance how well the player plays chess; the number is called a rating. Dangauthier et al. (2007) explain that a rating helps provide information on the development of the skill of a player within that particular sport. It also motivates players to do even better so that their rating will increase.

2.5 The game of chess

Chess is a board game played by two players each with his/her own set of chess pieces. The chess set consists of a board and two sets of 16 pieces each, with two colours usually referred to just as black for dark pieces and white for light ones. The 16 pieces move in different ways, which means that a player must always be careful and concentrate before touching a piece. Moving a piece in the wrong way results in losing the game should a player do it twice in one game; this is known as an illegal move. The result in chess can either be a win (checkmate), a loss (being checkmated) or a draw (stalemate). The aim of the game is to checkmate the opponent, putting his king in a position where it is in danger, and cannot escape to a safer place.

A chess player gets a number called a rating, which rates his performance. Rated chess games have clocks with equal minutes a side. After each move, a player is expected to press the clock, forcing his opponent's time to run out. When a player has run out of time, he loses the game. Having a clock adds another challenge to the players: apart from memorizing and sequencing the piece movements they have to keep track of time as well, and ensure that not much time is spent thinking about a move. In rated tournaments, players have to notate as well, and record all their moves as well as their opponent's moves. This means that they have to make a move, press the clock after each move, and record each move made. These actions have to be in order because failure to do so may result in a penalty which could mean having some minutes taken from your game time on the clock, putting you in danger of losing the game because your time ran out before the game could be finished.

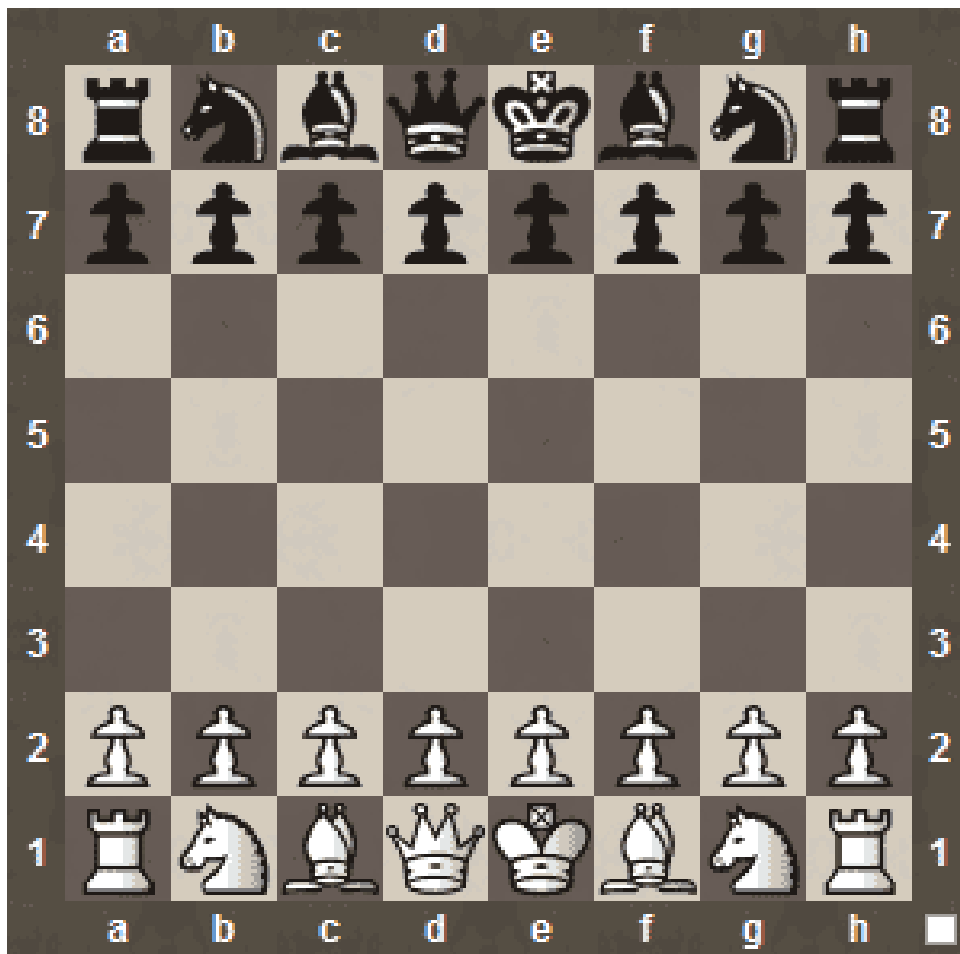


Figure 2.2: A chess board set with chess pieces (Dave, 2017)

Like any other game, chess has rules and ways of conduct. Before players start playing, they shake hands and sit quietly in their seats. There is discipline as well, as players cannot just move the pieces anyhow, but must wait patiently for their opponent to make his/her move before they can make their next move. Once a player touches a piece, he/she has to move it and should he/she touch the opponent's piece, he/she must capture it. These rules help ensure that the players are fully concentrated on the game. Their skill extends to other activities the players engage in. In the opening game, players are mostly memorizing and moving their pieces in a sequence, with much thinking. They play a familiar opening game they have seen or played before. Putting their places in the right positions ensures that they might have a better middle game, which might lead to an easier end game, and they might win the game in the end. All this requires a good memory, because just one piece placed in the wrong block might cost a player the whole game. In the middle game players use tactics to

try and put the opponent's king in danger, and capture as many opponent's pieces as they possibly can. Gumedé and Rosholm (2015, p. 4) affirm that chess players have "uncommonly good memory and concentration abilities." In the end game, players have to avoid being checkmated, and try to think what their opponent's next move might be so that he/she does not get into trouble by placing his/her pieces where either one of them can be captured. After the game, both players submit their result together to the recorder. The players, especially the one who lost, analyse the game with a more informed player to identify the mistakes to be avoided next time the player encounters such a problem. Kirschner, Sweller and Clark (2006) say that people become good at problem-solving because of the experience that helps them to select the best option when they are faced with tricky situations.

2.6 Chess and the curriculum

In any education system there is always a document outlining what is to be done and how to reach the goal of the department. In South Africa CAPS is used from the time the teacher prepares what is to be taught to the time of assessing the learners, providing teachers with the plans of what to teach and assess. Chess is part of the curriculum in more than a thousand schools in 30 countries worldwide, and more than 25 universities and colleges in the United States alone offer chess scholarships (Dangauthier et al., 2007). In some countries, like Iceland, Russia and Venezuela, chess is a compulsory subject taught and assessed like other subjects in the curriculum (Linder, 1990). Ferguson (1995) states that education in Venezuela is one of the best in the world because of the inclusion of chess in the curriculum. Chess can also be used for remedial teaching in cases of learners who are struggling in maths. In Vancouver, to assist learners develop maths skills, there are workbooks working hand-in-hand with chess playing (Math and Chess Learning Centre, 2018). In countries where chess is part of the curriculum, learners are good at logic and problem-solving. Liptrap (1998) notes that teaching learners maths skills through chess has increased their results by 19%. In a study by Trinchero (2013), the investigation was on the impact of chess instruction on the maths test scores of children in PISA aged 8 to 10. The results revealed that chess in school does indeed improve learners' problem-solving ability.

Incorporating chess into the curriculum means every child gets an opportunity to learn chess and enjoy all the benefits that come with this game, which include developing cognitive skills, increasing self-motivation, and improving behaviour and attendance at school (Ibrahim, 2014). Since some children are unable to join the school's chess club in some schools, chess should be brought into the classroom for the benefit of all the learners who might not have thought of joining or been able to join chess on their own. It is true that children who are intelligent perform better in chess. A study conducted by Frydman and Lynn in 1992 which investigated the potential relationship between chess and intelligence involving 33 chess players showed that chess players had a better IQ than those who do not play chess and better chess players had even higher IQ scores than the weaker ones (Gobet and Campitelli, 2002). Frank and D'Hondt found in their study conducted in 1979 in Zaire for a year that chess players have more elements of intelligence than non chess payers, and chess may indeed improve one's intelligence (Gobet and Campitelli, 2002). Studies show, then, that chess players are more intelligent than non-players. This is a result of their being involved in a lot of constant thinking, playing under the pressure of time and being competitive. Gobet and Campitelli (2002) assert that these players learn to handle time constraints and generalizable skills.

Curriculum influences all educational activities taking place in school and the classroom, and thus is considered to be the core of education (Govender, 2013). Govender (2013) explains that the South African curriculum has had problems in planning and in schools in the implementation stage. The country's previous curriculum distribution and application was not carefully thought through, planned and resourced, which caused stress on the part of teachers who had to implement it. The end product was learners' poor academic performance. The incorporation of chess into the curriculum can assist in rescuing South African learners from failure.

Ippolito (2009) states that in the United States of America a law promoting the incorporation of chess into their schools curricula was passed in 1992 after the game's advantages were reviewed. Among other organisations in America, America's Foundation for Chess (AF4C) teaches children as young as seven years old to play chess, working with just the Grade 2 and Grade 3 learners under The First Move

Curriculum, which aims at improving the learners' level of thinking, increasing their maths and reading ability, and building self-confidence (Bruer, 1998; Fischer, 2006). One state that has seen the impact of chess and has adopted it in its school curricula is New York, which introduced a Chess-in-the-Schools programme with the same aim of improving the annual attainment of the scores of their learners (Forrest et al., 2005). In Russia, chess has been part of their curriculum for more than forty years; Russian youngsters were encouraged to play chess to improve their skills of problem-solving and reasoning (Milat, n.d.). Milat mentions that it was then that research about chess as an educational tool started being conducted. Studies have confirmed the findings that indeed chess can help learners perform better academically if it is included in the curriculum.

2.7 Studies on the impact of chess on teaching and learning

Studies on chess unanimously agree that it is more than just a game as it also assists in getting children interested in learning, and helps in developing their minds. Dauvergne (2000) confirmed this using a study that was conducted in Venezuela which consisted of more than 4000 Grade 2 learners in a poorly performing school district. Learners who were exposed to chess for only four and a half months showed an improvement in the standardized test scores. This study proved that learners' IQ can improve through their engagement in chess for even a short period. The question is whether skills can be transferred from one domain to another. Several studies show that the transferability of skills acquired is often narrow and limited (Singley and Anderson, 1989; Bruer, 1998). Can skills learnt in chess be transferred to other subjects, or is it just a belief without any evidence? Not all studies agree that the ability to transfer skills to other domains is limited. Gobet and Campitelli (2002) maintain that skills are transferable from one field to another: for example, from chess to mathematics, or any other subject. Bloom (1985) and Ericsson, Krampe and Tesch-Romer (1993), affirm that skills are indeed transferable, but one needs much practice.

It is such programmes that are needed to aid schools in view of learners' low academic performance, and their lack of interest in learning as a whole. Having seen the impact of chess in education, the government in Venezuela was intrigued and

introduced chess in schools across the country with the aim of increasing the IQ of the learners in all schools (Gardiner Chess, 2018). With a high IQ, learners easily learn and would certainly not have a problem with Bloom's Taxonomy that is encouraged by the CAPS documents because their minds would be geared for such mental complexity.

Chess is a game dominated by males; the well-known grandmasters are males and generally males perform better than females in tournaments, with 99% of the world's grandmasters being males (Chabris and Glickman, 2006). This, though, does not imply that chess only helps males in their studies. They explain that this imbalance is due to the early intake of players: many more male players join chess at the lowest levels than females, and they develop their skills earlier than females. The Venezuelan study reveals an equal improvement in both males and females from different socio-economic groups.

The ever-changing set of problems presented by different moves in chess games develop the skills of analysing, problem-solving and logic, which are very important in numeracy. To be able to perform well in chess, you require numerous abilities in numeracy and literacy which Dr Albert Frank discovered can be enhanced through exposure in chess (Frank , 2009). Studies supporting the effectiveness of chess in education, particularly in improving numeracy in learners, have proved that indeed chess does make learning easier. However, chess as a means to aid learners academically cannot be coached in the same way as chess for tournaments, to make grandmasters. A two-year study conducted in New Brunswick, Canada from 1990 to 1992 showed that when the teachers added chess to the curriculum, teaching it with mathematics, their learners' scores improved greatly in problem-solving (Trinchero and Sala, 2016). A study by Scholz (summarized in Sala, Gorini and Pravettoni, 2015) in 2008 found that children exposed to chess instruction instead of a mathematics lesson for even an hour weekly performed better in counting and addition than those without the exposure. Apparently, chess has a great impact in assisting learners to learn the basics of mathematics, as the previous mentioned study has proved. In 2012, Kazemi, Yektayar and Abad conducted a study which confirms the impact chess has in aiding learners to learn through chess skills which are taught in mathematics, like

problem-solving. In their study, they investigated the role chess plays in enhancing the metacognitive ability and problem-solving skills in learners in Grades 5, 8 and 9. Their study involved two groups, one trained in chess and the other not. The results showed a great increase in the problem-solving skills in the group trained in chess. Similarly, Trinchero's study conducted among learners in Grade 3 in 2012 proved that exposure to chess does assist learners in metacognitive ability (Trinchero, 2013). Sala et al. (2015) conducted a study on the correlation between problem-solving skills in mathematics and chess. Their study involved two groups of 560 learners, with one group trained in chess through a course and online training and the other group was not exposed to any chess training. Like all the studies reviewed, their study too reveals a great connection between chess and mathematics as the group trained in chess showed improvement in mathematics even though they were only trained for a short while (Sala, Godini and Pravettoni, 2015). Sala, Gorini and Pravettoni (2015) conclude that chess and mathematics are closely related in that difficult concepts in mathematics are made easy through chess, and learners learn to easily manage them. With learners having improved in problem-solving skills, not only will they improve in mathematics but in the other subjects as well (Trinchero and Sala, 2016). They recommend that regardless of the subject they teach, teachers can only help learners acquire a deep understanding of concepts when they expose them to learning where knowledge is treated as problematic. This explains why Sigirtmac (2012) concluded that the positive impacts of chess in learners manifest themselves in the learners' tendency to develop a better understanding of concepts than those who do not play chess.

Studies conducted on chess show not only a connection of this game with mathematics, but tangible evidence proving the effects of chess on literacy, specifically in reading (Margulies, n.d.). A study was conducted in New York City in a district called District 9, with control and experimental groups. The experimental groups were coached by chess experts who were also teachers, and assisted by a chess computer programme. After two years of the experiment the experimental group revealed much greater improvement than the control group (Margulies, n. d.).

Costa and Kallick (2009) go as far as calling chess “an effective educational tool” to enhance numeracy and literacy, shaping even their concentration and heuristics. Chess seems to be just the solution to help learners, as Gunes and Turgul (2017) state that many children normally struggle with the process of transferring knowledge. With chess, they can learn this transferring of learning process through playing. Sheare, Dominguez, Bell, Rouse and Fantuzo (2010) stress the importance for children of playing. They state that through playing, children enhance their social and academic skills.

The reviewed literature proves that chess is a game which does more than entertain those playing, but goes on to help them psychologically. It is not new in assisting in improving the human brain. Ferguson (1995) says that steps needed to learn chess well are exactly the same as those for learning psychoanalytic techniques. The game of chess does not depend on just making a move but in making the right move. According to Fischer (2006), chess is about choosing the right option. In a study conducted by Philip Rifner in 1991-1992 with middle school learners, it was found that learners who learn problem-solving skills are able to apply them in other domains as well (Dangauthier et al., 2007).

In a traditional classroom, it becomes hard for learners to sit still for a long time, but with chess, they can sit for hours trying to figure out how to make a particular move, a spectacular one to checkmate the opponent. This helps them in seeing a variety of alternatives, but having to choose the best one, and thus trains them to look for alternatives in everything, which, according to Dangauthier et al. (2007), results in higher marks in fluency and originality. Children enjoy playing games, and really enjoy finding a way to solve a problem on the chess board on their own. Dangauthier et al, (2007) outline seven important factors making chess assist in educating learners:

- It accommodates all modalities.
- It provides a large number of problems for practice.
- It offers immediate punishments and rewards for problem-solving.
- It creates a thinking system that, when used faithfully, breeds success.
- It creates interests and promotes mental alertness through competition.
- It motivates learners to become willing problem-solvers.

- It supplies a variety of quality problems.

Chess has such a significant impact on those who play it that even if it is played after school, it still makes a great impact, provided the player has a coach. According to Nicotera and Struit (2014), chess programmes conducted after school have a statistically momentous impact on the performance of learners in mathematics, while chess in school has an even greater impact as it affects not only mathematics, but produces cognitive outcomes as well. However, it is not enough just knowing how to play the game if you do not compete and extend your thinking skills. In-school chess is beneficial to learners mainly because of the programmes running, which ensure that learners keep receiving instructions and reduce the rate of absenteeism, and also because of competing with other schools (Nicotera and Struit, 2014). When learners know there is something interesting at school, they surely look forward to going there, and in that way they do not miss any information given by teachers. Thus chess assists not only by being played, but by helping to keep learners on track with school work.

Learners who are well equipped, able to think critically and solve problems can be produced by improving the way they learn. Montessori believes that children are born knowledgeable. Piaget says that children are naturally curious, their motivation to learn comes from within, and all they need is an opportunity to learn (Piaget, 2013). Chess being a board game can help stimulate their minds and challenge them with what they are not familiar with, which in turn will develop their minds and improve their thinking skills. Liptrap (1998) said that the increase in the performance of the learners in mathematics is because of their text series called *Challenging Mathematics*, which teaches learners logic through chess in Grades 2 to 7.

In teaching learners chess has been associated with many aspects of development, including cognitive development, critical and creative thinking, and reasoning and thinking. Several studies have been done to prove that chess can indeed help struggling learners, especially in subjects like mathematics. In Zaire, now known as Congo, at Lisanga School in 1973-74, Dr. Frank conducted a study to find out whether being able to learn chess is caused by spatial aptitude, reasoning, creativity, perspective speed, or creativity. He also wanted to see whether chess helps in

developing these five attributes in a person, and if it does, to what extent. The results were that chess indeed helps, especially in two aptitudes, numerical and verbal. It was found that chess uses all abilities of a person. In another study conducted in Belgium at the Assenede Municipal School by Johan Christiaen in 1974-1976, there were two groups of 20 learners each. They were tested by Piaget's tests for cognitive development, and the results showed that chess players, the test group, had improved greatly. Dangauthier et al. (2007) affirm that chess indeed makes learners smarter.

Margulies, in a study he conducted in 1991 about the effects of chess on reading scores, revealed that the involvement of learners in chess helps improve their performance in reading (Dangauthier et al., 2007). In this study the results of chess players were much higher than those of non-chess players. In another study conducted by Gumede and Rosholm in 2015 with Grade 1 to 3 learners, to discover if chess instruction can improve maths results, the finding was that chess instruction does help learners in maths. They replaced a weekly maths lesson in three-quarters of their school year with chess instruction, and got tremendously improved maths results from the learners.

2.8 Capability of Performing Well

Gumede and Rosholm (2015) state that cognitive skills can be affected by the teaching of chess. This can take place both directly and indirectly. Heckman (2012) affirms through a life-cycle skill formation framework that people have cognitive and non-cognitive capabilities all the time, which come together to make an investment in their capabilities' formation.

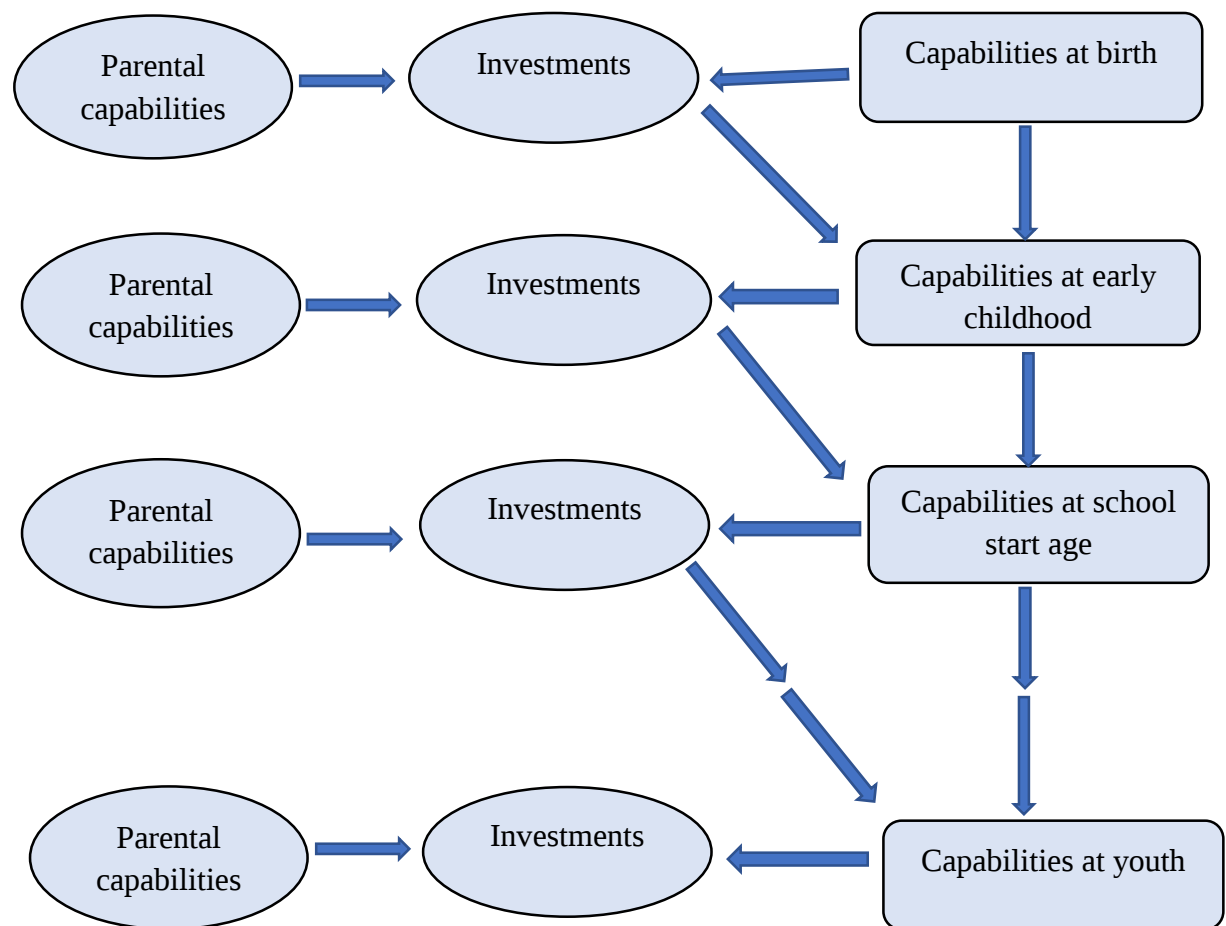


Figure 2.3: The framework of life-cycle skill formation (Heckman, 2012).

The game of chess helps players learn to plan ahead, before making a move. They memorize moves in sequence, especially in the opening, and apply tactics in the middle game. This teaches them to calculate before making a move, and failure to calculate results not only in a loss of the game, but a decrease in the player's rating. If a player makes hasty moves and fails to calculate, he/she can never do well. When one has patience (and time in tournaments) to think about one's next move one gets rewarded by being able to see all the possible good moves, and then chooses the best one, which might result in a checkmate. The game of chess helps improve a player's concentration, allowing him/her to focus more and be attentive (Gumede and Rosholm, 2015; Milat, n.d.). Gumede and Rosholm state that this game increases a person's intelligence and problem-solving skills. When playing, you memorize your moves and analyse the game afterwards with a more experienced and better player or coach, who helps identify your mistakes to avoid them the next time you play.

2.9 Chess as the solution

Tests in the styles of thinking and learning, *Torrance Tests of Creative Thinking* and the *Watson-Glaser Critical Thinking Appraisal* revealed a significant difference in scores of chess players and those who do not play chess (Meyers, 2005). Unlike other games, chess accommodates all the strengths of modality (Nash, 2011). It continually ensures that players practise by providing many puzzles with different angles for them to solve.

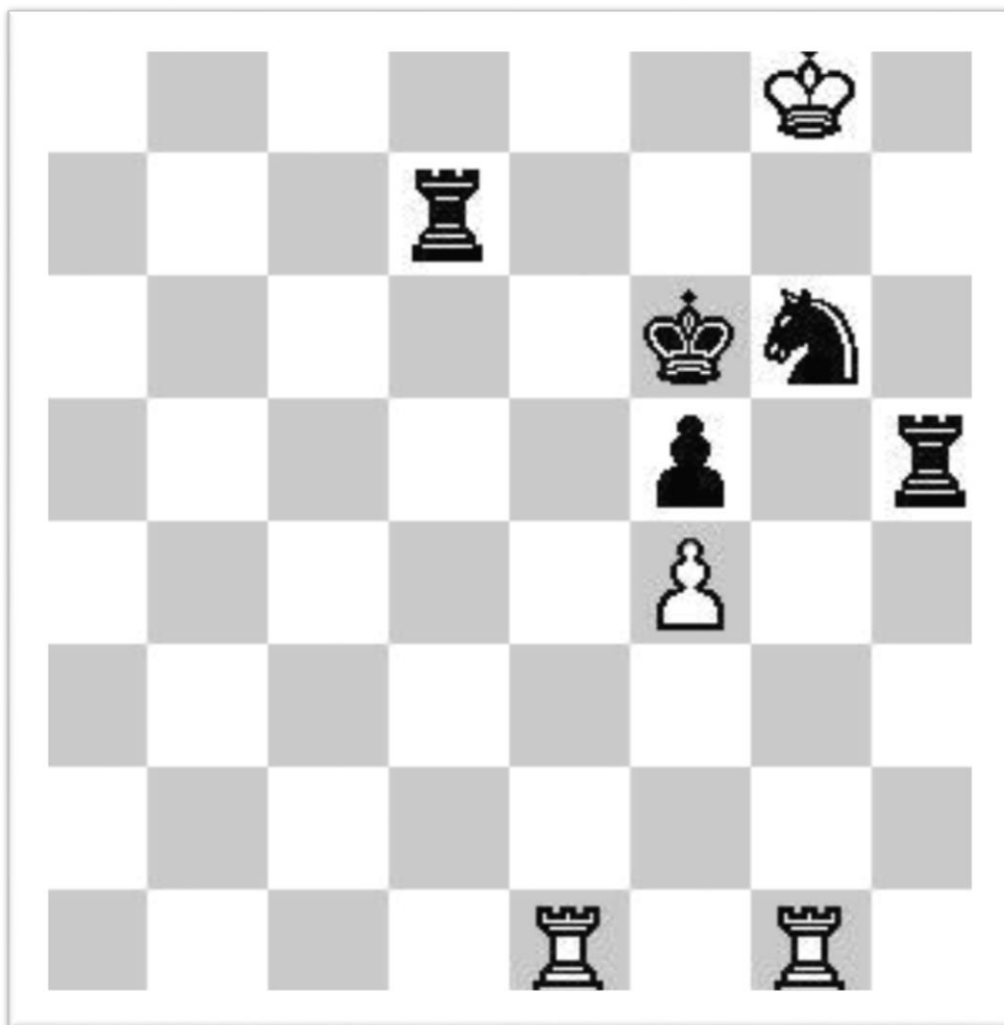


Figure 2.4: A chess puzzle (Dave, 2017)

In a chess game, players learn a pattern of thinking which helps them win a game still playing an opening if well played according to the correct pattern. Chess players always look for better options and alternatives which help them in higher scores and

originality (Meyers, 2005). They do not only learn chess for the sake of knowing how it is played; they go to tournaments to compete with other chess players. According to Barrett and Fish (2011), competition creates interest, challenges the players, encourages mental attentiveness and produces the highest levels of achievement. Children learn better while playing; teaching through chess means learners learn while playing, which creates a positive attitude in the learners towards learning. This effect acts as an enabler of cognitive achievement. Chess as a game helps motivate learners to solve problems and spend a lot of time thinking logically. In traditional classrooms, it becomes hard to get the learners to sit still, and be attentive so that they can solve certain mathematical problems, but with chess it becomes easier because they learn while playing and having fun. While they are enjoying themselves, chess offers many kinds of problems for them to solve. Milat (n.d.) comments: "The problems that arise in the 70-90 positions of the average chess game are, moreover, new." Game positions are never the same; themes and contexts may be repeated, but the positions of the pieces hardly do, which helps them in solving new problems every time.

Chess has been seen as a great initiative to assist learners to improve in numeracy and literacy, especially if it is taught in primary school. Ibrahim (2014) mentions that it has long been seen as a solution to assisting learners improve their focus, memory, and mental and analytic skills. Forrest et al. (2005) share the view that chess in primary schools is becoming popular, and has a significant impact on the performance of learners in numeracy and literacy. If children are taught the game at a very young age, they will enjoy being at school because they will associate it with chess, which is fun. The magnificence of chess as a tool for teaching is that it teaches while learners are playing. The game of chess, like any other sporting code, brings together learners of different ages, racial groups, gender and abilities. Ibrahim (2014) states that apart from developing a love for school and creating friendship in children, another reason for teaching them young is because their mental development is quicker than that of adults. Storey (2000) advises that chess be used in the curriculum as it has been shown to work when taught in school, even for children with disabilities. The game enables learners to achieve goals, attain self-regulative learning and have good problem-solving skills (Hong and Bart, 2007). These skills are essential for children to enable them to think better at school and make good decisions about their lives,

equipping them for the workplace after school. Ibrahim (2014) summarizes the benefits of chess as focusing, visualizing, thinking ahead, weighing options, thinking abstractly and planning.

2.9.1 Academic Benefits of Chess

The game of chess was introduced into schools because of the advantages it gives to those playing it. Meyers (2005) affirms that bringing chess into the classroom was mainly because of its direct contribution to the learners' academic performance. Meyers adds that chess makes kids smarter. It helps them to focus, concentrate and observe carefully. In the game of chess, it is vital that you focus on the board so that you are able to see what your opponent does, and then respond accordingly. Should you fail to focus, you will surely not be able to respond to a move, and most likely lose the game. This trains the learners to concentrate even in the classroom, and thus listen to the teachers when they are teaching, and be able to recall in assessments. Visualization is another skill taught in chess (Meyers, 2005). Milat (n.d.) asserts that the best way to improve memory is through visual stimuli. Ferguson (1995, p. 1) agrees that: "Visual stimuli tend to improve memory more than any other stimuli; chess is definitely an excellent memory exerciser, the effects of which are transferable to other subjects where memory is necessary". Chess players are encouraged to visualize the moves in their heads before playing them on the board. They have to imagine a sequence of moves before they are actually played by them or their opponent. The players get trained to move pieces using only their minds, not the actual pieces. This helps them foresee what might happen if they move a particular piece. Such a practice assists them to think ahead of the game, be able to plan before moving a piece and predict how the opponent might respond to certain attacks. In chess, players plan before making a move. These plans are usually long-term and are brought closer by steps taken to realize those goals. However, an opponent might play a piece that might make a player change his/her goal altogether and come up with new developments. A player sometimes has to re-evaluate his/her plans and develop new ones in order to reach his/her goal, which is winning the game, checkmating the opponent. This is what children are encouraged to have: goals in life, and the ability to diverge should there be any circumstances forcing them to. Chess also teaches its players to think

abstractly, and weigh their options (Meyers, 2005). There are 16 pieces on the board for each player to move, but not just any piece; the players must first consider the good and the bad that might occur if they move that piece, and then move it after giving it much thought. They do not just move the first piece that they see on the board, or the one closest to them. This teaches them to think even when given real-life scenarios to solve in class. or comprehend in language lessons. In the long run, chess players develop thoughtfulness and patience. Meyers (2005) adds that these skills are not only gained in chess, as there are other ways of teaching them to learners, but the point about chess is that it teaches all of them at once, not just one at a time; and the learning is fun.

Chess players get trained to analyse concretely by evaluating the outcomes of certain actions and sequences. They check if a certain move helps them or puts them in trouble. Decision making is guided by logic, not instinct (Ferguson, 1995). Children get to think abstractly because every now and then in chess games they have to recall moves seen in other contexts, and try to apply them in situations related to where the moves were played.

2.9.1.1 Chess and mathematics

Sala, Foley and Gobet (2017) describe mathematics as a subject needed in order for one to join the fields of science, technology, engineering and mathematics. This means that if a country wants a bright future in technology, its learners must be well equipped mathematically. However, this seems to be a problem in many countries, and chess instruction has been brought into schools to solve it (Sala, Foley and Gobet, 2017). In chess, the board is a square with light- and dark-coloured squares. One end has numbers called a rank and the other has the letters A-H, called files. When chess is played, players have to notate, which means basically writing down both their moves and their opponent's. Chess introduces the coordinate system to the players as they have to state the precise location of each piece moved on the board, stating both its rank and file. "Learning the coordinates for files (eight vertical rows) and ranks (eight horizontal rows) can be a great introduction to learning x, y axis" (Wojcio, 1990, p. 1).

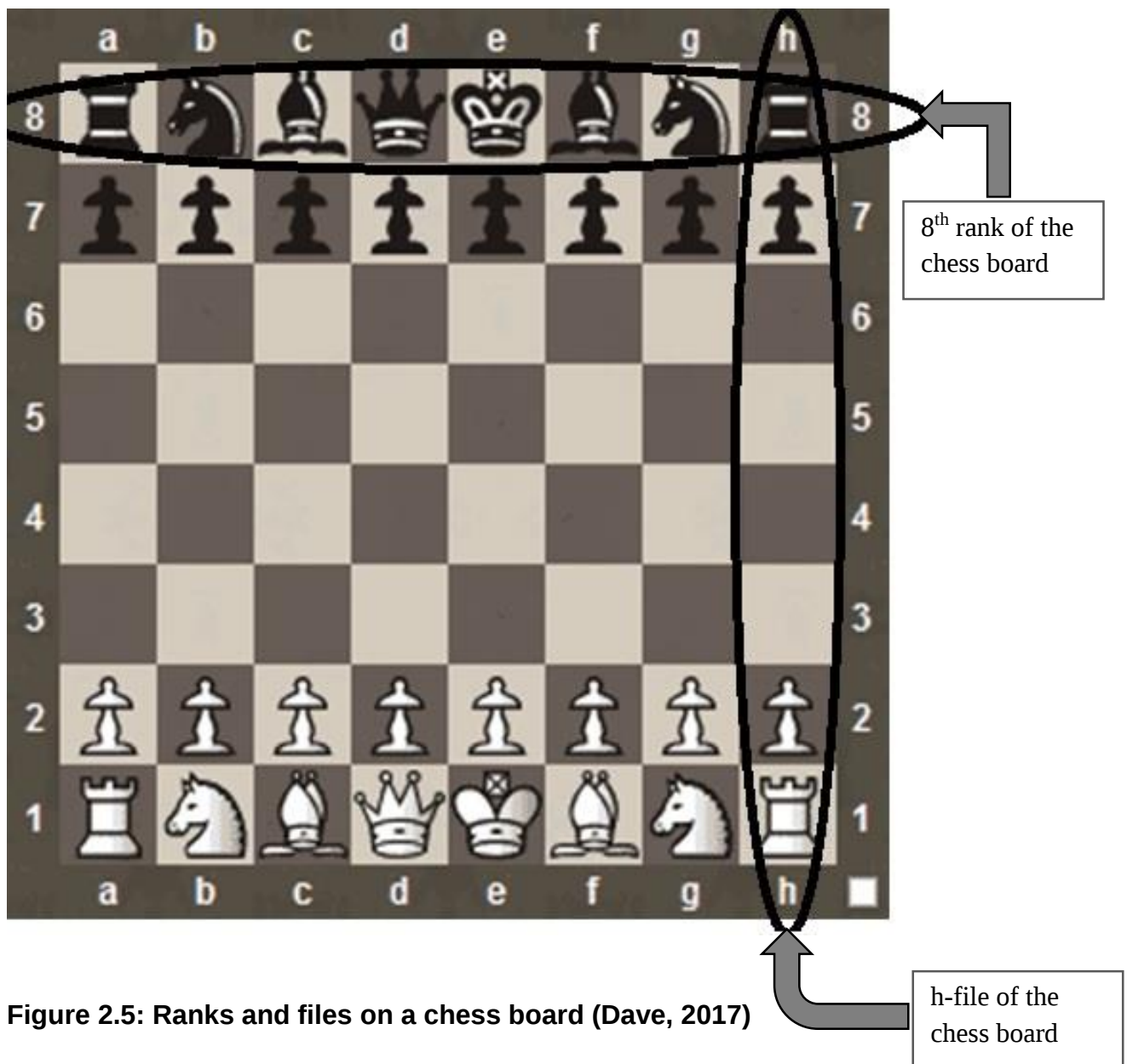


Figure 2.5: Ranks and files on a chess board (Dave, 2017)

Berkman (2004) explains the skills chess teaches in mathematics. In chess, there are times when a player must sacrifice a piece in order to gain advantage in the game; in maths the correlation concept is similar. Chess players have to state the exact position of the pieces on the board.

Table 2.1: Maths and chess relationship (Trinchero and Sala, 2016).

Maths aspects	Chess aspects
Correlation	Deciding the best piece to sacrifice
Coordinate system	Stating the exact piece location
Geometric concepts-rows and columns	Ranks and files
Diagonals	Bishop movement
Orthogonal	Continuous calculation
Attention span	Concentration
Spatial reasoning skills	Capacity to predict and anticipate consequences
Solving problems	Critical thinking

As previously mentioned, chess is often associated with smart people, because this game requires high-order thinking skills (Hong and Bart, 2007). Chess helps with acquiring such skills. Ericsson and Staszewski (1989), Ericsson and Kintsch (1995), Gobet and Simon (1996), and Hong and Bart (2007) agree that these skills can be transferred from one discipline to another, hence some teachers use chess to train players' maths skills. Studies show that there is a correlation between chess and maths as both require high-order thinking skills which one discipline may transfer to the other. A player becomes good in chess owing to his understanding and ability to evaluate the position of his pieces on the board, which needs wisdom and concentration (Bart, 2014). However, players good at maths may not necessarily be good at chess, but good chess players are usually good at maths and in any problem-solving activity (Meyers, 2005). Players have to be able to evaluate all the possible moves and, in the end, choose the best one, which requires recognition of patterns, and critical thinking. Bart (2014) adds that this helps in the chess players' cognitive improvement. Chess can therefore be used to reinforce concentration skills, problem identification, problem-solving, planning strategies, creativity and intelligible thinking

in maths learners (Storey, 2000). A study by Boruch (2011) in 33 schools in Italy consisted of 30 hours of chess instruction with each of the school's Grade 3 classes. Comparing pre- and post-test results showed that maths achievement improved by a third of a standard deviation because of chess instruction. Fifth graders were divided into three groups in a New Brunswick (Canada) study involving 437 learners in the experiment of adding chess to the maths curriculum (Meyers, 2005). The results showed an increase in problem-solving.

2.9.1.2 Chess and literacy

Margulies (n.d.) confirms that learners who play chess improve in reading skills. Dauvergne (2000) states that learning chess has positive effects on both numerical and verbal aptitude. For the learners to know how to play chess, they are coached. Language is involved when the coach and players are communicating and they learn to follow instructions. If players want to be better than average, they read books to improve their game and performance on the board. They read willingly because they want to get knowledge from the books, as they do not from reading an instruction in a classroom. Studies show that chess helps learners improve in literacy, especially in reading. A study Margulies conducted in the Bronx, New York City, which took two years, involved learners in elementary school who played chess as his experimental group. These learners were coached by their teachers and grandmasters from the American Chess Foundation. The learners not only played against each other, but they practised doing quizzes on computers, and used different software to learn how to improve in chess. They also played against distant players using chess software. Participants in this study had to have taken an annual Degree of Reading Power Test (DRP) so that there were results to compare with after the duration of the research. The results of this two-year study revealed that the learners who received chess instruction had gained in the two years of playing chess. The DRP test was written again and the majority of the learners writing the test in their district (District Nine), dropped, but, amazingly, the learners who received chess instruction for these two years performed above the national average (Margulies, n.d.). These results show that chess instruction does indeed improve the performance of learners in reading.

Chess playing requires the same skills and cognition as reading, which is why the learners' reading improved.

2.9.2 Social benefits

To succeed in today's world, people have to use emotional intelligence and not just rely on pure intelligence. Chess, like most sporting codes, teaches players sportsmanship. A player fights so hard in the game to win and not give up. Even if he/she does suffer defeat, he/she has to go record that the point goes to the opponent, and not get angry and leave the playing venue. In chess, players play until the last round without being eliminated. There is always the hope that they will win in the next round, and even if a player does not win all the rounds, but gets comfort, at least he/she obtained a point. Coming together to play chess is fun for many players, and creates a platform for even the shy players to meet and make friends. Before a chess game begins, players shake hands; most friendships in the game begin there. Whether you win or lose against that player, the friendship remains. If you win, you help the player analyse the game, correcting him/her where he/she went wrong, and pointing out what needs to be avoided next time; and if you lose, you become the one receiving advice on the game from your opponent. This builds self-confidence in some players who are reserved, while others improve their behaviour. In some competitions, players compete in teams; they develop team spirit and individual friendships in the process. Meyers (2005) reports that educators in a New York school, Roberto Clemente School, report that incidents taking place at school have decreased by 60 per cent since the learners enrolled in chess. Through chess, players learn to socialize and make many friends. Instead of clashing with each other as in physical games, two minds meet and use logic to plan attacks. Chess gives players a sense of belonging somewhere, especially if they are new to a school or neighbourhood; it helps them find their niche. Children improve their lives through chess; it helps them realize that it does not matter where you come from as long as you have a goal, and work towards reaching it. In the most recent chess movie, *Queen of Katwe*, released in 2017, which is based on a true story, a young girl travels the world and breaks the cycle of poverty at her home through chess.

Players have to manage their feelings in the game; even if they are losing they cannot just leave the game, or push the pieces onto the floor. In this way they learn managing skills in life. They also have to control their impulses. It helps them to be able to see the weak points of their opponent, and therefore capitalize on their opponent's blunders.

2.10 Teachers' views on chess

Teachers play a big role in the learners' acquisition of knowledge, skills and values in the classrooms and it is important to get their views on the good practices to be implemented in the classrooms. Studies have been conducted which allowed teachers to voice out their feelings towards the incorporation of chess into the curriculum. Expectedly, they have stressed that chess has assisted them to improve the performance of their learners. Graham (n.d.) states that teachers in the United States share the slogan by the United States Chess Federation, "Chess Makes Kids Smart" because it has worked wonders in their classrooms. Teachers have stated different advantages they have noticed from the inclusion of chess in the classrooms. A maths teacher from the United States shared his experience of using chess when teaching as having assisted learners improve patience, sharp memory, concentration, problem-solving skills and understanding of behaviours (Graham, n.d.). Graham further shares experiences of teachers who are using chess to teach in Virginia who all agree that chess is the best tool to teach learners problem-solving, logical and precise thinking. Another teacher using chess when teaching in Philadelphia agrees and emphasizes its connection with mathematics (Graham, n.d.). Ferguson (1995) shares the testimonies of different principals who are part of the New York School Chess Program who stress that bringing chess to their schools was the finest thing that had ever happened to their schools. A principal from Bronx gave credit to the intervention of chess as the scores of learners in the school improved (Ferguson, 1995). New York's District 9 teachers state that their learners' increased competence and enhanced ego strength is attributed to their involvement in chess (Byrne, n.d.).

Chess is better learnt in classrooms where learners are allowed to share ideas and are enabled to construct knowledge. Williams (2014) recommends a constructivist classroom as the best for teaching chess because it tends to put more effort in problem-solving. He adds that the skills in chess then become automatic with practice, efficiency and accuracy. While this sounds great on paper, it might come with challenges in South Africa with many learners coming from disadvantaged backgrounds in township and rural schools. However, literature reveals that chess helps with many problem-solving needs for academic achievement. Teachers have felt strongly about the inclusion of chess in the curriculum in the literature found even though it has been with learners from middle and upper class (Williams, 2014). Different strategies have been used by teachers to integrate chess into the curriculum including the use of computers. In Pinellas County, computer programs were designed to assist learners learn chess better, the First Lessons in Chess for the basic instructions like the board, how the different pieces move, notation and basic tactics. The second is Think Like a King which is more detailed as it includes the use of clocks, advanced chess tactics many puzzles for the learners to complete. It has been noticed that whether teachers choose to opt for the use of computers to teach chess or simply use instructional chess in the classroom, they all agree that “Chess Makes Kids Smart” (Graham, n. d.).

2.11 Chess educational research

Research has been conducted around the world on the topic of chess assisting learners improve their academic performance. Meyer (2005) cites several studies proving that scores of chess players in standardized assessments in the United States and Canada had showed that chess assisted in maths and reading. He says that a chess programme in New York where more than 3 000 learners from 100 schools participated revealed higher marks in maths and English for learners involved in chess. More studies conducted in Houston in Texas and Bradford in Pennsylvania show that learners’ critical and creative thinking is improved through playing chess (Meyers, 2005). Another study on chess in America was conducted by Barrett and Fish (2011), who explored the cognitive effect of a chess training programme over a period of 30 weeks within the mathematics spectrum in the United States. The study consisted of

31 participants in two groups, control and experimental. The findings revealed that chess can indeed help players transfer the cognitive skills they learn in the game to mathematics. Elementary learners who were members of the school chess club showed twice the improvement in mathematics and reading than those who did not play chess between Grades 3 and 5 in the Texas Assessment of Academic Skills.

Another study, conducted by Hong and Bart in 2007 in Seoul, Korea, with learners at risk from three primary schools, over a period of three months, with twelve separate lessons of three segments each – reviewing, lecturing and chess playing – showed positive results. None of the learners had ever played chess before. The aim of the study was to examine the cognitive effects of chess instruction on students at risk for academic failure. The study involved 38 learners from the three primary schools, who were divided into control and experimental groups. After receiving chess instruction for three months, 90 minutes each week. the results of the study showed the learners still lacked cognitive skills, but had gained some over the three months' experiment. The results also showed that learners at risk need more time to develop cognitive skills. In China, research was conducted by Dr Yee Wang Fung from 1977 to 1979 on the performance of learners in mathematics and science after receiving chess instruction (Nurse, 1995). Nurse reveals that the results of the study showed a 15 per cent improvement in learners' performance. Kazemi et al. (2012) conducted another study in Asia investigating if playing chess has cognitive effects. This was a big study with 94 children in Grades 5, 8 and 9 in Shanandaj, Iran. The study took six months, with the participants receiving chess instruction. After the experiment, the children who had received chess instruction showed higher scores in metacognitive ability and mathematics tests than the ones who had not.

In Italy, Trincherro (2013) conducted a study examining if the mathematical ability of primary school learners can be affected by chess instruction. 568 primary learners were placed into groups, control and experimental. Each group was further divided into those who wrote pre-tests and those who did not. The experimental groups received chess lessons, while the control groups received regular school lessons. Trincherro (2013) states that the learners placed in the experimental groups scored higher than the ones in the control groups, particularly in maths tests where problem-

solving skills were to be applied. In a study in Germany conducted by Scholz et al. (2008), the effect of chess instruction on mathematics in learners with learning disabilities was examined. There was an experimental group and a control group. The experimental group received chess lessons for a year, learning chess for only an hour weekly, while the control group received mathematics instruction for the same duration. Scholz et al. (2008) concluded that chess might just be a significant tool in teaching learners with disabilities.

Sigirtmac (2012) conducted a study comparing two samples of children at age 6, one which received chess instruction, and the other which did not. The study revealed a substantial difference between the children's understanding of spatial concepts. In a study in Denmark, Grade 1 to Grade 3 classes were selected to participate. From January to October 2013, the learners experienced a change in learning: one weekly standard maths lesson was replaced by a weekly chess lesson. The chess instruction was based on a Danish School Chess Association (*Dansk Skoleskak*) book called *Chess+Math* (Sigirtmac, 2012).

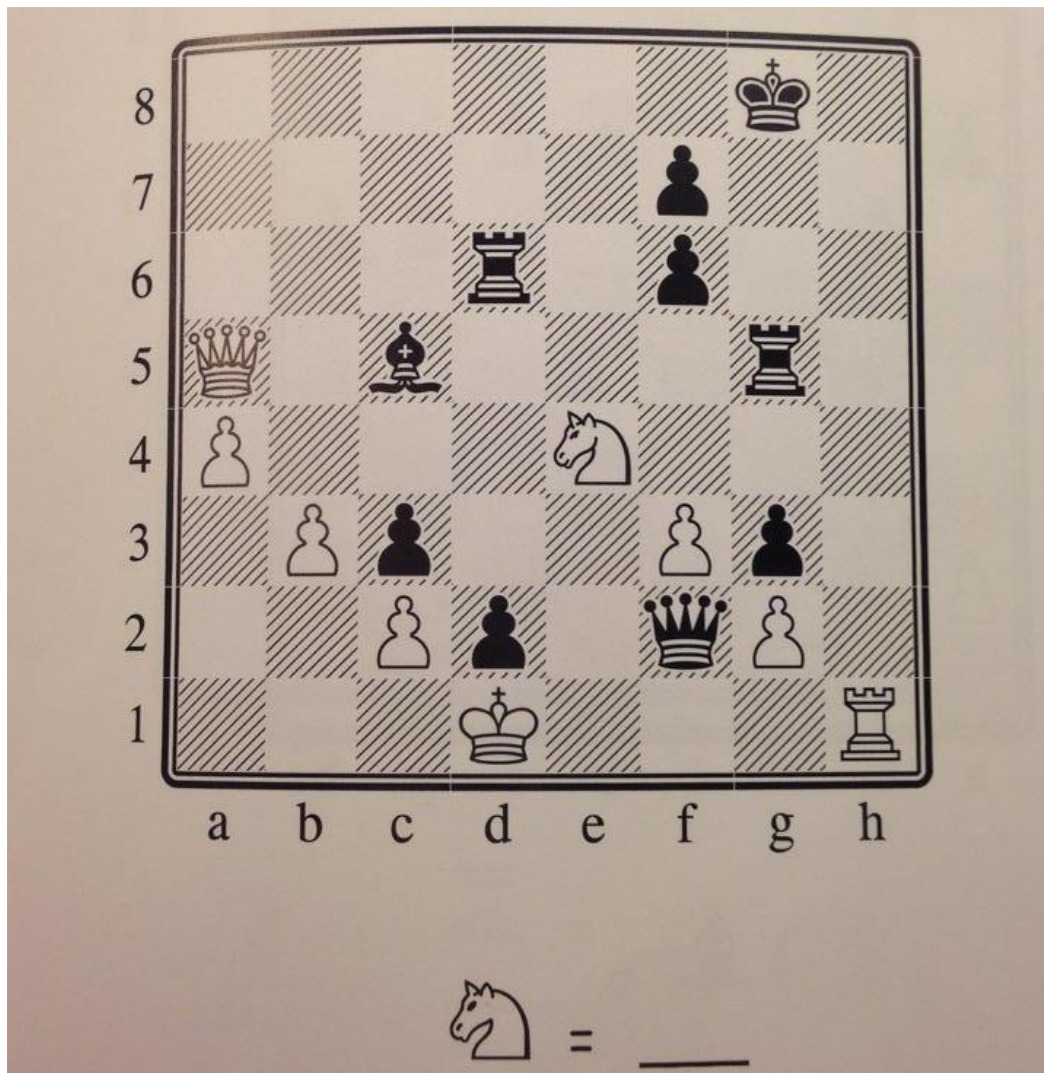


Figure 2.6: A chess exercise from the Danish School Chess Association book (Gumede and Rosholm, 2015).

The learners were asked questions like, how many pieces can the knight capture? They were provided with spaces to write their answers, and given a maths test to test their ability to calculate, recognize patterns and solve problems. The results revealed that chess instruction had led to an improvement in mathematical ability, especially in problem-solving and pattern recognition tasks. Gumede and Rosholm (2015) state that improvement was seen in other learning areas as well.

Studies reviewed all show an improvement of the players after receiving chess instruction, whether for five years, as in the study conducted by Ferguson involving learners in Grades 8 and 9 in New York, or another one which took only twenty days

of chess instruction to students in California, which showed an improvement of 55 per cent in academic performance after receiving the instruction.

A study was conducted by academics from the University of Johannesburg and the University of South Africa on MiniChess and the influence it has on cognitive development and acquiring mathematical knowledge among learners in the Foundation Phase, involving 10 primary schools in South Africa (University of Johannesburg, 2016). The study was carried out over two years with the learners given pre- and post-tests. The results after just one year revealed that learners exposed to chess instruction were calm and took their time thinking about solving the mathematics problems presented to them, while the ones without any chess instruction were quick to respond, and did not perform as well as the ones who were involved in chess (University of Johannesburg, 2016). The learners who played chess were, “more analytical and seemed to engage with the tasks at a relatively higher cognitive level than the learners that were not playing chess” (University of Johannesburg, 2016, p. 8). It can be concluded that chess really does help learners as early as in Grade R to be more engaged in tasks they are given, which results in better performance.

2.12 General attitudes of teachers

The effective implementation of chess in a school curriculum means that teachers have to be involved. They are the vital role players in ensuring that chess integration is a success. Unlike soccer or netball, which are popular among African residents in KwaZulu-Natal, not many people can play chess. Besides, the ability to play and the ability to transfer the skill of playing the game to someone are completely different. Teachers need training to be able to coach learners to play chess in the classroom. Ngware, Abuya, Mutisya and Oketch (2010) affirm that for one to excel in something, quality training is essential. More than training, they need to be motivated and dedicated to teaching chess.

Teachers in historically black schools are usually faced with many problems which make teaching and learning an everyday struggle. Smit (2001) mentions policy change as one of the greatest – having to develop new knowledge, skills and attitudes.

Williams (2014) states that although chess programmes may sound helpful (as they are), they have had little support, mainly from the teachers, and only certain states have supported chess. In America, New York and New Jersey have supported it, and so has Canada. He adds that these days, video games play a major role in chess not gaining much popularity. Dei and Simmons (2009) affirm that teachers sometimes lack faith in integrating programmes; they if they doubt if they would really help learners and their communities. Jerrim et al. (2016) disclose that in the study they did in England in 2016 involving teachers, learners and tutors; of all the participants involved, teachers were the ones who were uncertain about the success of the programme, especially in delivering positive results in the end. Their project was to help improve mathematics attainment in five years by replacing either music or physical education with chess. When the teachers realized that chess had actually improved the learners' thinking skills, confidence, ability to cope with losing, concentration and ability to play chess they became positive about the project and the impact of chess on learners.

If teachers are to help in making changes in the curriculum so that learners find it easy to solve mathematical problems or read fluently through their involvement in chess, they themselves have to learn to play chess and be good at it. Bitner and Bitner (2002) state that change can be frightening and threatening, and some teachers might avoid it. They suggest that teachers must be well trained and provided with sufficient knowledge of the basics of chess so that they can understand how chess can be used to yield good results from the learners.

2.13 Conclusion

The literature reviewed shows that chess might just be the solution to improving the academic problems faced by schools, especially in deep rural districts. It can help learners cope with an ever-changing world which requires creativity and critical thinking. The abundant research conducted on the game of chess in education, which all shows positive results, is proof that this can contribute towards changing the way both teachers and learners think. The spread of chess throughout the world, in libraries and schools, shows that this is not just a game, but an academic adventure. There is no other sporting code found in libraries. The game of chess tackles only the mind,

which allows both boys and girls to play, whether able or disabled, gifted or average, wealthy or needy; all can enjoy this game.

With the various positions encountered in just a single game, players get to stimulate their minds thinking about the best move, and in the process learning to focus, solve problems, think abstractly, analyse, calculate and basically have fun playing chess. Chess has long been played, but it was only recognized officially as a sport by the International Olympic Committee in June 1992, and it has more than six million registered players (Dauvergne, 2000).

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

This chapter provides insight into the research design and methodology of the study. It discusses the research methods that were used in gathering and analysing the data to answer the research questions outlined in the first chapter. The research questions emanated from the problem statement, as discussed in Chapter 1.

3.2 Research design

The researcher used a qualitative research design in conducting the study because it elicits the opinions and motivations of the participants. According to Maree (2007), qualitative research is “an inquiry process of understanding where a researcher develops a complex, holistic picture, analyses words, and reports detailed views of informants and conducts the study in a natural setting” (p. 51).

A qualitative research design was chosen for this study because it focuses on people and how they interact, their relationships and intentions. Ethnographic methodology was used in this study as it focuses on the perceptions of the stakeholders involved in the Tsogo Sun Moves for Life’s chess incorporation in the curriculum. Reeves, Kuper and Hodges (2008) define an ethnographic study as the one concerned with social interactions, behaviours and insights within groups, teams, organisations and communities. The researcher found it crucial to have an open attitude in allowing information to come from the participants. Giorgi (1997) explains that when a qualitative research design is used, researchers must allow unexpected notions to emerge from those providing data. Trochim (2006) asserts that this design is used to structure a research study, showing all the major parts of the research project. The research design used in this study was to assist in finding information and understanding the experiences of the teachers involved in delivering the curriculum through the assistance of the game of chess. The study sought to identify the role played by chess in helping learners in primary schools improve their academic

performance. Teachers were the right people to give appropriate and reliable information since they are the ones using chess to teach. Maree (2007) explains that qualitative research helps in getting a deeper insight into social actions that depend on people's interpretation, understanding and appreciation. In this study, teachers from sampled schools shared their experiences on how chess assists or hinders the successful implementing of the curriculum. The researcher chose this type of design so that she could gain insights into people which would lead in the end to reliable findings. The qualitative design helped the researcher gain understanding of the teachers' perspectives on chess implementation in the classroom. This design allowed the teachers to express themselves freely, and share their views and experiences about the incorporation of chess into their school curriculum. This research design enabled the researcher to get information in the natural setting of the respondents, which ensured even better results, and allowed her to reach a deeper understanding of the chess programme herself, which enabled her to make recommendations.

3.3 Research paradigm

Taber (2013) views a paradigm as key in social science research, giving it its meaning. This study took an interpretivist paradigm because of its qualitative design, which is exploratory. The researcher's ontological and epistemological view is that reality is constructed through communication with people and that knowledge is subjective to the person's standing and beliefs (Henning et al, 2004). In the context of this study, learners interact with teachers and fellow learners in order to construct knowledge through sharing of ideas. Several researchers point out that qualitative researchers largely use an interpretative paradigm because of its way of portraying the world as socially constructing the reality (Willis, 2007; Nind and Todd, 2011). Ritchie, Lewis, Nichols and Ormston (2013) describe a paradigm as having theoretical views and technical methods which are embedded in a specific view of the world. This study is aimed at understanding how the participants view social reality by investigating their experiences and perceptions. The participants explained how they have experienced the game of chess being incorporated into the curriculum in their Foundation Phase classrooms. They explained the social reality of their experiences of chess as teachers. These context-bound perspectives of participants helped in broadening the

researcher's understanding about the social construction of this world (Ritchie et al., 2013).

3.4 Research methodology

To gather data for this research, various sources of information believed to give reliable results were used. This section outlines the sampling procedure and sample, data collection methods and instruments, data analysis and ethical procedures.

3.4.1 Sampling procedure and sample

This research was conducted in King Cetshwayo District, one of twelve education districts in the province of KwaZulu-Natal. Only schools in the Tsogo Sun Moves for Life programme were sampled because it is the only programme in the country known to incorporate chess into the curriculum. Moves for Life was introduced in only two districts, King Cetshwayo and Zululand, in KwaZulu-Natal, but is also used in Gauteng province. The researcher chose King Cetshwayo District as the study area for four reasons. Firstly, she found no literature on the programme's implementation in KwaZulu-Natal yet the programme has been operative in this district for approximately ten years. The programme's implementation in Zululand District was discontinued owing to the shortage of funds from the mine which was sponsoring it. Secondly, chess is known to yield good results in schools, but the researcher, a teacher herself, observed some schools in this programme not using the chess material provided to them, which aroused questions on the programme as a whole. Thirdly, this is the district where the researcher lives, which made it convenient for her to do her research nearby as she would save expense. Lastly, King Cetshwayo District consists of rural, semi-urban and urban areas, unlike Gauteng, the only other province where this programme is implemented, which is predominantly urban. Zululand District, however, is predominantly rural. The researcher hoped for balanced results in a study conducted in a place of varied socio-economic status giving a true reflection of the programme's implementation in different areas facing different challenges.

This research's focus was on gaining insight into the incorporation of chess into the curriculum. The best people to assist in such a study were the teachers working as Tsogo Sun Moves for Life facilitators under the Tsogo Sun Moves for Life programme. Onwuegbuzie and Leech (2007) stress that the sample selection must be based on the experiences of the people who will furnish the study with rich and accurate information. In King Cetshwayo District the researcher used purposeful sampling to select participants that she believed would provide relevant information because of their expertise. According to McMillan and Schumacher (2006), purposeful sampling is appropriate if one wants to understand a topic that can be generalized, as is the case with this one.

The study had 16 participants consisting of 14 teachers who acted as facilitators of the programme in their schools, a Moves for Life coordinator, and a King Cetshwayo District Official who worked as a curriculum specialist. The District Official was the only one from the district office who had information on this programme, and the coordinator selected was the senior one in this district. The sampled schools were found in King Cetshwayo District; a district with 675 schools, 471 of which were primary schools and 204 high schools. Out of the 471 primary schools, only 20 were in the Moves for Life programme. King Cetshwayo District has four Circuit Management Centres (CMC), but the 20 schools were found in only three circuits, namely: Imfolozi, Nkandla and uMhlathuze. These schools are not evenly distributed in different circuits within the CMCs, but are concentrated in one circuit in both uMhlathuze and Imfolozi. In Nkandla this programme is in two out of five circuits in the CMC. In Imfolozi CMC, schools with the programme are in Richards Bay Circuit (a sample of 15 primary schools), and the uMhlathuze CMC schools are found in Esikhaleni Circuit (a sample of 20 primary schools). In Nkandla CMC, schools in the Moves for Life programme are found in Ithala Circuit (a sample of 23 primary schools) and Chwezi Circuit (12 primary schools). The 20 schools in the programme were identified in 2009 by the then BHP Billiton, which is now called South 32. Selected schools were already working with South 32; these were schools that this industry was already funding as a way of giving back to the communities.

Both Imfolozi and uMhlathuze CMCs have five schools per CMC in this programme, and the Nkandla CMC has 10 schools. The researcher deemed it necessary to have the same number of sampled schools in each CMC to ensure that the results found were accurate. To ensure this, only five schools were sampled in the Nkandla CMC. The area currently has two coordinators working for Moves for Life, each with one having five schools. The researcher chose the five sampled schools in the Nkandla CMC that were the closest to town, and under one coordinator. Out of a population of 20 Tsogo Sun Moves for life facilitators, 14 were sampled to be part of the study; unfortunately, one school from Imfolozi asked to be left out of the study, leaving only four schools taking part from that CMC, which resulted in a total of 14 schools being sampled from three CMCs, with five schools from the uMhlathuze and Nkandla CMCs, and four from the Imfolozi CMC.

In each of the 15 sampled schools only the project teacher/facilitator was selected to participate in the study. The facilitators chosen for the study were the ones who worked together with the Moves for Life coordinators to ensure that chess was implemented according to the Moves for Life instructions.

Table 3.1 Sampled Participants

Participant	Age (years)	Experience (years)	Gender	Grade	School	CMC
A	34	10	F	3	N1	Nkandla
B	45	12	F	2	N2	Nkandla
C	43	10	F	3	N3	Nkandla
D	53	29	F	3	N4	Nkandla
E	48	18	F	1	N5	Nkandla
F	50	28	F	3	M1	Imfolozi
G	48	23	F	3	M2	Imfolozi
H	48	28	F	2	M3	Imfolozi
I	54	29	F	1	M4	Imfolozi
J	35	07	F	1	U1	UMhlathuze
K	38	21	M	3	U2	UMhlathuze
L	60	31	F	1	U3	UMhlathuze
M	59	31	F	3	U4	UMhlathuze
N	40	23	F	3	U5	UMhlathuze
Coordinator	48	09	F	—	—	Moves for Life
Official	59	30	M	—	—	King Cetshwayo

3.4.2 Data collection methods, instruments and procedures

There are many methods researchers use when collecting information from participants, and it is very important that the researcher chooses a method which will show the best results. However, the researcher cannot use any method she sees fit; the research itself guides the researcher in choosing the correct data collection method. Efron and Ravid (2013) affirm that “the selection of data collection tools and strategies derives from the nature of the research questions” (p. 85). In this study, the researcher used instruments appropriate for collecting data for qualitative design, namely, interviews, observation and documents. The variety of data collection methods allowed the researcher to triangulate the information collected, and ensure that it was trustworthy. Efron and Ravid (2013) emphasize that data collection instruments must be credible, trustworthy, reliable and applicable. The aim of the research was to determine if chess can be successfully incorporated into the curriculum in King Cetshwayo District primary schools. These instruments helped in determining whether chess can indeed be a tool to be used at King Cetshwayo District primary schools to improve the performance of learners, especially in literacy and numeracy. The study’s problem required responses that were subjective and focused on participants’ viewpoints; and thus a qualitative enquiry method was used.

3.4.2.1 Interviews

Interviews are a way of gathering data orally where there is direct interaction between a researcher and a participant (McMillan, 2012). Maree (2012) makes the obvious point that this data collection method involves the interviewer asking the respondent questions, and describes it as a “two-way conversation” (p. 87). Interviews are vital in collecting data in qualitative research because they allow researchers to attain data through conversations with the participants sampled to provide data (Vos Strydom, Fouché and Delport, 2011; Maree, 2012; and McMillan, 2012). Maree (2012) states that interviews, if done correctly, can provide valuable information that no other data collecting method can provide; and Vos et al. (2011) avow that interviews as research collection instruments help in determining the participant’s perceptions, opinions and reactions to findings.

The researcher chose this method in particular because it allows for probing to ensure that the researcher gets rich information. This data collection method brings valuable information to the study since it is able to get what cannot be observed by the researcher.

The researcher had one-on-one interviews with all 16 participants sampled for the study. These allowed for both her and the participants to discuss the participants' views on chess in their schools. Through the interviews, participants were able to voice their opinions through interviews. This data collection method worked best for the researcher as she was able to capture not only the spoken responses from the interviewees, but also the gestures accompanying their responses to the questions they were asked. The in-depth interviews were conducted individually to allow interviewees to give their true thoughts on the questions asked, and not be influenced by other respondents' answers, which contributed to the quality of information collected. Palmerino (2006) confirms that in-depth interviews help in enriching a study with a rich database, and captures relevant and salient qualitative information from the respondents

As noted above, the interviews assisted the researcher in capturing even the non-verbal messages conveyed by the interviewees. She noticed how participants responded to questions verbally and non-verbally. When the interviewees were asked some of the questions they frowned and showed discomfort, which indicated that they were either not familiar with what was asked or they just did not approve of it. With other questions, interviewees seemed enthusiastic, which meant that they were familiar with what was asked, and liked how it was being handled. One-on-one interviews also assisted in ensuring that most of the information gathered was correct since interviewees could not lie about some of the data to be gathered from them, like their race, gender or age. The interviewer also wanted to bring up new issues as they came up during the interviews. She asked the respondents questions with the aim of getting more than just information on the incorporation of chess into the curriculum, but to have their individual perspectives and insights on the programme.

The researcher refrained from overstructuring her interviews in accordance with Maree's warning (2007) that overstructured interviews prevent probing, which the researcher deemed important in this study. She opted for semi-structured interviews because they allowed for questions to elicit a deeper understanding of the interviewees' responses. The researcher also deemed flexibility important should she discover a need to remove or add more questions to the schedule to ensure that the structure of the interviews did not prevent her receiving credible results in the end.

Interview guides/schedules (attached as Appendix H) were used during the interviews. The schedules ensured that all the interviewees were asked the same questions in the same order. The Moves for Life school facilitators were asked the same questions, the Moves for Life coordinator had her own set of questions and the District Official was asked different questions. The change in the questions was due to the nature of the participants' work and their role in the incorporation of chess in schools' curricula. A tape recorder assisted the researcher to record the interviews so that they could be used when analysing the data at a later stage.

(a) Teachers' (facilitators) interviews

The 14 interviews with the teachers who are facilitators of the Moves for Life programme in their schools were guided so as not to use too much of the respondents' time. They were Foundation Phase teachers, and had to be in their classes with the learners all the time. The interviewees shared their experiences through answering the open-ended questions asked by the researcher, who was clear on the topic and made sure to guide the interviews to receive precise information.

(b) Coordinator's interview

The only Tsogo Sun Moves for Life coordinator in King Cetshwayo District, serving the Nkandla and Richards Bay areas, was interviewed individually. The coordinator is the one leading and developing this programme in those areas, ensuring that the teachers are trained to incorporate chess into the curriculum, and are implementing this programme as intended by Tsogo Sun Moves for Life.

(c) District Official's Interview

The researcher conducted an interview with a King Cetshwayo Education District Official from the Curriculum Section. Only one official was said to have information regarding the Tsogo Sun Moves for Life chess programme in the district, as each district employee deals with a different type of programme. Before programmes go to schools in this district, approval must be received from the district office, and it is in this office where applications for programmes by different stakeholders are reviewed. The District Official ensures that programmes approved to be implemented in schools do not interfere with what the Department of Basic Education has put in place. The programmes should complement the Department's school curriculum. The interview was conducted in the official's office to investigate the programme's role in improving the learners' results in numeracy and literacy.

3.4.2.2 Observation

The researcher also collected data through observation as a valuable addition to the information given by participants. Observation refers to "looking at a setting purposely" (Efron and Ravid, 2013, p. 86). Maree (2007) comments that observation is a systematic process of recording behavioural patterns, objects and occurrences without questioning or communicating with the participants. The research was conducted in a natural setting, which allowed the researcher to understand the participants' actions complementing the information provided. Observation was used in this study to validate what was stated by the participants in the interviews about the practice of chess as part of the curriculum in schools. Data triangulation was used to ensure the validity of the information gathered (Cohen, Manion and Morrison, 2007). This enabled the researcher to better understand how the teachers perceive chess as a teaching tool in their classrooms, and what the different contexts are where this programme is being implemented.

Naturalistic observation was used in this study to allow the researcher to generate new ideas while observing without communicating with the participants. She had an observation schedule (attached as Appendix G) which served as a guide on what must

not be missed in the observation, but other recorded data emerged from the site as the focus was on the behaviour of the participants as they shared their experiences. The researcher also observed the teachers' classrooms to see any evidence of chess instruction, as Montessori emphasized that in children's classrooms there must be study materials stuck on the walls. The researcher observed in the classrooms how the teachers incorporate chess in their subjects, and the feelings of the learners towards this incorporation. Through observation the researcher was able to observe and feel the classroom atmosphere where chess instruction was being given, and observe the attitude of the learners and other teachers towards the use of chess in the classroom. The facilitators were observed to see if they did incorporate chess when they taught the four Foundation Phase subjects, namely isiZulu, English, life skills and mathematics. It was important that the researcher used observation as a data collection method in this study to ensure that the participants did not give false information. If they attempted to do that, their classroom setting would verify if they provided authentic data, which is why the researcher chose to conduct the study in the participants' setting. She watched and recorded experiences without herself being part of the activity, which Maree (2012) calls being a complete observer. McMillan (2012) states that if one is to study the perceptions of the teachers, the researcher's role must be that of a complete observer.

The researcher observed all the sampled participants as well as the groups they work with the school. She also observed the feelings of other teachers involved in teaching chess in the sampled schools, but who were not Moves for Life facilitators. Observing the participants' natural behaviour helped her understand exactly the effect of incorporating chess in the curriculum, and not rely only on what participants said.

3.4.2.3 Document analysis

Maree (2007) describes document analysis as using written communications to gather data in research. Efron and Ravid (2013) define artifacts as documents and records that help researchers understand their topics better. Various documents were gathered and evaluated from different schools, Moves for Life and King Cetshwayo Education District. Corbin and Strauss (2008) state that in order for a qualitative

researcher to gain understanding and develop empirical knowledge, she must examine and interpret data from documents. Documents were collected and analysed with the aim of getting information about chess in King Cetshwayo Education District primary schools. Both formal and informal documents from schools and Moves for Life which show the records of the programme in the district were of great assistance in the study. The documents were used to verify the data gathered from interviews and observations. Examples of the documents received are as follows:

- Moves for Life chess workbooks
- Department of Basic Education workbooks
- Magazine articles with chess players
- Lesson plans
- School timetables

The above documents were used to verify whether chess was incorporated in the teachers' and learners' activities, as lesson plans would show whether chess was scheduled in the classrooms, as would the timetables. The documents would also show whether the Moves for Life workbooks were used, and how they were aligned with the Departmental workbooks aimed at equipping Foundation Phase learners with 21st century skills. Articles published in newspapers helped in tracing the success of some chess players in the schools' Moves for Life programme. The researcher ascertained that the data received were authentic, because as Maree (2007) warns, not all data sources are accurate. The documents helped provide valuable information to add to what had been gathered from interviews and observations. Bowen (2009) affirms that qualitative data must be gathered from at least two sources of information to avoid bias.

3.4.3 Data analysis

In qualitative research, data analysis refers to a technique to scrutinize groups of data collected, or merge the evidence gathered to address the research question (Rammapudi, 2010). The aim of data analysis in a qualitative inquiry is to bring meaning to the mass of data collected by considering frequent themes, categories and patterns (Efron and Ravid, 2013, p. 166). The researcher aimed at explaining and

interpreting the data collected in order to address the research questions. Data were analysed as they were collected, and the researcher relied on emerging preliminary information to assist, shape and improve the inquiry throughout the collection of data. This helped the researcher greatly in understanding the topic, and thus adding more ways of probing the participants.

To organise the data gathered, the researcher used thematic data analysis. Responses given by respondents conveying similar meanings were grouped into themes. Artifacts, interviews and observation schedules with the data collected were used in the analysis. Although there is no universal rule for analysing qualitative data which is problematic (McMillan, 2013), the researcher still deemed it important that she employed the best ways for enhancing the trustworthiness of the analysis. She began by organizing the data, summarizing it as codes, and then interpreting it. She went through the data gathered in the form of text and identified themes using Microsoft Word, writing comments in a column on the right-hand side. She then made codes. This method of data collection made it easy for the researcher to engage with it. She read the transcripts from the interviews, looking specifically for phrases that seemed to appear the most, and created codes for these topics. It is these codes that she used when creating categories to organize the data before interpreting them so that she could easily retrieve them for analysis. McMillan (2013) stresses the importance of researchers finding a “systematic process in the development of the codes” (p. 298). The researcher classified the data, and indexed them to make them easy to review and retrieve. She applied codes to the data gathered from the interviews. This was done by putting a code to each key point in the interviews. Codes were kept simple and short; and then grouped according to their similarities. Coding as defined by Cohen, Manion and Morrison (2007) is the process of finding patterns and meaning in data collected using interviews. For efficient retrieval of data, the researcher used a data file organiser (Efron and Ravid, 2013), and she developed a conceptual category scheme to code the data from the interviews.

The researcher then went on summarizing the data she had organized into smaller units or themes. She capture the essence of the information in different responses and summarized in a few sentences, thus forming a category. She then gathered the

information different categories of the main research question. From all the data gathered, the researcher identified what was meaningful and important data for the study and separated it from the rest of the data. Corbin and Strauss (2008) advise that researchers should part information that is pertinent from that which is not. The researcher used an inductive approach to qualitative research design in this study to formulate the study's themes from the data. She analysed the data using different collecting tools separately to be sure of producing credible results. The researcher then consolidated the results from all the instruments to make them easy for the readers. She also used an emergent strategy to ensure that the analysis followed the data rather than the predetermined themes.

3.5 Ethical considerations

In the research, the researcher obeyed ethical criteria. Mauthner and Daucet (2003) describe ethics as a phenomenon concerning the morality of human conduct. McMillan (2012) suggests that the institutional review board must be consulted to approve a research study if one is to interact with humans in the research. In the light of that, the researcher applied for an ethical clearance from the University of Zululand Research Ethics Committee (UZREC) so that she would adhere to its ethical guidelines for conducting research. UZREC granted her permission to conduct her study. The researcher then applied for permission to conduct the study in premises under their jurisdiction was then sent to the KwaZulu-Natal Department of Education. Permission was granted in writing, and it is attached as Appendix E. The researcher also requested permission to conduct the study from the local management offices of the Department of Basic Education, the King Cetshwayo Education District, the Imfolozi Circuit Management Centre, the uMhlathuze Circuit Management Centre, the Nkandla Circuit Management Centre, and the principals of the sampled schools. Letters were written and taken to these management places. Permission was granted except from one school from the Imfolozi Circuit Management Centre, which resulted in 16 participants (one King Cetshwayo District Official, one Moves for Life coordinator, and 14 teachers who serve as Moves for Life facilitators in their schools), not the anticipated 17. The researcher also asked for permission from the Tsogo Sun Moves

for Life national office to interview its coordinators and teachers about its programme in schools. The researcher received approval (see Appendix F).

The researcher requested permission to interview respondents of the sampled schools from both the Department of Basic Education and Tsogo Sun Moves for Life. All the sampled schools' principals were given letters requesting permission to conduct a study in their schools and were shown the approval from Tsogo Sun Moves for Life and the Department of Basic Education from the provincial level to the circuit level. The letters appear as Appendices D and E.

Participants in the study were also requested to take part in the study voluntarily; signing a consent form was their way of showing their agreement. A brief document with details of the researcher and the research itself was written and presented to the participants to give them some insight into the research beforehand. Flick (2006) advises researchers that participants should have a chance to withdraw from the research if they do not know what it is about; the researcher ensured that the participants were fully aware of their rights, and that they could withdraw from the study at any time if they felt uncomfortable, which did not happen. The participants were assured of confidentiality, which made them feel free to share information without fear. They were also told about their right not to respond to questions which they felt uncomfortable with. Pseudonyms were used instead of the participants' real names to ensure confidentiality; their research names were given alphabetically according to the location of their schools in the Circuit Management Centre which were named N1-Nkandla 1, M1-Imfolozi 1 and U1-UMhlathuze 1. Confidentiality of both the schools and participants was ensured as the schools were named after the letters of the alphabet. It was important for the researcher to ensure discretion to allow the participants to participate in the research freely and report honestly without any fear of their identities being disclosed. According to Leedy and Ormrod (2012), there are four categories of ethical issues that researchers must note, namely: informed consent, protection from harm, right of privacy and honesty with other professionals.

3.6 Credibility and trustworthiness

The study ensured trustworthiness of the results by using multiple data collection methods, interviews, observations and document analysis. Efron and Ravid (2013) define validity in research as “the degree to which the study, the data collection tools, and the interpretation of data accurately represent the issue being investigated” (p. 70). The researcher ensured that the data recorded reflected the participants’ views on incorporating chess into the curriculum. Anderson, Herr and Nihlen (1994), as cited in McMillan (2013), suggest five basic criteria in ensuring validity in a study, namely: democratic validity, outcome validity, process validity, catalytic validity and dialogic validity. All five criteria were considered in this study to ensure credible results. The usage of more than one group of data sources was to ensure that democratic validity was achieved.

The researcher gathered multiple perspectives on the data from the teachers working as Tsogo Sun Moves for Life facilitators, the District Official and the Moves for Life coordinator. The researcher not only varied the perspectives, but varied even the data sources. She used data triangulation as she deemed it important not to rely on only one source of data to ensure validity of the data gathered. McMillan (2013) describes triangulation as using different sources addressing the same question. Interviews, observations and documents allowed the researcher to triangulate the data gathered, thus establishing the credibility of her interpretations. In ensuring the credibility of the data gathered, the researcher summarized her notes at the end of the interviews and requested the interviewees to check whether they had been captured accurately. Creswell (2009) suggests that qualitative researchers allow participants to review the data collected, and calls this way of validating, member checking. The researcher made amendments to some notes, but in the end, the researcher was left with knowing the actual views of the participants.

3.7 Conclusion

This chapter provided a discussion on the researcher’s choice of methodology believed to produce credible results. The following chapter (Chapter 4) focuses on the

findings of the collected data using the above-mentioned data-gathering instruments. The chapter discusses the perspectives of stakeholders about the impact of incorporating chess into the curriculum practice in King Cetshwayo District primary schools.

CHAPTER 4

RESEARCH FINDINGS

4.1 Introduction

The previous chapter gave details on the methodology used in gathering and analysing data as per the qualitative research approach. This chapter aims at unpacking the responses of the participants about their experiences of incorporating chess in the curriculum in their specific classrooms in King Cetshwayo District primary schools. Each educator's perspective on incorporating chess is laid out in this chapter, as well as insights from the Tsogo Sun Moves for Life Coordinator and the King Cetshwayo District's curriculum specialist. The data to be presented were collected using interviews, observation and document analysis, and analysed through interpretation of the responses gathered. The data presented in this chapter are in accordance with the research question of this study outlined in the first chapter, which is: what are the perspectives of stakeholders about the impact of incorporating chess into the curriculum practice in King Cetshwayo District primary schools? It is through the data presented below that the researcher attempted to provide a view on the participants involved by giving answers to the research question. This chapter provides a logical synthesis of the different ways that the teachers use in incorporating chess into the curriculum, and the viewpoints of the Provincial Education Department's District Official, and the Tsogo Sun Moves for Life coordinator.

The aim of the study was to assess the impact that the chess instruction had when it was incorporated into the curriculum in King Cetshwayo District primary schools. The study sought to answer the following research questions:

- What role does chess play in enhancing learning in primary schools?
- What are the effects of chess instruction on the development of learners' cognitive abilities?
- What strategies can be employed to incorporate chess into the teaching and learning process in schools?
- What are the perceptions of teachers on the incorporation of chess in the curriculum?

- Does the integration of chess into the curriculum improve learners' academic performance?

4.2 Biographical profile of the participants

Participants in this study were asked to provide biographical information which included their gender, age, race, post level, and the grades and subjects they teach. They were also asked to state if they were chess players themselves, and if they were, their highest level of chess tournament. These questions were asked so as to get the meaning of the results of the study. The demographic data collected also helped in making sound recommendations at the end of the study. Only one of the facilitators was a male, and the other 13 teachers were female. The Tsogo Sun Moves for Life Coordinator was a female and the King Cetshwayo District Official was a male, which made a total of 14 females and two males in the sampled population. The ages of the majority of the participants revealed that they were not left with many years in the field, as they were above the age of forty-five. Fourteen participants were Africans, and the other two were Asians.

Table 4.1: Chess experience of the participants

Participant	Age (years)	Chess Experience Before M4L	Gender	School	Circuit Management Centre
A	50	None	F	N1	Nkandla
B	45	None	F	N2	Nkandla
C	43	None	F	N3	Nkandla
D	34	Basic	F	N4	Nkandla
E	48	None	F	N5	Nkandla
F	50	None	F	M1	Imfolozi
G	48	None	F	M2	Imfolozi
H	48	None	F	M3	Imfolozi
I	54	None	F	M4	Imfolozi
J	35	None	F	U1	UMhlathuze
K	38	Basic	M	U2	UMhlathuze
L	60	None	F	U3	UMhlathuze
M	59	None	F	U4	UMhlathuze
N	40	None	F	U5	UMhlathuze
Coordinator	48		F	—	Moves for Life
Official	59		M	—	King Cetshwayo

4.3 Chess background of the participants

The participants in this study were an official from the King Cetshwayo District office, a Tsogo Sun Moves for Life coordinator, and teachers who were facilitators of the Tsogo Sun Moves for Life chess programme in their schools. All the teachers were teaching in the Foundation Phase because the focus of this study was on the incorporation of chess into the curriculum, and it is currently incorporated only into the Foundation Phase. Teachers in the Foundation Phase teach all four subjects offered there, which are home language (isiZulu), additional language (English), mathematics and life skills, unless otherwise arranged by the school. Eight of the sampled participants taught in Grade 3, only two of them taught Grade 2, and four taught Grade 1.

The participants admitted that they had not participated in a rated chess tournament in their lives, but some had played chess, just not competitively. Some of the participants, including the coordinator, were confident that they knew how to play chess, while others said they knew how the pieces moved, but they had never played a long game of chess before; the little information they had was what they had learnt from the Tsogo Sun Moves for Life coordinator during workshops that were normally held for the teachers who were part of the programme. Some participants admitted that they were blank when it came to playing chess; all they knew were the basics they used with the learners.

4.4 Findings

Data collected from the participants were analysed and below are the findings from the analysis arranged in themes:

4.4.1 Theme 1: Chess enhances education

Enhancing education means improving the quality of education through strengthening the delivery of the curriculum. Improving education takes more than delivering the content in a way that is understandable to the learners; it means equipping them with

skills that are essential and relevant to the time. The Tsogo Sun Moves for Life coordinator who monitors the teachers incorporating chess into their teaching described chess as a tool assisting in enhancing education in primary schools by helping both teachers and learners; adding that it is an element brought to support teachers in their curriculum delivery in the classrooms. She said: *“The aim is to bring the skills that come with chess to the learners so that they can pass at school and it interests children, without any age limitations. What’s good about it is that it’s something you can learn.”*

Some of the participants stated that chess has helped them with getting the learners involved in learning, making them active participants in the classroom. Among other benefits, they said chess has helped them with the improved behaviour and confidence of the learners in the classroom. Participant H explained how chess has worked for her learners both inside and outside the classroom:

“Chess often serves as a bridge, bringing together children of different ages, races and genders in an activity they can all enjoy. Chess helps build individual friendships and also school spirit when children compete together as teams against other schools. Chess also teaches children about sportsmanship – how to win graciously and not give up when encountering defeat. For children with adjustment issues, there are many examples where chess has led to increased motivation, improved behaviour, better self-image, and even improved attendance. Chess provides a positive social outlet, a wholesome recreational activity that can be easily learned and enjoyed at any age.”

In support of this view, other participants added that they have noticed a change in their learners' behaviour since the beginning of the year since they have been engaged in chess; they participate more in the classroom. and absent themselves from school less. The participants consider that the more learners are involved in the classroom, the more they will learn, Participant K explained: *“I have noticed that when they are attentive and listening, they do well in that activity because they hear all the instructions when I explain how to do that work.”*

Participant N agreed: *“It goes without saying that if you are attentive when instructions are explained you will obviously learn. Towards the middle of the year, that is when I see change in them; they are more attentive and do well academically compared to when they first came before the chess exposure.”*

The teachers believe that chess not only helps the learners learn better, but it also brings fun into the classroom, and when their learners are happy, they learn better, which ultimately leads to their marks improving as they tend to be present to school often, decreasing the rate of absenteeism.

4.4.1.1 Active participation in the classroom

Teachers in classrooms should always involve all the learners in the classroom as opposed to having only the ones in front participating, while others at the back are not even concentrating on the day's lesson. This is the way that a teacher ensures that learners do indeed understand what is done in the classroom by involving them. As in other districts in KwaZulu-Natal, King Cetshwayo's previously disadvantaged schools have a big enrolment in the classrooms, and this affects the participation as some learners tend to hide. The challenge then falls to the teachers as it becomes hard for them to identify learners who are struggling, because involving all of them in the lesson is a challenge. The participants involved in this study unanimously agreed that using chess in the classroom helps in that it ensures that everyone participates. Chess also helps the teacher by occupying the high flyers with more challenging tasks to engage in while the teacher gives individual attention to those struggling. Participant A stated:

“My learners are still learning how to play chess, but when I mention the word chess they jump for joy, and start making a noise. They leave whatever they are doing, they leave even work unfinished in their exercise books and rush to play chess, and you know how children love to play. I like it because it gets them to listen to me because if they do not I threaten them not to be allowed to play chess again, and when I teach in class, if I have a chess object, be it a board or a piece, I know I have won their attention, and they will participate because they know that we will play afterwards.”

The District Official indicated that it is better if the learners get a good foundation when they are still very young, and that is one of the reasons they were thrilled when the Provincial Office gave Tsogo Sun Moves for Life the go-ahead for the implementation of this programme in King Cetshwayo Education District:

“We felt very lucky when the province told us that there is such a programme of this nature that will be implemented in our district. Even though I cannot play chess myself, I have heard and read that this game helps one greatly in learning, like increasing one’s memory and focus.”

The involvement of learners when teaching has been seen as important by the interviewed participants. As stated in the above comments, learners are always alert when taught through chess. The participants explained that they involved learners so that they become part of the decision making on how to learn certain topics because they give them options. For example, they ask them questions like: “Which task do you want to start with?” The participants said that this approach helps in ensuring that the work they have chosen gets finished instead of them (teachers) imposing everything on the learners. Participant I explained:

“I involve my learners in almost everything in this class. Because we have many activities from textbooks, DBE and chess workbooks, I give them options to choose the activity they want to do. This way I am able to ask them why they did not finish because they chose this particular activity. It means they wanted to do that specific one, so why would they not finish then?”

Participant C echoed the above participant: *“I know that by letting them choose activities from the workbooks, they will be excited and do the work they have chosen themselves. One of the things I like about working with children... if there are options you would feel so happy because you get to choose the one you know better.”*

The participants indicated that they see a need for their learners to not only progress to the next grade, but to understand the content and gain the necessary skills that one learns in chess. It appears that the district office, Tsogo Sun Moves for Life and

teachers hold at heart what is in the best interest of the learners, which is quality education by involving the learners in learning.

4.4.1.2 Fun through chess

Children enjoy playing games, and if they are to learn through playing, they will undoubtedly have fun, which will yield better results. Chess is a game which is a lot of fun when one has learnt how to play it in the classroom, if the teachers are using it correctly. Most participants in the study agreed that incorporating chess draws the attention of the learners and makes them focus on what the teacher is teaching at that particular time. The teachers interviewed explained that because their learners are very young and enjoy playing so much, they have come to like chess, and they do not notice that they are learning. If they see chess, they see fun and playtime. In support of this view, Participant K said:

“I tell my children to take scissors and cut the chess pieces and then stick them on the correct pages; they like doing it if it is the chess pieces, unlike the pictures in the Department of Basic Education workbook. Before, it was a struggle to get all of them to listen to the instructions I give them, but now that I use chess, something they like, they listen to me. They used to sleep a lot in class before, but now I have no problem involving them in lessons as they are usually very cooperative and active in class. I remember I used to tell them that whoever finishes will get to play chess and they would rush to finish; others would not even take the time to think and search for correct answers, they would just rush to finish so they could play chess; that is when I stopped using it as a motivation for finishing work. But I still let them play it in class when they have finished their work.”

When talking about fun in the classroom teaching either numeracy, literacy or life skills through chess to the actual playing of the game; the participants shared the view of the learners having lots of fun from the game as compared to normal learning of the subjects. Participant N said: *“Even the ‘not so gifted’ learners in my class take part when it comes to playing chess. They like it better when we play using the pieces than when we are learning using the workbooks.”*

“Chess involvement in the classroom...brings out the best in the learners; you see the real them when they play, it is like they are outside, they forget that they are still in the classroom,” added Participant E.

The participants described chess as a tool they are using to motivate the learners to finish their work as they know they will play afterwards. They say it is a great way to keep their learners focused and interested in the lesson so that they absorb what you teach them, unlike when they are bored as they tend to sleep and lose interest in learning.

4.4.1.3 Improved concentration

For one to succeed academically, concentration and focus are key. Learners need to focus on what the teacher is teaching to grasp the concepts, but if they are not concentrated on the teacher they will not hear. Good concentration skills help the learners understand; when the teachers are explaining concepts, they are able to link them with their prior knowledge. Concentration problems are bound to exist in the Foundation Phase because the learners are still very young, and their minds are all over the place and they easily get bored. The participants interviewed stated that through chess playing, their learners are able to stay focused for a longer period. They admitted that when they come from Grade R, they are usually very playful and struggle to concentrate in the classroom, and end up causing chaos, disturbing other learners. Participant E explained: *“At the beginning of the year this class was unruly, but now they are better, I see the improvement. They listen better...and they now pay attention when I am teaching.”*

Participant H added: *“They are very young and they will misbehave like all other children, but I do not have many problems with them concentrating when I am teaching. They listen attentively and ask if they do not understand.”*

When the players are involved in long games, they sit quietly and think; they have to concentrate and make a move they think is the best. In that way they are trained to be still for long periods and not make hasty decisions, one of the participants explained.

Participants pointed out that if the learners were taught chess even in Grade R when they begin school, they would be better learners who were disciplined and do well academically because they would learn to focus. They stated that they notice the difference in behaviour between the beginning of the year and the end.

4.4.2 Theme 2: Challenges

The participants explained that even though they have seen the positive impacts of chess in their classrooms, they face numerous challenges which hinder including chess when they are teaching. The majority confessed that growing up they did not play chess, and only came across it now that they are teaching. Apart from this challenge, the participants complained that they are now faced with a lot of work coming mainly from the chess programme workbooks on top of the ones issued by the Department of Basic Education (DBE). The participants also alluded to the challenges they face when teaching their learners using the chess workbook, which is written in a foreign language and has activities too complex to be played by the teachers who are novice chess players.

4.4.2.1 The lack of chess expertise

It is important to have the necessary expertise in something to do it successfully, and to be able to teach a skill, one must have it oneself. The majority of the participants in this study admitted that they do not have a chess background as they had never played it when they were growing up, and only came across it now that they had to teach it to the learners. The teachers using chess when teaching are normal teachers who were already teaching in the Foundation Phase in the chosen schools when the programme of chess was introduced; They teachers were workshopped constantly on how to incorporate chess in their classrooms. Participant F stated: *“I am thankful to the coordinator for teaching me chess and how to teach it to the learners. However, there is still a lot that I do not know regarding this game as I only know how the pieces move. Some of my learners know how to play chess better than me. Good thing we are no longer coaching them how to play chess, but we are teaching it through the subjects.”* Participant L shared this view:

"I had no experience of chess and only came across it here. Even in my previous school, there was no chess. I am still learning it, but it is a complicated game, I doubt I will ever be good at it. My learners are trying, but I think if I was a good player myself, they would also be good. But as we are incorporating it in the curriculum we do not need to know it that much as there are workbooks helping us on what to explain to the learners, and besides, the coordinator always supports us whenever we give her a shout."

While others lack the background understanding of chess like Participant L above; there are participants who have been exposed to chess as a game, but not to the level of being able to compete, hence they do not even have chess ratings themselves. Participant C explained:

"I played chess way back in the early 2000s in high school, but it was not serious, and we never went to any tournament. The little experience of chess that I have, I think it has helped me a lot. When the coordinator workshopped us, I could remember some of the things that the coach taught us in chess. Now I am teaching it to the learners. Luckily there is a community guy who comes to the school to coach our players and takes them to tournaments. There are medals and certificates that they have received from tournaments, but they keep them at home because they are theirs, not for the school."

Participant H also recounted her experience in chess:

"I never played chess growing up, but my children play it and they are good at it. I always support them and have grown to love this game. I have learnt a thing or two about it, and when I had to use it in my classroom it wasn't much of a struggle because I wasn't blank but there is a lot that I still need to learn...We had a Moves for Life tournament for the first time last year, and my players came first. I was so proud!"

Though the teachers whined about the complexity of the chess game and their lack of expertise in it, the coordinator agreed that the teachers were trained at the beginning of the programme, and they continue with the training. She said: *"There are frequent*

workshops to train the teachers so that they do what is expected of them, and stay updated about the latest developments in the programme.”

The coordinator went on to explain that she is always available to assist the teachers whenever they experience problems. She visits the schools often and meets with the teachers and hears about their progress, or where they need assistance. The teachers did give credit to the coordinator for what they know about chess and her willingness to help them better their teaching through chess.

Most of the participants interviewed rated themselves four out of ten on their ability to play chess. Because of their inability to play chess well, they indicated the discomfort of having learners who know in more than they do about chess, yet they are teachers, and are expected to know more than their learners. While some felt embarrassed, others said they do not like the game anyway, and it does not bother them that they cannot play it. Some of the participants were at peace with the fact they are not very good at chess, and stated that they give the learners who can play better permission to teach others. One participant stated that she has a boy in her class who plays very well and competes in district tournaments in Richards Bay, and has gone as far as participating in the South African Junior Chess Championship (SAJCC).



Figure 4.1: A certificate of participation received by one of the players from Uthungulu District Chess Association (now called King Cetshwayo District Chess Association).



Figure 4.2: A certificate received by one of the learners who participated at a national tournament, the South African Junior Chess Championship (SAJCC) in 2018.

4.4.2.2 Increased workload through workbooks

Workbooks are documents with tasks aimed at helping teachers with enough activities to challenge their learners. The chess programme piloted in the district offers chess workbooks to all the learners in the programme in the Foundation Phase except Grade R, which is not part of the programme in this region, and there are teacher guides to give guidance to the teachers. The Tsogo Sun Moves for Life coordinator stated that the workbooks are meant to support the teachers. However, the participants did not seem to understand their purpose as they stated that they have enough work on their shoulders already, and there is this chess programme which comes with its separate but complementary work to be done as well. The workbooks contain many different tasks that learners have to complete either on their own or with the assistance of the teacher, depending on the teacher teaching.

Mad moves for masterminds: The Queen

Can you solve these brainteasers?

Rules: 1. Only the Queen moves.
2. Don't take turns (you play against yourself).
3. Capture a heart with every move.
Write down each move with the name of the square you captured.

How many moves does it take the Queen to capture all the white pieces?

Write down the moves:

The Queen has to capture all the pieces in eight moves

Write down the moves:

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

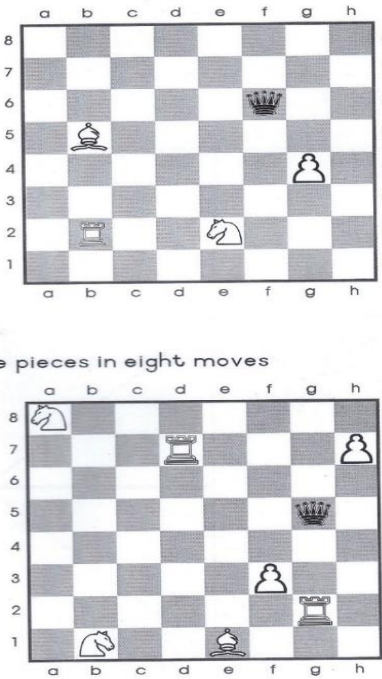


Figure 4.3: A page from the chess workbook (Tsogo Sun Moves for Life, 2016)
The above page from a Grade 3 chess workbook shows an example of a task.

The participants interviewed pointed out that they already have the Department of Basic Education workbooks which supplement the curriculum they use when they are teaching. The DBE workbooks are aligned with the CAPS documents used in schools. The chess workbooks are supplementary to the DBE workbooks, and they were introduced to assist the learners with more tasks which are also aligned with the CAPS document. The participants interviewed found the chess workbooks to be an addition to the workload already on their shoulders, and they said they were struggling to perform their usual teacher duties effectively. Participant C stated:

"I am teaching very young kids who are so many in the classroom, I hardly give them individual support and having to add more work on top of what I already have is just too much, but it does get learners to do their work. Look at them, they are fifty in total, and tell me how I would give them individual attention. It is hard to mark even their exercise books and the school workbook [DoE workbook], and parents complain if their children's exercise books have not been marked for some time. It would be better if I was teaching at most two subjects, not all these four, with the addition of chess."

Most of the participants interviewed stated that chess is a good and interesting game, which they have seen their learners enjoy playing, but it adds to the work they already have as it comes with additional workbooks and worksheets to be completed by the learners, and have to be marked by the teachers. The teachers are responsible for ensuring that all the learners in the classroom have understood the lesson delivered, and they have to check the understanding of the learners every day by giving them activities such as classwork and homework. Teachers need to mark these activities so that they get insight into whether the learners have understood the lesson delivered. The participants in this study complained that they end up not finishing their work as they have many workbooks to mark for the many learners in their classrooms. Like most of the Foundation Phase teachers, the participants interviewed teach all four subjects in their classrooms. They argue that this leaves them with a lot of work, having to mark all the learners' daily classwork they write in their exercise books, their daily activities in the DBE workbook, and of late, the Tsogo Sun Moves for Life workbook. This leaves a single teacher with at least three activities to mark for each learner in each subject every day. Participant A elucidated:

“Our learners finish school very early, and it becomes hard for us to integrate chess into the subjects as we are already very busy with the work we are employed for. Because we are always busy here; you hardly even get time to sit down; we sometimes struggle to finish even the DBE workbooks; where would we get the time for the chess workbook then? It is a good book that learners like, but it demands a lot from our side, time that we do not have.”

The coordinator explained that the content in the chess workbook has been made in conjunction with the content in the curriculum with the aim of assisting the teachers in delivering the content in the curriculum; it is not something different. She explained that the workbook is there to ensure that learners get the skills they need in their specific grades. That is why workbooks differ according to the grades. The coordinator also alluded to the fact that when the programme was introduced, learners were taught just how to play chess, but as time went on it was realized that it could make a great impact if it was taught through a workbook, just like the normal curriculum, hence a workbook was established and distributed to the schools as is done in other countries.

It is important that learners are taught according to their ages so that they are able to handle the content delivered to them, because if they cannot, they will obviously fail, and it will be as if the teachers are not doing their job well.

The participants who are Foundation Phase teachers stated that they do not get enough time with their learners because they finish school earlier than the other Phases, but they are the ones who have had work added for them. The teachers have to ensure that they cover all the day's lessons in the stipulated contact hours. The participants complained about having to do more work over what is given by the Department of Basic Education, and even referred to the chess workbooks as extra work. Participant F explained:

“My learners like the Moves for Life workbook, but we have to cover the day's work every day, and if we do not, the Head of Department will be on our case. You see, we have a Jika iMfundo Tracker that we are using which tells us what to teach on what day; if you miss one day or you delay, you will be behind and will struggle to catch up,

especially with so many Departmental workshops that we have to attend. To be honest with you, I really do not get time to give these extra workbooks to the learners.”

Week 3					
Day	CAPS content, concepts, skills	LP no.	DBE workbook	Resources	Date completed
11	Addition – family facts	9	Worksheet 72 (pp. 16, 17)	Base ten blocks (see Term 1 <i>Printable Resources</i>), Unifix cubes Written assessment item 9	
12	Building up and breaking down 1–75	10	Worksheet 73 (pp. 18, 19) Worksheet 74 (pp. 20, 21)	Base ten blocks, (see Term 1 <i>Printable Resources</i>), flard cards (see Term 1 <i>Printable Resources</i>)	
13	Addition – doubles and near doubles to 75	11	Worksheet 86 (pp. 48, 49)	Unifix blocks	
14	Addition – doubles and near doubles to 75	12	Worksheet 87 (pp. 50, 51)	Unifix blocks	
15	Complete and consolidate the week's assessment and work	n/a			
Week 3 Assessment Activity: ORAL – INFORMAL CAPS: Numbers, operations and relationships: Addition and subtraction Activity: Assess the learners' ability to add using number family facts, building up and breaking down, and using doubles and near doubles.					Mark: <i>/7</i>

Figure 4.4: A Grade 2 Mathematics CAPS Planner and Tracker document.

The CAPS Planner and Tracker is a document given to the teachers by the Department of Basic Education through a Jika iMfundo initiative. This document provides teachers with information on what to teach on which day, providing the teachers with topics, themes, page numbers of the prescribed books where they will find the content. Teachers use the CAPS Planner and Tracker in conjunction with the DBE prescribed textbooks, and it helps teachers link the CAPS content and skills to the relevant material in the textbook, the teacher's guide, and other materials such as the DBE workbook. Teachers in King Cetshwayo District have to use the CAPS Planner and Tracker documents in their classroom as this district is among the ones where the Jika iMfundo programme is being piloted.

The above participants were not alone as Participant J also indicated:

“Listen sisi (sister), when I bring the chess topic, they cause chaos and when they see the chess pieces, they become uncontrollable, everyone wanting to take his board to play. They like playing it but where do we get the time for chess? I ensure that I cover all the work scheduled for the day and by the time I finish, their staff cars are waiting outside, and we do not get time for chess. Some days if we finish early, I let them play.”

The participants added that the shortage of time with their learners on a normal school day affects the way they would want to incorporate chess when they are teaching. They suggested that there could be thinner workbooks with fewer tasks from both the DBE and the chess programme.

4.4.2.3 Language

As mentioned above, the sampled schools are located in rural and semi-urban areas and are predominantly African schools with only one Indian primary school involved in the study. The native language of the area is isiZulu, but the language of instruction is English in all the schools, including the previously disadvantaged ones. However, the Foundation Phase, Grades R and 1, in particular, are an exception. Learners in the Foundation Phase are taught in their home language so that they can understand the concepts better. The DBE’s CAPS document allocates no hours of an additional language to be taught; only the learners’ home language in their year of entry, i.e. Grade R. As they move to Grade 1, the additional language (English) is introduced, as can be seen below in the table:

Table 4.2: Time allocation in the Foundation Phase according to the CAPS document (DBE, 2012).

SUBJECT	GRADE R (HOURS)	GRADES 1-2 (HOURS)	GRADE 3 (HOURS)
Home Language	10	8/7	8/7
First Additional Language		2/3	3/4
Mathematics	7	7	7
Life Skills	6	6	7
• Beginning Knowledge	(1)	(1)	(2)
• Creative Arts	(2)	(2)	(2)
• Physical Education	(2)	(2)	(2)
• Personal and Social Well-being	(1)	(1)	(1)
TOTAL	23	23	25

The participants interviewed agreed that the workbook would be much more effective for many learners if it was available in their home language. Participant F explained:

“The workbook is fine, quite interesting really, but the learners struggle with it because of the language used, they find it hard to understand it. Our learners are IsiZulu speakers, and it is preferable for us to teach them in IsiZulu because they understand it better than English.”

The majority of the participants stated that their learners are just learning how to read in their home language. To read the chess workbook is a struggle as it is written in a foreign language to them. One participant said that the language issue is a real problem as it takes time for the teacher to explain the tasks to the learners. Besides, the aim is for the learners to learn how to read by themselves. When they have to be constantly assisted, the aim is not served as they end up not learning some of the vital skills they need. The participants explain that often the learners just go with their

instincts when it comes to writing answers in the chess workbook, and often they get the answers wrong until the task has been explained to them in their home language, then they get the answers correct.

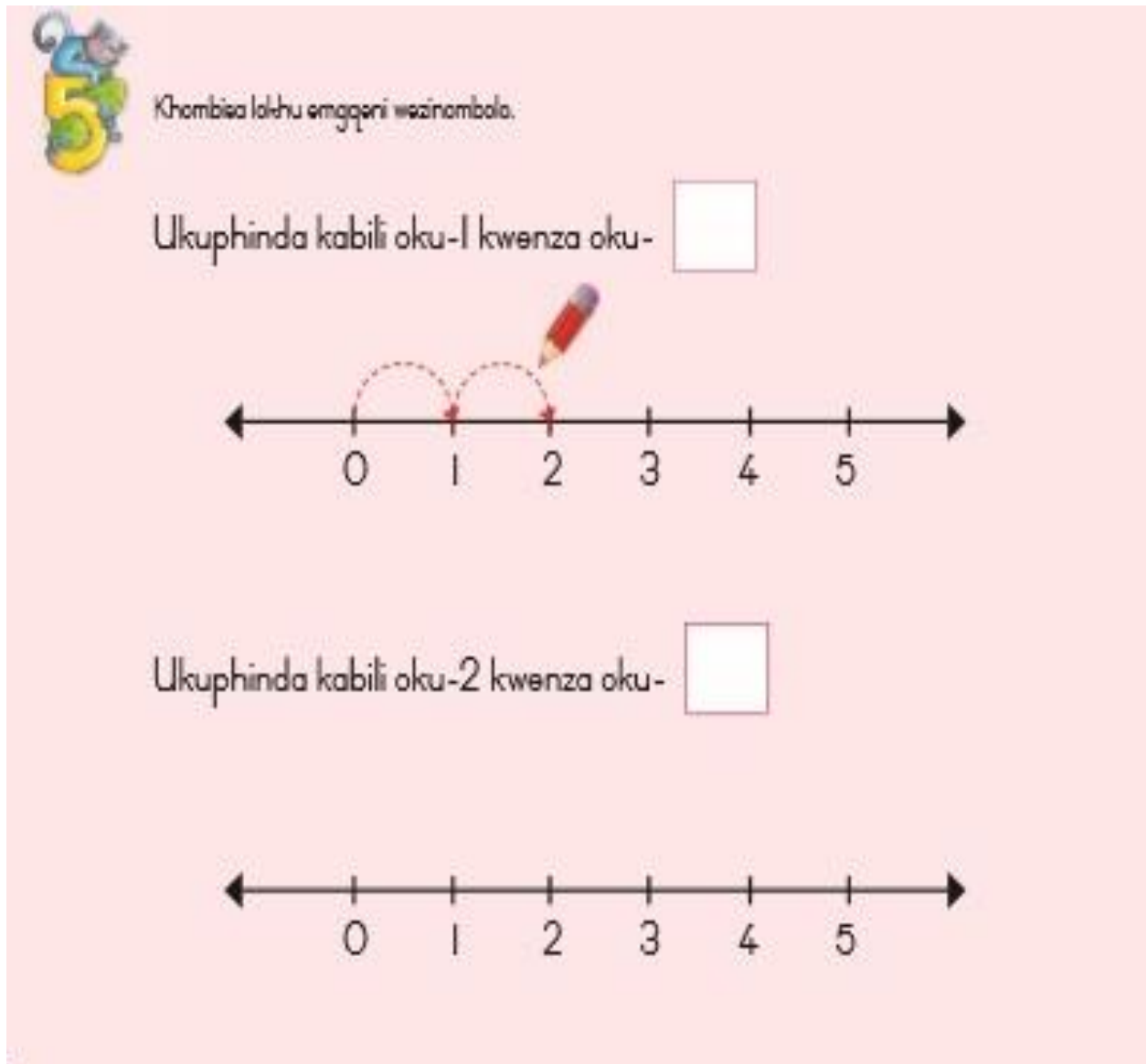


Figure 4.5: An activity taken from a Mathematics Department of Basic Education Workbook, Term 3, which teaches learners addition, and is written in the learners' home language.

10. The King walks one step at a time.

Word sum.

The King took 5 steps, got scared by a spider and took 3 steps back. What does this look like on the number line? Draw your answer.



Write your number sentence below:

$$1 + \square + \square + \square + \square - \square - \square - \square = \square$$

Can you write another number sentence for the same sum?

$$\boxed{\square - \square = \square}$$

Figure 4.6: An activity from a Tsogo Sun Moves for Life Workbook also teaching learners addition, but written in the learners' additional language.

Participant M said:

"It is hard for the learners to just read and understand the instructions themselves without assistance; this is because of the language. I know my learners can read with understanding because I have taught them that, but using a foreign language, it is definitely bound to be hard on them. I am sure that this workbook works better with the

English speakers, lucky them. I am hoping that Moves for Life will also consider us in the future, that there are also learners using English as an additional language.”

Participant E stated:

"I teach Grade 1 and I have introduced them to only the consonants and sounds in isiZulu, not in English. The learners struggle to understand whatever I say to them in English, let alone read it, they are just starting it this year. With this workbook, I have to read and understand it myself and then translate what is written for them, which is not really the way I teach here. What I do when teaching is, I read along with the learners so that they learn how letters are pronounced. With this workbook, I have to explain without reading with them because they have not learnt most of these sounds used in the workbooks."

Participant E said that the Tsogo Sun Moves for Life workbook was a good instrument, but useful for the English home language learners rather than those learning English as an additional language. Only one school in the 14 sampled ones teaches English as a home language. The majority of the learners in their classrooms are IsiZulu speakers, but unlike the other schools, they have not come across any problem with the language used in the workbook as all their books are in English.

4.4.2.4 Age-appropriate content

The content for the learners should be according to their level of brain development. The participants interviewed agreed that some of the tasks in the workbook are too difficult. They are the teachers, but have to rely on the teacher's guide for answers. They said that such tasks become very hard for their learners, and some feel discouraged. They explained that in their classrooms the learners are not the same, as some are bright and grasp quickly, while others struggle for days to master certain skills. The participants said they choose the tasks for their learners as some are very difficult for them. The participants interviewed unanimously agreed that some of the content in the chess workbooks is too advanced for their learners. Participant I stated: *"Sometimes even if you want to use the chess workbook, it becomes hard because you first have to explain the instructions thoroughly to the learners before they can do*

it correctly. At times, they do not even say that they do not understand and they mess up the workbook, especially when we first started. It is better now because they are getting used to it, but I still think that the content they have there is just too advanced for our learners.”

Participant K shared the view:

“My learners cannot understand what they are supposed to be doing in each activity in the Moves for Life workbook, unlike in the DBE workbook. I have to read the instruction and explain to them what it says. It takes so much time having to explain word by word to the learners before they start writing the tasks.”

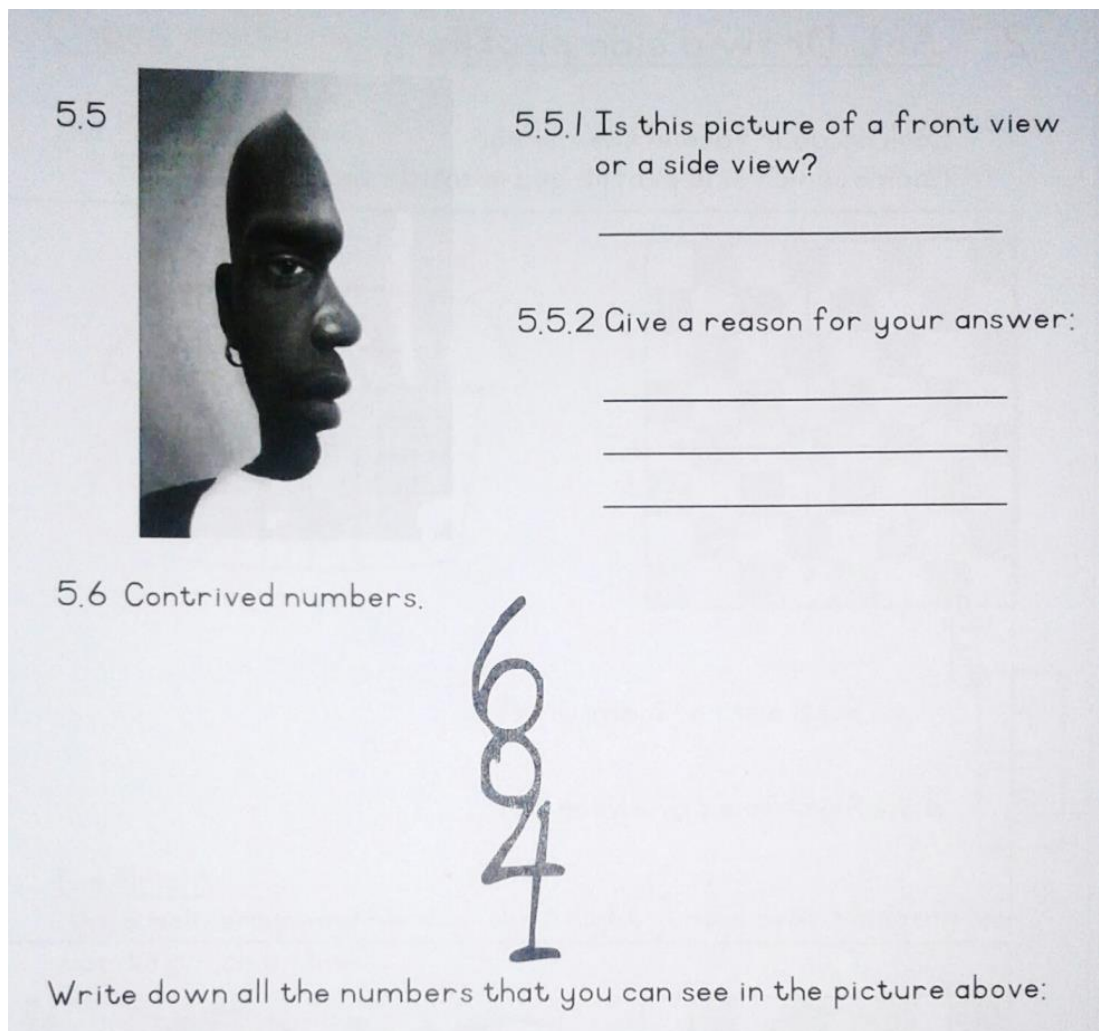


Figure 4.7: An activity from a Tsogo Sun Moves for Life Workbook identified by one of the participants as being advanced for her Grade 3 learners.

Contrary to what the above participants said about finding the Tsogo Sun Moves for Life workbook complicated, some participants find the chess workbook useful, like Participant D:

“I find the content in the Moves for Life workbook complementary to what is in the DBE workbook so when it comes to teaching my learners, I first explain the day’s work according to the tracker, then I give them the DBE workbook to ensure that they understand before they write in their exercise books. As you know, learners are not the same: some still need clarification after all the explanation I have given. That is when I bring in the chess workbook: it helps greatly in making them understand better. I give them the chess workbook, tell them how to do the work and then I tell them to write in their exercise books using the understanding they got from the chess workbook. The chess workbook is very useful. Sometimes I use it when I see that they are confused with what I am explaining to them.”

Participant D uses the chess workbook as a reward to motivate her learners.

“I have explained to them that no one will use the chess workbook anyhow, I keep them with me here (pointing at a cupboard). After I have given them work, others finish very fast while others struggle, I then give the workbooks to the ones who have finished the work to keep them busy while I give individual support to the other learners who still have not understood the concept. If we finish early and all the learners have understood, I let them play a long game of chess because they already know how the chess pieces move, they enjoy it very much. I would like to take my learners to a chess tournament to see how they perform against other learners.”

4.4.3 Theme 4: Rewards and recognition

Participants interviewed complained that they are not being recognized by Tsogo Sun Moves for Life and DBE for the work they do incorporating chess into the curriculum. They complained that they are doing a lot more than their equals in other schools who are also teaching the Foundation Phase. This programme is piloted in some schools in the district; not all teachers enrich their curriculum with the resources provided by Tsogo Sun Moves for Life. The participants complained that they have added

workload, but their salaries remain the same. The participants interviewed unanimously agreed that there are no rewards they receive from either Tsogo Sun Moves for Life or the DBE to encourage them to keep using chess when they are teaching. This was clear, as some participants admitted that they do not use chess as they find it requires more of their time which they should use teaching what is stipulated in the CAPS Planner and Tracker. Participant B explained:

“It is discouraging not to get recognition of extra work that you do. I know I would work better with a little motivation. If you are not appreciated, you do not give the extra effort and go an extra mile; it would really be nice to get something from Moves for Life as a token of appreciation, I am sure that I would like even their workbooks better.”

Participant F also stressed how she would like to get an incentive from Moves for Life for taking part in their programme, but she appreciated the certificates they received.

“In terms of resources, I would not lie, Moves for Life gives us the chess sets, enough for all the learners, and others are in the admin as we speak. There is even a magnetic demonstrating board that they gave us so as to help us teach the learners all at once in front of the class. The coordinator also comes to the school often to teach how to better use chess when we are teaching. She is such a great lady, who assists us very much, and ensures that we understand what is expected of us. She made herself available so that we can call her to train us anytime when we need assistance. Before she introduced this chess thing to us, I was blank in this game. For the first time this year we got certificates of appreciation, I hope next year we get another token of appreciation.”

Certificate of Acknowledgement



ACKNOWLEDGES

FOR PARTICIPATING IN THE
MASTERMOVES KIDS EDUCATIONAL PROGRAMME,
BY IMPLEMENTING IT WITH YOUR DAILY CAPS LESSONS IN 2017.

BY INTEGRATING MASTERMOVES KIDS WITH YOUR MATH,
LANGUAGE AND OTHER LESSON SUBJECTS,
YOU WORKED HARD FOR YOUR AND YOUR LEARNERS' BENEFIT.

**TSMFL APPRECIATES YOUR PARTNERSHIP
IN MAKING 2017 A SUCCESS!**

SCT Trustee

TSMFL General Manager

Figure 4.8: A 2017 certificate of acknowledgement given to teachers participating in the Tsogo Sun Moves for Life Programme by Tsogo Sun Moves for Life.

Chess has been incorporated in King Cetshwayo District since 2009 through the Tsogo Sun Moves for Life Programme, but it was only last year that it started recognizing the effort put by teachers into incorporating chess into their everyday classroom activities. Last year (2017) all the teachers teaching in the Foundation Phase where this programme is piloted received certificates of appreciation acknowledging the extra work they put into teaching the learners by incorporating chess into the curriculum. The Regional Coordinator admitted to not having given teachers in MiniChess tangible objects to show appreciation of the work they are doing and to motivate them to keep doing it until last year, and hoped that tokens of appreciation will keep going to the teachers. While some teachers appreciated the certificates from Moves for Life, others did not even know where they had put theirs.

The participants expressed appreciation of the abundance of teaching aids, stating that there are more than enough chess sets available provided by Tsogo Sun Moves for Life; they were given magnetic demonstration boards as well as enough workbooks for all the Foundation Phase learners except Grade R, which is not part of the chess programme in King Cetshwayo District. The Moves for Life coordinator offered support to the teachers every now and then or whenever they request her service. The participants indicated that they could contact the coordinator anytime to assist them because they do not really know how to play chess and got stuck often in some topics. With such support and resources available to the teachers, one would expect to see positive results.

It was observed that the participants made an effort to implement the programme, but because of the difficulties they mentioned, it was not easy. Although the coordinator is always available to assist the facilitators, they do not always ask for her assistance..

4.5 Conclusion

This chapter has presented the data gathered from the Tsogo Sun Moves for Life Coordinator, the King Cetshwayo District curriculum specialist and the teachers working as Tsogo Sun Moves for Life facilitators in incorporating chess into the curriculum in King Cetshwayo primary schools. The next chapter discusses these findings.

CHAPTER 5

DISCUSSION OF THE FINDINGS

5.1 Introduction

The aim of this chapter is to discuss the findings presented in the previous chapter which came from the data collection methods described in Chapter 3. The purpose of this study was to assess the impact of chess instruction when incorporated into the curriculum in primary schools in King Cetshwayo District. This chapter explains the meaning of the main findings, why they are important, and, where applicable, links them to other research.

5.2 Theme 1: Chess enhances education

The findings reveal that chess enhances education. This is supported by vast literature showing that chess has been used widely to improve curriculum delivery in the classroom in places like Zaire, New York, Canada, Indonesia, Virginia, California and England (Artise, 1993; Jerrim, Macmillan, Micklewright, Sawtell and Wiggins, 2016). The study shows that chess helps not only the teachers in imparting knowledge, but the learners as well in acquiring it. The findings gathered in this study show that chess has worked wonders for teachers in other countries. In King Cetshwayo District as well, the teachers have noticed improvement in the learners' participation and concentration, and in their general academic performance since chess was introduced into the classroom.

The participants in the study state that chess helps them in getting their learners to actively participate in the activities of the classroom. Similarly, Sweller, Clark, Kirschner (2006), Gobet, de Voogt and Retschitzki (2004). and de Groot (1977, 1978) concluded that among other benefits, improved concentration and attention span are outcomes of chess instruction in schools. Chess helps to improve the learners' concentration of the learners as it exposes them to long, uninterrupted periods of just thinking about the precise move to make with so many options to choose from. Several

studies conducted on chess support this finding (Frank, 2009; Liptrap, 1998; Dauvergne, 2000; Thompson, 2003; Brenda, 2003). Learners cannot just make any move; chess calls for them to sit and think quietly and alone, and then come up with a move that will conquer the opponent and lead the player to winning the game. All players want to win, and because of that, they are trained to sit still and think until they come out victorious. The players have to generate alternative moves they have seen in a similar position, evaluate the alternatives they have generated and evaluate the problem before deciding which move to make. This view is supported by Buki (2008) and Campitelli (2008), who add that in the process, learners also learn other skills, like critical thinking and problem-solving.

The learners' improved concentration and attention span enable the teachers to involve them in the lessons. When the learners are active participants in class, they learn better. This way, the teacher is able to guide the learners while they construct knowledge on their own, and the conducive environment created by the teacher enables this process. Storey (2000) advises teachers who want to help their learners improve concentration to use chess in their classrooms. This finding is aligned with Piaget's (1927) theory of cognitive constructivism where he explains that learners learn better when they are able to link new information with what already exists in the schema. Nicotera and Stuit (2014) confirm this, and affirm that chess has the potential to make kids smarter. This is in line with the study's theoretical framework, which states that learners are able to refine the way they think and make it more effective if they are engaged in the task at hand (Jonassen, Peck and Wilson, 1999). This allows learners to come up with their own ideas, be creative and innovative.

For chess to help the learners to be smart, it is vital that they participate in the classroom. Active participation of the learners is crucial because it enables them to learn. Bruner and Vygotsky's principle of active learning states that learners must be engaged for them to be able to construct knowledge (Jonassen, Peck and Wilson, 1999). Getting learners to participate in the classroom is not an easy task; chess enables teachers to accomplish this task successfully, although it is hard at first; but with the teacher's training and patience taking the learners step-by-step through chess training, learners eventually learn the skill. Ibrahim (2014) states that chess can

help learners improve academically through enhancing their cognition. For this to happen, it is vital that teachers involve the learners for the benefit of both parties. The involvement of learners is important because it gets them to express themselves and share ideas on the topic at hand; and it helps the teachers see whether the learners are following as they teach, which helps them improve their teaching. Active participation of the learners reinforces learning, ensuring that all the learners understand what is taught. Meyers (2005) and Barret and Fish (2011) affirm that chess in the classroom helps not only the teachers by occupying the high flyers with tasks requiring them to think critically, but it enables the teacher to give individual attention to those struggling. Chess also encourages the learners to participate freely as the game amuses them.

Active participation through chess is enabled because the learners learn while having fun. This study's findings show that chess brings fun in the classroom, allowing learners to enjoy learning. The teachers said that when there is chess involved, it is easy for them to engage the learners as they have fun and contribute to the topic at times without even the teacher asking them Willis (2007) states that when learners are having fun in the classroom they feel comfortable, their level of comfort influences the way information is transmitted and stored in their brains, and their cognition is enhanced. However, there is still a question on the transferability of skills. As Kirschner, Sweller and Clark (2006) argue, skills developed in that particular subject cannot be transferred to other disciplines, as they are subject specific. However, vast literature shows that chess does equip learners with skills like problem-solving and critical thinking, which help them learn mathematics better (Ferguson, 1983; Liptrap, 1998; Berkman, 2004; Hong, 2007; Campitelli, 2008 and Buki, 2008. Sala, Gorini and Pravettoni, 2015). Luneta, Giannakopoulos, Coetsee and Cheva (2016) conducted a study on young learners in South Africa in the same setting as this study, and found that there is a correlation between chess and maths. Similarly, Gumede and Rosholm (2015) conducted a study in England where learners had to replace maths instruction with chess instruction; the ones who received chess instruction outperformed the ones who received maths instruction throughout that period. Ferguson (1983 and 1995) assures us that there is a transfer of skills from chess to other subjects such as mathematics. Literature shows that owing to this transfer the academic performance

of the learners improves (Nurse, 1995; Dauvergne, 2000; Meyers, 2005; Ippolito, 2009 and Jaeggi, Buschkuehl, Jonides, and Perrig, 2008). As per the findings of this study, it can be concluded that the skills learnt from chess assist the learners in different ways, which include concentration and active participation.

The goal of teaching is for learners to attain knowledge; chess helps learners to enjoy lessons while acquiring information. This finding confirms the findings of a study by Luneta et al (2016) in Gauteng, where the teachers found chess to be exciting and motivating to learners. If there is no fun or enjoyment in the lesson, it is too abstract, learners tend to be stressed, and frustrated and bored, and produce poor work. Chess, as the findings reveal, is sometimes used by the teachers as a great motivator for learners to finish their work because they look forward to playing a long game with their friends. This long game helps them concentrate more in the classroom, which leads to improved teaching and learning.

5.3 Theme 2: Challenges

Although participants report benefits in incorporating chess into the curriculum, the findings reveal that there are challenges which impede its successful integration owing to teachers' lack of expertise and increased workload, the language of instruction in chess resources ,and the complexity of the content found in the documents given to support teachers in their teaching.

The findings of this study show that the majority of the teachers who incorporate chess in their classrooms lack expertise in chess, which can handicap the learners who are to be taught by these teachers. The participants attribute this problem to the DBE's idea that introducing chess would help the learners academically while easing the work of the teachers. However, literature shows that a top-down approach usually has limitations as the success of the programme also depends on the attitude of those who are to implement it. It is assumed that when the authorities proclaim the programme, implementation will automatically occur (Najam, 1995). However, those responsible for implementation have mixed emotions about the scheme. It is important for teachers to have the necessary skills to be able to have a positive attitude towards the

programme and produce good results. In other words, teachers must be adequately trained. In all the studies on chess, chess instructions were carried out by either experienced chess instructors, chess masters or grandmasters (Meyers, 2005; Dangauthier et al., 2007; Boruch, 2011; Gumede and Rosholm, 2015). Without training, the teachers will use their own understanding and whatever strategies they think will work. This might confuse the learners and cause an even lower pass rate, which would mean that the chess programme is not serving its purpose. Findings show that the teachers are being supported by the Tsogo Sun Moves for Life coordinator in terms of training and resources, but the question is whether it is adequate for the teachers who have never played chess in their lives, and now have to use it competently in their classrooms. Some of the teachers in these schools need help with the curriculum itself, and the inclusion of chess seems like a recipe for failure. Because of this, the teachers end up facing problems with both the curriculum and the integration of chess, which leads to disastrous teaching; they become reluctant to incorporate chess into their teaching because they lack the skills. Luneta et al. (2016) found that teachers involved in the MiniChess programme of incorporating chess into the curriculum in Gauteng do not know how to play chess, regardless of the training they had received, and relied on the programme's coordinators for assistance. One concludes that this is why the teachers' lack enthusiasm for this initiative.

Findings in this study show that even though the teachers do not know how to play chess, they appreciated the way the chess material had been linked with the CAPS documents and the DBE workbooks. In contrast, the study by Luneta et al. states that the teachers in Gauteng do not see the connection between chess and the curriculum. The contrast between the teachers in the same setting could mean that even though they are in the same programme, there is probably a difference in the materials provided and the way they are trained.

The findings reveal that the teachers involved view the incorporation of chess into the curriculum as an additional workload. The chess programme that the teachers have to implement in their classrooms comes with support material which is intended to help them when they are teaching, including workbooks. Each school in the programme receives enough workbooks for all the learners involved, i.e. learners in the Foundation

Phase except Grade R. Although this is one workbook which can be used across all the four Foundation Phase subjects, whether it is numeracy, literacy or even lifeskills, it means too much work for the teachers because they have other workbooks from the Department of Basic Education for all the four subjects they teach. Each day the teachers have to give activities to the learners and have to mark all these workbooks and exercise books, which they complain becomes too hard as they teach all the subjects in their classrooms. They are also responsible for the administrative work of their classrooms, and co-curricular activities, among other tasks. This leaves them with very little time to perform all these tasks proficiently, especially as the Foundation Phase learners spend fewer hours at school than any other phase in the South African school system. According to the CAPS document, the “instructional time for Grade R, 1 and 2 is 23 hours, and for Grade 3 is 25 hours” (DBE, 2012, p. 6). These hours include an average of five hours that must be spent for instructional time teaching the four Foundation Phase subjects. However, the workload is a common problem across the globe. Likewise, the Department of Education in England reveals that it also has teachers complaining of a heavy workload, and it insists that teachers have to find strategies to manage their time so that they can perform all their duties satisfactorily (Deakin, James, Tickner and Tidswell, 2010).

If teachers cannot manage their workload they will not cover some topics, they will feel stressed and frustrated, and their work will be below standard. The learners they teach will not be the ideal learners envisaged by the Department of Basic Education, and they may feel inclined to leave the profession.

Teachers in King Cetshwayo District have to use the CAPS Planner and Tracker document in their classrooms as this district is one of those where the Jika iMfundo programme is being piloted. It appears that this document makes work easier for the teachers, and so does the chess workbook which is blamed for making too much work for the teachers. The chess workbooks are aligned to the DBE resources, and should be able to assist the teachers in their daily activities by providing additional support where it is needed. The chess activities are not shown in the CAPS Tracker and Planner, which means that teachers have to find ways to use separate chess tasks to enhance their teaching. Apparently the teachers struggle to use all the supporting

documents together to their advantage. There are several possible reasons for this: perhaps the teachers have not been properly trained in how to make use of all these documents together so that they can lighten their work and produce better performing learners. Or perhaps the teachers have too many learners to look after in their classrooms, so they are always occupied and do not find time and ways to accommodate change in their teaching. The teachers' lack of chess proficiency and interest in chess could also be to blame for this finding.

The language of instruction in the chess resources is another problem revealed by participants to be preventing the successful incorporation of chess in their classrooms. Findings revealed that the language of instruction in the Foundation Phase is the learners' home language, which is isiZulu in the majority of the schools involved in the study. This is in line with Kioko, Mutiga, Muthwii, Schroeder, Inyega and Trudell's (2015) emphasis on the importance of teaching young learners in their mother tongue. He states that it helps them learn the content better as learning does not begin in school. The use of the home language as a medium of instruction for learners who have just started school helps them to communicate better as they feel free to express themselves, ask questions or even make suggestions, because they are proficient in the language. This is evident in the DBE's CAPS document, which allocates no hours for teaching an additional language, only the learners' home language in the learners' year of entry, i.e. Grade R. As the learners get used to the new physical environment and to the structured way of learning, English is introduced, but with a minimum of two and a maximum of three hours (DBE, 2012).

The chess materials, including the workbooks given to the learners, are written in English, which becomes a problem for them as they are not English home language learners; and thus the workbooks cannot serve their purpose. A report from the National Commission on Special Needs in Education and Training and National Committee Education Support Services affirms that learners who learn through a language that is not their home language are at a disadvantage because of their limited proficiency in the language (DoE, 1997). It is worse for these learners because they experience this language problem when they have just started school at a young age. This finding supports Vygotsky (1978), the DoE (1997), Donald, Lazarus and

Lolwana (2006) and Herschensohn (2007) who stress the importance of language in teaching and learning, but unfortunately language makes learning difficult for these children.

The South African curriculum states that learners in the Foundation Phase must be taught in a language they understand, the language they use to communicate with at home. This will enable them to learn the content without having to struggle with understanding the language and then process the content. This finding reveals that the workbooks are not used as they should be by the learners owing to the language barrier. Donald et al, (2006) disapprove of such inaction and regards it as subtractive bilingualism because it displaces the value of the learners' home language. If the workbooks are to be used, the teachers have to explain thoroughly and in their home language for learners to understand the task. Teachers complain that time is too short for this. The successful completion of the tasks will depend on whether the teachers understand the specific task on chess, which is a challenge on its own because the majority of the teachers do not know how to play the game themselves.

The findings reveal that the teachers are having problems with the difficulty of the content in the chess workbooks. The intensity of the activities is beneficial, in that it trains the learners to think, but only if they are able to successfully complete them. However, these rigorous activities from the chess resources can demotivate the teachers and lead them to stop using the chess activities altogether. Some of the teachers admitted to having a hard time using the chess workbooks; they said the content was difficult even for them.

5.4 Theme 3: Rewards and recognition

The findings reveal that participants in this study wanted to receive rewards and recognition for the chess work they do. They argue that they do a lot more than those teachers whose schools are not part of the chess programme. A job done well deserves recognition, and if none is given, those performing that task may be discouraged and not put much effort into doing it again. Findings in this study reveal that the teachers in the schools where the chess programme is piloted were not

recognized for incorporating chess into the curriculum. They have not been getting recognition from either the Department of Basic Education or Tsogo Sun Moves for Life until November 2017, when they were given certificates of recognition.

The teachers were certain about the type of rewards they would want for the effort they put in as they have more work, while their equals who teach in other schools that are not part of the programme do not have to do the extra work that they do. Literature shows that rewards, financial or not, do have an impact on the performance of the employees (Severinsson and Hummelvoll, 2001; DeCenzo and Robbins, 2010). Findings in this study reveal that the teachers would appreciate getting monetary rewards rather than certificates. This finding is contrary to the view of Tessema, Ready and Embaye (2013), who state that there is always improvement in the performance of employees because of non-monetary rewards. This could be because the financial status of the teachers involved in the study as their schools are found in semi-urban and rural schools. It is important to give people what is of value to them so that the purpose of the gift is achieved. If the teachers are not happy, their performance is likely to be low. If the teachers do not perform as expected, the real objective of incorporating chess into schools would not be achieved.

The teachers' lack of interest in the use of chess in the classroom might be due to the lack of recognition and rewards. Tessema, Ready and Embaye (2013) affirm that if the employees are satisfied with their jobs, they will work better and if they are not, they will not. The teachers feel that they work harder than their counterparts, but they earn the same salary which tends to discourage their effort to incorporate chess into their teaching.

5.5 Conclusion

In this chapter the findings were discussed. The findings reveal both the rewards and the difficulties teachers experience in the classrooms when incorporating chess into the curriculum. The findings discussed are similar to those found in the studies conducted elsewhere, with some minor discrepancies.

CHAPTER 6

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter discusses the conclusions of the study and gives recommendations based on the literature presented in Chapter 2 and the findings presented in Chapter 4. The study aimed at answering the following questions:

Main research question

What are the perspectives of stakeholders about the impact of incorporating chess practice into the curriculum in King Cetshwayo District primary schools?

Subresearch questions

- What is the role played by chess in enhancing learning in primary schools?
- What are the effects of chess instruction on the development of learners' cognitive abilities?
- Which strategies can be employed to incorporate chess in the teaching and learning in schools?
- How do the teachers perceive the incorporation of chess into the curriculum?
- How does the integration of chess into the curriculum improve learners' academic performance?

6.2 Summary

The purpose of this study was to assess the impact of teaching in a normal classroom during normal hours, teaching the Foundation Phase subjects using chess. According to the researcher's view, the study's objectives were met through combining the study's findings and literature on chess. The study aimed at understanding how the teachers using this teaching style find it.

The study adopted a qualitative design and an interpretivist paradigm because the purpose was to get an in-depth understanding of the teachers' views about chess in education as they have experienced it. Data were collected using interviews, observation and document analysis and it was then analysed thematically.

The findings of this study confirmed the findings of the literature reviewed regarding the connection between chess and academic performance. Three themes emerged from the study, namely, chess enhancing education, challenges encountered in the incorporation and recognition and rewards. The data collected was obtained in over half of the schools involved in the Tsogo Sun Moves for Life MiniChess Programme in King Cetshwayo District in Nkandla and Richards Bay, and this is what they reveal:

- Chess improves learners' attention span.
- Learners enjoy learning through chess.
- Concentration improves if chess is incorporated into the lesson.
- The teachers believe that chess has the ability to enhance education.
- Teachers incorporating chess into the curriculum in this district lack chess expertise.
- Challenges can temper with the successful incorporation of chess into the curriculum.

Findings specific to King Cetshwayo District's Tsogo Sun Moves for Life chess incorporation:

- The availability of the resources encourages the teachers to use chess when teaching.
- The Tsogo Sun Moves for Life Coordinator assists the teachers greatly with incorporating chess in their classrooms. The teachers struggle to integrate chess into their teaching, but the coordinator helps them, especially in maths.
- The lack of recognition demotivates the teachers from incorporating chess in their lessons.

In accordance with the first and second research questions of the study, the findings reveal that chess has a big role in enhancing learning in primary schools as it trains the learners to concentrate more, which leads to better learning as they are alert when the teacher teaches. It also develops the learners' ability to construct knowledge as they are able to come up with new solutions to problems they face on the board. In some cases, they are able to remember solutions they have seen before and apply them in new situations. This becomes effective as the learners learn unconsciously, and the study reveals that they have so much fun when learning through chess.

With regard to the third and fourth research questions, the findings reveal that the teachers are faced with many challenges which lead them to be reluctant to integrate chess when they are teaching. Among them is the additional material they have to administer, including workbooks which have to be marked for every learner in addition to the ones they already work with from DBE. The teachers also feel that the incorporation of chess into the curriculum takes too much of their time as the chess material to be used is written in a foreign language, which means that the teachers have to first translate for the learners before explaining the task itself, which is a challenge on its own because the majority of the teachers have very little knowledge of chess.

In accordance with the fifth research question, the teachers believe that chess has the potential to assist their learners even more than it has (which they commend), but only if it is implemented often. The teachers say that when the learners concentrate more, their results also reflect it as they improve drastically. However, because of the lack of recognition and rewards for their hard work in integrating chess when they teach, they feel demotivated, and tend to return to their normal way of teaching without chess.

6.3 Conclusion

The study investigated the impact of chess in schools through interviews, observations and document analysis. Sixteen participants were involved, consisting of 14 teachers, one district curriculum specialist and one Tsogo Sun Moves for Life coordinator. The majority of the participants were African, and a few were Asians. The teachers were

all qualified for their profession, but only a few of them had ever played chess. Some teachers lacked interest in the game but still had to use it when teaching. As a result, only a few schools incorporate chess into their teaching.

Although chess has been played in schools in the district as a game, in some schools as part of their sporting codes, its integration into the curriculum has become a way to enhance pedagogy in the classroom. It allows teachers to facilitate learning rather than dictate it. This gives learners a chance to take control and be responsible for their learning.

Corresponding with many other studies conducted on chess, this study reveals that chess does enhance education through increased participation of the learners in the classroom, as they enjoy learning while having fun. Their concentration span also increases, and they tend to be alert in the classroom most of the time. This study concludes that chess has a positive impact in education, but it has to be facilitated by teachers who have the skills and passion for it. Chess programmes in schools have been implemented in many countries, and they have shown better results than this study reveals. However, most of these studies used a quantitative approach focusing on the learners, not on the teachers. This study looked at the success of the incorporation through the eyes of the teachers, explaining thoroughly what they are faced with every day in using chess in the classroom.

This study reveals that the teachers were teaching chess themselves with the little knowledge they got from the coordinator in one-day training. Owing to the teachers' lack of chess expertise, the integration of this game into the curriculum in King Cetshwayo has not made a big impact in improving education as the district is still in the bottom list of the worst performing districts in the province. Training is provided for the teachers to equip them with the basic skills of how to play chess, and how to integrate it into the curriculum, but apparently it has not helped the teachers much as they are still struggling. More training should be scheduled for them. Not all teachers teaching in the Foundation Phase should be given the task of incorporating chess but only those either with an interest in chess, or who would like to see their learners improve their academic performance.

The positive impact of chess that the teachers have noticed seems not to be enough to encourage them to keep using the game and to seek for practice to perfect it, as most of the schools who have had a chance to integrate chess into the curriculum are reluctant to use it, while others have stopped using it completely. The findings of this study reveal the importance of getting rewards and being recognized for the work that you have put into something.

6.4 Recommendations

Chess in schools has been found by many researchers to be very useful in helping teachers to transform pedagogy and in creating a conducive environment for the learners to learn better. Several studies found to have been conducted on the chess dealt on the connection between chess and education. These studies used a quantitative design using control and experiential groups and they have proved that chess helps learners improve in academic performance. However, very little literature is found on how the teachers using chess in education can use this game to their advantage and actually produce better results. This study reveals that teachers face many problems in incorporating chess when they are teaching which has led to some of them neglecting chess and not using it in the classroom at all. Further research needs to be done to get approaches and tactics where chess is incorporated into the curriculum is done successfully so that other teachers would learn and implement them as well.

Previous studies conducted have concentrated in chess in education in primary schools where there are young learners. Some learners are not fortunate to go to schools where there is such a practice, after grade 7 it would mean they have lost this opportunity for life. Just like in primary schools, learners in high schools also do not perform well and this is reflected in the matriculation results which are released every year. Maybe such a practice can help high schools improve their pass rate. More research about chess in high schools needs to be conducted so that they too can benefit from this game.

Little literature could be found on the experiences of the teachers in using chess when teaching yet they are the ones who have to ensure that this game helps the learners. Teachers in this study pointed out that they lack chess expertise but they are still expected to use it in their classrooms. Others explained that they are not even interested in this game. More research needs to be conducted in this area to find necessary interventions that can assist the teachers with the successful chess in the curriculum intervention.

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8. Appendices

8.1 Appendix A: Participants' letter of request

University of Zululand
P. O. Box 32
Empangeni
3880
27 February 2017

Dear Participant

REQUEST FOR PERMISSION TO PARTICIPATE IN A STUDY

My name is N. P. Dlamini; a student at the University of Zululand studying towards a doctoral degree in the Faculty of Education, Department of Curriculum Studies.

I am conducting a research with the title: *The perspectives of stakeholders about the impact of incorporating chess into the curriculum practice in King Cetshwayo District primary schools.*

This research study will be conducted under the supervision of Prof. M. Maphalala from the University of Zululand. I am requesting your permission to participate in my research.

Thank you.

Yours sincerely

Miss N. P. Dlamini

8.2 Appendix B: Principals' letter of request to conduct a study

University of Zululand
P. O. Box 32
Empangeni
3880
27 February 2017

The Principal

Dear Sir/Madam

REQUEST FOR PERMISSION TO CONDUCT A RESEARCH IN YOUR SCHOOL

My name is N. P. Dlamini; a student at the University of Zululand studying towards a doctoral degree in the Faculty of Education, Department of Curriculum Studies.

I would like to conduct a research in your school for the purposes of fulfilling the requirement of a thesis. My research topic is entitled: *The perspectives of stakeholders about the impact of incorporating chess into the curriculum practice in King Cetshwayo District primary schools.*

This research study will be conducted under the supervision of Prof. M. Maphalala from the University of Zululand. I am hereby seeking your permission to approach the chess facilitator/coach in your school in order to participate in this research.

Upon completion of the research, I undertake to provide the Department of Education with a bound copy of the full research report. If you require any further information, please do not hesitate to contact me on 072 949 0204 or 073 915 9424.

Thank you.

Yours sincerely
Miss N. P. Dlamini

8.3 Appendix C: Tsogo Sun Moves for Life's letter of request

University of Zululand
P. O. Box 32
Empangeni
3880
26 September 2017

Mrs Amanda Fourie

Tsogo Sun Moves for Life

Dear Madam

REQUEST FOR PERMISSION TO INVOLVE YOUR EMPLOYEES IN A RESEARCH IN KING CETSHWAYO DISTRICT

I, Miss N. P. Dlamini presently on the staff of Nguluzana Primary School studying for my DEd in Curriculum and Instructional Studies through the University of Zululand under the supervision of Prof. M. Maphalala, would like to request for permission to involve your employees involved in chess in King Cetshwayo schools.

The study will be done to fulfil the requirements of a DEd of producing a thesis. My research topic is: **The perspectives of stakeholders about the impact of incorporating chess into the curriculum practice in King Cetshwayo District Primary Schools.** The study will involve fifteen teachers who work as Move for Life facilitators in three circuits: Richards Bay, Mthunzini and Nkandla. Moves for Life coordinators working with these schools will also be involved just to share their insight on the inclusion of chess into the curriculum in King Cetshwayo District. Permission has already been granted by the KwaZulu Natal Department of Education to go ahead with the research.

Upon the completion of this study; Moves for Life will receive a copy of the research report. For further information or enquiries on this, kindly contact me on 0729490204 or okamenziyeza@gmail.com.

Yours sincerely

Miss N. P. Dlamini

8.4 Appendix D: Ethical Clearance Certificate from the Research ethics Committee

**UNIVERSITY OF ZULULAND
RESEARCH ETHICS COMMITTEE**
(Reg No: UZREC 171110-030)



RESEARCH & INNOVATION

Website: <http://www.unizulu.ac.za>
Private Bag X1001
KwalMangezu 3886
Tel: 035 902 6887
Fax: 035 902 6222
Email: Mangole5@unizulu.ac.za

ETHICAL CLEARANCE CERTIFICATE

Certificate Number	UZREC 171110-030 PGD 2017/169								
Project Title	The impact of incorporating chess into the curriculum in King Cetshwayo District Primary Schools								
Principal Researcher/ Investigator	NP Dlamini								
Supervisor and Co- supervisor	Prof MC Maphalala								
Department	Curriculum and Instruction Studies								
Faculty	Education								
Type of Risk	Medium Risk – Data Collection from people								
Nature of Project	Honours/4 th Year	Master's	Doctoral	x	Departmental				

The University of Zululand's Research Ethics Committee (UZREC) hereby gives ethical approval in respect of the undertakings contained in the above-mentioned project. The Researcher may therefore commence with data collection as from the date of this Certificate, using the certificate number indicated above.

Special conditions:

- (1) This certificate is valid for 3 years from the date of issue.
- (2) Principal researcher must provide an annual report to the UZREC in the prescribed format [due date-01 July 2018]
- (3) Principal researcher must submit a report at the end of project in respect of ethical compliance.
- (4) The UZREC must be informed immediately of any material change in the conditions or undertakings mentioned in the documents that were presented to the meeting.

The UZREC wishes the researcher well in conducting research.

Professor Gideon De Wet
Chairperson: University Research Ethics Committee
Deputy Vice-Chancellor: Research & Innovation
12 July 2017

CHAIRPERSON
UNIVERSITY OF ZULULAND RESEARCH
ETHICS COMMITTEE (UZREC)
REG NO: UZREC 171110-30

12-07-2017

RESEARCH & INNOVATION OFFICE

8.5 Appendix E: Imfolozi Circuit Management Centre's approval letter



education

Department:
Education
PROVINCE OF KWAZULU-NATAL

Enquiries: Mr. S. Ngema Reference: Permission to Conduct Research Date: 20/10/17

Miss N.P. Dlamini
P.O. Box 32
Empangeni
3880

Dear Miss Dlamini

PERMISSION TO CONDUCT RESEARCH IN THE IMFOLOZI CMC SCHOOLS

The above-quoted subject has reference.

Kindly be informed that permission is hereby granted to you to conduct research entitled:
"THE EFFECTS OF INCORPORATING CHESS INTO THE CURRICULUM IN KING CETSHWAYO DISTRICT PRIMARY SCHOOLS" in the Imfolozi CMC-Richards Bay Circuit schools.

Please note the following during and after the completion of your research:

1. Schools and office personnel will participate on a voluntary basis.
2. Teaching, learning and office activities may not be interrupted.
3. Access to schools/offices will have to be negotiated with the Principals of schools.
4. Please submit a summary of your findings to the CES : Imfolozi CMC and a fully-fledged report to the Head of Department : KZN DoE on completion of your research.

I wish you strength and success in your undertaking.

Thank you.


.....

P/CES : Imfolozi Circuit Management Centre

8.6 Appendix F: KwaZulu Natal Department of Education's approval letter



education

Department:
Education
PROVINCE OF KWAZULU-NATAL

Enquiries: Phindile Duma

Tel: 033 392 1041

Ref.:2/4/8/1344

Miss NP Dlamini
PO Box 32
Empangeni
3880

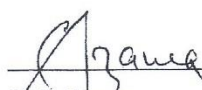
Dear Miss Dlamini

PERMISSION TO CONDUCT RESEARCH IN THE KZN DoE INSTITUTIONS

Your application to conduct research entitled: **"THE EFFECTS OF INCORPORATING CHESS INTO THE CURRICULUM IN KING CETSHWAYO DISTRICT PRIMARY SCHOOLS"**, in the KwaZulu-Natal Department of Education Institutions has been approved. The conditions of the approval are as follows:

1. The researcher will make all the arrangements concerning the research and interviews.
2. The researcher must ensure that Educator and learning programmes are not interrupted.
3. Interviews are not conducted during the time of writing examinations in schools.
4. Learners, Educators, Schools and Institutions are not identifiable in any way from the results of the research.
5. A copy of this letter is submitted to District Managers, Principals and Heads of Institutions where the Intended research and interviews are to be conducted.
6. The period of investigation is limited to the period from 22 September 2017 to 09 July 2020.
7. Your research and interviews will be limited to the schools you have proposed and approved by the Head of Department. Please note that Principals, Educators, Departmental Officials and Learners are under no obligation to participate or assist you in your investigation.
8. Should you wish to extend the period of your survey at the school(s), please contact Miss Connie Kehologile at the contact numbers below
9. Upon completion of the research, a brief summary of the findings, recommendations or a full report/dissertation/thesis must be submitted to the research office of the Department. Please address it to The Office of the HOD, Private Bag X9137, Pietermaritzburg, 3200.
10. Please note that your research and interviews will be limited to schools and institutions in KwaZulu-Natal Department of Education.

King Cetshwayo District


Dr. EV Nzama
Head of Department: Education
Date: 26 September 2017

KWAZULU-NATAL DEPARTMENT OF EDUCATION

Postal Address: Private Bag X9137 • Pietermaritzburg • 3200 • Republic of South Africa

Physical Address: 247 Burger Street • Anton Lembede Building • Pietermaritzburg • 3201

Tel.: +27 33 392 1004/41 • Fax.: +27 033 392 1203 • Email: Phindile.Duma@kzndoe.gov.za • Web: www.kzneducation.gov.za

Facebook: KZND OE... Twitter: @DBE_KZN... Instagram: kzn_education... Youtube: kzndoe

...Championing Quality Education - Creating and Securing a Brighter Future

8.7 Appendix G: Tsogo Sun Moves for Life's approval letter



27/09/2017

Dear Ms. Dlamini,

APPROVAL FOR RESEARCH INTERVIEW

I, Amanda Fourie (General Manager) hereby confirm my approval for you to interview Mrs. Lisa Griffiths, TSMFL Coordinator of Richards Bay and Nkandla, for your research purposes.

We are very interested in your study, and we are keen on the results and your findings of the research.

All the best with your study!

Kind Regards



Amanda Fourie
General Manager

8.8 Appendix H: Observation schedule

Artefacts	Yes	No	Comments
Schedules of results			
ANA results			
Attendance registers			
Chess lesson plans			
Chess certificates			
Chess trophies			
Chess medals			
Chess notation books/sheets			
Chess worksheets/workbooks			
Players arrive in time			
Players co-operate during the lesson			
Players show interest in the lesson			
Players appear to be attentive			
Facilitator appears to be enjoying teaching			
Integration of chess is done accordingly			

8.9 Appendix I: Interview Questions

THE PERSPECTIVES OF STAKEHOLDERS ABOUT THE IMPACTS OF INCORPORATING CHESS INTO THE CURRICULUM PRACTICE IN KING CETSHWAYO DISTRICT PRIMARY SCHOOLS

I am NtandokaMenzi Dlamini, a researcher on the study with a title: The Perspectives of Stakeholders about the Impacts of Incorporating Chess into the Curriculum Practice in King Cetshwayo District Primary Schools. Basically, I am just checking if chess is helping learners learn and teachers teach better in this district. Thank you very much for agreeing to assist in collecting data for this research.

Before we begin, may you please tell me a bit about yourself:

Age	
Gender	
Post level	
Grades taught	
Subjects taught	
Number of years in the profession	
School	
Racial group	
Number of children	
Do they play chess?	
Do you play chess?	
Highest level of chess tournament ever attended?	
CHESSA Rating (if you play chess)	

Personal performance rating in a scale of 10	
Any personal future plans involving chess?	

1.1. Research question 1

- **What role does chess play in enhancing learning in primary schools?**
 - What are the reasons that made Moves 4 Life sponsor and implement the chess programme in schools?
 - Why primary schools and not high schools?
 - Is there any age specifically in the primary schools or every learners there partakes?
 - Not all primary schools take part in this programme, how were those participating selected for the programme?
 - Aren't teachers already packed on their hands to be added with another load?
 - What has been the reaction of DoE and its officials, including the Principal towards the incorporation of chess in their schools?
 - Any problems/challenges faced since the programme started in King Cetshwayo? In other regions?
 - How are the challenges faced dealt with?
 - Any chances of the programme expanding in the district?
 - Are you still with the primary schools you started with?
 - if not, what happened to others? If yes, what has been keeping them in the programme?
 - How were/are they solved?
 - Any contextual factors that exist pertaining chess at this school?
 - Do the players in the programme get to compete in district tournaments or higher?
 - Are the chess facilitators well trained for the coaching?
 - Any assessment for the chess trainers if they are competent in what they are doing?
 - Any Mini-chess tournament where players will compete and thus increase their knowledge?

1.2. Research question 2

- **What are the effects of chess instruction on the development of learners' cognitive abilities?**
 - How are the chess players performing in Mathematics after some time playing chess?
 - Do they answer all questions in tasks or they leave some unanswered?
 - Do they find it easy answering questions in class and participate actively in activities?
 - Do they seem to forget easily when tested what they have learnt?
 - Are they able to co-operate and pay attention in class?
 - Do they seem eager to do school work?
 - Any improvement in the learners involved in chess academically and socially?
 - Has the way the players conduct themselves changed in terms of discipline?
 - Any special way that the learners are taught the game of chess that increases their cognitive abilities?

Research question 3:

- **What measures can be employed to best use chess to enhance teaching and learning in schools?**
 - How do you teach chess in your school? Theory/practical?
 - How often are they taught chess? Hours per week.
 - How often do they compete and in what level?
 - Playing against chess players from other schools, how do they perform in the tournaments?
 - Are their games analysed after tournaments?
 - Any barriers to the successful implementation of the programme in the school?
 - How does the Moves for Life and the school overcome them?

Research question 4:

- **What are the perceptions of teachers towards the incorporation of chess in the curriculum?**
 - How good are you in chess?
 - When did you start playing chess?

- How does chess help you in your class?
- Do you see chess as the other sporting codes at school or a useful tool in teaching and learning?
- Many teachers teaching chess or just one coach in the school? Reason.
- How are the teachers trained to teach chess?
- What are the feelings of teachers towards chess at the school?
- Is chess not a burden, creating more work for the affected teachers?
- Are the prescribed chess teaching hours enough or not?
- Are teaching hours extended to accommodate chess or it is fitted in the 7 hours of notional teaching time as instructed by the Department of Education?
- How are the facilitators in schools motivated to keep working hard to make this programme a success?

Anything else you would like to share on this topic?

Thank you very much for your time and contribution to this research.