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Teachers' utilisation of colour in Foundation Phase classrooms

by

SONELLE GERNEKE

Submitted in partial fulfilment of the requirements for the degree

MAGISTER EDUCATIONIS

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Supervisor

Ms Karien Botha

PRETORIA

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This mini-dissertation is dedicated to my parents, who instilled in me the virtues of perseverance and commitment and relentlessly encouraged me to strive for excellence.

DECLARATION OF ORIGINALITY

I, Sonelle Gerneke (student number 27223613), declare that the mini-dissertation, which I hereby submit for the degree Magister Educationis at the University of Pretoria in the Department of Educational Psychology, is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution.

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Sonelle Gerneke

September 2021

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- Data storage requirements.

ETHICS STATEMENT

The author, whose name appears on the title page of this dissertation, has obtained, for the research described in this work, the applicable research ethics approval. The author declares that she has observed the ethical standards required in terms of the University of Pretoria's *Code of ethics for researchers and the Policy guidelines for responsible research.*

Sonelle Gerneke

September 2021

DECLARATION FROM LANGUAGE EDITOR

6 September 2021

Louise Pretorius
Editing, writing and translation services

To whom it may concern:

This letter serves to confirm that I have edited a dissertation by Sonelle Gerneke for English language usage, titled:

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submitted in partial fulfilment of the requirements for the degree Magister Educationis (Educational Psychology) in the Department of Educational Psychology, Faculty of Education, University of Pretoria.

Yours sincerely
Louise Pretorius

Tel: 082 854 4657
Email: louisevn@mics.co.za

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ABSTRACT

This study forms part of a broader research project situated within the Centre for Visual Impairment Studies (CVIS) at the University of Pretoria. It focuses on colour vision deficiency (CVD) with the aim of facilitating educational and social change as a possible outcome. The purpose of this study of limited scope was to explore and describe Foundation Phase teachers' utilisation of colour to support teaching and learning in the Foundation Phase classrooms of the selected primary school in Pretoria, (Gauteng province).

I followed a qualitative research approach, relied on interpretivism, and implemented a descriptive case study research design, while applying Participatory Reflection and Action (PRA) principles. I made use of a multi-method approach to data generation and documentation, where I included a PRA-based workshop, a member-checking session, visual data, field notes, reflective journaling, document analysis, and verbatim transcriptions of audio-recordings.

Following inductive thematic analysis, three main themes and related sub-themes were identified. The first theme relates to the utilisation of colour-based resources to support the teaching and learning of Literacy, Mathematics and Life Skills in Foundation Phase classrooms. Utilising colour to support teachers' classroom management skills was identified as a second theme, reflecting classroom organisational skills, the monitoring and evaluation of teaching practices, as well as establishing a positive learning environment. The third theme captured the value of the utilisation of colour within the Foundation Phase classroom to improve learners' academic skills. It also highlighted the use of colour-based resources to focus learners' attention, enhance learners' cognitive skills and to develop learners' listening and comprehension skills.

The findings of my study of limited scope furthermore highlighted the different colour-based resources that were implemented to support teaching and learning, as well as the challenges and benefits associated with teachers' utilisation of colour-based resources in Foundation Phase classrooms. These findings may be

considered and placed in perspective when teachers engage with learners and the CAPS curriculum to ensure supportive teaching and learning practices.

Identified challenges may be addressed as opportunities where teachers can apply critical and creative thinking skills and build collaborative teacher relationships to overcome these challenges related to the utilisation of colour-based resources in Foundation Phase classrooms.

KEY CONCEPTS

- Colour
- Colour Vision Deficiency
- Foundation Phase classrooms
- Teachers
- Teaching and learning
- Utilisation

LIST OF ABBREVIATIONS

CAPS	Curriculum Assessment Policy Statements
COVID-19	Coronavirus Disease of 2019
CVD	Colour Vision Deficiency
CVIS	Centre for Visual Impairment Studies
DBE	Department of Basic Education
DHET	Department of Higher Education and Training
LTSM	Learning and Teaching Support Material
NCS	National Curriculum Statement
PIRLS	Progress in International Reading Literacy Study
PRA	Participatory Reflection and Action
THRASS	Teaching of Handwriting, Reading and Spelling Skills

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CHAPTER ONE: INTRODUCTION AND GENERAL ORIENTATION

1.1 INTRODUCTION AND RATIONALE FOR UNDERTAKING THE STUDY

This mini-dissertation of limited scope forms part of a broader project situated within the Centre for Visual Impairment Studies (CVIS) at the University of Pretoria. The broader project focuses on colour vision deficiency (CVD) with the aim of facilitating educational and social change for learners diagnosed with CVD as a possible outcome. In addition, the project is directed at exploring and addressing classroom practices, as well as the support being given to learners with CVD in selected quintile 5 fee-charging primary schools in Pretoria (Gauteng province). As part of my study of limited scope, I investigated teachers' (n=5) utilisation of colour in Foundation Phase classrooms within a selected primary school in Pretoria (Gauteng province).

Gaines and Curry (2011) found that colour can have an impact on learners' attention, behaviour and achievement. Dzulkifli and Mustafar (2013) also investigated whether adding colour in an educational setting could improve memory. These authors concluded that "colour has the potential to increase chances of environmental stimuli to be encoded, stored and retrieved successfully" (Dzulkifli & Mustafar, 2013, p. 8).

According to Elliot (2015), there has been an increased interest in the research regarding the use of colour and psychological functioning. Understanding the experiences of teachers who have utilised colour within Foundation Phase classrooms as part of the Curriculum Assessment Policy Statements (CAPS) curriculum, may contribute to a better understanding of how colour influences teaching and learning. In addition, knowledge and insight informed by practice and research, may potentially lead to further curriculum development to give learners diagnosed with CVD, access to acceptable and adaptive education.

As part of my study, I explored the teachers' (n=5) utilisation of colour in Foundation Phase classrooms as part of the CAPS curriculum in terms of resources that are recommended, available and implemented as a visual modality to strengthen

teaching and learning. I also focused on teachers' preferences regarding classroom aesthetics that may influence classroom-based teaching and learning.

Foundation Phase learners encounter continuous instructional tasks that rely on colour identification to execute a task accurately (Colour Blind Awareness, 2016). This instructional task potentially may not contribute to the capacity of learners diagnosed with CVD, to learn and may undermine their confidence for future learning (Colour Blind Awareness, 2016). Colour that is used to highlight keywords and sounds in textbooks, colour-on-colour printing, maps, graphs and worksheets, that are usually considered to enhance learning may be ineffective for learners with CVD (Albany-Ward, 2011; Torrents et al., 2011).

Learners with CVD may furthermore experience frustration and anger while developing coping methods to work around their CVD. These coping methods may include memorising the order of coloured objects within the classroom and constantly relying on teachers or peers for help with colour-related tasks (Konkel, 2016). As such, these coping methods may furthermore slow them down and prevent them from taking in as much knowledge as learners without CVD do (McPherson, 2018).

CVD is currently an under-researched topic in South Africa (Mashige & Van Staden, 2019) that requires further investigation and which may lead to more insight and awareness of learners with CVD by giving them alternative opportunities in the classroom. Booysen (2018) recommends further research in terms of the CAPS curriculum to accommodate all learners' learning needs, styles and cognitive abilities. To address this aspect, it is important to understand how teachers utilise colour within the classroom context as a visual modality to strengthen teaching and learning. The results of this study of limited scope may potentially be used for the planning and implementation of future support programmes for learners diagnosed with CVD regarding the utilisation of colour for teaching and learning.

1.2 PURPOSE OF THE STUDY

Against the background of the discussion in the previous section, the purpose of this study of limited scope was to explore and describe Foundation Phase teachers' utilisation of colour in the classroom for teaching and learning in the selected primary

school. I focused on teachers' perceptions and experiences, concerning different colour-based resources they are using in their classrooms, how they create a conducive space for teaching and learning, as well as the benefits and challenges of using colour within the classroom context to support teaching and learning. By understanding teachers' perceptions and experiences, I obtained insight into the use of colour as a visual modality to strengthen teaching and learning, which may influence the quality of education for learners diagnosed with CVD within the selected primary school in Pretoria (Gauteng province).

1.3 RESEARCH QUESTIONS

This study of limited scope was guided by the following primary research question: *How do teachers utilise colour in Foundation Phase classrooms as part of the CAPS curriculum to support teaching and learning?*

I was guided by the following secondary research questions to address the primary research question:

- How are colour-based resources implemented (or not) in Foundation Phase classrooms as part of the CAPS curriculum to support teaching and learning?
- What are the benefits of utilising colour in Foundation Phase classrooms as part of the CAPS curriculum to support teaching and learning?
- Which challenges are implied when utilising colour in Foundation Phase classrooms as part of the CAPS curriculum to support teaching and learning?

1.4 WORKING ASSUMPTIONS

I conducted this study of limited scope against the background of the following assumptions:

- Teachers within quintile 5 fee-charging primary schools have access to and implement colour-based resources within Foundation Phase classrooms as part of the CAPS curriculum, to support teaching and learning.
- Teachers' perceptions of the utilisation of colour within the classroom context will be affected by their own subjective experiences relating to the implementation of colour-based resources as part of the CAPS curriculum.

- Teachers are aware that the CAPS curriculum may be implemented with creativity as indicated in the comprehensive National Curriculum Statements (NCS) Foundation Phase subject documents.
- Teachers value the use of colour as a resource to support learners with barriers to learning, such as reading, spelling and mathematics.

1.5 CONCEPT CLARIFICATION

In this section, I clarify the key concepts that guided this study of limited scope.

1.5.1 Teachers

Teachers are regarded as leaders and managers who provide direction, structure, and guidance to learners within the school environment (Donald et al., 2016). According to the Department of Higher Education and Training (DHET) (2015), teachers are specialists in a specific phase during which their knowledge, skills, values, principles, and teaching methods are utilised to uplift and transform society. Within the context of this study of limited scope, teachers included five female Foundation Phase teachers (n=5) from one selected quintile 5 fee-charging primary school in Pretoria (Gauteng province).

1.5.2 Utilisation

Bušljeta (2013) indicates that a quality teaching process is determined by the teacher's success in effectively utilising resources. Three main phases of utilising resources can be differentiated regardless of the type of teaching and learning resource (Bušljeta, 2013). First, the selection of the most adequate teaching and learning resource may be influenced by factors such as teaching objectives, learners' personalities and teachers' levels of education and abilities (Reints, 2002).

The second phase in the utilisation of teaching and learning resources is the presentation and interpretation of the selected resources, followed by the third phase of final evaluation. The goal of the third phase is to determine the effectiveness of the teaching and learning resource selected and presented. In the context of this study of limited scope, I focused on the Foundation Phase teacher's perceptions of the utilisation of colour-based resources as part of the CAPS

curriculum, including classroom management practices to support teaching and learning.

1.5.3 Colour

Hansen (2012) describes colour as a qualitative perception where colour is a variation in the spectral power distribution of light as discriminated by the human visual system. The colours discriminated are defined by the red, blue and green cones of the eye which is sensitive to different wavelengths of visible light (Purves et al., 2001). Kasmaienezhad-Fard et al., (2017) indicate that the colour wheel, colour harmony, and colour usage are basic categories of the colour theory that are more logical and useful when investigating the utilisation of colour.

Engelbrecht (2003) states that people are aware of colour and its impact on how we operate in our environment; it should therefore be critically utilised in an educational setting. The Department of Basic Education (DBE) has implemented the CAPS that includes specific recommendations for resources, including colour-based resources to be utilised according to each subject and grade (Department of Education, 2012). Within the context of this study of limited scope, colour refers to all the colour-based resources and classroom environments that are perceived and utilised by teachers to support teaching and learning.

1.5.4 Foundation Phase classrooms

The Foundation Phase can be considered as the entry-level to General Education and Training within the South African school environment; it is a four-year phase from Grade R up to Grade 3 that includes learners from five to nine years of age (Department of Education, 2012; Mahlo, 2011). Within the context of this study of limited scope, Foundation Phase refers to the classrooms and teachers (n=5) from Grades R to 3 that were selected to participate in the study.

Classrooms can be described as environments where teachers and learners engage to optimise learners' learning (Pickett & Fraser, 2010). According to Apps and MacDonald (2012), learning environments are spaces that are continually being repurposed and recontextualised by the teachers, the learners and the curriculum as needed for optimal learning to occur. For the purpose of this study of limited

scope, Grade R to 3 classrooms formed part of a well-resourced quintile 5 fee-charging school environment (Dass & Rinquest, 2017).

1.5.5 Teaching and learning

Teaching and learning are an interrelated process (Lippincott, 2019). Sequeira (2012) describes teaching as a set of events, outside the learners, which are designed to support an internal process of learning. De Houwer et al. (2013) refer to learning as a change in mental constructs, such as knowledge, representation or associations that can function as a contiguous cause of changes in behaviour. Teaching and learning in the context of this study of limited scope refer to the utilisation of colour-based resources such as workbooks, readers, objects, and charts to support teaching and learning in the classroom context.

1.6 THEORETICAL FRAMEWORK[1]

For the purpose of this study of limited scope, I applied Laird's sensory stimulation theory (Laird, 1985). The sensory stimulation theory indicates that learning relies on the senses to enhance the acquisition of knowledge. Individuals such as teachers, who manage the process of learning, first try to stimulate and then control what learners see, hear, touch and do during a teaching-learning session. The sensory stimulation theory maintains that 75% of what individuals know is acquired through vision, 13% through hearing and the remaining 12% through touch, smell or taste (Laird, 1985).

In addition, the sensory stimulation theory indicates that if more senses are stimulated, greater learning may occur. Laird (1985) highlights that stimulation through the senses is achieved through a greater range of colours, volume levels, bigger pictures, strong statements, facts presented visually, using different resources and multimedia. Contrast, tilt, curvature, line ends, colour and size are essential elements that enable learners' eyes to compose meaning from their visual field. These elements may provide a framework for learner attention even before learners consciously understand or give meaning to what they have seen (Jensen, 2008).

[1] I acknowledge that this is a dated source, yet I have consulted it as a primary source in the field (Laird, 1985).

According to Jensen (2008), these essential visual elements may inform teaching practices and provide a framework for attracting learners' attention to create a supportive learning context. Applying this to my study, I, as the researcher, considered how visual colour-based resources, support teaching within Foundation Phase classrooms as part of the CAPS curriculum, and how visual colour-based resources influenced teachers' utilisation of colour as a visual modality to strengthen learning.

The sensory stimulation theory (Laird, 1985) guided my study on the premise that colour-based resources are important visual aids to enhance learners' learning, in addition to benefits and challenges that may be experienced by both teachers and learners, as most of the information that is absorbed by our brain is visual. A detailed description of Laird's sensory stimulation theory (Laird, 1985) and its application to this study is provided in Chapter 2.

1.7 PARADIGMATIC PERSPECTIVES

In the following sections, I introduce the epistemology and methodological approaches that guided this study of limited scope. A detailed description of each approach is provided in Chapter 3.

1.7.1 Epistemological paradigm

I relied on interpretivism as an epistemological paradigm (Nieuwenhuis, 2016b), thereby recognising that "knowledge is constructed not only by observable phenomena, but also by people's intentions, beliefs, values, perceptions, reasons, meaning-making and self-understanding" (Henning et al., 2004, p. 20). An interpretivist paradigm recognises that individuals' experiences may be understood from the viewpoint of the people involved and experiencing the specific phenomenon (Morgan & Sklar, 2012).

The interpretive approach was suitable for the present study because it focused on teacher's perceptions of the utilisation of colour within the identified Foundation Phase classrooms as part of the CAPS curriculum. To this end, I focused on the meaning that teachers attribute to their own perceptions and experiences and I attempted to understand their perspectives in their specific contexts (Mack, 2010).

An advantage of interpretivism is to gain an in-depth understanding of the participants' perceptions and experiences, which represent their personal knowledge, ideas and perceptions within their social context. Interpretivism might not lead to generalisation. Although it is not the aim of the study to generalise, it contributes to local understanding of what South African teachers experience in their lives and of the cultures of classrooms and schools within the South African school environment (Nieuwenhuis, 2016b).

A possible challenge includes researcher subjectivity. To overcome this challenge, I focused on the quality standards of trustworthiness (Guba & Lincoln, 1989[2]) to overcome my own subjectivity in the process of interpreting the results. I took a reflective stance throughout the interpretation of information to develop an enhanced understanding of teachers' experiences within the classroom context. I also made use of a reflective journal, while regular discussions with my supervisor allowed me to challenge my own initial assumptions (Yin 2018).

1.7.2 Methodological approach

I employed a qualitative research approach. Qualitative research is described by Creswell and Creswell (2018) as an approach for exploring and understanding meaning that individuals or groups assign to social or human challenges within their context. A focus is placed on social reality as a subjective experience established by individual human experience (Basit, 2010). A qualitative research approach aligns with the interpretivist paradigm. Subjectivity, interaction, socially constructed ontology, recognising multiple realities and understanding a phenomenon through the eyes of a participant are highlighted (Cohen et al., 2018).

In-depth information was gathered within the natural setting (classroom) by engaging with the teacher participants. Multiple data generation methods, such as a focus group and document analysis, were utilised to integrate information across data sources into themes or categories for analysis (Creswell & Creswell, 2018). Such themes or categories were built inductively by identifying common abstract trends in the information collected and establishing comprehensive themes to

[2] I acknowledge that this is a dated source, yet I have consulted it as a relevant source in this context (Guba & Lincoln, 1989).

represent the data. Following a qualitative approach enabled me to explore in detail the teachers' perceptions of the utilisation of colour within the identified Foundation Phase classrooms to support teaching and learning. In addition, a qualitative mode of enquiry provided the insight that was required to answer the research questions (McMillan & Schumacher, 2014; Patton, 2015).

1.8 OVERVIEW OF THE METHODOLOGICAL STRATEGIES

In this section, I introduce the research design, selection of participants, and methodological strategies I utilised in conducting my study. A more detailed discussion is presented in Chapter 3.

1.8.1 Research design

I implemented a descriptive case study design, applying Participatory Reflection and Action (PRA) principles (Chambers, 2002) for the purpose of this study of limited scope. A descriptive case study design involves an exploration of a bounded system (Stake, 1995[3]) – a system bounded by time, context, and a place to gain an in-depth understanding of the phenomenon through detailed data generation by involving multiple sources of information. As indicated, I relied on a descriptive case study design and included one selected quintile 5 fee-charging primary school in Pretoria (Gauteng province) (Yin, 2018).

PRA-based principles (Chambers, 2002), as part of the broader field of action research, align with a descriptive case study research design as it focuses on gaining insight into the world views and experiences of participants (Ebersöhn et al., 2016). Rich, detailed information was generated through interactive participation, teamwork, learning and shared knowledge, while conducting research within the participants' context (Ferreira & Ebersöhn, 2012).

A descriptive case study design, applying PRA principles, was suitable to gain a detailed understanding of teachers' experiences of utilising colour in their classroom contexts to support teaching and learning. By involving teacher participants through PRA-based activities, a focus group, reflections and the analysis of their

[3] I acknowledge that this is a dated source, yet I have consulted it as a relevant source in this context (Stake, 1995).

understanding, I co-generated rich and detailed information (Ebersöhn et al., 2016) that may inform follow-up studies about the utilisation of colour within Foundation Phase classrooms to support teaching and learning.

1.8.2 Selection of research site and participants

As highlighted by Merriam (2002), sampling in a descriptive case study design consists of finding cases and selecting a sample within a bounded system. A sample is selected on purpose to yield the most information about the phenomenon of interest (Merriam, 2002). I conveniently selected the case – one primary school in Pretoria (Gauteng province). Convenience sampling refers to the selection of cases that are conveniently available and easily accessible (McMillan & Schumacher, 2014).

Purposive sampling occurs when participants are selected for a distinct research purpose and according to a set of criteria (Maree & Pieterson, 2016). I purposefully selected the teacher participants (n=5) for the purpose of the study of limited scope. In the context of this study of limited scope, I applied the following criteria to purposefully select the teacher participants (Merriam & Tisdell, 2016): the Foundation Phase teachers must have access to colour-based resources as a visual aid to support teaching and learning; teacher participants must be willing to participate voluntarily in the study; they must be willing to share their knowledge and insight regarding the utilisation of colour within their Foundation Phase classroom as part of the CAPS curriculum; and they must give informed consent before they participate in this study.

1.8.3 Data generation and documentation

I utilised a focus group, a member-checking process and an observation-as-context-of-interaction, as well as visual data, field notes, reflective journaling, document analysis, audio-recordings and verbatim transcription as a multi-method approach to data generation and documentation. I relied on triangulation to gain trustworthiness and more in-depth understanding of the phenomenon in question (Merriam & Tisdell, 2016). Triangulation contributed to rich data generation as it provided a varied set of data and triangulation, thus strengthening the credibility of the research findings (Patton, 2015).

I used a focus group as a platform to facilitate one PRA-based workshop of 80 minutes in duration (Lloyd-Evans, 2006). The PRA-based workshop guided the process of data generation through enabling Foundation Phase teachers to do their own appraisals, analysis, planning and presentations of the utilisation of colour within their identified Foundation Phase classrooms to support teaching and learning (Chambers, 2002).

I facilitated an online PRA-based workshop through the online Zoom platform, while the teachers were present at the identified school in Pretoria (Gauteng province). Foundation Phase teachers participated in a group and completed visual presentations, including posters, while reflecting on their own experiences of utilising colour within Foundation Phase classrooms to support teaching and learning. A follow-up member-checking process took place to verify that the teachers' viewpoints were accurately captured and that inferences made from the data analysis and interpretation represented their viewpoints accurately.

Nieuwenhuis (2016b) highlights that group interactions may be productive in widening the range of responses, activating forgotten details of experiences, and releasing inhibitions to disclose information. Participants may build on each other's ideas and comments, adding new perspectives and insight, thus adding value to the proposed study that may not be attained through individual interviews (Rubin & Babbie, 2014).

I documented the PRA-based workshop activities through audio-recordings, field notes and photographs. McMillan and Schumacher (2014) indicate that digital recordings ensure completeness of the verbal interactions and provide material for authenticity checks. These authors (McMillan & Schumacher, 2014) further conclude that note-taking should be included as it contributes to the reformulation of questions and probes and assists with the data analysis process. Verbatim transcriptions of audio-recordings and legible formatted field notes were also documented (Yin, 2018).

By keeping a reflective journal, I documented feelings, thoughts, experiences and ongoing reflections, as well as observations during the research process. Chambers (2002) highlights the importance of reflexive practises during PRA-based research

to ensure effective facilitation. The reflective journal contributed to self-monitoring for potential biases (McMillan & Schumacher, 2014; Leavy, 2017). In addition, reflective teacher journals were also utilised to document the use of colour over a period of four weeks, by reflecting on classroom practises and the implementation of colour-based resources within the classroom context to support teaching and learning.

Documents, such as the prescribed CAPS curriculum workbooks utilised within the classroom context, were collected and analysed. The workbooks included Grade 1 subject workbooks compiled by the schools' teachers and the Department of Education Grade 1 Rainbow workbooks. Resources such as the workbooks were readily available within the classroom context to analyse the utilisation of colour in the classroom (Merriam, 2002).

1.8.4 Data analysis and interpretation

I relied on inductive thematic data analysis based on the work of Braun and Clarke (2006), supported by the bottom to top hierarchical approach of Creswell and Creswell (2018). Inductive thematic analysis focuses on the process of identifying themes and patterns within the generated data (Braun & Clarke, 2006). According to Creswell and Creswell (2018), qualitative data analysis involves organising and preparing the generated data from multiple resources; segmenting the data into categories by producing codes; presenting the data through figures, tables or narrative discourse; and interpreting the findings. Themes and patterns emerged through the interactive process of data analysis and interpretation (Nieuwenhuis, 2016a).

An inductive thematic approach to data analysis and interpretation allowed me to gain a detailed understanding of teachers' experiences as it is found to be compatible with interpretivism, focusing on participants' subjective perceptions, feelings and experiences (Saldaña, 2013). Participants' views on the phenomenon emerged through themes identified during the coding process that assisted me to address the research question (Braun & Clarke, 2006).

I utilised the six phases of thematic analysis as outlined by Braun and Clarke (2006). First, I familiarised myself with the data, paying specific attention to patterns that

occurred. I subsequently generated the initial codes by documenting where and how patterns occur through data reduction. Next, I combined codes into themes that accurately portrayed the data generated. I also reviewed the themes to ensure the coherent recognition of how themes are patterned to support the data generated and the theoretical perspective. I then defined and named each theme. Lastly, I wrote a report containing a rich description of the results (Braun & Clarke, 2006).

1.9 ETHICAL CONSIDERATIONS

I adhered to specific ethical principles throughout my study to ensure that the study was conducted in an ethically sound way (Creswell & Creswell, 2018). Fieldwork only commenced once permission to do research was obtained from the ethics committee of the Faculty of Education (University of Pretoria) (Creswell & Creswell, 2018). I also adhered to the Code of Ethics in Research as outlined by the University of Pretoria (University of Pretoria, 2019) and I obtained informed written consent from each participant (Elias & Theron, 2012). Before obtaining informed consent, I informed participants that participation was voluntary and that they could withdraw at any stage without any adverse consequences (Bless et al., 2013).

Participants were treated with respect and I created an environment providing a safe and trusting relationship between participants and myself (Leavy, 2017). I was transparent in openly stating the purpose and procedure of my proposed study and protected them from any harm (Creswell & Creswell, 2018; Leavy, 2017). Confidentiality was ensured (Silverman, 2014) and pseudonyms were used to protect participants' identity in the discussion of and writing up of the research findings (Creswell & Creswell, 2018; Leavy 2017). However, I acknowledge that I could not guarantee confidentiality and anonymity during the interactive, multiple participant PRA-based workshops. I requested participants to respect each other's right to privacy and to manage shared information with confidentiality. Data generated can only be accessed by the researcher and the study supervisor (Merriam & Tisdell, 2016) and it will be securely stored for 15 years at the University of Pretoria (University of Pretoria, 2018).

1.10 QUALITY CRITERIA

According to Lincoln and Guba (1985[4]), the criteria for trustworthiness in qualitative studies are regarded as credibility, transferability, dependability, confirmability and authenticity. I followed the strategies proposed by Maree (2016) to enhance the trustworthiness of my study. I relied on different types of data sources to enable me to confirm the findings of my study. I also included member checking to present my initial results to the participants to check, verify and correct any misunderstandings. I furthermore kept a research journal to document all research decisions. Lastly, I focused on maintaining anonymity and confidentiality, and to reflect on the potential limitations of the study in the final chapter. I discuss the strategies I implemented to ensure the trustworthiness of this study in more detail in Chapter 3.

1.11 OUTLINE OF THE CHAPTERS

Chapter 1: Introduction and general orientation

This chapter provides a broad overview of the study. I briefly explain my reasons for focussing on the particular phenomenon, formulate research questions, highlight the research purpose, and clarify key concepts. I subsequently provide a brief overview of the selected paradigms, research design and methodological choices I made. I also introduce the ethical principles and the quality criteria I aimed to adhere to.

Chapter 2: Literature review

In Chapter 2, I explore existing literature on the research topic, focusing on the role of colour to support teaching and learning in Foundation Phase classrooms. I also explain the theoretical framework in more detail.

Chapter 3: Research design and methodology

In Chapter 3, I elaborate on the research methodology and strategies I introduced in Chapter 1. I justify interpretivism as the epistemological research, and qualitative research as the methodological approaches utilised during my study of limited

[4] I acknowledge that this is a dated source, yet I have consulted it as a relevant source in this context (Lincoln & Guba, 1985).

scope. I subsequently explain the selected research design, the selection of research participants and the site. I also discuss the data-generation and documentation strategies, as well as the process of data analysis and interpretation. I outline the quality criteria of the study and conclude the chapter with an explanation of the ethical considerations that I followed.

Chapter 4: Results and findings of the study

In this chapter, I report on the results of the study in terms of the themes and subthemes I identified, following the inductive thematic analysis of the datasets and sources in this study of limited scope. I include verbatim quotations, photographs, and excerpts from the classroom journals, as well as excerpts from my field notes and reflective journal to support the themes and sub-themes under discussion. To conclude, I discuss the findings of the study by linking the results to current literature, as included in Chapter 2.

Chapter 5: Conclusions and recommendations

In Chapter 5, I address the research questions in terms of the findings I obtained and the conclusions I arrived at. I present the potential value and the limitations of the study and conclude with recommendations for further training, practice, and research.

1.12 CONCLUSION

In this chapter, I explained the rationale for undertaking the study, and the purpose of the research, as well as the assumptions on which my study was based. I also discussed the core concepts and formulated the research questions. I introduced the selected paradigms, methodological choices and the research process. Finally, I briefly referred to how I addressed ethical considerations and quality criteria.

In the following chapter, I explore existing literature on the utilisation of colour to create a positive learning environment and the development and support of learners' perceptual, academic, literacy and mathematical skills. Finally, I explain the sensory stimulation theory and how it applies to the study (Laird, 1985).

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

The purpose of the preceding chapter was to provide an introduction and general orientation in terms of this study of limited scope. In Chapter 1, I presented the rationale and purpose of the study, formulated the research questions and presented the working assumptions with which I approached the study. I subsequently clarified key concepts and provided an overview of the selected research design and methodology. I also introduced the ethical principles and the quality criteria I adhered to during this study of limited scope.

In Chapter 2, I provide an overview of the role of colour to support teaching and learning in South African Foundation Phase classrooms. This includes the utilisation of colour to create a positive learning environment, as well as the use of colour to develop learners' perceptual and academic skills. Thereafter, I discuss the utilisation of colour to support the teaching and learning of literacy and mathematical skills.

The final section of this chapter outlines the theoretical framework of the present study, namely, the sensory stimulation theory of Laird (1985). The purpose of this literature review, was to steer my study, identify limitations in the existing knowledge base on teachers' experiences and perceptions regarding the utilisation of colour-based resources to support teaching and learning in Foundation Phase classrooms.

Within the South African education system, the CAPS curriculum offers teachers structured, clear and practical guidelines to utilise the proposed documents, including content, concepts, skills, time allocation, formal assessment requirements and recommended colour-based resources related to each subject and grade. The draft national policy (Department of Education, 2014) on the provision and management of learning and teaching support material (LTSM), indicates that all learners and teachers must have access to the minimum set of resources and learning material within the classroom (Department of Education, 2001). This supports Section 21 of the South African Schools Act 1996 (No. 84 of 1996)

(Constitution of the Republic of South Africa, 1996[5]) which indicates that schools are allocated finances by the Department of Basic Education and are responsible for the availability of these resources. Plevin (2018) highlights the value of implementing classroom management strategies to ensure the availability of such resources to improve and support teaching and learning.

2.2 ROLE OF COLOUR TO SUPPORT TEACHING AND LEARNING IN FOUNDATION PHASE CLASSROOMS

In this section, I discuss literature related to the role of colour as a supportive strategy to create a positive learning environment. I also report on the role of colour to facilitate the teaching and learning of perceptual, early literacy and mathematical skills from a global and South African perspective. Colour is often seen as part of various recommended resources in the classroom to improve and support teaching and learning within the classroom environment (Olurinola & Tayo, 2015).

Dated findings reviewed by Lamberski (1980[6]), highlight the benefits of colour-based resources to focus attention and provide motivation for learning that correspond with recent findings (Olurinola & Tayo, 2015). The support and management of learner behaviour through the utilisation of colour-based resources as a supportive strategy, may establish a context conducive for learning (Lester et al., 2017; Oliver & Reschly, 2007). Walker-Gleaves and Waugh (2017) agree that colour-based resources are a supportive strategy to refine teaching and learning through creating a positive learning environment.

2.2.1 Utilising colour to create a positive learning environment

Colour is a resource that has different uses in education (Shabiralyani et al., 2015). Colour-based resources may be used to create a positive learning environment, focus attention, enhance clarity, and establish a code, as well as label and differentiate classroom resources to improve and support teaching and learning practices (Olurinola & Tayo, 2015). Colour is also universally used in the

[5] I acknowledge that this is a dated source, yet I have consulted it as a primary source in the field (Constitution of the Republic of South Africa, 1996).
[6] I acknowledge that this is a dated source, yet I have consulted it as a relevant source in this context (Lamberski, 1980).

development of instructional material but is often used without due consideration for what is known about colour in research (Nazzaro, 2008). Laird (1985), who emphasised the importance of visual aids as part of the sensory stimulation theory, highlighted the importance of colour-based resources to be readable and clearly visible. Laird (1985) indicates that warm colours such as reds, yellows and oranges will appear larger to the viewer than the cooler blues or greens. Olurinola and Tayo (2015) furthermore describe colour in "temperature" terms by indicating "warm" as stimulating and "cool" as restful, which has the potential to create a positive learning environment.

Colour is an inseparable part of our everyday lives, as we visually perceive the world around us (Jensen & McConchie, 2020). Physiological and psychological responses are related to the utilisation of colour-based resources within any environment (Engelbrecht, 2003). Colour utilised within a physical learning environment has proven to have a profound effect on teaching, learning and behaviour. In a learning environment colour is believed to create both positive or negative behaviour, such as avoidance or withdrawal behaviour, which will affect learners' academic performance and stimulate their senses (Jalil et al., 2013). Barrett et al. (2015) also concluded that the appropriate level of stimulation, such as the utilisation of colour-based resources to support teaching and learning in classrooms, should be balanced. In a well-designed classroom, the layout of the classroom, the displays and colour of the walls should be taken into consideration to support optimal teaching and learning (Barrett et al., 2015).

Gaines and Curry (2011) found that the proper application of colour has become even more important because of inclusive education. Functional aspects rather than the aesthetics of colour may be emphasised. An awareness among teachers regarding the supportive role of colour-based resources, emphasises that colour within the classroom influences a learner's mood, behaviour and academic performance. Research by Elliot (2015) found important contributions to the literature related to colour and psychological functioning. Knowing which colours will allow learners to retain more information, would have an impact on the development and implementation of instructional material and resources. Olurinola and Tayo (2015) advise that teachers should be trained on the instructional benefits of colour-

based resources and how to optimise these benefits for supportive teaching and learning within the classroom context.

During a study of 98 college learners' emotional responses related to colour-based resources, Kaya and Epps (2004) found that, according to the Munsell Colour System, a relationship exists between colour and emotion. The Munsell Colour System (Cochrane, 2014), emphasise that colour consists of three basic attributes, including hue, value and chroma. Hue can be described as the attribute that distinguishes one colour from another. There are ten hues, with the colours red, yellow, green, blue and purple identified as principal hues, while yellow-red, green-yellow, blue-green, purple-blue and red-purple as intermediate hues (Cochrane, 2014). Value is regarded as the degree of lightness or darkness of a colour in relation to white and black and black and white, as well as the shades of grey that are referred to as neutral colours. The third attribute, chroma, refers to the degree of purity or vividness of the hue when compared with a neutral grey of the same value (Centore, 2013).

Kaya and Epps (2004) revealed that principle hues comprised of the highest number of positive emotional responses (80%), followed by the intermediate hues (65%) and the neutral colours (29%). Green has been found to have a positive emotional response, including the feelings of relaxation, calmness, happiness, comfort, peace and hope as it was associated with nature and trees. These findings are supported by Boeri (2019), who indicates that green can be associated with a natural setting. Roberts (2017) used the colour green in the South African-based developed product namely "*Lees Deur Kleur*" (Learning Through Colour) to highlight the vowel combination in words and indicates the calming effect of green which promotes concentration when learners engage and read printed material.

In addition, Kaya and Epps (2004) found that the colour blue elicited feelings of relaxation, calmness, happiness, comfort, peace and hope when associated with the ocean, beach or sky. However, blue also created feelings of sadness and depression relating to ideas of dark skies and feeling "blue". The colour yellow was seen to be lively and energetic because it was associated with the sun or blooming flowers (Kaya & Epps, 2004). In a study based on the effect of red classroom walls on the aggression levels of female high-school learners, Vakili et al., (2019) found

that their aggression increased in general. This corresponds with the findings of Kaya and Epps (2004), who indicate that red is symbolically known as a dominant and strong colour, which has an exciting and stimulating effect. While red also gives impressions of warmth, activity and passion, it can provoke feelings of aggressiveness, blood, rage and intensity. Gil and Le Bigot (2016) agree that young learners associate red with negative emotions. However, in a study to determine if colour is a feasible resource within the classroom environment, Boeri (2019) found that red and yellow elicited feelings of warmth from primary school learners.

Gaines and Curry (2011) recommend six guidelines to utilise colour as a supportive strategy in teaching and learning spaces. A warm neutral colour scheme of tan or sand sets a desirable foundation for classroom design and should be applied to surfaces. The wall that Foundation Phase learners focus on during teaching and learning should be a medium hue in the same colour range. In addition, Gaines and Curry (2011), recommend that soft colours such as green or blue should be used in other areas within the classroom, while strong, primary colours should be avoided.

Mahnke (1996[7]) also offers functional guidelines to implement colour-based resources as a supportive strategy in classrooms, to create a positive learning environment. Primary schools prefer warm, bright colour schemes that complement the natural extroverted elements in nature. Cool colours are recommended for higher grades and secondary classrooms to focus their attention. Barret et al., (2013) suggest that warm hue colours are more appropriate for higher grades and secondary classrooms, and that cold hue colours are more appropriate for primary school grades, such as Foundation Phase classrooms. The findings of Barrett et al., (2013) are consistent with Yildirim et al., (2015), who indicate that classrooms with cold-hued and low-saturated colours on the walls, such as light blue, are positively perceived by school-age learners in relation to classrooms with warm-hued, low-saturated walls, such as cream or pink.

Colour is furthermore rich with symbolism and it seems that colour-related emotion is highly dependent on personal preferences and past experiences. This means that

[7] I acknowledge that this is a dated source, yet I have consulted it as a relevant source in this context (Mahnke, 1996).

colour consists of an emotional arousing effect; however, the degree of arousing emotion depends on the type of emotion or feeling being attached to it (Sokolova et al., 2015). Teachers should be are aware of colour and its impact on how learners operate in the classroom environment and it should therefore be optimally utilised in educational settings (Engelbrecht, 2003).

2.2.2 Utilising colour to develop learners' perceptual and academic skills

Perception can be described as the ability to give meaning to information gathered by the senses (Jenkinson et al., 2008; Landsberg et al., 2019). Perceptual skills that enable learners to perform adequately in their schoolwork, include visual, auditory and tactual-kinaesthetic perceptions. De Jager (2014) confirms that perception, as part of language and thinking skills, is required to be cognitively ready to learn. The Progress in International Reading Literacy Study (PIRLS) (Howie et al., 2017) states the importance of perceptual skills. PIRLS (Howie et al., 2017) confirms that learners whose parents focused on early perceptual skills through reading activities with the learners before they started school, tended to achieve higher literacy scores (Howie et al., 2017).

Early research has indicated that up to 80% of learning is dependent on vision; it is therefore a required skill for learning (Grove & Hauptfleisch, 1978[8]). Jenkinson et al., (2008) agree, stating that visual processing affects how efficiently we interact with our surroundings as 80% of learned knowledge is visual. Jensen and McConchie (2020) and Landsberg et al., (2019) agree that approximately 80% of our sensory inputs are visual and that visual factors include colour-based resources to support teaching and learning. For example, the Laying Solid Foundations for Learning Grade R resource kit, includes a variety of colour-based tasks and activities to develop visual perceptual skills (Department of Education, 2010).

Visual discrimination, visual memory, visual sequential memory, visual-spatial relationships, visual figure-ground and visual form constancy, as well as visual closure form part of the foundational skills of reading, spelling, writing (Literacy Skills), mathematics and the academic skills required for learning during formal

[8] I acknowledge that this is a dated source, yet I have consulted it as a relevant source in this context (Grove & Hauptfleisch, 1978).

schooling (De Jager & Victor, 2013). Audiblox (Strydom & Du Plessis, 1996[9]) devised a system of cognitive exercises, aimed at the development of foundational learning skills that are being utilised in many South African learning environments. The Audiblox programme (Strydom & Du Plessis, 1996) consists of coloured blocks for learners and a colour-based teacher instruction board to develop visual and auditory perception skills according to specific activities.

Jenkinson et al., (2008) also recommend colour-based activities and resources such as sorting items according to a specific colour, using coloured lines to clarify shape, size and position, colour-based shape and form games, bead and peg patterns, lacing cards, threading activities, paint by number, colouring and copying colour patterns, as well as memorising colours according to a sequence, as activities to enhance visual perceptual skills. Visual perceptual skills are implemented in various programmes as a prerequisite for acquiring adequate literacy and numeracy skills (Andrich et al., 2015; De Jager, 2014). The development, printing and distribution of literacy and numeracy workbooks to all learners in Grade R forms part of the initiative to improve and support the teaching and learning of perceptual skills (Department of Education, 2019a).

Fordham and Hayes (2009) found that the colour of paper also has a significant effect on learners' perceptual skills. Learners supplied with white and yellow coloured paper performed better than those with blue or pink paper. Studies have found that white pages compared to primary-coloured pages used during tests were advantageous but there was no advantage of white paper compared to desaturated and lighter colours (Clary et al., 2007; Tal et al., 2008).

The early work of Bustanoby's Principles of Colour and Colour Mixing (Laird, 1985), also indicate that black on yellow, black on orange and orange on navy blue as the top three colour combinations that will contribute to visibility. Rello and Bighman (2017) found that background colours have an impact on perceptual and early reading skills. Peach, orange, and yellow background colours with black fonts lead to shorter reading times. The British Dyslexia Association (Yoliando, 2020)

[9] I acknowledge that this is a dated source, yet I have consulted it as a relevant source in this context (Strydom & Du Plessis, 1996).

recommend the colour 'cream' for clear readability, which is consistent with previous research when participants viewed black pictures or text over a cream-coloured background (Rello & Baeza-Yates, 2015).

2.2.3 Utilising colour to support the teaching and learning of literacy skills

The International Literacy Association (2019) highlights that the efficient teaching of literacy skills is required to lay a foundation for learning, as it will support learners to develop their potential, and to grow into adults who participate fully in society. During the PIRLS study (Howie et al., 2017), which focused on the reading comprehension of learners in their fourth year of primary schooling, South Africa ranked the lowest out of 50 countries. PIRLS (Howie et al., 2017) found that 78% of South African learners at this level could not read for meaning (Howie et al., 2017). The Read to Lead Campaign (Department of Basic Education, 2015) was implemented to improve the reading abilities of all South African learners.

Studies in South Africa have indicated that learners are not reading adequately, and are unsuccessfully executing tasks that demonstrate key skills associated with sufficient literacy skills (Department of Basic Education, 2015). Willenberg (2018) points out that challenges related to reading may be addressed by increasing access to books and highlighted that the development of a reading culture may contribute to solving the challenges. However, to a certain extent is inadequate teaching also a contributing factor. Swanepoel et al. (2019) found that the explicit use of colour-based resources as a supportive strategy for teaching and learning related to literacy skills, contribute to improved reading comprehension.

The utilisation of colour to support literacy skills is evident in various studies (Condy et al., 2010; Cramer et al., 2016; Hinds & Dodds, 1968[10]; Hines, 2009; Kasmaienezhad-Fard et al., 2017; Maddison, 2007; Outhred et al., 2013; Wrembel, 2009). The processing of colour involves less attention than processing fine-grained visual details when confronted with visual text (Wrembel, 2009). Visual search tasks that require fine-grained orientation features are easier when colour is applied.

[10] I acknowledge that this is a dated source, yet I have consulted it as a relevant source in this context (Hinds & Dodds, 1968).

Therefore, searching for a specific letter among other letters takes longer than searching for letters that are highlighted in a specific colour (Wrembel, 2009).

The work of Hinds and Dodds (1968) state that colour-coded reading material supports learners to identify codes of organisation and sequences, which also assists with the formal learning processes. Gattegno (2010) developed the 'Words in Colour' approach to assist learners to associate specific colours with the specific letter sounds in words. Boyd (2018) agrees that the utilisation of a colour-coded alphabetic system may support learners to hear, isolate, sequence, and manipulate the sounds in words to read. Utilising colour-coded manipulatives, guides learners to think in sounds and to break down words into their component parts, while reinforcing the visual aspects of patterns that create the foundation of the English language (Moats, 2020).

Montessori utilised a colour-coded system for vowels and consonants as part of a spelling and reading programme (Firdaus, 2018). As part of the Montessori programme, learners begin word building with the 'Moveable Alphabet'. Red consonant tiles and blue vowel tiles are used to build and later read basic three-letter words. Gillingham, the creator of the Orton-Gillingham curriculum materials, used salmon-coloured vowel cards and white consonant cards as part of the Phonics Drill Card pack (Gillingham & Stillman, 1997[11]). By differentiating the letter types by colour, learners have a clear view of the organisational structure of the English orthography system. Orlassino (2014) devised the Orton-Gillingham-based 'Blast Off to Reading' lessons, by utilising colour to emphasise the specific sound introduced during a reading lesson.

The THRASS (Teaching of Handwriting, Reading and Spelling Skills) system developed a periodic table of English consisting of 44 phonemes and 120 graphemes (Davies, 2003). THRASS (Davies, 2003) links each grapheme to a key word, picture and colour. Vowels are indicated in red and consonants in blue (Davies, 1998[12]). The picture cues the learner how to read the word and the

[11] I acknowledge that this is a dated source, yet I have consulted it as a relevant source in this context (Gillingham & Stillman, 1997).
[12] I acknowledge that this is a dated source, yet I have consulted it as a relevant source in this context (Davies, 1998).

phoneme for that particular grapheme demonstrated in that word (Siik & Hawkins, 2013). The picture cues are then used as an analogy to explicitly teach words. In other words, when learners encounter vowel combinations in regular text, they have developed prior knowledge of the proper phoneme-grapheme relationship and may use the THRASS chart as a reference to identify phoneme-grapheme combinations in uninstructed words.

A South African study found the colour-coded THRASS (Davies, 2003) chart to be an effective colour-based resource that can be used in different contexts, including in the classroom and in the home environment (Maddison, 2007). The study found that working within one literacy framework allowed learners to consolidate concepts and had an impact on their performance regarding reading and spelling skills. Condy et al., (2010) concluded that pre-service teachers perceived the THRASS programme (Davies, 2003) as an effective programme to teach the basic knowledge of graphemes and phonemes before making inferences or judgements about texts. These authors (Condy et at., 2010) also found that the colourful THRASS resources (Davies, 2003) were enjoyable. However, it was expensive and not attainable for learners from all the different school contexts (quintile 1, 2, or 3). Panday (2007) confirmed that not all schools are equally well-resourced and that a lack of suitable resources in under resourced schools may have a detrimental effect on teaching and learning.

Morthy and Aziz (2021) found that the utilisation of a colour-based resource, such as colour-coded dominoes contributed to improved sentence construction. These findings are supported by Hettiarachchi (2015), who found that a colourful semantic approach to support the development of narrative skills is helpful. Bolderson et al. (2011) also designed a study that replicated the results obtained by Bryan (1997[13]) and found that colour-based resources support the teaching and learning of expressive language in a written format.

Shabiralyani et al., (2015) explored teachers' opinions on the use of colour-based resources as a supportive strategy to enhance learners' attention in literacy. Colour-

[13] I acknowledge that this is a dated source, yet I have consulted it as a relevant source in this context (Bryan, 1997).

based resources supported the retention of concepts as learners were inspired to engage with the learning materials. The colour-based resources provided a complete example necessary for conceptual thinking and created an environment of interest to learn. Teachers noticed an increased vocabulary and managed to provide concrete experiences to learners (Shabiralyani et al., 2015). Panday (2007) similarly found that audio-visual resources contribute to the meaningful teaching and learning of concepts.

The Rainbow Workbooks supplied by the Department of Basic Education (DBE) (Department of Education, 2019b), also utilise colour as part of the instruction to complete tasks within these workbooks. The DBE (Department of Education, 2019b), has committed to improving the literacy skills of learners by producing, at no cost, a series of colour-based workbooks, as part of a range of interventions, to assist learners from Grades R to 6 to cover the CAPS curriculum (Department of Education, 2019b).

Workbooks that are well-written and well-designed are important indicators for learners to learn and can contribute to productive classroom teaching (Praphamontripong, 2010). An evaluation was done, and the Rainbow Workbooks and government recommended textbooks as utilised by teachers within the specific study, were found to be of a quality defined by international literature (Outhred et al., 2013).

According to Olurinola and Tayo (2015), teachers use various colours to support the development of literacy skills. Blue or black ink is utilised by the learner while red ink is used by the teacher to draw attention to work completed. Colour is also used to differentiate between concepts, for example, a light colour appears brighter against a black background than against white. Olurinola and Tayo (2015) also found that the readability performance was highest on the black on white background context. In addition, these authors (Olurinola & Tayo, 2015) referred to the use of highlighters to mark important information in a textbook. Caudill (2018) supports selective highlighting, but states that it requires explicit teaching, support and directions to be executed successfully, to organise learners' learning and to deepen their understanding.

The efficacy of colour-based overlays as a resource for supporting learners with their literacy skills has been proven successful with some researchers. However, according to a study by Uccula et al., (2014), it requires further research. Colour-based overlays and lenses are widely recommended for frequently identified visual stress due to prolonged reading. The value of colour-based overlays was, however, questioned as a remediation resource for reading difficulties associated with dyslexia (Henderson et al., 2013).

2.2.4 Utilising colour to support the teaching and learning of mathematical skills

Mathematics is often seen as an abstract subject, yet when learners learn through visual and colour-based approaches, mathematics changes for these learners and they often experience an improved understanding of mathematics (Boaler et al., 2016). Adding visual and colour-based approaches to mathematical tasks may improve the effectiveness of a mathematics intervention (Zentall et al., 2013). In addition, visual background colours and colour added to relevant numbers or operation signs, may also improve mathematical skills (Zentall et al., 2013).

Similarly, Lee and Asplen (2004) found that calculations printed on coloured cards increased learners' mathematical knowledge. Colour-highlighting operations furthermore improved mathematical accuracy in comparison with non-highlighted conditions (Kercood & Grskovic, 2009). Zentall et al. (2013) reported differential gains in accuracy when words were highlighted in yellow, indicating that colour has the potential to direct attention to underlying mathematical concepts and changes in calculations with mixed operations.

Naroth and Luneta (2015) found that by implementing the Singapore Mathematics Curriculum in South Africa, the use of the manipulatives was effective as it offered visual and tactile stimulation and improved learning. The Numicon system (Wing & Tacon, 2007) is a multi-sensory approach to developing an understanding of abstract number ideas; it builds on the visual approaches of Stern (1977[14]) and the

[14] I acknowledge that this is a dated source, yet I have consulted it as a relevant source in this context (Stern, 1977).

use of concrete representations of numbers by means of coloured rods (Dias, 2011), to develop arithmetic abilities.

Numicon materials are structured visual representations to make the number system both visual and tactile, indicating the order of the number system (that the 'next' number is 'one more') and how different numbers are related (7=4+3, or 7=1+6). A key feature of this programme is that it provides learners with visual representations of whole numbers in different shapes and colours which assist learners to develop a mental imagery for numbers, thus supporting mental mathematics (Wing & Tacon, 2007). A study done in the Republic of Ireland (Jenkins, 2013), found that the Numicon programme motivated and sustained learners' attention and built their confidence.

Naidoo (2012), who conducted research with South African teachers employed by the KwaZulu-Natal Department of Education, found that utilising colour-based resources made mathematics easier to remember, as wel as interesting and fun. Naidoo (2012) moreover found that efficient teachers often use symbols, colour, diagrams and gestures in the classroom as an alternative to the traditional approach to teaching. The use of colour and other visual resources often create an exciting and interesting mathematics classroom (Naidoo, 2011).

Naidoo (2012) illustrated that the teachers actively engaged their learners in the classroom by using colour-based resources. The use of the colour-based resources was either planned before the lesson or created during the lesson. By using colour-based resources and well-planned interactions, the effective teaching and learning of mathematics may be promoted in any classroom regardless of the school context (Naidoo, 2012). Caudill (2018) further highlights that colour can support mathematical thinking as it organises learners' thinking and makes their thinking more visible. Boaler et al., (2016) indicate that mathematics teaching and learning should become more visual, because there is not a single idea or concept that cannot be illustrated or thought about visually.

2.3 THEORETICAL FRAMEWORK

I relied on the sensory stimulation theory (Laird, 1985) that highlights the importance of senses to enhance and support learning. According to Laird (1985), emphasis is

placed on the investment of senses for change to occur. Instructors, trainers, parents and teachers who manage the process of learning, first try to stimulate and then control what learners see, hear, touch and do during a learning session. More attention is paid to sensory experience than to mental processes or emotional involvement and the sense of sight is emphasised. Environmental input is therefore critical to activate attention and to have a lasting effect (Schunk, 2014).

The emphasis on visual senses as a supportive source for teaching and learning makes the traditional lecture method questionable, unless it is accompanied by visual resources. Laird (1985) indicate that people retain one-tenth of what they have heard 72 hours after hearing it and that the same learners retain 30% of what they have seen (Laird, 1985). However, when the resources appeal to both hearing and seeing, the retention goes up to about 70%. Therefore, the more senses are stimulated, the better the acquisition and retention of knowledge may occur.

Jensen and McConchie (2020) confirm that visual resources may influence how we see and process information. Landsberg et al. (2019) agree that between 80% of all information that is absorbed by our brains is visual. The retina accounts for 40% of all nerve fibres connected to the brain. According to Jensen (2008), our eyes can register 36 000 visual messages per hour.

Laird (1985) highlights that stimulation through the senses is achieved by means of resources and multimedia that contain a range of colours, enlarged pictures and visual presentations. Essential visual elements enable our eyes to compose meaning from our visual field. These essential visual elements may capture a learners' attention before understanding or cognitively manipulating what they have seen (Jensen & McConchie, 2020; Landsberg et al., 2019; Jensen, 2008). Optimal learning may involve more than getting and keeping learners' attention. Other principles such as the piquing of the brains' interest are also useful.

Zadina (2014) indicates that attention is an important factor in changing the brain as a result of learning, but highlights the part of an experience that we pay attention to is the aspect that changes the brain. A stronger chemical reaction with stronger firing in the brain is gained when attention is focused (Zadina, 2014). Therefore, colour-based resources may inform teaching practices and provide a framework for

focusing learners' attention to create a conducive learning environment (Jensen, 2008).

Laird (1985) described certain criteria to be adhered to for the effective implementation of colour-based resources. The author (Laird, 1985) describes a good colour-based resource as unified and containing the relevant information for its intended purpose. Simplicity is highlighted to convey a message in the fewest possible symbols, pictures or words. In addition, colour-based resources should be accurate without unexplained distortions or missing relationships. Emphasis is specifically placed on colour as part of colour-based resources to move away from the parameters of black-and-white presentations (Laird, 1985).

Criteria related to colour-based resources imply a certain intensity, especially for key figures or keywords (Jensen, 2008). Lighter colour tones should serve as a background and key aspects should appear in vivid colours. There should furthermore be a restraint on the number of colours in any one display. Consistency in colour is also important, where reasonable and reliable consistency in the symbolism of the colours is expected (Dzulkifli & Mustafar, 2013).

Legibility is moreover considered to be important and can be attained through readable images (Laird, 1985). Colour should be used with caution as it can add to or hinder legibility. The portability of colour-based resources should also be addressed as a matter of practicality. Lastly, a colour-based resource should be visually clear. Printed words should be accompanied by a picture or photo to produce better retention (Zadina, 2014).

Fiske and Taylor (1984[15]) agree that visual images are most influential because neuroscientists theorise that the brain has an attentional bias for high contrast and novelty; 90% of the brain's sensory input is from colour-based resources and the brain has an immediate and primitive response to symbols, icons and other images. Effective colour-based resources can contribute to improved teaching and learning, however, learning and memory are intricately connected. Learning is the acquisition

[15] I acknowledge that this is a dated source, yet I have consulted it as a relevant source in this context (Fiske & Taylor, 1984).

of new information or knowledge and memory contributes to information being stored and recalled when needed (Hardiman, 2012).

Colour utilised as a visual resource to promote teaching and learning play a role in motivating individuals to learn and benefit from their educational experiences (Schunk, 2014). A study by Dzulkifli and Mustafar (2013) indicate that colour has a significant effect on memory abilities. Colour has the potential to increase the chances of environmental stimuli to be encoded, stored and retrieved successfully. Without memory, learning would be impossible and it is therefore important to engage a child's memory system (Bailey & Pransky, 2014; Schunk, 2014).

Craik and Lockhart (1972[16]) propose that memory is part of levels of perceptual processing, including sensory analyses, pattern recognition and stimulus elaboration. Memory is viewed as a continuum from the temporary products of sensory analyses to the highly elaborate long-lasting products of semantic-associative operations. The shallow memory process involves physical and sensory features such as lines, angles, brightness, pitch and loudness as important environmental factors to focus attention that supports the sensory stimulation theory (Laird, 1985). The context and intensity of sensory information has an impact on the kind of learning the resources produce (Jensen & McConchie, 2020; Schunk, 2014; Zadina, 2014).

Sternberg et al. (2009) agree that the more attention is focused on a visual resource, the better the chances of the information to be transferred to a more permanent memory storage. Research by Pan et al. (2009) supports the influence of colour to capture attention better than other variables. Based on dated research, Ward and Naus (1973[17]) agrees that colour used with young learners is limited to tasks requiring minimal cognitive processing of information. Therefore, it can be concluded that colour may have the tendency to capture attention levels more effectively (Jensen & McConchie, 2020; Landsberg et al., 2019; Schunk, 2014).

[16] I acknowledge that this is a dated source, yet I have consulted it as a relevant source in this context (Craik & Lockhart, 1972).
[17] I acknowledge that this is a dated source, yet I have consulted it as a relevant source in this context (Ward & Naus, 1973).

The sensory stimulation theory thus highlights the utilisation of senses as an important aspect to improve teaching and learning and may be considered as a suitable initial level of processing information to maintain attention (Schunk, 2014). Laird (1985) highlights visual modalities as important, which supports many research findings about the role of visual resources or, more specifically, the role of colour as a visual stimulus to enhance teaching and learning (Olurinola & Tayo, 2015; Shabiralyani et al., 2015; Dzulkifli & Mustafar, 2013; Gaines & Curry, 2011).

2.4 CONCLUSION

In this chapter, I discussed existing literature on the role of colour to support teaching and learning in Foundation Phase classrooms. I focused on the utilisation of colour to create a positive learning environment, as well as the use of colour to develop learners' perceptual and academic skills. I subsequently discussed the utilisation of colour to support the teaching and learning of literacy and mathematical skills. In the final section of this chapter, I explained my selected theoretical framework, namely, the sensory stimulation theory of Laird (1985).

In the following chapter, I discuss the research methodology implemented in the study. I explain the selected epistemological stance and methodological approach I relied on. I furthermore discuss a descriptive case study design, while applying PRA principles, the selection of a research site and participants, data generation and documentation techniques, as well as the data analysis. I conclude this chapter with the quality criteria and ethical considerations I adhered to throughout this study of limited scope.

CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

In Chapter 2, I reviewed existing literature on the utilisation of colour to support teaching and learning in Foundation Phase classrooms. For this purpose, I discussed global and South African perspectives on the utilisation of colour to create a positive learning environment and the development and support of learners' perceptual, academic, literacy and mathematical skills in Foundation Phase classrooms to support teaching and learning. I concluded the chapter by explaining Laird's (1985) sensory stimulation theory as the theoretical framework of my study.

In this chapter, I elaborate on the research methodology and strategies I introduced in Chapter 1. I justify interpretivism as the epistemological paradigm and qualitative research as the methodological paradigm that I relied on during my study. I subsequently explain the selected research design; the selection of research participants and the site; data generation and documentation strategies, as well as the process of data analysis and interpretation. I discuss the quality criteria of the study and conclude the chapter with the ethical considerations I adhered to.

3.2 PARADIGMATIC APPROACHES

In this section, I discuss the epistemological and methodological approaches I relied on during this study of limited scope.

3.2.1 Epistemological paradigm

For the purpose of this study of limited scope, I relied on interpretivism as a meta-theoretical paradigm, thereby recognising that knowledge is gained not only by observation but also by people's experiences, perceptions, values, beliefs, meaning-making and self-understanding (Henning et al., 2004). The interpretivist paradigm accepts various explanations for an individual's actions, thereby implying that meaning is created as individuals engage in social interactions and with their surrounding contexts (Creswell & Creswell, 2018).

Interpretivism allowed me to gain a deep understanding of the participants' perceptions and experiences relating to the utilisation of colour to support teaching

and learning in Foundation Phase classrooms (Wagner et al., 2012). Morgan and Sklar (2012) state that perceptions and experiences may only be understood from the viewpoint of the participants involved, who are experiencing a specific phenomenon and which may lead to insight (Ferreira, 2012; Tuli, 2010) into the phenomenon.

Interpretivism aims to gain knowledge from participants, which is subjectively created, since each person's experiences will be interpreted differently as human life may only be understood from within (Nieuwenhuis, 2016b). An interactive interpretivist paradigm allowed me to investigate and prompt things that we cannot observe. I could probe a participant's thoughts, values, prejudices, perceptions, views, feelings and perspectives during the PRA-based workshop (Wellington & Szczerbinski, 2007). I gained an in-depth understanding of participants' experiences, which represented their knowledge, ideas and perceptions within their social context and culture (Hammersley, 2013).

Interpretivism may not lead to generalisation, but it may lead to insight regarding what South African teachers perceive and experience when they utilise colour-based resources to support teaching and learning in their classrooms (Nieuwenhuis, 2016b; Cohen et al., 2018). I aimed to understand individual teachers' experiences since different individuals interpret experiences differently, leaving multiple perspectives regarding a phenomenon (Mack, 2010). As I obtained knowledge from participants' direct experiences, I generated rich data embedded within the specific context, thus gaining relevant insight into how the selected teachers utilise colour-based resources within Foundation Phase classrooms to support teaching and learning. I hope that future research may be able to utilise this study to employ some form of the "moderatum generalisation" (Williams, 2000, p.215) where the results and conclusions can be used as a base from which to conduct further research in other related contextual settings.

An interpretivist paradigm requires methods that may be time-consuming during the data generation of in-depth descriptions and understanding of a specific phenomenon (Walsham, 2006). However, I addressed this potential challenge by utilising a PRA-based workshop (Chambers, 2002). A PRA-based workshop allowed me to gain insight into the teachers' perceptions and experiences regarding

the utilisation of colour to support teaching and learning in Foundation Phase classrooms. As part of the data-generation process, teachers were requested to share their acquired and implemented knowledge and skills regarding the use of colour as a supportive resource during teaching and learning. The interactive data-generation process allowed the teachers to reflect on their perceptions and experiences in a creative way (Chambers, 2002) within a safe environment.

3.2.2 Methodological paradigm

I followed a qualitative methodological approach in this study of limited scope. Qualitative research is described by Creswell and Creswell (2018) as the exploring and understanding of meaning that individuals assign to a social phenomenon within their context by recognising multiple realities (McMillan & Schumacher, 2014). The focus is placed on social reality as a subjective experience established by individual human experiences (Basit, 2010). Cohen et al. (2018) state that a qualitative research approach aligns with the interpretivist paradigm, since subjectivity, interaction and the recognition of multiple realities are highlighted through the eyes of participants.

A qualitative research approach allows researchers to gather in-depth data within participants' natural setting by engaging with them (Creswell & Poth, 2018). Participants' understanding, descriptions, labels and the meanings they attach to experiences, are furthermore emphasised (McMillan & Schumacher, 2014). Following a qualitative approach enabled me to explore the subjective experiences of teachers within their specific contexts. Insight was gained through a qualitative mode of enquiry that was required to answer the formulated research questions and contributed to my understanding of this study of limited scope (McMillan & Schumacher, 2014; Patton, 2015).

By following a qualitative research approach, I gained an in-depth understanding that provided the basis for further research (Nieuwenhuis, 2016a). Further research may serve as a guide to improved inclusive teaching practices and support learners diagnosed with CVD. A qualitative research approach provides a complex understanding of explanations, which is necessary as multiple factors should be considered for an in-depth understanding of behaviour (McMillan & Schumacher, 2014). Flexibility in qualitative research is another advantage I was able to use as

part of the selected research methodology, since engaging with participants led to a deeper understanding of the phenomenon under study (Merriam, 2002).

Qualitative research is also known to be time-consuming, requiring intense involvement (McMillan & Schumacher, 2014). I acknowledged this limitation and allowed enough time for the research process and report writing, as it is not always possible to account for the complexity involved in studies focusing on human behaviour. As already mentioned, generalisability was not the aim of the study. I therefore focused on an in-depth understanding of a particular phenomenon, namely teachers' utilising of colour to support teaching and learning in Foundation Phase classrooms.

3.3 RESEARCH METHODOLOGY

In this section, I discuss the research process I followed in terms of the selected research design, the selection of participants and the site, as well as the data generation and documentation.

3.3.1 Research design

I implemented a descriptive case study design, applying PRA principles (Chambers, 2002). A descriptive case study design can be described as the way in which the researcher explores a case in-depth, within a specific context (Creswell & Creswell, 2018). According to Stake (1995), a descriptive case study design entails the exploration of a bounded system from multiple perspectives. A descriptive case study takes into consideration the uniqueness and complexity of the specific system in its context through detailed data generation involving multiple sources of information during a specific time and place (Stake, 1995). As indicated, I relied on a descriptive case study design, involving one quintile 5 fee-paying primary school in Pretoria (Gauteng province) (Yin, 2018).

PRA principles (Chambers, 2002) aligns with a descriptive case study research design as it focuses on gaining insight into participants' perceptions and experiences (Ebersöhn et al., 2016). By applying PRA principles, rich-detailed information is generated within the participants' context through their interactive participation and sharing of knowledge when conducting research (Ferreira & Ebersöhn, 2012). Elliott (2001) describes the fundamental aim of action research as

the ability to improve practice rather than to produce knowledge. Fundamental to action research is a cyclical process of planning, action, observation and reflection. Somekh and Zeichner (2009, p. 5) describe this process as "working towards a resolution of the impetus for action in a reflective process of enquiry and knowledge generation, to generate new practice". This approach assumes that information is shared and owned by the participants (teachers in this study) involved within their context (Foundation Phase classrooms in this study) (Chambers, 2002).

Through the use of PRA, I viewed the participants as experts, possessing embedded knowledge regarding their school community (Ferreira & Ebersöhn, 2012). Participants shared their perceptions and experiences of utilising colour-based resources to support teaching and learning in their Foundation Phase classrooms. In addition, as part of my study of limited scope, PRA allowed participants to engage and reflect as part of the PRA-based workshop to raise awareness of their use of colour-based resources to support teaching and learning. It also served to identify potential challenges or limitations regarding the use of colour in their classrooms. Active involvement of research participants is key (De Vos, 2011) during the research process and can become a resource to the participants, thereby providing them with a sense of confidence through their contribution to the research process (O'Neill & McMahon, 2012).

A descriptive case study design allowed for data generation within a purposively selected context. In-depth knowledge of the utilisation of colour, within specific classrooms, as a supportive resource for teaching and learning, was gained through multiple perspectives in a real-life context. By utilising PRA principles, I was able to conduct cost-effective research by including innovative, concrete, visual and creative methods, such as the creation of posters in a small group. This kept participants engaged and supported a positive atmosphere between them and the research team (Ebersöhn et al., 2016).

Allowing myself a mind shift from using a more traditional way of doing research, I embraced the challenge of using an interactive way of generating data. I filled the role of facilitator of the research process as opposed to the teacher in the research relationship (Chambers, 2007). I continually reflected on the research process regarding prompting and timing and not rushing or interrupting participants. This

required flexibility to make changes to the research process when it was required (Chambers, 2002).

Making use of a descriptive case study and applying PRA principles can be time-consuming and complex in terms of data generation and analysis (De Vos, 2011). However, I followed a systematic process to overcome this challenge by providing rigorous data findings and conclusions, to ensure that the research did not become too time-consuming and unmanageable (Yin, 2018).

3.3.2 Selection of research site and participants

For this study, I purposefully selected five Foundation Phase teachers (n=5) from one quintile 5 fee-paying primary school in Pretoria (Gauteng province), thus utilising convenience sampling to select the research site (school). Convenience sampling refers to the selection of cases that are conveniently available and easily accessible (McMillan & Schumacher, 2014). The research site was easily and conveniently accessible through the utilisation of an online platform. While this method of site selection for data generation is cost and time effective, its trustworthiness may be questioned (Nieuwenhuis, 2016b). I therefore, utilised purposive sampling in an attempt to enhance the trustworthiness of the study.

Purposive sampling occurs when participants are selected for a distinct research purpose and according to a set of criteria (Maree & Pieterson, 2016). I purposely selected five Foundation Phase teachers, applying the following selection criteria (Merriam & Tisdell, 2016):

- Participants had to be Foundation Phase (Grade R to 3) teachers from a quintile 5 fee-paying primary school in Pretoria (Gauteng province).
- Foundation Phase teachers had to teach in a learning environment with access to colour-based resources as a visual aid to support teaching and learning.
- Foundation Phase teachers had to attend a PRA-based session and participate in a member checking process voluntarily.
- Participants had to be willing to participate in the study and provide informed consent.

Purposive sampling also implies potential limitations. Generalisation, subject bias and results are dependent on the unique characteristics of the research site and

participants may pose a challenge to provide findings to others (McMillan & Schumacher, 2014). Throughout this study, I remained aware of the perceptions of the participants and relied on detailed observations and field notes, as well as regular discussions with my supervisor.

3.3.3 Data generation and documentation

Since the purpose of the study was to provide an in-depth description of teachers utilising colour-based resources to support teaching and learning in Foundation Phase classrooms, I relied on multiple data-generation techniques to enhance the trustworthiness of the findings of this study of limited scope. Yin (2018) highlights the use of multiple data generation resources as a strength when implementing a descriptive case study design. Generating data from multiple resources confirms findings that would increase trustworthiness in that the descriptive case study reflected the participants' perspectives accurately (Merriam & Tisdell, 2016).

Qualitative data were generated by means of a PRA-based workshop, a member checking session, observation-as-context-of-interaction, visual data (poster), field notes, reflective journaling, document analysis, and verbatim transcriptions of audio recordings. I relied on triangulation in gaining trustworthiness and an in-depth understanding of the phenomenon under study (Merriam & Tisdell, 2016). Triangulation contributed to rich data generation as it provided a varied set of data and it strengthened the credibility of the research findings (Patton, 2015).

3.3.3.1 PRA-based workshop

I facilitated an online PRA-based workshop through Zoom, while the teachers were present at the selected school in Pretoria (Gauteng province). A group-based activity in which all participants were actively engaged, was selected as a suitable approach for the initial PRA-based workshop (Ferreira & Ebersöhn, 2012; Ebersöhn et al., 2016, p.149). Foundation Phase teachers participated as a group and completed posters (visual data) while reflecting on their own experiences of utilising colour within Foundation Phase classrooms to support teaching and learning. I relied on a member checking session to verify the teacher's viewpoints and that the inferences made from the data analysis and interpretation, represented their perceptions and experiences accurately.

PRA-based workshops may guide the process of rich data generation through enabling participants to do their own appraisals, analysis, planning and presentations (Chambers, 2002). In addition, group interactions may activate a range of responses and forgotten details of experiences (Nieuwenhuis, 2016b). In addition, participants may build on each other's responses and add new perspectives and insight to the study that may not be attained through individual interviews (Rubin & Babbi, 2014).

I recorded the presentations with an audio-recorder and transcribed the content of the recordings, as well as the visual posters and field notes for the purpose of data analysis (Yin, 2018). McMillan and Schumacher (2014) indicate that digital recordings ensure completeness of the verbal interactions and provide material for credibility checks. However, note-taking to support the reformulation of questions and probes to record and observe non-verbal communication must be included (McMillan & Schumacher, 2014).

The member checking session enhanced the trustworthiness of this study to confirm my interpretations of the findings based on the transcribed content (McMillan & Schumacher, 2014). Member checking refers to the strategy of determining the accuracy of the results by presenting these to participants and providing them with the opportunity to comment (Creswell & Creswell, 2018). I conducted member checking by creating a WhatsApp group (mobile technology) that included the research participants from the school. I presented the initial themes I had identified to the participants in the form of messages on the group and requested the participants to provide feedback on the accuracy of my interpretations, for example agreeing, adding or adjusting the themes as they saw fit. Participants confirmed my analysis on the utilisation of colour-based resources to support teaching and learning in Foundation Phase classrooms.

A PRA-based workshop also implies potential limitations that I had to keep in mind throughout this study. According to Chambers (2002), some individuals may dominate the process of engagement and discussions may go off at a tangent. I addressed the matter of equal participation at the beginning of the workshop and carefully observed the process of engagement and prompted when necessary to keep the task on track. The process was planned in advance to ensure that it was

conducted in a meaningful way, contributing to this study of limited scope and the existing body of knowledge (Chambers, 2012). Quality criteria to conduct research were applied to enhance the trustworthiness of the process and data generated (Lincoln & Guba, 1985).

3.3.3.2 Observation-as-context-of-interaction

Observation-as-context-of-interaction (Angrosino & Mays de Pérez, 2000) as a source of evidence within a real-world setting was employed (Yin, 2018). According to McMillan and Schumacher (2014), observation entails the generation of data whereby a researcher listens to, hears and records what has been witnessed in the field. I observed the collaboration and interaction that occurred during the PRA-based facilitated activity through Zoom while participants engaged in their natural setting (one of the Foundation Phase classrooms). Nieuwenhuis (2016c) highlights the importance of observation as an essential data-generation technique, as it has the possibility to provide the researcher with insider perspectives regarding the group dynamics and behaviour of participants.

Observation also allowed me to obtain an idea of how questions were approached and experienced throughout the PRA-based workshop. I interacted with participants and was actively involved in the data-generation process (Rubin & Babbie, 2014). Observations were documented through field notes and a reflective journal to provide detailed descriptions of the interaction and conditions that characterised the research setting (Wagner et al., 2012). I made use of a template to capture two dimensions of data to include rich descriptions of what actually took place without value judgements or my own reflection on thoughts and ideas and the meaning I attached to it (Nieuwenhuis, 2016c).

3.3.3.3 Field notes

Field notes constitute written or mechanical recordings from observations made and become the raw data from which a study's findings emerge (Merriam & Tisdell, 2016). Schensul and LeCompte (2013) add that writing field notes can be a difficult task, but that field notes constitute the basis for data upon which a study is based. Nieuwenhuis (2016c) states the importance of accuracy and that field notes should record what you see, hear and experience for the first time. Verbal and non-verbal

behaviour must be recorded in a social setting and reflection of your observations should be done as soon as possible after the event occurred (Brodsky, 2012).

Remembering and recording the specifics of observations can be an intimidating task (Merriam & Tisdell, 2016), however, I followed Taylor and Bogdan's (1984[18]) suggestions for recalling data. I focused my attention on the specific participant, interaction or activity, while I mentally blocked out all the others. I looked for keywords in remarks and mentally played back remarks and scenes to write detailed and clear notes, to not lose any important information. I completed the elaboration of field notes soon after the event to ensure highly descriptive and accurate notes. My field notes consist of systematically written notes including time, date and specific participants (Leavy, 2017)

The reflective component of field notes must also be considered (Merriam & Tisdell, 2016) and is captured in observer commentary by including the researcher's feelings, reactions, hunches, initial interpretations, speculations, and working assumptions. These are comments about the researcher's thoughts regarding the setting, participants, and interactions (Silverman, 2014).

3.3.3.4 Reflective journal

By keeping a reflective journal during the research process, I documented feelings, thoughts, experiences and ongoing reflections and observations. Recording ideas and insights gained as you move through the research process, provides an additional source of data to be analysed (Nieuwenhuis, 2016a). Chambers (2002) highlights the importance of a reflexive practice during PRA research to ensure good facilitation. The reflective journal contributed to self-monitoring for potential biases (McMillan & Schumacher, 2014; Leavy, 2017). A reflective journal enabled me to make known my own thoughts and experiences of the research process and allowed for a transparent research process.

Creswell and Creswell (2018) support sufficient reflexivity when researchers record notes during the process of research, reflect on their own experiences and consider

[18] I acknowledge that this is a dated source, yet I have consulted it as a primary source in the field.

how their personal experiences may shape the interpretation of results. I limited my discussions of personal experiences in an attempt to not override the importance of their content in the study. The participants were also given a reflective journal to document the utilisation of colour-based resources to support teaching and learning over a period of four weeks, by reflecting on classroom practices and the implementation of colour-based resources within the context of the proposed study.

Documented feelings, thoughts, experiences and ongoing reflections and observations, contributed to a valuable additional source of data that I analysed (Vannini, 2012). Documents utilised within the context of the classroom was also collected and analysed through participants' reflective journal entries. The strength of documents, such as lesson plans, workbooks, and additional educational resources, include that resources were readily available within the context of the proposed study to be analysed (Merriam, 2002).

3.3.3.5 Audio and visual data documentation

Throughout the study, I included audio and visual data documentation, thereby contributing to the credibility of the study (McMillan & Schumacher, 2014). Photographs were used to capture the physical setting of the respective Foundation Phase classrooms, documents and colour-based resources utilised by participants and learners within the participants' classrooms, as well as the posters made by the participants during the PRA-based activity. This provided me with a record of what was generated during the data-generation session, which I subsequently analysed.

Audio recordings of the group presentations were transcribed to capture spoken information (Chambers, 2007; Tessier, 2012). These transcriptions enabled me to verify participant responses at a later stage (Halcomb & Davidson, 2006; Merriam & Tisdell, 2016). Together with the use of field notes and posters to document group responses, data could be triangulated to ensure that no data was lost (Tessier, 2012). I transcribed the audio recordings, read through the transcriptions, while listening to the recordings and correcting errors as the process of transcribing is time-consuming and the quality of verbatim transcriptions is subject to various factors, including human errors (Merriam & Tisdell, 2016).

To protect the anonymity of participants, photographs were only used if written permission was given. Participants had the option of having their faces and names published or not. If they chose the first option, written consent was obtained. While audio data may pose a challenge when participants are not willing to be recorded, all participants gave consent to participate and indicated a preference to be recorded (Elias & Theron, 2012). Audio and visual data can result in vast amounts of data to be analysed, which may seem overwhelming; however scheduling the research process in an organised manner, I managed to complete the data analysis and interpretation, as planned (Merriam & Tisdell, 2016).

3.3.4 Data analysis and interpretation

I conducted inductive thematic data analysis based on the work of Braun and Clarke (2006) to identify patterns or themes that capture the important elements associated with the study. Through inductive thematic analysis, I organised and prepared the generated data from multiple resources. Themes and patterns emerged through the interactive process of data analysis which led to an understanding of participants' perceptions and experiences (Creswell & Creswell, 2018; Nieuwenhuis, 2016a). I followed specific procedures to transfer the data from text to interpretation.

An inductive thematic approach to data analysis and interpretation allowed me to gain a detailed understanding of teachers' utilisation of colour-based resources to support teaching and learning. Saldaña (2013) states that focusing on participants' subjective perceptions, feelings and experiences make inductive thematic data analysis compatible with interpretivism. Participants' views on the phenomenon emerged through themes identified by the process of coding without trying to fit the data into predetermined themes (Boyatzis, 1998[19]). This assisted me to address the research questions (Braun & Clarke, 2006). Braun and Clarke (2006) suggest six phases for inductive thematic analysis. These phases are; familiarising oneself with the data, formulating initial codes, looking for themes or patterns, reviewing identified themes, defining and naming themes, and writing up a report.

[19] I acknowledge that this is a dated source, yet I have consulted it as a primary source in the field (Boyatzis, 1998).

I first spent time to familiarise myself with the data captured through transcripts, field notes and document analysis, as well as audio and visual material and the reflective journals, by reviewing all the data sources a few times at the beginning of the analysis process. I subsequently generated the initial codes by documenting where and how patterns occurred from the posters the participants compiled, as well as from the explanations they provided from the field notes and for the journals that the participants completed.

Next, I combined the codes into themes that accurately portrayed the data generated. I then reviewed the themes to ensure the coherent recognition of how themes were patterned to support the data generated and to ensure that these were relevant, as well as to identify any additional themes that I may have missed. I also defined and named each theme to provide a solid grounding from which to write the research report. Lastly, I wrote the report containing a rich description of the results (Braun & Clarke, 2006). I discussed the themes and related sub-themes that I identified with my supervisor and kept a reflective journal, documenting my thoughts and reflections as I analysed the data (Creswell & Creswell, 2018).

As a novice researcher applying inductive thematic analysis, I focused on the seven personal attributes required for coding to ensure quality driven research (Saldaña, 2013). I was organised and I dated and labelled all incoming data; I also kept multiple digital and hard copies as backups (Theron & Malindi, 2012; Nieuwenhuis, 2016a). Coding is usually a challenging and time-consuming task, but with the necessary perseverance I created a personal work ethic, environment and schedule. I was able to sustain extended periods of time with analytic tasks requiring my full concentration (Yin, 2016). I dealt with ambiguity, exercised flexibility, applied creativity, was rigorously ethical and developed an extensive vocabulary for coding as part of the valuable qualitative research process (Saldaña, 2013).

3.4 QUALITY CRITERIA

Trustworthiness refers to the truthfulness of the data generated during a research process. Patton (2015) indicates that the trustworthiness of research findings and interpretations depends on the careful attention given to data. Lincoln and Guba (1985) describe prolonged engagement and persistent observation of relevant detail pertaining to the study as critical in attending to the trustworthiness of a qualitative

study. Lincoln and Guba (1985) identify the following criteria for evaluating the trustworthiness of qualitative research: credibility, transferability, dependability, confirmability and authenticity.

3.4.1 Credibility

Credibility refers to the question of how research findings match reality. Even though qualitative researchers can never capture the truth of the reality as with quantitative research, there are several strategies to increase the credibility of the study (Merriam & Tisdell, 2016). Triangulated findings contribute to the credibility and involve the use of multiple data-generation methods, resources and investigators (Patton, 2015).

A second strategy for ensuring credibility is member checking, where participants give feedback to ensure an accurate interpretation of the results. Merrriam and Tisdell (2016) state that credibility is an important way of identifying your own biases and misunderstanding of what you observed. Adequate engagement during data generation is a third strategy that makes sense when you are trying to get as close as possible to participants' understanding of a phenomenon (Merriam & Tisdell, 2016). Researcher reflexivity is another strategy that contributes to the integrity of the researcher (Probst & Berenson, 2014).

As part of my study of limited scope, data were triangulated through the use of multiple resources, such as field notes, audio and visual data, verbatim transcriptions, document analysis and reflective journals. Member checking was utilised to establish whether the teachers regarded the results of the study as accurate. Finally, credibility was strengthened through verbatim transcriptions of audio recordings and the continuous reflexivity on my part as researcher throughout the research process.

3.4.2 Transferability

Transferability of a study refers to the degree to which the findings can be transferred to other settings (Merriam & Tisdell, 2016). As part of interpretivism the purpose of the study was to gain an in-depth understanding of teachers' utilisation of colour to support teaching and learning within Foundation Phase classrooms and not to generalise the findings. This is in line with the underlying principle of PRA,

that different contexts consist of characteristics, resources and challenges and therefore findings cannot be generalised to other contexts (Chambers, 2012).

I obtained rich, descriptive data from the research site and participants involved allowed transferability to be facilitated by others who may wish to apply the findings in their unique environment (Guba & Lincoln, 1989). Through purposively selecting the participants and ensuring that each grade within the Foundation Phase was represented, I allowed for variation to enhance the transferability of knowledge (Merriam & Tisdell, 2016).

3.4.3 Dependability

Dependability refers to the extent to which research findings are consistent with a research process that is logical and traceable (Lincoln & Guba, 1985). I aimed to enhance the dependability of this study by providing an audit trail of the research process, including a clearly defined purpose and research questions. I also generated data in a dependable manner, analysed the data through inductive thematic analysis, and compiled a detailed report,. In addition, I used triangulation (Lincoln & Guba, 1985) and included my field notes; verbatim evidence of participant responses, as well as a reflective journal throughout the research process. I worked closely with my supervisor and made use of a reflective journal to document how I went about the analysis of the data and how I made interpretations that contributed to the dependability of the study.

Dependability ensures that, if a study is repeated in a similar context by applying the same methodology, the results of the study will be the same (Stenfors et al., 2020; Given, 2008). This means that the research results should be consistently linked to the generated data and that the findings should be an accurate expression of the experiences and perceptions of the participants. I provided detailed descriptions of the procedures used in the selection of participants, data generation and data analysis in this study of limited scope (Stenfors et al., 2020).

3.4.4 Confirmability

Confirmability of a study indicates the extent to which the findings of a study are shaped by the participants and not by researcher bias, motivation or interest (Lincoln & Guba, 1985). I contributed to the confirmability of the research findings through

practising reflexivity, member checking and triangulation, as well as the availability of a detailed audit trail and regular discussions with my supervisor, (Nieuwenhuis, 2016a).

Confirmability also refers to ways in which the results of a study can be verified to ensure that the results are a true expression of the participants' perceptions and experiences (Merriam & Tisdell, 2016). I remained transparent regarding my personal perceptions during the research process by documenting my reflections in a reflective journal. Member checking was also used to verify that the final findings of the study were accurate and not a reflection of my own perceptions or experiences. I furthermore, employed triangulation to limit the effect of researcher bias. Finally, an audit trail was provided detailing the processes of data generation, data analysis and data interpretation in this study of limited scope.

3.4.5 Authenticity

Lincoln and Guba (1985) state that authenticity implies conscientiously taking into account multiple perspectives, interests, experiences and diverse constructions of reality. Authenticity furthermore refers to the degree to which the participants are heard, and a balanced view of their social lives (McMillan & Schumacher, 2014). Authenticity thus refers to the aim of a study and that researchers' judgement and understanding is based on sound values (Johnson & Rasulova, 2017).

I obtained informed consent from research participants to engage in the study and formed trusting relationships with the participants (Manning, 1997[20]). To enhance the fairness of the study, I conducted a member checking session to confirm that the participants agreed with the results. I also included quotations of the participants' contributions as part of the results to accurately capture their perspectives and experiences (Merriam & Tisdell, 2016). I furthermore exercised reflexivity (Mcshane et al., 2015) and I remained mindful throughout the research process by documenting the participants' true voice and gaining an insider view.

[20] I acknowledge that this is a dated source, yet I have consulted it as a primary source in the field (Manning, 1997).

3.5 ETHICAL CONSIDERATIONS

I adhered to specific ethical principles throughout my study to ensure that this study of limited scope was conducted in an ethically sound way (Ferreira, 2012). I was directed by the guidelines prescribed by The Code of Ethics in Research as outlined by the University of Pretoria (University of Pretoria, 2019). In addition, I attended to the principles of permission to conduct research, informed consent, voluntary participation, autonomy, confidentiality, anonymity, respect for privacy, trust and non-maleficence.

Yin (2018) states that approval for your research plan is necessary to maintain ethical standards when engaging with people and that such approval should be regarded as an important process. The proposed research was presented and approved by the Ethics Committee of the Faculty of Education at the University of Pretoria (University of Pretoria, 2019). In addition, the Gauteng Department of Basic Education provided permission (Addendum A) for the proposed research activities to be conducted online with the selected primary school in Pretoria, (Gauteng province) due to COVID-19 (Coronavirus Disease of 2019) restrictions.

Creswell and Creswell (2018) emphasise the use of informed consent when conducting research to ensure that participants are informed about the level of risk they might possibly experience when they participate in the study. To this end, I obtained informed written consent from each of the participants (Elias & Theron, 2012). Prior to obtaining informed consent, I verbally informed participants that their participation was voluntary and that they had the right to withdraw at any stage without any consequences (Bless et al., 2013). The consent form included information about the benefits and risks of participation, the voluntary nature of participation, the right of the participants to withdraw from the research at any time, the specific purpose and procedures that would be followed during the research, as well as participants' right to ask questions at any time (Creswell & Creswell, 2018).

Participants in this study of limited scope were provided with a sense of autonomy as their rights were constantly acknowledged and respected. Participants were treated with respect and I created a secure environment by establishing a safe and trusting relationship among the participants and myself (Leavy, 2017). I was

transparent in my conduct and openly stated the purpose and procedures that would be followed during the study (Creswell & Creswell, 2018; Leavy, 2017).

Confidentiality refers to the restriction of access to data and the names of the participants, whereas anonymity refers to the use of pseudonyms and disguised locations to prevent a link made between the data and the research participants (McMillan & Schumacher, 2014). During my study of limited scope, I adhered to confidentiality and anonymity by using pseudonyms to protect participants' identity in the discussion of data analysis and writing up of the research findings (Creswell & Creswell, 2018; Leavy 2017).

When conducting research, the application of PRA principles may be challenging in terms of guaranteeing confidentiality and anonymity during an interactive, multiple participant PRA-based workshop. I addressed this matter by requesting participants to respect each other's right to privacy and I handled shared information with confidentiality. Generated data was only accessible to myself (as researcher) and my supervisor (Merriam & Tisdell, 2016).

The data will be securely stored at the University of Pretoria for a period of 15 years, as required by the current ethical guidelines for qualitative research (University of Pretoria, 2018). The generated data to be stored, include audio-visual data, verbatim transcripts of audio recordings, field notes and reflective journals. Throughout this study, I ensured that data was dealt with in a professional and confidential manner (McMillan & Schumacher, 2014; Yin 2018). In addition, I remained aware of the participants' right to confidentiality and anonymity and respected their privacy.

According to Leavy (2017), the building of trust and developing of rapport is necessary aspects of engaging with participants to generate data (Leavy, 2017). In addition, Leavy (2017) highlights the importance of honesty, integrity, and being mindful that the results and findings are truthfully represented through non-judgmental and non-denigrating language. Throughout this study, I informed participants about the purpose of the study and maintained trust throughout the research process (Creswell & Creswell, 2018). I refrained from any form of

deception as the research process and purpose of the study was clearly communicated (Yin, 2018).

The process of trust started when I obtained informed consent from participants to proceed with my study. I treated participants as experts and valued their inputs as role-players throughout the process. For example, I valued participants' individual time and experiences and I therefore carefully planned the implemented PRA-based workshop at a time and place that would be convenient for all participants. Creswell and Creswell (2018) highlight the importance of avoiding exploitation of participants and to consider giving something back to the participants for their involvement in research studies to show respect and appreciation for their valuable contributions. Participants were provided with refreshments during the course of the PRA-based workshop.

Leavy (2017) states that no harm should be done to research participants or the research setting. Patton (2015) indicates that participants and programmes can be put at risk and good intentions, *naïveté*, and ignorance should not be considered as excuses for causing harm. I ensured non-maleficence by remaining aware of the participants' well-being, monitoring all potential risks of the study and clearly communicating all relevant information pertaining to the process of the study to the participants. No tasks beyond my abilities and skills were undertaken and I closely worked with my supervisor throughout the research project. All potential risks of the study were considered in advance to ensure professional research throughout the study (Patton, 2015).

3.6 CONCLUSION

In this chapter I discussed the paradigmatic and methodological paradigms that guided my study. I elaborated on the selection of the research site and participants, data generation, documentation and the analysis of the raw data as part of the research process. My discussions included the quality criteria and ethical considerations I adhered to throughout this study of limited scope.

In Chapter 4, I present the results of the study in terms of themes and sub-themes that I identified during the process of data analysis. I then compare those themes

against the background of existing literature to identify similarities and contradictions when presenting the findings of the study.

CHAPTER 4: RESULTS AND FINDINGS OF THE STUDY

4.1 INTRODUCTION

In Chapter 3, I discussed the research process and paradigmatic approaches I employed. I explained the descriptive case study design, applying PRA-based principles; the selection of the research site and participants; as well as the data generation and documentation methods I used. I subsequently described the data analysis techniques I employed and concluded the chapter with the quality criteria and ethical considerations that guided my study of limited scope.

In this chapter, I report on the results of the study in terms of the themes and sub-themes I identified following the inductive thematic analysis of the generated data. I include verbatim quotations and photographs, as well as excerpts from the participants' reflective journals and excerpts from my reflective journal to support the themes and sub-themes under discussion. Finally, I also discussed the findings of this study by linking the results to literature, which I included in Chapter 2.

4.2 RESULTS OF THE STUDY

Table 4.1 provides a summary of the three main themes and sub-themes I identified through inductive thematic analysis related to teachers' utilisation of colour to support teaching and learning in Foundation Phase classrooms.

Table 4.1: Overview of themes and related sub-themes

THEMES	SUB-THEMES
Theme 1: Colour-based resources utilised to support teaching and learning.	Sub-theme 1.1: Colour-based resources utilised to support the teaching and learning of literacy skills. Sub-theme 1.2: Colour-based resources utilised to support the teaching and learning of numeracy skills.
Theme 2: Utilisation of colour to support classroom management.	Sub-theme 2.1: Utilisation of colour to support classroom organisation. Sub-theme 2.2: Utilisation of colour to support monitoring and evaluation of teaching practices. Sub-theme 2.3: Utilisation of colour to establish a positive classroom environment.
Theme 3: Utilisation of colour to improve learners' academic skills.	Sub-theme 3.1: Use of colour to focus learners' attention. Sub-theme 3.2: Use of colour to enhance learners' cognitive skills. Sub-theme 3.3: Use of colour to develop learners' listening and comprehension skills.

*Henceforth, the following abbreviations apply: PRA = PRA-based workshop conducted on 20 April 2021; P = Participant; RJ = Research journal; WA= Workbook analysis; TJ = Teacher journal.

4.2.1 THEME 1: COLOUR-BASED RESOURCES UTILISED TO SUPPORT TEACHING AND LEARNING

Theme 1 represents the results obtained on the utilisation of colour-based resources to support teaching and learning. Table 4.2 summarises the inclusion and exclusion criteria I applied in identifying the related sub-themes.

Table 4.2: Inclusion and exclusion criteria for Theme 1

SUB-THEMES	INCLUSION CRITERIA	EXCLUSION CRITERIA
Sub-theme 1.1: Colour-based resources utilised to support the teaching and learning of literacy skills.	All data related to colour-based resources utilised to support the teaching and learning of literacy skills.	All data related to colour-based resources utilised to support the teaching and learning of numeracy skills.
Sub-theme 1.2: Colour-based resources utilised to support the teaching and learning of numeracy skills.	All data related to colour-based resources utilised to support the teaching and learning of numeracy skills.	All data related to colour-based resources utilised to support the teaching and learning of literacy skills.

4.2.1.1 Sub-theme 1.1: Colour-based resources utilised to support the teaching and learning of literacy skills

Participants' utilisation of colour-based resources to support the teaching and learning of literacy skills was evident throughout the multiple data sources. Participant E referred to the Letterland posters on the walls for the learners to see. This participant said: *Colour; when I look at those top alphabet letter cards of hers, it's beautiful, it's so colourful and everyone, every picture tells a story and no one pictures' colours are the same* (PRA, P-E, line 153-154). Photograph 4.1 illustrates the Letterland posters that were highlighted by Participant E.

Photograph 4.1: Letterland posters (colour-based resource) to support the teaching and learning of literacy skills

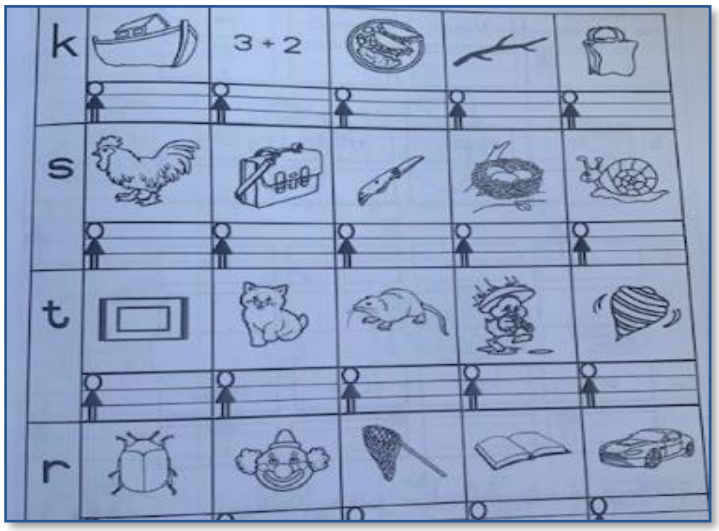
According to Participant D, the Grade R group utilised colour to either paint or draw pictures related to the alphabet characters (Participant D, TJ – Grade R, page 13, day 3). Similarly, Participant C indicated that the Grade 1 group listens to a story related to the letter sound and then utilises colour to draw the story (Participant C, TJ – Grade 1B, page 4, day 3). Another Grade 1 teacher, Participant E, mentioned that the Grade 1 group also utilises crayons to write and practise the new letter-sound formation in colour.

The letter-sound lesson is then supplemented with a PowerPoint presentation that contains colourful pictures related to words that contain the target sound of the week (Participant E, TJ – Grade 1A, page 3, day 1). This is confirmed by Participant A, who confirmed that the Grade 3 group also utilises PowerPoint presentations to revise letter-sound knowledge (Participant A, TJ – Grade 3, page 5, day 4).

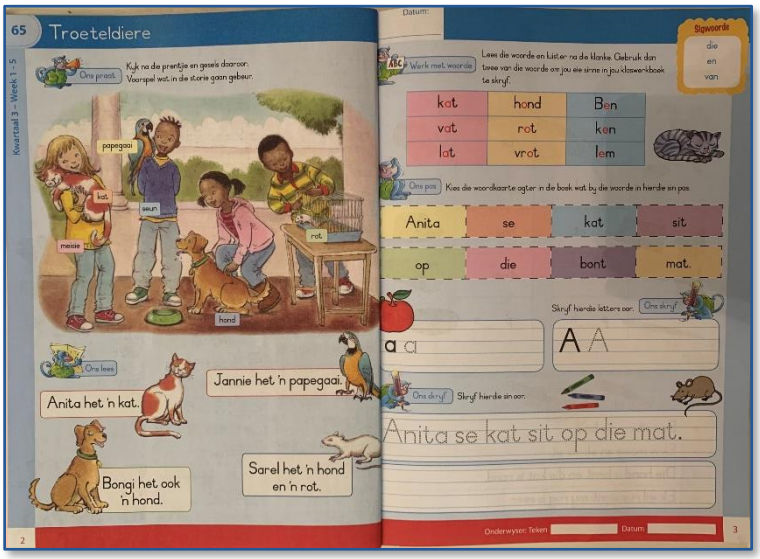
Both Participants E and C confirmed that coloured pencils are also utilised to complete tasks within the Afrikaans and English workbooks (Participant E, TJ – Grade 1A, page 4, day 3; Participant C, TJ – Grade 1B, page 6, day 6) and that large books with colourful pictures are utilised for classroom reading (Participant E, TJ – Grade 1A, page 6, day 7). Participant C added that yellow flashcards with high-frequency words are utilised to help construct sentences (Participant C, TJ – Grade 1B, page 5, day 5).

I analysed the Grade 1 Literacy Workbook (compiled by the teachers), as well as the GDE Rainbow Workbooks and found that the Literacy Workbook was printed in black and white (Photograph 4.2), but contained colour-based activities and instructions, compared to the GDE Rainbow Workbooks that were printed in colour (Photograph 4.3). While analysing the GDE Rainbow Literacy Workbooks, I captured questions and thoughts in my reflective journal: *I realised with these books that they contain an extreme amount of colour and thought about the learner that the one participant mentioned who is colour blind and wondered how he will cope with these books. I also wondered about crowded schools in South Africa and if a teacher will be aware of a learner with colour vision deficiency and how she will assist or accommodate such a learner with an alternative book. I also thought about children with attention difficulties and who become easily distracted. Highlighting the sound introduced may be helpful to draw attention. It grabbed my attention to focus*

on those specific parts. I value the continuity of organising instructions, numbering, headings and subheadings throughout the books with the use of colour. I do also feel that some sections would work just as well without colour. I found some pages very distracting (too much colour, too much information, and clutteredness) and thought of my son with ADHD and many children who I have worked with who this may be too overwhelming and distracting for and might cope better with black-and-white printed worksheets with a hint of colour and less clutter. The workbooks provided by the school seemed a bit dull, but I assume it is more cost-effective. It did not catch my attention. Colour was often part of an instruction to complete or following a teacher given instruction. The black print was also not appealing to me. Some books also seemed cluttered and not well organised *(Researcher, RJ).*



Photograph 4.2: Black-and-white Literacy Workbook sample page compiled by the teachers



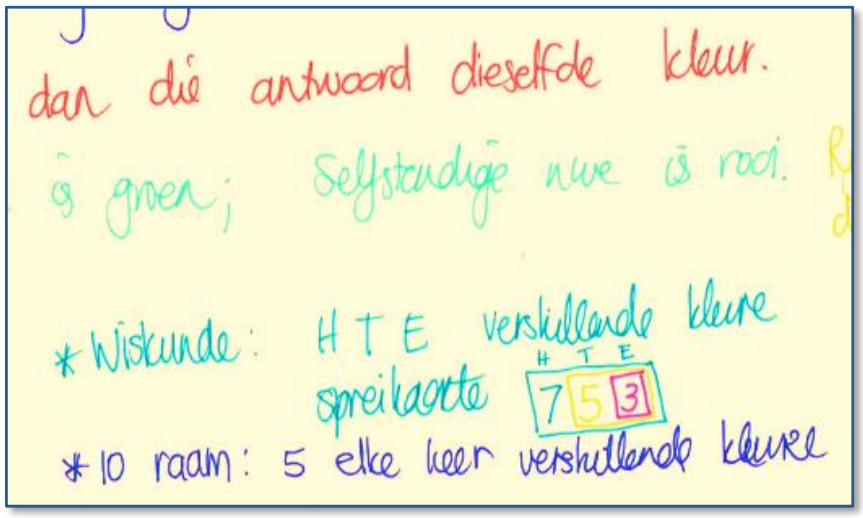
Photograph 4.3: Colourful GDE Rainbow Literacy Workbook sample page

4.2.1.2 Sub-theme 1.2: Colour-based resources utilised to support the teaching and learning of numeracy skills

Participants confirmed that more concrete colour-based resources are utilised to support the teaching and learning of numeracy skills in the Foundation Phase classrooms. Participant E confirmed that shapes are taught through colour. This participant said: *When I think of shapes, I have different coloured shapes as we learn shapes and then we work with the colours and properties of the shapes* (PRA, P-E, line 97 - 98). Another participant indicated that time is introduced and taught by using colour-based clocks: *The long hand is blue and the hour hand is red* (PRA, P-B, line 289, TJ – Grade 2, page 8, day 10). This participant added that units, tens and hundreds (place value) are taught using three different coloured Flard Cards: *I know from the Flard Cards with the math we make it three different colours, the hundreds the tens and the units* (PRA, P-B, line 345 – 346, Photograph 4.5). Participant C similarly indicated that the Grade 1 learners also utilise different coloured Flard Cards to illustrate units and tens (Participant C, TJ – Grade 1B, page 10, day 15). Photograph 4.4 illustrates a poster linked to teaching place value.

Photograph 4.4: Colour-based place-value poster to support the teaching and learning of numeracy skills

Two other participants elaborated and mentioned that the Ten Frame and Abacus are also utilised during mathematics lessons: *The grade ones use the Ten Frame too. There are five in a colour and then the colour changes* (PRA, P-C, line 353 – 354, Photograph 4.5), as well as: *Their abacus with the colour is specific so that there are five colours and then again five colours. It should not be ten whites or ten blues. It must be 5, 5, 5* (PRA, P-B, line 376 – 379, Photograph 4.5).



Photograph 4.5: PRA-based poster indicating the utilisation of colour-coded Flard Cards and Ten Frame to support the teaching and learning of numeracy skills

Participants continued by discussing other colour-based resources that are utilised to support the teaching and learning of numeracy skills. The Grade R teacher utilises pegboards, Unifix blocks and shapes (TJ – Grade R, page 3), while the Grade 1 teacher utilises Unifix blocks, coloured crayons to write and practise numbers, as well as PowerPoint lessons to keep the lessons interesting (TJ – Grade 1A, page 3, day 1). The same Grade 1 teacher indicated that coloured pencils are utilised to complete numeracy worksheets and that multi-coloured sweets, such as Smarties are used for sorting and data-handling activities (TJ – Grade 1A, page 4, day 2).

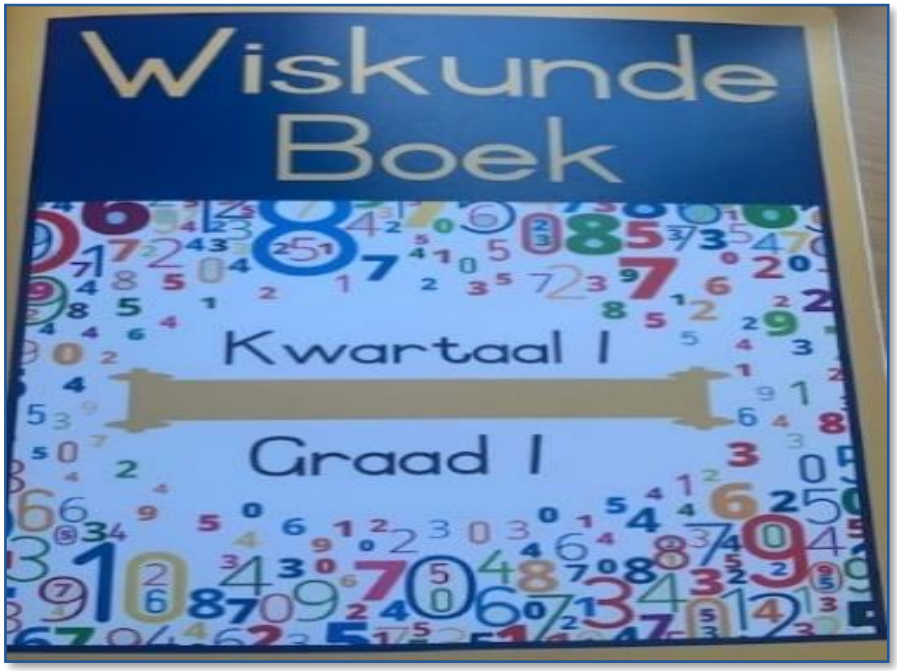
This teacher elaborated by stating that minus-calculations are done with coloured straws and that shape-pattern sequencing activities also contain colour (TJ – Grade 1A, page 7, day 8). Another Grade 1 teacher added that in Grade 1 different coloured blocks are used to visually show learners different number combinations for a specific number taught (TJ – Grade 1B, page 5, day 4). This participant continued by highlighting that red and blue coloured dices are thrown as part of a numeracy activity in the classroom to focus on addition (TJ – Grade 1B, page 10, day 14).

According to Participant B, coloured pencils are also used in Grade 2 to colour-code any numeracy activities (TJ – Grade 2, page 10, day 14). The Grade 3 teacher (Participant A) concluded that coloured pencils are utilised to complete data activities (TJ – Grade 3, page 6, day 6), learning about shapes and time (TJ – Grade

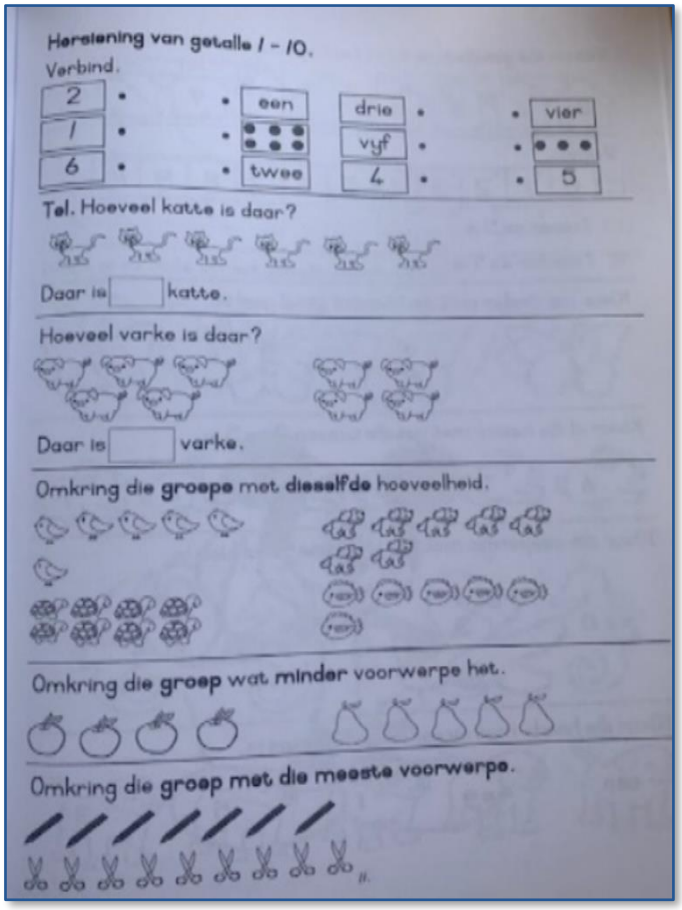
3, page 7, day 9), together with vertical and horizontal addition and subtraction sums (TJ – Grade 3, page 12, day 19) and fractions (TJ – Grade 3, page 13, day 20).

As mentioned previously, the participants did not use the GDE Rainbow Workbooks, but instead compiled and use their own Numeracy Workbook. I analysed the Grade 1 Numeracy workbooks and captured the following thoughts in my reflective journal: *I valued the GDE math book that is colour-coded according to concepts* (Photograph 4.6). *I thought in terms of organisation how it can help a parent to easily go back to sections for revision that may be an area of concern. In terms of colour-coding themes and sections in the book, this may be helpful to a teacher to emphasise or redirect learners* (Researcher, RJ). The schools' Numeracy Workbook has a colourful front cover, but the content is printed in black and white (Photograph 4.7, 4.8). The Foundation Phase classroom walls also contain posters illustrating numeracy concepts (Photograph 4.9 – 4.11).

Photograph 4.6: Colour-coded numeracy content sample page (GDE Rainbow Workbook) to support the teaching and learning of numeracy skills



Photograph 4.7: Colourful front cover of a Numeracy Workbook compiled by the teachers


Herstelning van getalle 1 - 10.
Verbind.
2 • • een
1 • • drie • • vier
6 • • twee
vyf • • • •
4 • • 5
Tel. Hoeveel katte is daar?
Daar is ___ katte.
Hoeveel varke is daar?
Daar is ___ varke.
Omkring die groepe met dieselfde hoeveelheid.
Omkring die groep wat minder voorwerpe het.
Omkring die groep met die meeste voorwerpe.

Photograph 4.8: Black and white Numeracy Workbook sample page to support the teaching and learning of numeracy skills

Photograph 4.9: Foundation Phase classroom walls with colour-coded numeracy posters to support the teaching and learning of numeracy skills

Photograph 4.10: Foundation Phase classroom walls with colour-coded numeracy posters to support the teaching and learning of numeracy skills

Photograph 4.11: Foundation Phase classroom walls with colour-coded numeracy posters to support the teaching and learning of numeracy skills

4.2.2 THEME 2: UTILISATION OF COLOUR TO SUPPORT CLASSROOM MANAGEMENT

In Theme 2, I report on the results that relate to the utilisation of colour to support teachers' classroom management skills. Table 4.3 provides a summary of the inclusion and exclusion criteria I applied in identifying the related sub-themes.

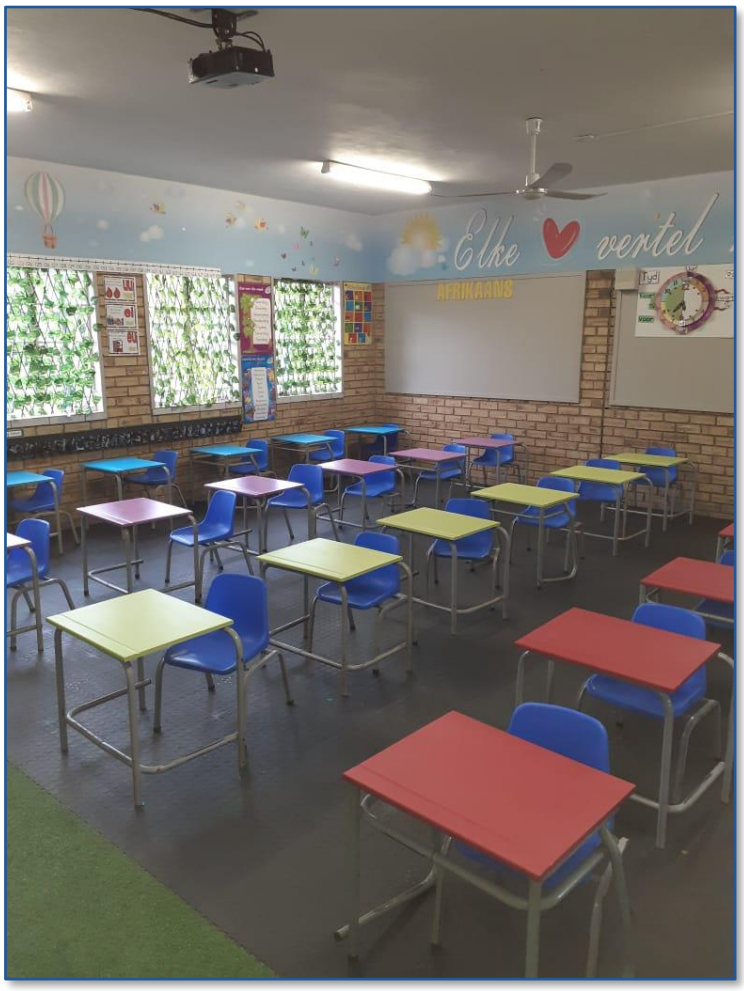
Table 4.3: Inclusion and exclusion criteria for Theme 2

SUB-THEMES	INCLUSION CRITERIA	EXCLUSION CRITERIA
Sub-theme 2.1: Utilisation of colour to support classroom organisation.	All data related to teachers' utilisation of colour to support classroom organisation.	All data related to the utilisation of colour to support the monitoring and evaluation of teaching practices.
Sub-theme 2.2: Utilisation of colour to support monitoring and evaluation of teaching practices.	All data related to the utilisation of colour to support the monitoring and evaluation of teaching practices.	All data related to the utilisation of colour to support classroom organisation.
Sub-theme 2.3: Utilisation of colour to establish a positive classroom environment.	All data related to the utilisation of colour to establish a positive classroom environment.	All data related to the utilisation of colour to support classroom organisation, as well as the monitoring and evaluation of teaching practices.

4.2.2.1 Sub-theme 2.1: Utilisation of colour to support classroom organisation

Participants' utilisation of colour to support classroom organisation contributed to the achievement of increased teaching and learning outcomes. One Participant indicated that the learners are divided into colour-coded groups: *We divide the children into groups. So, I have a blue group, a red group and a yellow group* and that this strategy contributed to an organised classroom environment (PRA, P-D, line 217 - 218). Photograph 4.12 illustrates the colour-coded groups on a poster for easy identification. Photograph 4.13 indicates the colour-coded desks within the Foundation Phase classroom.

Photograph 4.12: Colour-coded group posters to support classroom organisation



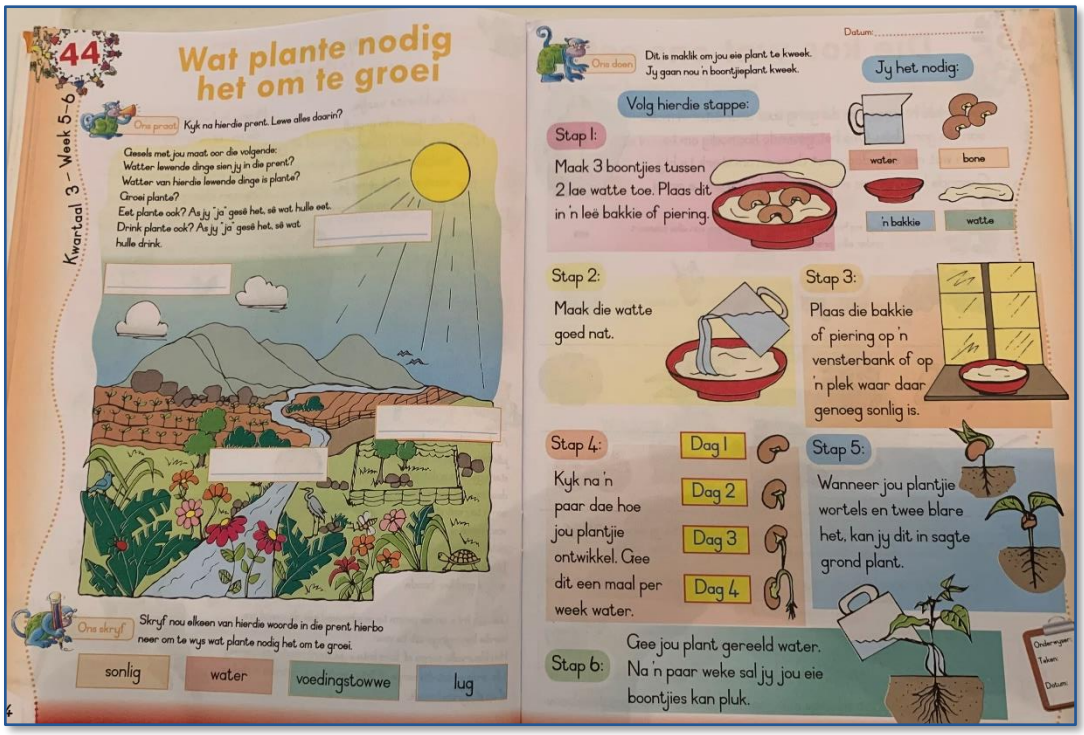
Photograph 4.13: Colour-coded classroom desks to support classroom organisation

Participant A added that different workbooks are also colour-coded: *So it's easier for them to identify, get out of the green books, it's the math books, or whatever* (PRA, P-A, line 613 - 614). As the participants reflected on some of the challenges associated with colour-coding as part of classroom organisation, Participant A mentioned, that learners with CVD will be supported: *It's our job to just point it out to him* (PRA, P-A, line 743).

As part of my reflective notes, I thought about the learner with CVD and that it might be helpful to code his books with symbols instead of using colour to also support both the learner with CVD and the teacher to access workbooks quickly and efficiently (RJ). Participant D, a Grade R teacher, indicated the following in her reflective journal: *Sort their ice cream containers and check that all stationery has all colours* (TJ, page 14), which could be a possible organisational solution for the challenge identified as *But say now a child does not have all his crayons* (PRA, P-B, line 722 – 723) in addition *to I always say take a coloured pencil. You have coloured pencils and crayons, somewhere he has a red one. Unless he has no red at all* (PRA, P-E, line 785 – 786) to replenish stationery.

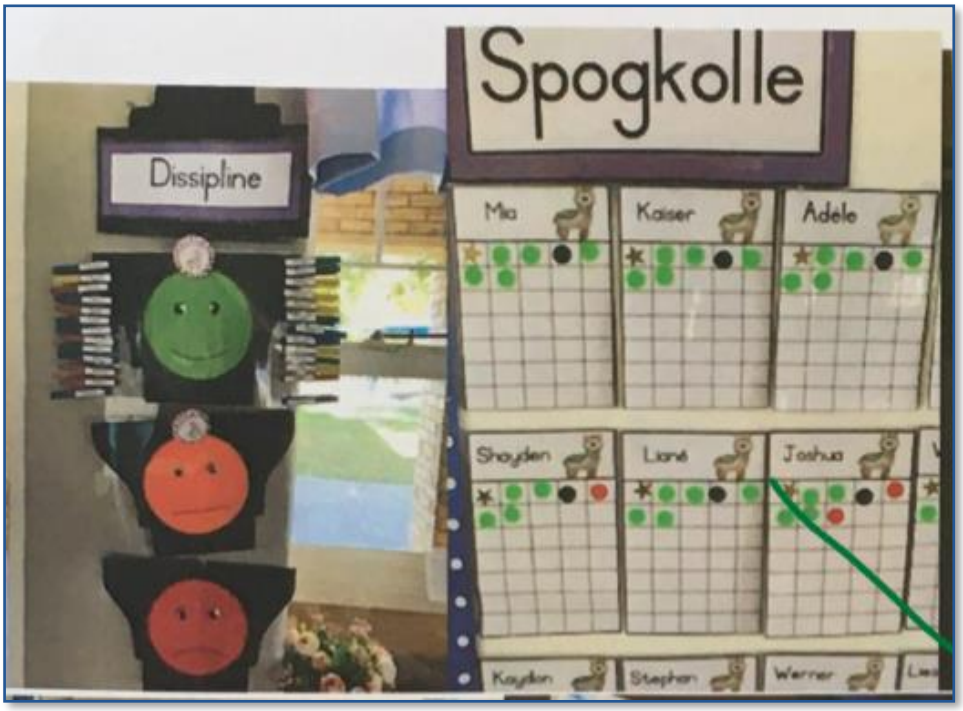
Analysing the GDE Rainbow Workbooks, I identified sections within the workbooks that I considered to be effective to provide classroom instructions to improve classroom management. As such, it is evident that colour-coded indexes and sections are divided according to colour to *help a teacher to direct learners to the specific section that she is reading or referring to* (Researcher, WA). Photograph 4.14 and Photograph 4.15 illustrate the colour-coded sections that may better support classroom organisation.

Photograph 4.14: Colour-coded sections (GDE Rainbow Workbook sample page) to support classroom organisation (Example 1)



Photograph 4.15: Colour-coded sections (GDE Rainbow Workbook sample page) to support classroom organisation (Example 2)

In addition, Participant B reported that colour is also utilised to manage behaviour, as part of classroom organisation.: *All the names are in green and then if someone steps over the line, they go in the orange section or in red if they are 'doomed forever'* (PRA, P-B, line 441 - 442). Furthermore, participants referred to the positive effect of a colour-coded reinforcement system. Participant B confirmed: *We give them dots for motivation on a dot card and we use different colours* (PRA, P-B, line 439 - 440). Photograph 4.16 illustrates the colour-coded reinforcement system to support discipline and motivation (TJ – Grade R, page 4). Similarly, the Grade R teachers incorporate a colour-coded class timetable and responsibility chart to support their classroom organisation more effectively (TJ – Grade R, page 18).



Photograph 4.16: Colour-coded motivational traffic light and dot chart to support classroom discipline and organisation.

4.2.2.2 Sub-theme 2.2: Utilisation of colour to support monitoring and evaluation of teaching practices

According to the participants, various strategies are implemented within the classroom to determine if teaching outcomes and practices are sufficient. During assessment tasks, teachers utilise colour-based instructions such as the following example: *In a paper with an assessment task, they will sometimes ask to circle all the healthy food with a green* (PRA, P-D, line 805 - 806). This form of monitoring and evaluation may assist teachers with more effective teaching practices; however,

Participant D highlighted the challenge regarding the availability of the identified colour. Participant D said: *Then the children do not have that colour, then colours are missing or blunt or whatever and then one can only say that he can use a different colour* (PRA, P-D, line 805 - 806).

I noted the following in my reflective journal regarding the utilisation of colour to support the monitoring and evaluation of teaching practices: *in terms of classroom management and assessing learners, the use of colour, in this case, should assist with marking books. If learners are allowed to just use another colour, this will create more work for a teacher when marking to determine who was allowed another colour or if the work was completed incorrectly* (Researcher, RJ).

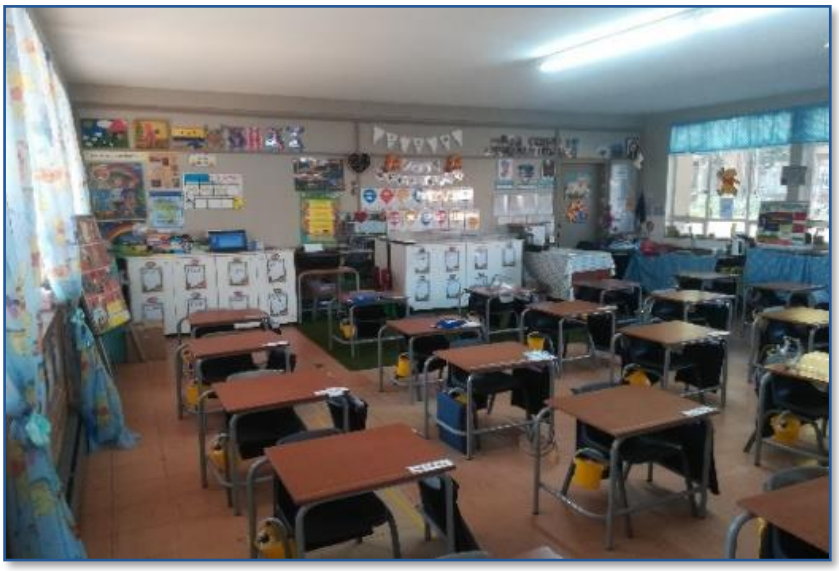
According to Participant D, the Grade R teachers also make use of colour-based instructions to complete shape-related academic tasks (TJ, Grade R, page 15). In addition, the Grade 1 teachers utilise colour-based instructions to assess learners' numeracy skills and during Life Skills to identify body parts (TJ, Grade 1B, page 13, day 1). Participant B indicated that they also use colour-based instructions in Grade 2 to monitor and evaluate learners' ability to follow instructions (TJ, Grade 2, page 4, day 3). Participant B confirmed the usefulness of Flard Cards in different colours as it is helpful when monitoring and evaluating the class's responses when participating in a group-based activity: *So when the children pick it up you can immediately see if they are correct* (PRA, P-B, line 348). In addition, Participant B also reflected on the usefulness of utilising colour when monitoring and evaluating clock-based activities. Participant B said: *So, when the pointers are very close to each other, I just use the colour to see which one the longer one is supposed to be* (PRA, P-B, line 461 - 462).

4.2.2.3 Sub-theme 2.3: Utilisation of colour to establish a positive classroom environment

Participant A reflected on the utilisation of colour to establish a positive environment and indicated the following: *Well, we'll first have to say what you do in your whole class when you walk in. Is it colourful, or is it not one of those things?* (PRA, P-A, line 87 - 88). Participant D referred to the value of a neutrally painted classroom to facilitate a positive classroom environment. This participant said: *Yes, the walls are*

painted neutrally precisely for the idea that the scrapbooks and the children's work should stand out (PRA, P-B, line 89 - 90).

Furthermore, Participant E commented on teachers' preferences regarding the use of colour to establish a positive environment. Participant E explained*: I think every teacher also has a colour that she chooses which is very much a theme, which is a favourite colour* (PRA, P-E, line 92). *Some work better for me in a bright environment and others in a softer colour environment. So, this is for me how children differ. So, we just incorporate it in our lessons* (PRA, P-E, line 94 - 96). Photograph 4.17 and 4.18 illustrate examples of how teachers utilised their preferred colour to create a positive classroom environment.



Photograph 4.17: Teachers' utilisation of colour in the Foundation Phase classroom to create a positive classroom environment

Photograph 4.18: Teachers' utilisation of colour in the Foundation Phase classroom to create a positive classroom environment

Participant E also elaborated on creating a relaxed environment by switching lights on or off during certain times of the year. Participant E explained: *I noticed that when I turn off the lights in the summer, for example, there is a calm feeling after second break, especially because it is so hot. And then the kids also get calmer because these tube lights often make the classroom too hot and it sometimes makes my kids restless. So, in winter, it's different again, warming us up. So, you get warm colours and cool colours* (PRA, P-E, line 205 - 210).

Participants shared various opinions during the PRA-based workshop regarding the utilisation of colour to facilitate a positive classroom environment to support teaching and learning. Participants came to the following conclusions: *Some children function better in a class with a bright environment and others function better in a class that has a neutral or pastel-coloured environment* (PRA, P-B, line 387 - 388). Hereafter, Participant A clarified the use of neutral colours by saying: *It is the child who is the more active type of child who can function better in a neutral type of class and the child who is calmer can be awakened with bright colours.* (PRA, P-A, line 417 - 418). Participants also welcomed the idea of walking into a calm and positive classroom environment or where there is continuity of colour. Participant B said: *We talked about it being nice to walk into a class where it is a calm colour or where there is a colour in the class that is semi-continuous* (PRA, P-B, line 426 - 427).

The participants furthermore discussed possible challenges associated with the utilisation of colour to create a positive environment. Participant B questioned how hyperactive learners are influenced by colour, while Participants D and E agreed that colour might influence them negatively. Participant B added that it may have the following influence on learners, by saying: *If it's too busy in class, if the colours are too much. We also have to guard against it to some extent* (PRA, P-B, line 748). Similarly, this relates to a statement from Participant C about avoiding the colour red in classrooms. Participant C said: *Yes, only if the children are very busy you should not have red and those colours* (PRA, P-C, line 109).

4.2.3 THEME 3: UTILISATION OF COLOUR TO IMPROVE LEARNERS' REQUIRED ACADEMIC-RELATED SKILLS

Theme 3 captures the results obtained regarding the utilisation of colour to improve learners' required academic-related skills. Table 4.4 provides an overview of the inclusion and exclusion criteria I applied in identifying the related sub-themes.

Table 4.4: Inclusion and exclusion criteria for Theme 3

SUB-THEMES	INCLUSION CRITERIA	EXCLUSION CRITERIA
Sub-theme 3.1: Use of colour to focus learners' attention.	All data related to the use of colour to focus learners' attention.	All data related to the use of colour to enhance learners' cognitive skills.
Sub-theme 3.2: Use of colour to enhance learners' cognitive skills.	All data related to the use of colour to enhance learners' cognitive skills.	All data related to the use of colour to develop learners' comprehension skills.
Sub-theme 3.3: Use of colour to develop learners' listening and comprehension skills.	All data related to the use of colour to develop learners' listening and comprehension skills.	All data related to the use of colour to enhance learners' cognitive skills.

4.2.3.1 Sub-theme 3.1: Use of colour to focus learners' attention

Participants reflected on the utilisation of colour-based resources and highlighted the importance of using colour to focus learner's attention. Participant B said*: These are things that stand out so that it catches the children's eyes. But if it's writing then it's usually black. It is usually black because they can see it best from afar* (PRA, P-B, line 126 - 129). Another participant confirmed the use of yellow flashcards with black printed words that were also identified as useful to focus learners' attention. Participant E said: *I have seen with flashcards. I see (Participant name) has those number names, the yellow also works quite well for me* (PRA, P-E, line 131 - 132).

Another strategy to focus learners' attention with the use of colour is to write compound words by using two colours to emphasise that it consists of two words. Participant A confirmed: *Compound words. I also write them in two colours that they can see it is two words that become one word* (PRA, P-A, line 301 - 302).

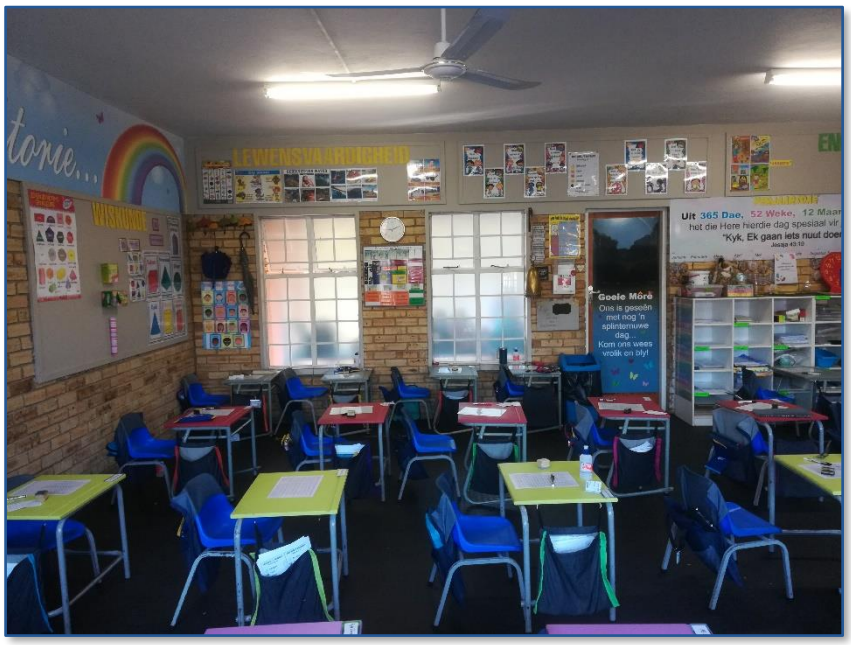
Participants shared more examples on the manner in which they use colour to focus learners' attention. One participant indicated that conjunction words are highlighted in colour to show where two sentences form one (TJ, Grade 2, page 11) and furthermore mentioned that coloured pencils are utilised in classrooms to illustrate the use of punctuation during written activities (TJ, Grade 2, page 3).

Participant A also shared her view on the use of colour-coded books after watching a YouTube video and how it supports learners to focus their attention when they choose books to read. Participant A said: *It immediately attracts a child's attention to go to the bookshelf* (PRA, P-A, line 336 - 337). Participant D agreed and mentioned that: *It catches the eye* (PRA, P-D, line 344). The use of colour to focus learners' attention was also highlighted when participants mentioned how learners are taught to utilise colour as a support mechanism. Participant B explained: *In Grade 2 and Grade 3, we have comprehension tests that they do. We will colour the first question green and circle the number one. Then we look for the answer and then we also underline the answer in green. Then we will read question 2 which we circle with orange and then underline its answer in orange. So, when they do this, they can use the colour to look for the answer to help them* (PRA, P-B, line 445 – 449: TJ, Grade 2, page 7, TJ, Grade 3, page 5).

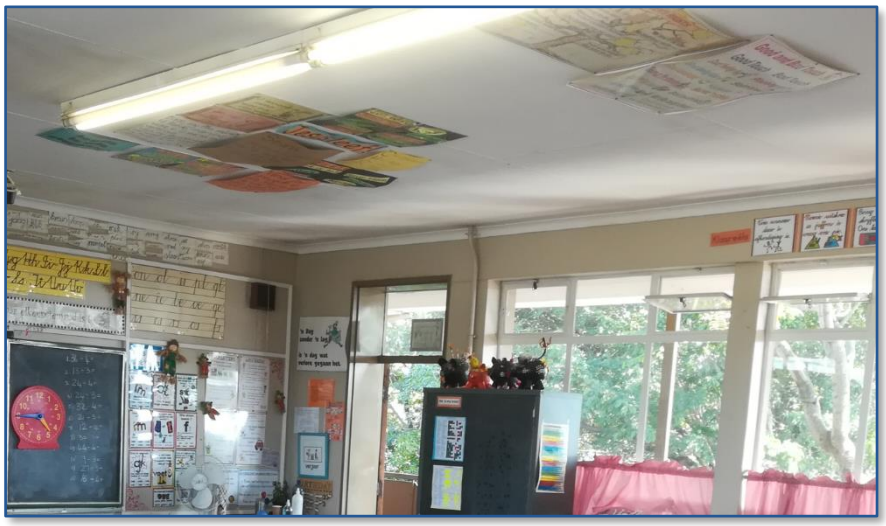
Participant D mentioned that coloured arrows, dots or lines are also utilised to focus learner's attention during reading activities. This participant said*: Then we use colour to know where our place is* (PRA, P-D, line 386). Learners' utilisation of coloured pencils to mark their own work in their workbooks was also identified as a supportive strategy as learners could focus their attention specifically to make corrections. Participant A indicated: *When our children start marking their books, we let them mark with a coloured pencil so that they can see where they are wrong. The correct word can then stand out* (PRA, P-A, line 642 - 645). Another participant said that mathematics operations are also colour-coded in Grade 2. This participant mentioned: *When we do sums, we make the plus sign one colour and the minus sign another colour* (TJ, Grade 2, page 10).

In addition, participants also reflected on learners who chose brightly coloured artwork instead of pastel-coloured artwork when they are asked to choose their favourite picture. In response to the researcher's question about why they thought

the learners prefer the bright pictures, one participant responded in terms of the bright pictures that focus their attention: *It immediately catches their attention* (PRA, P-A, line 659). I wrote in my reflective journal (Researcher, RJ): *This made me think of how bright colourful posters may also then attract the learner's attention within the classroom. I decided to browse through the class photos and it was evident that most of the walls were covered with not only bright artwork but also educational posters* (Photograph 4.19). *Focused attention stood out for me when I saw coloured Life Skills (Bible) posters on the roof and how it also associated with religion for me 'looking up to God'* (Photograph 4.20).



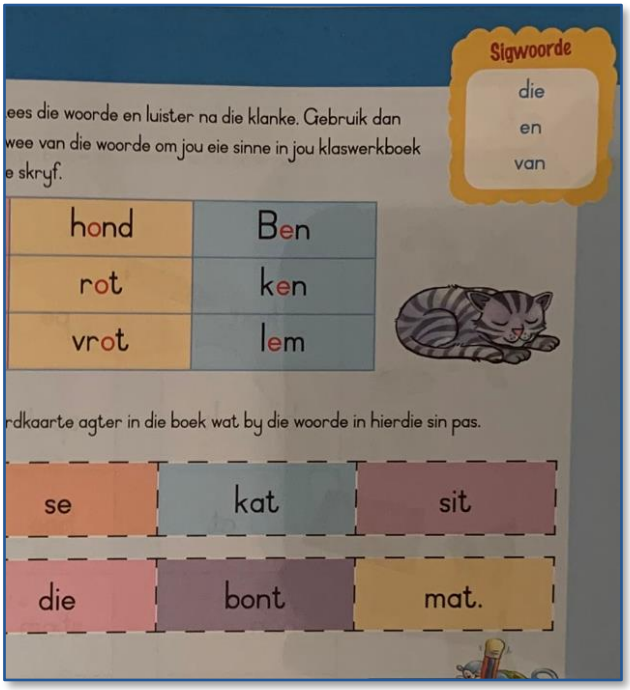
Photograph 4.19: Bright colourful posters on Foundation Phase classroom walls to focus learners' attention



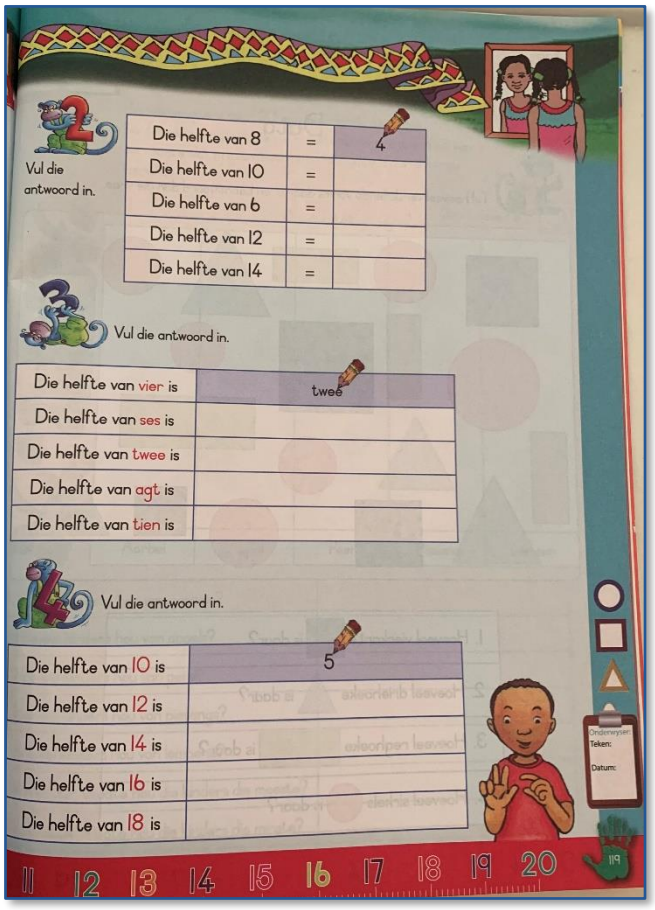
Photograph 4.20: Colourful Life Skills (Bible) posters on the Foundation Phase classroom roof to focus learners' attention

The GDE Rainbow Workbooks also include colour as a strategy to focused attention with the intention to contribute to learners' skills acquisition, knowledge and attitudes towards learning. In addition, the GDE Rainbow Workbooks consists of bright colourful front covers and illustrations throughout the workbooks. Different themes for the Home Language Workbook are identifiable in terms of colour. Each theme features a different colour-coded background throughout the book (Photograph 4.21). Furthermore, sight words in a yellow bubble with the words printed in blue on a white background also stand out (Photograph 4.22). The use of colour to emphasise an important instruction (Photograph 4.23) or section (Photograph 4.24) further support learners in focusing their attention.

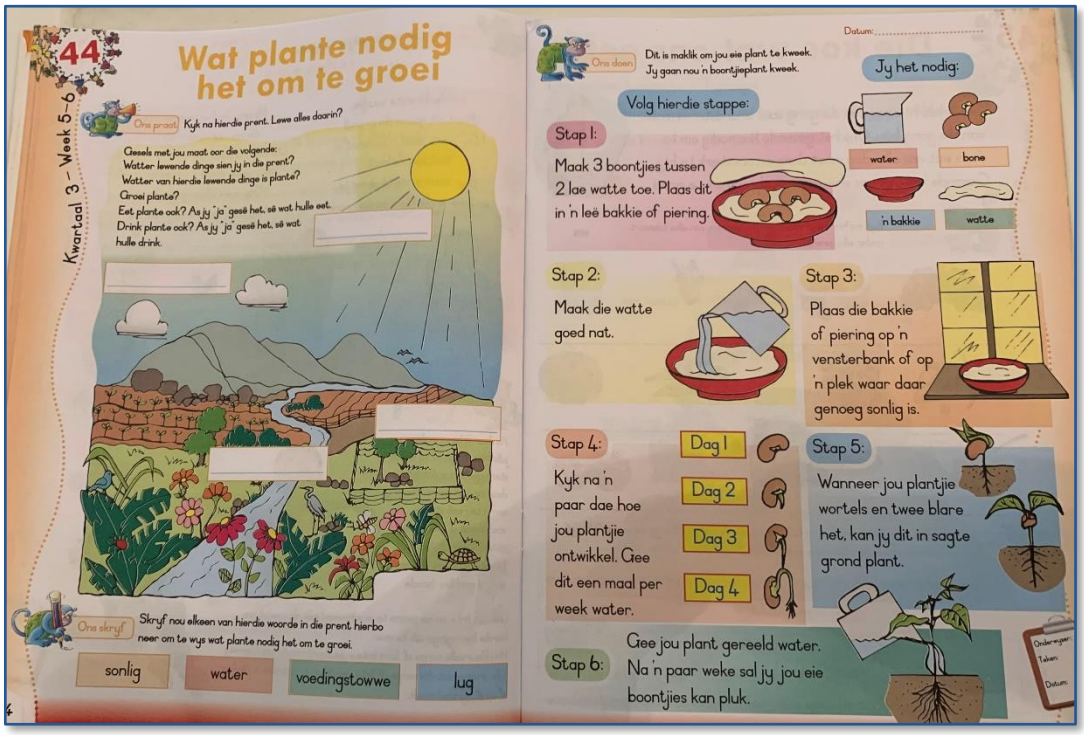
Photograph 4.21: Colour-coded themes sample content page (GDE Rainbow Workbook) to focus learners' attention



Photograph 4.22: The utilisation of colour-based printing to focus learners' attention



Photograph 4.23: The utilisation of colour to emphasise an important instruction to focus learners' attention



Photograph 4.24: The utilisation of colour to emphasise an important section to focus learners' attention

4.2.3.2 Sub-theme 3.2: Use of colour to enhance learners' cognitive skills

The value of utilising colour-based resources within Foundation Phase classrooms to improve learners' cognitive skills, featured throughout the various data sources; it emphasised teachers' efforts to contribute to the acquisition of knowledge and attitudes related to teaching and learning. Enabling a learner with CVD to independently have access to the required coloured crayons or pencils to execute an instructional task was captured by a teacher, Participant C, who also shared a solution: *With the Grade ones, you can stick a drop on it. One drop if the colour is blue and then they can associate it that way. A 'sticker' or just stick something on it* (PRA, P-C, line 150 - 151).

This participant also described how teachers use colour to support learners to identify and apply vowels and consonants. Using letter-sound knowledge posters, they also develop cognitive associations related to letter-sounds (PRA. P-C: TJ, Grade 1B, page 5). Participant C explained*: We do our sounds in two colours. Our consonants and vowels. Ours is red and blue in grade one* (line 157 – 158). *So, if they have to build words, then I always tell them there must be a blue sound except at 'n'* (line 160 -161). *Because the apple sound is the red sound* (line 166). *The cloud sound is blue so we make it as we learn it, every time a different sound is added* (line 168).

Participant B mentioned how the Grade 2 and 3 teachers use different colours to associate a particular part of speech with a colour: *They have posters with adjectives and the children write the adjectives in blue to remember that blue is an adjective, their verbs are green and their nouns are red. Just to have a colour connotation* (PRA, P-B, line 452 – 455: TJ, Grade 3, page 4, day 12). Participants furthermore mentioned that it might be helpful for the two grades to liaise with each other regarding assistance to learners with to ensure they use the same colour to make a more effective cognitive connotation when learners progress to the next grade. The GDE Rainbow Workbooks also make use of coloured word cards, but as mentioned in my reflection, there were no specific associations: *Colour-coded word cards to build sentences, but no continuity, for example, to emphasise parts of speech. Random colours.* (Researcher, WA).

As mentioned in the previous theme related to classroom management, the participants felt that the colour coding of workbooks may also be a helpful cognitive association to develop and support learners. Participant A indicated: *So it's easier for them to identify too, get out the green books, it's the math books* (PRA, P-A, line 613 - 614). Participant B elaborated on another cognitive association skill where teachers guide the learners to imagine a picture in real life or to look around them before drawing a picture. Participant B explained this as follows: *So if they colour a face green with purple hair I will say; look around the class a bit* (PRA, P-B, line 706).

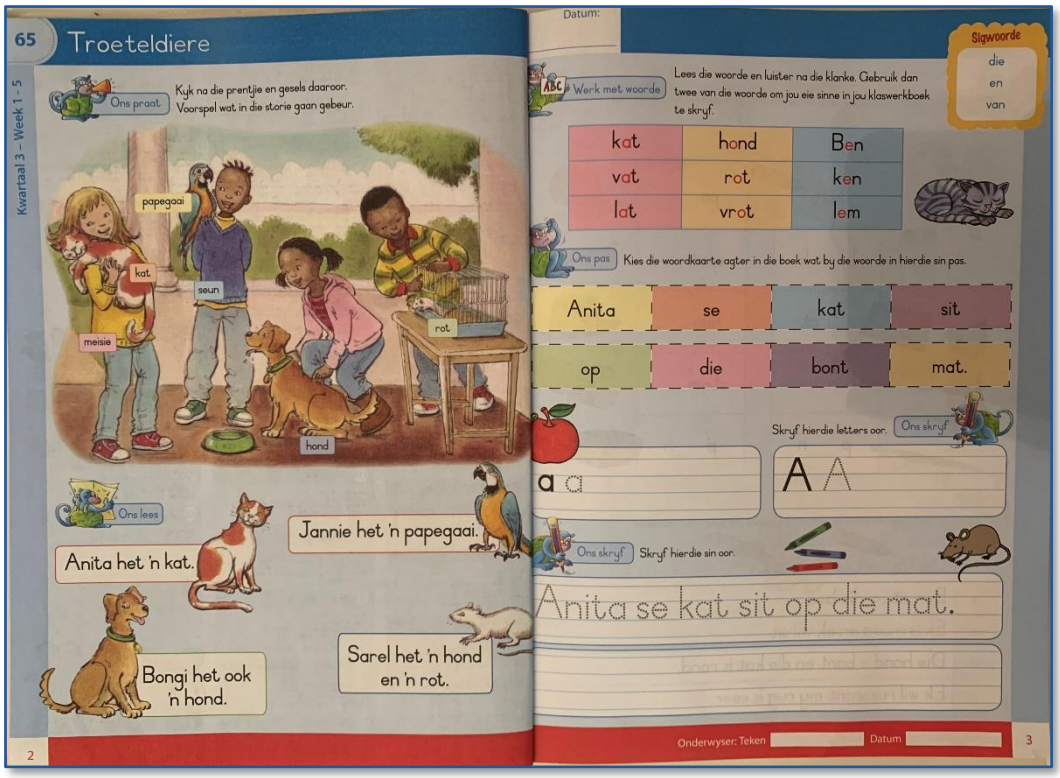
4.2.3.3 Sub-theme 3.3: Use of colour to develop learners' listening and comprehension skills

Life skills knowledge may be acquired through listening to and following instructions as indicated by one of the participants: *Circle everything green that is healthy food* (PRA, P-B, line 723). In relation to this statement, I noted the following in my reflective journal: *Not only are we acquiring knowledge in terms of life skills, but these learners also need to carefully listen to a teacher giving an instruction to follow or they should read an instruction properly to show an understanding of the information taught* (Researcher, RJ).

Spatial orientation skills are also developed through listening to and following instructions by using coloured blocks (TJ, Grade R, page 3). The Grade R participant indicated that some worksheets are required to be completed by following and listening to specific instructions such as: *Colour the ball red* (TJ, Grade R, page 15).

Grade 1 teacher participants confirmed that listening skills are developed when learners follow verbal instructions to draw a picture (TJ, Grade 1B, page 4, day 2). Auditory sequential memory skills are also developed in Grade 1 through listening to and following instructions by using coloured blocks (TJ, Grade 1B, page 4, day 3). Furthermore, literacy skills develop through listening and comprehension skills, for example, one participant said: *Draw a star at the bottom right in yellow* (TJ, Grade 2, page 4). The development of listening skills is further developed when learners are required to listen to colour-based instructions to complete their mathematics activities, as illustrated by Participant C said: *The learners must colour in all the pictures that are the biggest or bigger than eight* (TJ, Grade 1B, page 6, day 6).

The GDE Rainbow Workbooks consist of headings in the main theme colour (a dark shade of the colour printed on a lighter shade of the same colour) with a colourful supporting monkey showing an action related to the instruction to help learners to complete the activity (Photograph 4.25). The workbooks used by the participating school are printed mainly in black and white and aim to develop listening and comprehension skills by using colour. Learners are required to either listen to the teachers' instruction or to follow written instructions to demonstrate their understanding (Researcher, WA).



Photograph 4.25: The utilisation of colour-based printing to develop learners' listening and comprehension skills

4.3 FINDINGS OF THE STUDY

In this section, I relate the identified themes and sub-themes to existing literature. In preparation for my discussion of the findings, I compared my findings with existing literature presented in Chapter 2.

4.3.1 Utilisation of colour-based resources to support teaching and learning

I found that the PRA-based workshop, teacher journals and Foundation Phase classroom photographs highlighted the utilisation of colour-based resources as part of the CAPS curriculum. I also found that teachers referred to different colour-based

resources that are utilised when teaching Foundation Phase subjects. I furthermore mentioned some of the resources referred to in the CAPS (Department of Education, 2014) that relate to the provision and management of learning and teaching support material (LTSM) and that every learner and teacher should have access to a minimum set of core material within their classrooms.

It was evident from the Foundation Phase classroom photographs and the teachers' reflections on colour-coded resources, that the school is well-resourced and has access to sufficient support material. Olurinola and Tayo (2015) and Walker-Gleaves and Waugh (2017) similarly found that colour often form part of various recommended resources within the classroom to improve teaching and learning. Moreover, the availability of colour-based resources corresponds with the findings of Panday (2007), who confirmed that sufficiently resourced classrooms support teaching and learning. However, not all schools are equally well-resourced, and a lack of resources may have a detrimental effect on teaching and learning.

The findings of my study indicate that utilising colour-based resources contributed to the development of listening skills, for example where a teacher gives verbal instructions and learners have to demonstrate knowledge or understanding. Listening skills are essential to learning and require effective development early in a learner's academic life (Department of Education, 2010).

Moreover, findings indicate that reading and writing takes place through focused lessons when colour-based resources are utilise during shared reading, group-based reading, the teaching and learning of phonics, individual writing, grammar, and spelling activities. I found that an emphasis was placed on colour-based resources, such as posters and the use of PowerPoint illustrations to support the teaching and learning of letter-sound principles. Zadina (2014) confirms that printed words should be accompanied by a picture to improve retention.

I also found that other colour-based resources such as enlarged text in big books and in pictures contributed to a supportive teaching and learning environment. The utilisation of such colour-based resources concurs with the findings of Shabiralyani et al., (2015), who confirm that visual aids, such as colour-based resources contribute to the improvement of leaner attention in reading literacy and retention of

concepts when learners are visually engaged and supported through colour-based teaching.

I found that participants in this study utilised colour-based resources to observe, represent and investigate patterns together with qualitative relationships in an effort to support the teaching and learning of numeracy skills. My findings indicate that learners engaged in a variety of activities while utilising various colour-based resources to practise and consolidate their numeracy skills. Similarly, Naroth and Luneta (2015) confirm that the use of colour-based resources, such as concrete apparatus, was found helpful during the teaching and learning of numeracy skills when colour-based resources were utilised to improve teaching and learning through visual and tactile stimulation.

A South African study found that the use of symbols, colour and diagrams as an alternative to traditional teaching methods, created an exciting and supportive teaching and learning environment (Naidoo, 2012). Similarly, Lee and Asplen (2004) found that addition calculations printed on coloured cards increased calculation performance and Kercood and Grskovic (2009) found that colour-coded operations improved the teaching and learning of numeracy.

The utilisation of colour-based resources may lead to the general application of the findings from Caudill (2018), who indicates that colour can assist in organising both teaching and a learner's thinking by making their thinking visible and possibly support the internalisation of learning. Boaler et al. (2016) and Zentall et al. (2013) also confirm that the teaching and learning of numeracy skills need to be more visual to illustrate numeracy concepts.

4.3.2 Utilisation of colour to support teachers' classroom management

I found that teacher participants regarded classroom management as an intertwining of factors and parts found in daily routines, which are necessary for the successful facilitation of teaching and learning. This view is confirmed by Lester et al. (2017). Overall, I found that the utilisation of colour-based resources to maintain and create a positive classroom environment is conducive to supporting teaching and learning, This is evident in the participating teachers' classrooms and organisational

practices, as well as in their monitoring and evaluation practices and the establishment of a positive classroom environment.

The findings of this study indicate that the colour-based resources utilised by teachers form part of various classroom management practices and contributes to learners' acquisition of knowledge, skills and values. I found that the allocation of learners to colour-based groups facilitates small-group teaching, as confirmed in the CAPS document (Department of Education, 2010).

The organised transition into such colour-based groups was complemented by a poster (colour-based resource) to support learners to identify their allocated groups. Comparable to literature, I found that colour-coded workbooks for easy access and the labelling of pencils for learners diagnosed with CVD formed part of daily routines that saved valuable instructional time and supported teaching and learning (Lester et al., 2017).

I furthermore found that daily routines to monitor the availability of colour-based resources, which are often used to support teaching and learning, such as to redirect learners' attention, form part of an organised classroom practice. In addition, I found that specific sections within the GDE Rainbow Workbooks are considered to be effective to support classroom management and organisation. Similarly, Praphamontripong (2010) states that well-written and well-designed (colour-based) workbooks are important indicators for supportive teaching and learning that also contribute to classroom organisation. Outhred et al. (2013) correspondingly found the GDE Rainbow Workbooks compared to quality international literature. The strategic use of colour-based resources, as confirmed by the participants, is in accordance with the findings of Olurinola and Tayo (2015). These authors highlighted that colour-based resources can be used as a supportive resource to focus learners' attention and enhance clarity or differentiate teaching and learning (Olurinola & Tayo, 2015).

Supporting and managing learner behaviour are considered important to achieve positive educational outcomes. Oliver and Reschly (2007) state that behavioural support and management may not guarantee effective teacher instruction; it may however, establish a conducive context for learning. In this study of limited scope,

participants emphasised the effectiveness of their colour-based discipline resources, which encourage good behaviour among learners. These include a colourful ‘discipline traffic light’ and a coloured-coded dot chart that are used as part of classroom management related to learner behaviour.

Findings of this study further highlight that teachers’ planning of educational goals and their role in the classroom affect the quality of their teaching and learning. As mentioned previously (4.3.1), the study also found that teachers’ utilisation of colour-based resources, contribute to engaging lessons. This is in agreement with Laird (1985), who states that teachers who deal with the process of teaching and learning effectively first try to support and manage what learners see, hear, touch and do during a lesson. In addition, teachers highlighted the role of monitoring and assessment of learning. Teachers confirmed how colour-based resources are utilised to monitor and assess learning that occurs in the classroom.

I found that teachers experienced the use of colour-based resources, such as Flard Cards (number builders) and clocks useful to support learners to achieve the planned learning outcomes. Utilising colour-based resources to assess worksheet-related tasks seemed to be helpful. However, the availability of appropriate colour-based resources was simultaneously mentioned as a concern that may require improvement. Strategies, such as checking the available of colour-based resources regularly was also mentioned and this strategy may be employed by teachers who lack the necessary resources. However, Plevin (2018) states that it is counterproductive for teachers to source the required resources while teaching, as less time is available for teaching and learning. This, in turn, contributes to learners becoming more dependent. Plevin (2018) therefore emphasises the value of implementing effective classroom management strategies to ensure the availability of resources.

I found that, teachers feel that the utilisation of colour-based resources may affect learning and behaviour in different ways. In a learning environment, colour-based resources are believed to lead to both positive and negative behaviour, which can affect performance (Jalil et al., 2013). Teachers concluded that active learners function better within a neutral colour-based environment, while the calmer learners function better in a brighter classroom. This conclusion is in conflict with the findings

of Mahnke (1996), who states that warm, bright colour schemes may be preferred by primary school learners and those of Gaines and Curry (2011), who found a warm neutral colour scheme of tan or grey as more desirable.

I thus found teachers highlighted that learners experience and react differently to different colours. This finding confirms that colour may contribute to emotional arousal depending on the type of emotion or feeling attached to it by an individual, as emphasised by Sokolova et al. (2015).

Findings confirm that the colour red has been identified as a concern. A study by Vakili et al. (2019), for example found that red is associated with increased aggression. Kaya and Epps (2004) correspondingly highlighted red as a dominant and strong colour that may have an over-stimulating effect on learners. However, Boeri (2019), who disagrees, found that red and yellow have the potential to elicit warm feelings from primary school learners. It was evident from the teacher participants that they are aware of the influence of colour-based resources on learner's behaviour and that as teachers, they should be more cautious when incorporating colour into their lessons.

Findings regarding the effects of colour on learners are supported by Gaines and Curry (2011), who confirm that the appropriate use of colour is important to facilitate inclusive and supportive classroom practices as encouraged by the Department of Education (2001). Engelbrecht (2003) states that teachers are aware of colour and its impact on teaching and learning in their classrooms. Teachers should therefore be cautious about how and when they utilise colour and colour-based resources in Foundation Phase classrooms.

4.3.3 Utilisation of colour-based resources to improve learners' academic skills

I found that the development of learners' academic skills, knowledge and attitudes are achieved through utilising colour-based resources to support teaching and learning. The findings of this study indicate that learners' senses are supported through a range of colour-based resources, such as larger pictures, as well as statements and facts presented visually by using different resources and multimedia. I furthermore found that teachers used colour to highlight conjunction

words, compound words and punctuation marks, as well as comprehension questions and answers, reading place and colour-coded books were additionally indicated as useful techniques to focus learners' attention.

Similarly, the findings of Zentall et al. (2013), Kercood and Grskovic (2009) confirmed the usefulness of colour-based resources to improve focused attention. Caudill (2018) agrees that the use of colour-based resources support selective highlighting; but points out that the use of such resources requires explicit teaching, support and direction to contribute to improved learning. The findings of Torrents et al. (2011) on the other hand, question the usefulness of such colour-based resources in inclusive classrooms, as colour-based textbooks were found to be unsuitable for learners diagnosed with CVD. It may be concluded that utilising other colour-based classroom resources will have a similar outcome for learners with CVD, but this conclusion requires further investigation.

Findings from this study of limited scope, confirm that the provision of a framework to support learner attention before learners consciously understand or give meaning to what they have seen, was evident. It was found that colour-based resources influence how learners from Foundation Phase classrooms see and process information. This finding agrees with Jensen and McConchie (2020), as well as Landsberg et al. (2019), who state that approximately 80% of our sensory inputs are visual and concluded that the use of colour-based resources improve teaching and learning.

Findings furthermore confirm that the facilitation of focused attention through utilising colour-based resources to support teaching and learning, contribute to a conducive learning environment. However, I also found that teachers need to be more mindful of learners diagnosed with CVD, as these learners may need alternative support for teaching and learning to be included in all classroom activities as indicated in White Paper 6 (Department of Education, 2001).

My findings indicate that the teachers utilised learning strategies, supported by colour-based resources, that contributed to the learners' development of cognitive association. Jensen (2008) confirm that colour-based resources contribute to cognitive association and inform teaching practices by providing a framework to

create a conducive positive learning environment. Hardiman (2012) further emphasises that the development of learners' cognitive abilities through colour-based resources contribute to better academic achievement. The way learners perceive, focus, remember, think and understand lessons are cognitive abilities that are necessary to facilitate the learning process.

I found that repetition contributed to the consolidation of new information and knowledge. This was evident when the participating teachers continuously highlighted utilising colour-based resources to support teaching and learning. Literacy skills, such as letter-sound knowledge, reading and phonics are some examples. CAPS encourages the utilisation of colour-based resources to support the explicit and systematic teaching of reading and phonics (Department of Education, 2012). Participating teachers stated how they implement colour-based resources to support learners to identify and apply vowels and consonant letter-sound knowledge. Teachers further confirmed how they supported learners with visual posters to make cognitive associations related to letter-sound knowledge.

I moreover found that lessons were supplemented with colour-based resources, such as PowerPoint slides with accompanying words and pictures, followed by a colour-based workbook activity. In addition, teachers confirmed that this was part of their weekly teaching practices. Studies by Montessori (Firdaus, 2018), on the utilisation of a colour-coded system for vowels and consonants as part of spelling and reading programmes together with the Orton-Gillingham reading programme (Orlassino, 2014; Gillingham & Stillman, 1997), confirm the usefulness of incorporating colour-based resources to support the teaching of letter-sound knowledge. Boyd (2018), Moats (2020) and Gattegno (2010) similarly confirm that the utilisation of a colour-coded alphabetic system, supports learners to hear, isolate, sequence, and manipulate sounds in words to read.

Furthermore, I found that teachers introduced different colours to associate with the various parts of speech as part of their teaching; learners accordingly applied this during written activities. The effective utilisation of colour-based resources to identify the different parts of speech, corresponds with the findings of Morthy and Aziz (2021), Hettiarachchi (2015), Bolderson et al. (2011) and Bryan (1997), who found that the use of colour-based resources as part of a semantic sentence development

approach, is an effective resource to support the development of learners' academic skills.

I similarly found that teachers realised the necessity to ensure the continuity of colour-based cognitive connotations related to colour-coding parts of speech in different grades. Dzulkifli and Mustafar (2013) confirm the importance of reasonable and reliable consistency in colour-based resources.

Additional skills, such as, listening and comprehension skills are crucial for improving learners' academic skills, as well as knowledge and attitudes within the Foundation Phase classroom. The teaching of listening skills through colour-based resources contribute to future skills, such as following instructions for class assignments or assessments, a better understanding of written work and, ultimately, to learners experiencing less anxiety. Comprehension skills are another important competence that form part of effective reading. This skill is supported by colour-based resources for reading to have meaning as part of learners' academic development. Similarly, Swanepoel et al. (2019) found the utilisation of colour-based teaching and learning practices, such as circling the corresponding reading comprehension question to the answer in a specific colour, contributed to improved reading comprehension. Willenberg (2018) confirms that adequate teaching and learning practices improve comprehension skills.

Findings from this study indicate that the utilisation of colour-based resources to create a conducive learning environment was evident. The findings agree with the sensory stimulation theory (Laird, 1985) that highlights the incorporation of learners' senses as important to improve learning. The findings furthermore agree that colour-based resources may be considered as suitable for processing information to maintain attention and focus for learning to occur (Schunk, 2014). Colour-based resources have been identified through various studies about the role of colour-based resources as a support mechanism to improve teaching and learning.

4.4 CONCLUSION

In this chapter, I presented the results of the research study based on three central themes I identified. I assigned themes with sub-themes and categories that emerged and contextualised the results against the background of existing literature.

I conclude this study in Chapter 5 by addressing the research questions indicated in Chapter 1. In addition, I present the potential value and the limitations of the study and conclude with recommendations for further training, practice, and research.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

The purpose of this study of limited scope was to describe the utilisation of colour-based resources to support teaching and learning in Foundation Phase classrooms. In this chapter, I discuss the findings relating to the research questions presented in Chapter 1. I indicate the potential contributions, limitations and challenges I experienced. I conclude this chapter with recommendations for training related to educational psychologists and I provide recommendations for practice and future research.

5.2 CONCLUSIONS

In the following section, I discuss the conclusions based on the findings of this study of limited scope. I first address the secondary research questions, followed by the primary question that guided this study of limited scope, as formulated in Chapter 1.

5.2.1 Secondary research question 1: How are colour-based resources implemented (or not) in Foundation Phase classrooms as part of the CAPS curriculum to support teaching and learning?

The findings of this study of limited scope highlight the availability and utilisation of colour-based resources in Grade R to 3 classrooms within a well-resourced quintile 5 fee-charging school. Colour-based resources form an integral part of the supportive teaching and learning practices at the school. Various colour-based resources are available across the different subject areas (Literacy, Mathematics and Life Skills) as required by CAPS. The findings of this study show that colour-based resources are strategically used in each Foundation Phase classroom, and that such resources contribute to an environment that is conducive to teaching and learning.

Teachers utilised colour-based resources to assist with the improvement of learners' academic skills. Colour-based resources to support teaching and learning of literacy skills was evident throughout the multiple data sources. For example, Letterland posters and colour-based PowerPoint slides were used to focus learners' attention on literacy skills. Listening to a story related to the weekly letter-sound and utilising

colour-based resources to illustrate the story, also supported the teaching and learning of literacy skills. Colour-based stationery that was utilised supported learners to complete workbook tasks, while large books with colourful pictures were also utilised to improve reading literacy skills. To support writing literacy skills, yellow flashcards with high-frequency words were utilised.

Concrete colour-based resources were utilised in Foundation Phase classrooms to support the teaching and learning of numeracy skills, such as shape, time and place values. The teaching and learning of numeracy skills was further supported by using concrete resources such as colourful clocks, Flard cards (number builders), Ten Frames, Unifix blocks and the Abacus. Colour-based stationery supported learners to complete numeracy workbook-related activities. Colourful PowerPoint lessons, numeracy wall posters and other colour-based resources, such as Smarties were employed to support learners with sorting and data-handling activities. The teaching and learning of numeracy skills were further enhanced by colour-based pattern-sequencing activities, coloured dices to focus on addition and colour-coding math processes such as horizontal addition, subtraction calculations and fractions.

The number of colour-based resources utilised in Foundation Phase classrooms was determined by the teachers' personal preferences. Positive and negative experiences relating to the use of colour-based resources was evident, as teachers reported on the number of colour-based resources they were utilising by sharing examples from their personal teaching practices.

Colour-based resources were also used by teachers when implementing classroom management skills, which was found to contribute to the achievement of educational outcomes. Teachers pointed out that the utilisation of colour-based resources in the classroom contributed towards the effective execution of identified organisational strategies.

Teachers also reported on the monitoring and evaluation of learner-specific educational outcomes and reflected on the benefits and challenges experienced when utilising colour-based resources. One of the challenges they experienced, relate to accommodating learners with CVD in performing instructional work (teaching) and to demonstrate competence (learning). To address this challenge,

they devised simple strategies, such as labelling coloured pencils, to assist learners with CVD to identify the correct colours. However, the teachers did not elaborate on how the learners with CVD are affected or accommodated regarding all the colour-based resources that support teaching and learning in Foundation Phase classrooms.

Colour-based resources were further specifically implemented as part of teachers' strategies to focus learners' attention, to enhance learners' cognitive skills and to use colour to develop learners' listening and comprehension skills. Teachers reflected on the benefits, as well as the challenges, they perceived and experienced when using colour-based resources. These will be discussed in the following sections.

5.2.2 Secondary research question 2: What are the benefits of utilising colour in Foundation Phase classrooms as part of the CAPS curriculum to support teaching and learning?

Based on the findings of my study of limited scope, I can conclude that the utilisation of colour-based resources in Foundation Phase classrooms has benefits. It was evident from the teachers' experiences with the utilisation of colour-based resources in their classrooms that their teaching and learning practices supported classroom organisation and contributed towards achieving increased teaching and learning outcomes.

The utilisation of organisational strategies, such as grouping learners to facilitate small-group teaching, and using a supplemental colour-coded poster to guide learners, created a smooth transition from one task to another. This saved valuable instructional time, which in turn contributed to an organised classroom environment. Colour-coding subject workbooks or labelling coloured stationery for learners with CVD was also highlighted by teachers as strategies contributing to easy access to learner resources.

Discipline and motivation strategies, such as, utilising a colour-coded discipline traffic light and motivational dot chart demonstrated the positive effect of a colour-coded reinforcement system to support teaching and learning in Foundation Phase classrooms. Utilising colour-coded class timetables and responsibility charts also

supported their classroom organisation more effectively, thus contributing to improved teaching and learning in Foundation Phase classrooms.

Utilising routines to monitor the availability of coloured stationery formed part of classroom organisation practices and contributed to the achievement of increased teaching and learning time. Incorporating colour to support classroom organisation, contributed to the achievement of increased teaching and learning outcomes in Foundation Phase classrooms.

Utilising colour to support the monitoring and evaluation of teaching practices was achieved through the various teaching strategies implemented in Foundation Phase classrooms. Utilising colour-based resources to monitor and evaluate learning that occurs during whole-class teaching sessions was highlighted as being beneficial. The teachers intentionally utilised colour-based resources to check for understanding throughout written or oral lessons.

Teachers also utilised colour to evaluate or assess worksheet-related activities through instructions that required the utilisation of specific colour-based resources. Utilising colour-based resources when monitoring and evaluating numeracy skills during whole-class teaching, such as time and place values, was supported by colour-based clocks or Flard Cards that supported the identification of learner responses.

It was found that utilising colour to establish a positive environment, supported teaching and learning in Foundation Phase classrooms. However, teachers also found that colours did not affect all the learners in the same way. They concluded that a neutral environment improved learning for active learners, while a bright classroom stimulated the more passive learners. Entering a calm and relaxed classroom environment displaying a continuity of colour, was experienced as positive. It was also established that a relaxed classroom environment was created through switching tube lights on or off during certain times of the year. Cautiously incorporating colour to improve teaching and learning is important as different learners experience the effect of colour in different ways.

My findings indicate that the utilisation of colour-based resources was implemented as a teaching strategy in Foundation Phase classrooms to improve learners'

academic skills, such as focusing their attention, enhancing their cognitive skills and developing their listening and comprehension skills.

The utilisation of colour-based resources to focus learner's attention was achieved through colour-based resources, such as, specifically designed colourful flashcards, using two colours to emphasise the composition of compound words and the colour-coding of conjunction words and punctuation. Circling a corresponding reading comprehension question to an answer in a specific colour was also identified as a technique to focus learners' attention, which in turn contributed to improved reading comprehension.

It was likewise found that utilising colour-based resources to focus learners' attention, such as reading place cues, colour-based self-correction of work and colour-coded math operations, was identified by the teachers as supportive strategies to improve teaching and learning in Foundation Phase classrooms. The GDE Rainbow Workbooks emphasise important instructions or sections that supported learners to focus their attention.

The utilisation of colour-based resources within Foundation Phase classrooms to improve learners' cognitive skills was also identified. Teachers highlighted that it supported cognitive skills, such as managing the way they perceive, pay attention, remember, think and understand lessons. Colour was utilised to support learners to make a cognitive association when applying letter-sound knowledge, which in turn improved their reading and spelling skills. In addition, different colours were attributed to particular parts of speech that supported the cognitive connotation required to apply skills and knowledge related to sentence construction. Colour coding of workbooks was also found to be an effective cognitive association strategy in Foundation Phase classrooms.

The utilisation of colour-based resources furthermore contributed to the development of listening and comprehension skills, for example as part of the teacher giving instructions and learners having to demonstrate knowledge or understanding. Life Skills knowledge was acquired through listening to and following instructions, as well as spatial orientation. Auditory sequential memory skills were developed through listening to and following instructions utilising coloured blocks.

Learners' development of listening and comprehension skills were supported through listening to their teacher's colour-related instructions or following colour-related written instructions to demonstrate their understanding.

The development of listening and comprehension skills through the utilisation of colour-related instructions, was beneficial for both teachers and learners. It enhanced the monitoring and evaluation process for teachers, while developing foundational learning skills to empower learners for future learning requirements. Comprehension skills were also improved through the utilisation of colour-based resources.

5.2.3 Secondary research question 3: Which challenges are implied when utilising colour in Foundation Phase classrooms as part of the CAPS curriculum to support teaching and learning?

The findings of my study of limited scope highlight some challenges that were experienced by the participating teachers while utilising colour-based resources in their Foundation Phase classrooms. These challenges included resource-related challenges, learner accommodation challenges, environmental challenges and teacher collaboration challenges, which negatively affected teaching and learning in Foundation Phase classrooms.

The resource-related challenge experienced in the context of my study of limited scope, relate to the inconsistent availability of coloured stationery, which negatively influenced some of the classroom management initiatives. Monitoring and evaluating educational outcomes when utilising strategies that incorporate colour-based instructions with coloured resources was challenging where there was a lack of suitable colour-based resources. Some teachers indicated that this challenge could be overcome by simply substituting the coloured pencil with another colour. However, this could create a further challenge thus defeating the purpose of classroom management practices and contributing to ineffective time management when marking and evaluating workbooks.

Accommodating learners' individual needs as part of inclusive education was also found to be a challenge, especially when working with learners diagnosed with CVD. When utilising colour-based resources it was important to constantly be aware of

how the learner diagnosed with CVD may be affected. Teachers were aware of the challenges experienced by learners with CVD in the classroom when colour-based resources were utilised and they devised strategies to address these challenges. However, the challenge remains the ability to sustain inclusive classroom practices. It was thus found that the need to be consciously aware of accommodating learners with CVD when colour-based resources are utilised to support teaching and learning, can be challenging.

Teachers furthermore identified environmental challenges when teaching in Foundation Phase classrooms. They recognised that the utilisation of colour in the classroom affects learning and behaviour. While brightly coloured classrooms were found to be a stimulating learning environment for some learners, it was not the case for other learners. Learners experienced colour uniquely with different colours contributing to different physiological and psychological responses. For example, it was found that the colour red could be disturbing for some learners and that large areas of red in the classroom should be avoided.

Teacher collaboration was also identified as a challenge. Teachers observed that different grades worked in isolation to achieve educational outcomes. They realised that developing strategies and methods as part of a collaborative process between them, would ensure the continuity of cognitive associations throughout the Foundation Phase. This challenge requires future consideration, as utilising colour-based initiatives more collaboratively, will support teaching and learning in Foundation Phase classrooms.

5.2.4 Primary research question: How do teachers utilise colour in Foundation Phase classrooms as part of the CAPS curriculum to support teaching and learning?

Based on the findings of my study of limited scope, I can conclude that teachers utilise colour in Foundation Phase classrooms as part of the CAPS curriculum, despite some challenges they experience. Participating teachers utilised colour-based resources to support classroom management and to improve learners' required academic skills. The findings of my study of limited scope are supported by Laird's (1985) sensory stimulation theory that emphasises the investment of senses

for change to occur, such as the teachers' utilisation of colour-based resources to engage learners visually.

Within the Foundation Phase classroom, change refers to the knowledge, skills and values that learners gain through engaging with colour-based resources as part of the CAPS curriculum. Examples of colour-based resources include academic colour-based posters, colourful PowerPoint slides, colour-based concrete apparatus and learner workbooks. The utilisation of these colour-based resources focused on the visual senses as a supportive visual resource for teaching and learning that occurred.

The colour-based resources and multimedia utilised in Foundation Phase classes, reflected a range of colours, large pictures and visual presentations. These are essential visual elements (Laird, 1985) that enabled learners to derive meaning from their visual field. These essential visual elements also assisted in focusing learners' attention. Optimal teaching and learning furthermore involved the utilisation of colour to support more than getting and keeping learners' attention. Other methods, such as enhancing learners' cognitive skills through colour-based association strategies and the utilisation of colour-based resources to develop listening and comprehension skills, were also found to be useful.

Additionally, colour-based resources also informed teachers' teaching practice and provided a framework to create an environment that is conducive to learning. The utilisation of colour-based resources supported classroom organisation, the monitoring and evaluation of teaching and learning, and created a positive classroom environment in Foundation Phase classrooms.

The utilisation of colour-based resources to support teaching and learning in Foundation Phase classrooms adhered to the criteria of effective implementation of visual resources as highlighted by Laird's (1985) sensory stimulation theory. Colour-based resources implemented by teachers in the Foundation Phase classroom, contained relevant information with the intended purpose of improving teaching and learning. Colour-based resources or colour strategies included the concrete apparatus, colour-based pictures, posters, workbooks and basic colour-based cognitive associations, which supported teaching and learning in Foundation Phase

classrooms. Emphasis was placed on colour as part of visual resources set against the parameters of black-and-white presentations (Laird, 1985) in Foundation Phase classrooms.

The findings of my study also indicate how the utilisation of colour-based resources created a certain intensity to focus learners' attention. Utilising colour-based flashcards and other specifically designed colour-based printed resources, supported teaching and learning.

Reasonable and reliable consistency in the symbolism of the colours were regarded as important to support teaching and learning. However, consistency in the utilisation of colour-based resources was identified as an area of development and improvement in the Foundation Phase classrooms used for this study.

The sensory stimulation theory has as its basic premise that effective learning occurs when the senses are stimulated (Laird, 1985). This corresponds with the findings of this study of limited scope that the utilisation of colour stimulates learners' senses. Colour-based resources can thus be considered as helpful to focus learners' attention, enhancing cognitive skills and developing listening and comprehension skills. It was furthermore found that colour supports classroom organisation, the monitoring and evaluation of teaching practices and establishing a positive classroom environment. This supports the research findings about the role of visual resources, or more specifically the role of colour as a visual stimulus to enhance teaching and learning.

5.3 POTENTIAL CONTRIBUTIONS OF THE STUDY

This study highlighted the value of colour-based resources to support teaching and learning in CAPS curriculum Foundation Phase classrooms. The study contributes to the existing body of knowledge and literature on the utilisation of colour-based resources to support teaching and learning in Foundation Phase classrooms. The findings provide insight into the experiences and perceptions of five Foundation Phase teachers, from one quintile 5 fee-charging school, who utilise colour-based resources in their classrooms.

The experiences and perceptions of the participating Foundation Phase teachers' in this study, offer insight into the potential benefits and challenges that may be associated with the implementation of colour-based resources to support teaching and learning practices. Exploring and describing teachers' perceived benefits and challenges regarding the utilisation of colour-based resources, may initiate further research from a different context, on teachers' perceived benefits and challenges related to the utilisation of colour-based resources in different classrooms from a South African perspective.

The findings of this study, although of limited scope, contribute to the relevant literature by indicating that the utilisation of colour-based resources implies identified benefits and challenges to be considered. The study found that colour-based resources are utilised by teachers during teaching and learning and that it forms part of classroom management strategies with the aim of contributing to the achievement of educational outcomes.

The development and implementation of classroom organisational skills was emphasised through the utilisation of various colour-based resources. The monitoring and evaluation of educational outcomes, classroom-based activities and assessments, were also facilitated through the utilisation of colour-based resources. Creating an awareness of the implications of utilising colour-based resources to create a positive classroom environment conducive for learning, was also outlined. It was furthermore established that learners' academic skills can improve through the utilisation of colour-based resources, as it helps learners to focus their attention, it enhances their cognitive association skills and it develops their listening and comprehension skills.

As indicated previously, this study of limited scope forms part of a broader research project situated within the Centre for Visual Impairment Studies (CVIS) at the University of Pretoria. It potentially contributes to the broader research project, which focuses on learners diagnosed with CVD, with the aim of facilitating educational and social change as a possible outcome for these leaners. CVD, which is currently an under-researched topic in the South African context, requires further investigation, which may lead to more insight and greater awareness about learners with CVD, thus improving their learning opportunities in the classroom.

This study furthermore contributes to the CAPS curriculum knowledge base. The findings regarding challenges with learners diagnosed with CVD when colour-based resources are utilised in the classroom, can lead to learners with CVD being accommodated as part of inclusion within the South African teaching and learning context.

Additionally, the current study may contribute to practice and knowledge application utilising colour-based resources within the participating teachers' specific Foundation Phase classrooms. Through the process of shared knowledge and engagement, the teachers may have augmented a new knowledge base during data generation discussions. As a result, teacher participants may apply the newly gained knowledge and skills to influence their teaching practices positively when engaging with the CAPS curriculum.

5.4 CHALLENGES AND POSSIBLE LIMITATIONS

An unforeseen challenge in undertaking this research, was the difficulty I experienced to find a school that was willing to participate in this study of limited scope. This challenge was further exacerbated when the GDE permission to conduct research was authorised for online data generation only, due to the COVID-19 pandemic. With the necessary patience and assistance from one of my peers and motivation from my supervisor, I managed to overcome this challenge. A descriptive case study design, while applying PRA principles to conduct online data generation via the Zoom platform, was a suitable choice to gain a detailed understanding of teachers' utilisation of colour-based resources to support teaching and learning in Foundation Phase classrooms.

A potential limitation I identified related to a qualitative research approach, similar to interpretivism, which cannot result in generalisable findings. My aim, however, was to gain insight into the experiences and perceptions of five primary school teachers from a quintile 5 fee-charging primary school regarding their utilisation of colour-based resources in their classrooms. The aim was to develop a detailed understanding of this particular group of teachers' (Foundation Phase) experiences and perceptions from their specific contexts, and not to communicate findings that can be generalised to other contexts. However, even though generalisability was

not the aim of this study, the findings may be transferred to a similar context. Yet, it remains the reader's decision to what extent this is possible in related studies.

Another potential limitation relates to remaining objective at all times during the interactive relationships between a researcher and the participants. Applying the strategy of reflexivity through the use of a reflective journal and member checking, I managed to reflect on my experiences and opinions. Acknowledging the influence I may have had on the study or the influence that the research may have had on me was helpful.

This study, as part of a broader research project, considered a particular area of interest to inform related studies. As a result, I often found it challenging to focus only on the questions and aims I applied to my study, as I was aware of the broader purpose and scope of the project. The limited scope of the dissertation also challenged me when I approached the inductive thematic data analysis. By means of regular discussions with my supervisor and a constant awareness of the purpose of the study, I managed to minimise the potential effect of these challenges.

5.5 RECOMMENDATIONS

In the following sections, I make recommendations for training, practice, and future research.

5.5.1 Recommendations for training

Based on the findings of the study, I recommend the continued use of concrete and innovative colour-based resources to support teaching and learning in Foundation Phase classrooms. I recognise the value of understanding teachers' daily utilisation of colour-based resources to develop and implement different levels of support relating to teaching and learning.

I further recommend that teachers are involved as far as possible in the development and implementation of different levels of support for teaching and learning through the use of colour-based resources. In addition, I recommend and encourage the use of collaborative workshops and peer learning sessions.

Training students in the context of school-based support for teaching and learning, is also recommended, based on the findings of my study of limited scope. Students

from support-based professions, such as educational psychology, may value opportunities to work in a school-based environment, as it offers insight into the teaching, learning and inclusion of all learners. Research conducted in school-based environments is furthermore valuable, as the results can be used to inform practitioners of school-based issues and other relevant information.

5.5.2 Recommendations for practice

I recommend that the findings of the study be practically applied across all grades within the Foundation Phase in the school where the study was undertaken. I recommend that access to the content of the findings be shared with teachers in other schools in the area to enhance teachers' understanding of utilising colour-based resources to support teaching and learning in the wider community. I believe that the findings of this study can be implemented in future to support initiatives relating to the inclusion of learners diagnosed with CVD and general support involving teaching and learning.

Furthermore, follow-up discussions to address the challenges when incorporating colour-based resources and reflecting on the implementation of current solutions offered through the study, as well as the implementation of new creative solutions is recommended.

Recommendations for specific challenges identified during the study of limited scope:

- The utilisation of organisational strategies to regularly check learners' stationery to ensure the availability of colour-based resources when required to support teaching and learning.
- Cognisance of learners diagnosed with CVD, while utilising colour-based resources to sustain inclusive classroom practices. Incorporating the practise of labelling coloured pencils to contribute to the development of independent learner skills, is one classroom management initiative that can assist learners with CVD.
- Finding a balance to accommodate learners in general, may be valuable to overcome the challenges of colour in a learning environment that may cause negative behaviour, such as avoidance or withdrawal behaviour.

- Teacher collaboration practices to develop focused attention and cognitive association skills to ensure the continuity of skills throughout the Foundation Phase.

I believe that challenges need not be regarded as problems that cannot be addressed, but rather as opportunities where teachers can apply critical and creative thinking and build collaborative teacher relationships to enable them to overcome the challenges they encounter.

5.5.3 Recommendations for future research

Further research about teachers' utilisation of colour-based resources to support teaching and learning in Foundation Phase classrooms, may include:

- Learners' experiences with utilising colour-based resources to support their learning in Foundation Phase classrooms.
- Learners diagnosed with CVD and their experiences related to the utilisation of colour-based resources to support their learning in Foundation Phase classrooms.
- Teachers' needs relating to the utilisation of colour-based resources to support teaching and learning in Foundation Phase classrooms.
- A wider study on the utilisation of colour-based resources in Foundation Phase classrooms across various provinces and contexts within South Africa, that may contribute to improving learning opportunities in South African schools.

5.6 CONCLUDING REMARKS

In this study, I aimed to explore and describe teachers' utilisation of colour-based resources to support teaching and learning in Foundation Phase classrooms as part of CAPS. The findings of my study highlight the different colour-based resources that were implemented to support teaching and learning, as well as the challenges and benefits associated with the utilisation of colour in the Foundation Phase classrooms.

Teachers shared their experiences about the utilisation of colour-based resources as part of their classroom management practices to enhance learners' academic skills and learning opportunities. These viewpoints should be considered and placed in perspective when engaging with learners and the CAPS curriculum to ensure

effective learning and teaching practices. Identified challenges should be addressed as opportunities where teachers can apply critical and creative thinking and build collaborative teacher relationships to overcome the challenges they encounter.

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ANNEXURE A: PERMISSION TO CONDUCT RESEARCH

GAUTENG PROVINCE
Department: Education
REPUBLIC OF SOUTH AFRICA

8/4/4/1/2

GDE RESEARCH APPROVAL LETTER

Date:	**24 March 2021**
Validity of Research Approval:	**08 February 2021– 30 September 2021** **2021/82**
Name of Researcher:	**Buytendag S**
Address of Researcher:	**142 Plover Street**
	Pinehaven
	Krugersdorp
Telephone Number:	**082 0408418**
Email address:	**sonellebuytendag@gmail.com**
Research Topic:	**Utilisation of colour in the classroom by Foundation Phase teachers.**
Type of qualification	**MEd**
Number and type of schools:	**1 Primary School**
District/s/HO	**Tshwane South**

Re: Approval in Respect of Request to Conduct Research

This letter serves to indicate that approval is hereby granted to the above-mentioned researcher to proceed with research in respect of the study indicated above. The onus rests with the researcher to negotiate appropriate and relevant time schedules with the school/s and/or offices involved to conduct the research. A separate copy of this letter must be presented to both the School (both Principal and SGB) and the District/Head Office Senior Manager confirming that permission has been granted for the research to be conducted.

24/03/2021

The following conditions apply to GDE research. The researcher may proceed with the above study subject to the conditions listed below being met. Approval may be withdrawn should any of the conditions listed below be flouted:

1. *Letter that would indicate that the said researcher/s has/have been granted permission from the Gauteng Department of Education to conduct the research study.*

Office of the Director: Education Research and Knowledge Management
7th Floor, 17 Simmonds Street, Johannesburg, 2001
Tel: (011) 355 0488
Email: Faith.Tshabalala@gauteng.gov.za
Website: www.education.gpg.gov.za

1. *Letter that would indicate that the said researcher/s has/have been granted permission from the Gauteng Department of Education to conduct the research study.*
2. *The District/Head Office Senior Manager/s must be approached separately, and in writing, for permission to involve District/Head Office Officials in the project.*
3. ***Because of COVID 19 pandemic researchers can ONLY collect data online, telephonically or may make arrangements for Zoom with the school Principal. Requests for such arrangements should be submitted to the GDE Education Research and Knowledge Management directorate. The approval letter will then indicate the type of arrangements that have been made with the school.***
4. ***The Researchers are advised to make arrangements with the schools via Fax, email or telephonically with the Principal.***
5. *A copy of this letter must be forwarded to the school principal and the chairperson of the School Governing Body (SGB) that would indicate that the researcher/s have been granted permission from the Gauteng Department of Education to conduct the research study.*
6. *A letter / document that outline the purpose of the research and the anticipated outcomes of such research must be made available to the principals, SGBs and District/Head Office Senior Managers of the schools and districts/offices concerned, respectively.*
7. *The Researcher will make every effort obtain the goodwill and co-operation of all the GDE officials, principals, and chairpersons of the SGBs, teachers and learners involved. Persons who offer their co-operation will not receive additional remuneration from the Department while those that opt not to participate will not be penalised in any way.*
8. *Research may only be conducted after school hours so that the normal school programme is not interrupted. The Principal (if at a school) and/or Director (if at a district/head office) must be consulted about an appropriate time when the researcher/s may carry out their research at the sites that they manage.*
9. *Research may only commence from the second week of February and must be concluded before the beginning of the last quarter of the academic year. If incomplete, an amended Research Approval letter may be requested to conduct research in the following year.*
10. *Items 6 and 7 will not apply to any research effort being undertaken on behalf of the GDE. Such research will have been commissioned and be paid for by the Gauteng Department of Education.*
11. *It is the researcher's responsibility to obtain written parental consent of all learners that are expected to participate in the study.*
12. *The researcher is responsible for supplying and utilising his/her own research resources, such as stationery, photocopies, transport, faxes and telephones and should not depend on the goodwill of the institutions and/or the offices visited for supplying such resources.*
13. *The names of the GDE officials, schools, principals, parents, teachers and learners that participate in the study may not appear in the research report without the written consent of each of these individuals and/or organisations.*
14. *On completion of the study the researcher/s must supply the Director: Knowledge Management & Research with one Hard Cover bound and an electronic copy of the research.*
15. *The researcher may be expected to provide short presentations on the purpose, findings and recommendations of his/her research to both GDE officials and the schools concerned.*
16. *Should the researcher have been involved with research at a school and/or a district/head office level, the Director concerned must also be supplied with a brief summary of the purpose, findings and recommendations of the research study.*

The Gauteng Department of Education wishes you well in this important undertaking and looks forward to examining the findings of your research study.

Kind regards

.....

Mr Gumani Mukatuni
Acting CES: Education Research and Knowledge Management

DATE: 24/03/2021

Office of the Director: Education Research and Knowledge Management
7th Floor, 17 Simmonds Street, Johannesburg, 2001
Tel: (011) 355 0488
Email: Faith.Tshabalala@gauteng.gov.za
Website: www.education.gpg.gov.za

Faculty of Education
Fakulteit Opvoedkunde
Lefapha la Thuto

Department of Educational Psychology
University of Pretoria
23 March 2021

Mr J Raath
300 Blackwood Road
Hennopspark
Centurion
Pretoria
0081

Dear Sir

RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH AT THE SCHOOL

I hereby request your permission to conduct research at Laerskool Hennopspark in Pretoria, Gauteng. My research project will involve the Grade R to Grade 3 teachers. The title of my research is **"Utilisation of colour in the classroom by Foundation Phase teachers".**

The purpose of this study is to explore and describe Foundation Phase teachers' utilisation of colour in their classrooms. My focus will be on teachers' knowledge and experiences, specifically concerning the different resources they use in their Foundation Phase classrooms, how they create a space conducive for teaching and learning and the benefits and challenges of using colour within the classroom environment.

For the purpose of this study, I shall require voluntary participation from the teachers in a Participatory Reflection and Action (PRA) focus group workshop that will be both video-recorded and audio-recorded. The teachers will be required to participate in small groups and

to prepare visual presentations such as posters or mind maps while reflecting on their own experiences of making use of colour within the Foundation Phase classrooms. Teachers will be required to compile a reflective journal to document their use of colour over a four-week period, while reflecting on classroom practices and the implementation of resources within the context of the study.

All the information given by the teachers will be treated in confidence and participants will be given anonymity, meaning that neither their name nor identity will be revealed. The teachers will not be exposed to any risk or harm during the duration of the study. The data will be kept confidential and no one, other than the research supervisor and myself, shall have access to the data. The data will be securely stored at the University of Pretoria for 15 years. The teachers will not be subjected to any act of deception or betrayal during the research process or in the published outcomes of the research. I shall inform the teachers about any changes in the study that could affect them in any way. Once the study is completed, a summary of the results will, on request, be emailed to them.

I request the teachers' permission to use the data, confidentially and anonymously, for further research purposes, as the data sets are the intellectual property of the University of Pretoria. Further research may include secondary data analysis and the use of the data for teaching purposes. The confidentiality and anonymity applicable to this study will be binding on any future research studies.

Dissemination of the findings may in the future be done through participation in conference proceedings or in journal articles. In such cases, the participants will be informed.

I believe that the research findings will make a creditable contribution towards understanding teachers' experiences and knowledge and, potentially, insight may be obtained on factors that could influence the sustainability of a quality education for all learners in South African schools.

Yours sincerely

Sonelle Buytendag (Researcher) Mrs C.J. Botha (Supervisor)

ANNEXURE B: LETTER OF INFORMED CONSENT

Department of Educational Psychology
University of Pretoria
24 March 2021

Dear Participant

RE: INFORMED TEACHERS' CONSENT (Request to participate in the research project)

My name is Sonelle Buytendag and I am currently working towards my MEd (Educational Psychology) degree through the University of Pretoria. As part of the requirements for completing the degree, I shall be conducting a research study on the use of colour in the classroom by Foundation Phase teachers. I cordially invite you to participate in my study.

For the purposes of the study, I shall require your voluntary participation in the Participatory Reflection and Action (PRA) focus group workshop that will be both video-recorded and audio-recorded, then transcribed into a written format. You will be required to participate in small groups and present visual presentations such as posters or mind maps while reflecting on your own experiences of utilising colour within Foundation Phase classrooms. You will be required to compile a reflective journal to document the use of colour over a four-week period, while also reflecting on classroom practices and the implementation of resources within the context of the proposed study. Please note that participation in this study is voluntary and that you may withdraw from the study at any time. In such a case, please notify me, in writing, of your decision to withdraw.

All the data you provide will be treated in confidence and you will be given anonymity, meaning that neither your name nor identity will be revealed. You will not be exposed to any risk or harm during the duration of the study. Your data will be kept confidential and no one, other than the research supervisor and myself, will have access to the data that you contribute and your data will be securely stored at the University of Pretoria for 15 years. You will not be subjected to any act of deception or betrayal during the research process or in its published

outcomes. I shall inform you about any changes in the study that could affect you in any way. Once the study is completed, a summary of the results will, on request, be emailed to you.

I also request your permission to use your data, confidentially and anonymously, for further research purposes, as the data sets are the intellectual property of the University of Pretoria. Further research may include secondary data analysis and the use of the data for teaching purposes. The confidentiality and privacy aspects applicable to this study will be binding on any future research studies.

Dissemination of the findings may in the future be done through participation in conference proceedings or in journal articles. In such cases, you, as the participant, will be informed.

If you are willing to participate in the focus group workshop, please complete and return the informed consent slip.

Yours sincerely

Sonelle Buytendag (Researcher) Mrs C.J. Botha (Supervisor)

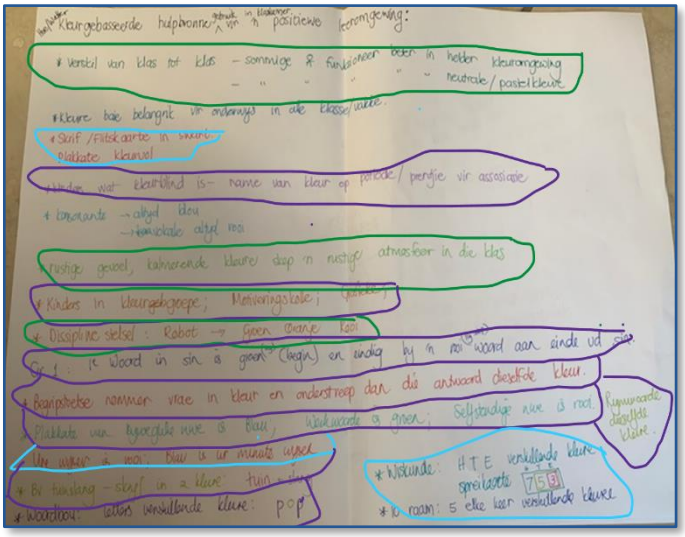
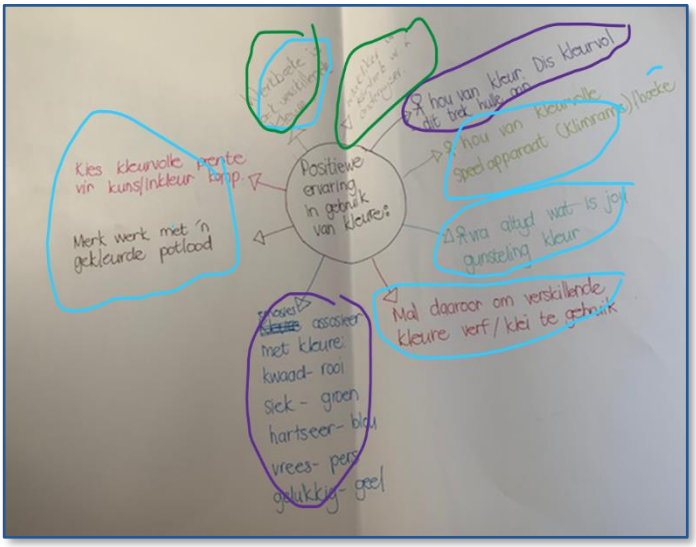
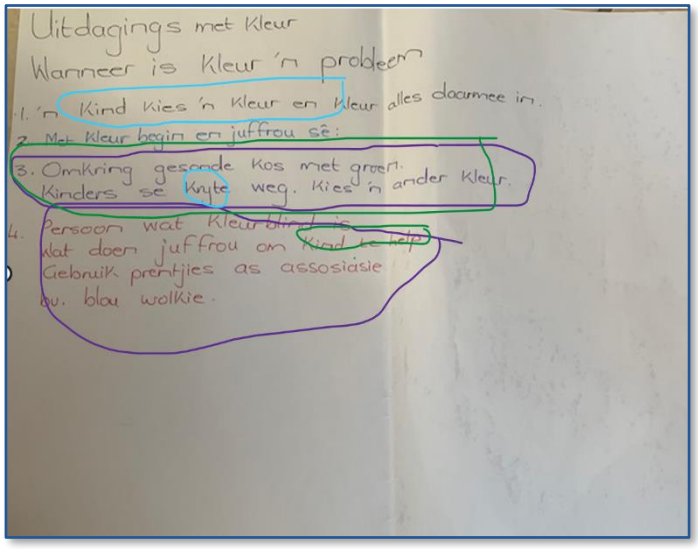
I,_____ hereby agree to participate in the above research project.

(print name)

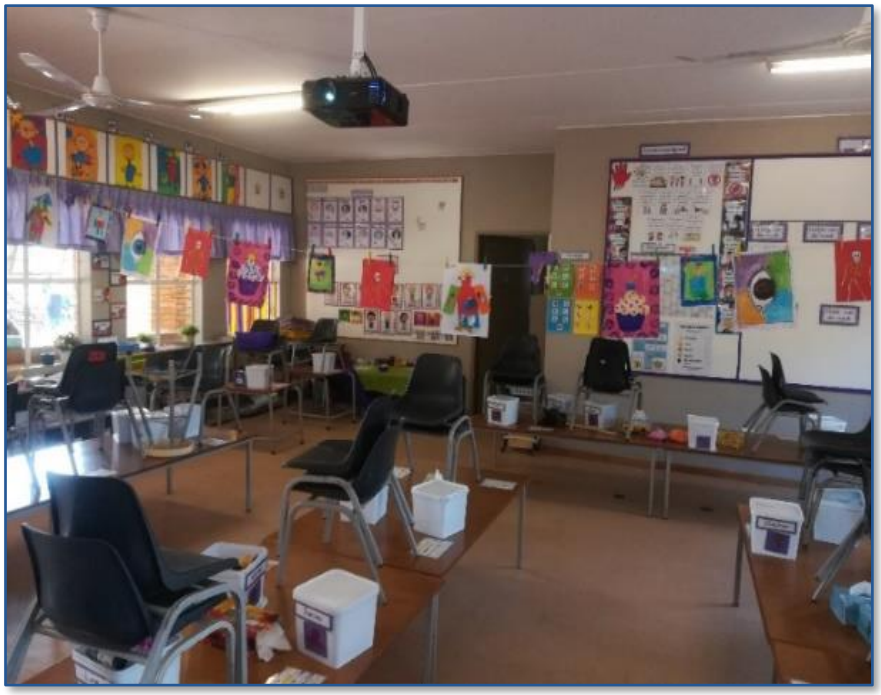
_____ 24-03-2021

Signature of Teacher Date

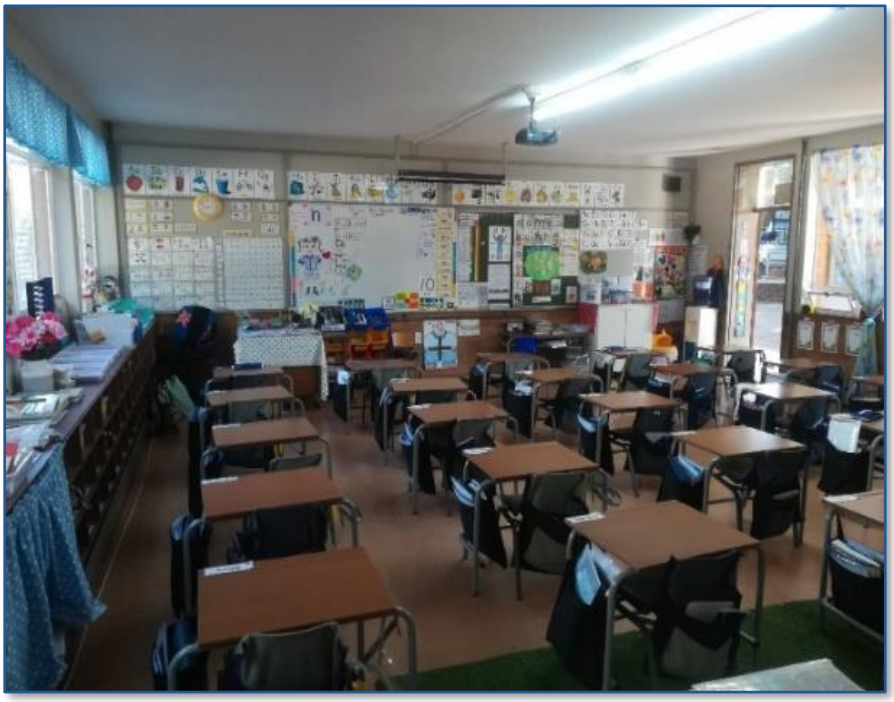
ANNEXURE C: PHOTOGRAPHS OF PRA-BASED POSTERS

	Discussion 1: Poster on colour-based resources used in the classroom to create a conducive learning and teaching environment. CO2 Organisation CO3: Attention CO3 Association CO1: Resources utilised in Mathematics
	Discussion 2: Poster on the benefits of utilising colour within their classroom CO1: Resources utilised in general CO2: Organisation CO2: Evaluation and Assessment CO3: Association CO3: Attention
	Discussion 3: Posters on the challenges when utilizing colour within Classrooms CO1: Resources utilised during Life Skills CO2: Organisation CO2: Evaluation and Assessment CO3: Association CO3: Listening skills or following written instructions

ANNEXURE D: VISUAL DOCUMENTATION

Classroom Photo Analysis	
GRADE R CLASSROOM  	Colourful art on the walls. CO1: Resources utilised in general Grey walls with pictures and posters. CO2: Classroom Environment Coloured labels on learner's ice-cream containers. CO2: Organisation Light room, with light purple curtains. Purple colour "theme" as seen on boarders of posters, labels and curtains. CO2: Classroom Environment Posters on wall. CO1: Resources utilised during language lessons, Mathematics, Life Skills Sight words and names of colours printed in colour on white background. CO1: Resources utilised during Life Skills

GRADE 1 CLASSROOM



Light blue and yellow “theme”.

CO1: Resources utilised in general

Light environment. Grey walls with pictures and posters.

CO2: Classroom Environment

Colourful educational posters on wall.

CO1: Resources utilised during language lessons, Mathematics, Life Skills

CO1: Resources utilised during Life Skills

Alphabet chart with colourful pictures printed on white background.

CO1: Resources utilised during language lessons

Posters” mostly black on white printing.

CO1: Resources utilised during language lessons

GRADE 2 CLASSROOM

Grey walls with pictures and posters.

CO2: Classroom Environment

Posters: mostly black print on white.

CO1: Resources utilised during language lessons, Mathematics, Life Skills

White on colour printing.

CO1: Resources utilised during language lessons, Mathematics, Life Skills

Colour on white printing.

CO1: Resources utilised during language lessons, Mathematics, Life Skills

Bright colourful posters.

CO1: Resources utilised during language lessons, Mathematics, Life Skills

GRADE 3 CLASSROOM

Grey walls with pictures and posters.

CO2: Classroom Environment

Burgundy wall colour in the back of the classroom.

CO2: Classroom Environment

Colourful artwork on walls.

CO1: Resources utilised during Life Skills

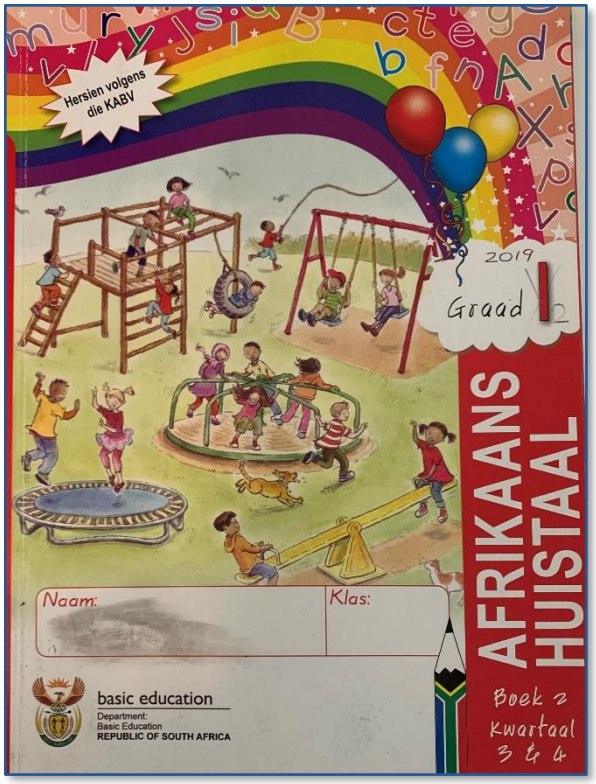
Bright classroom with light.

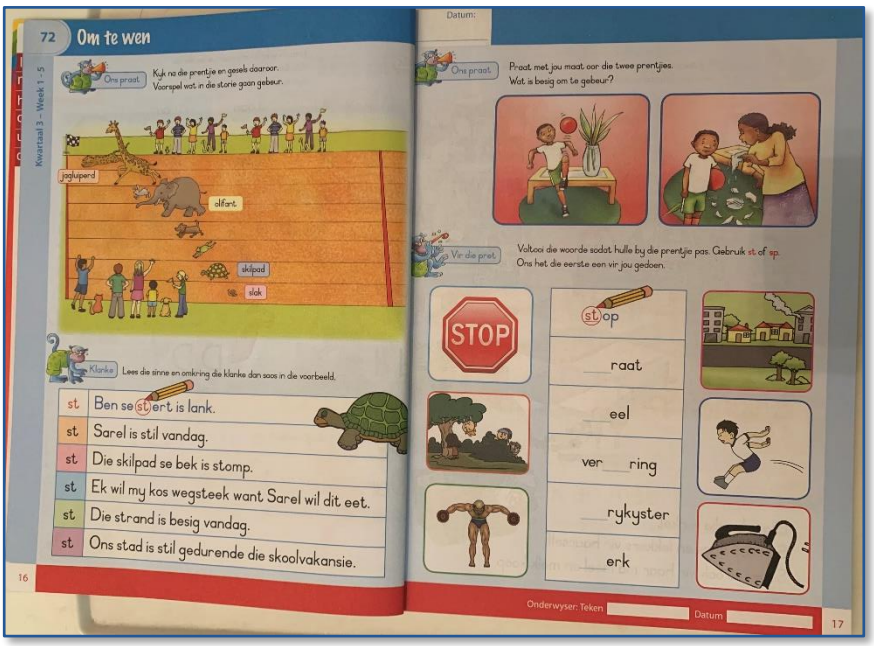
CO2: Classroom Environment

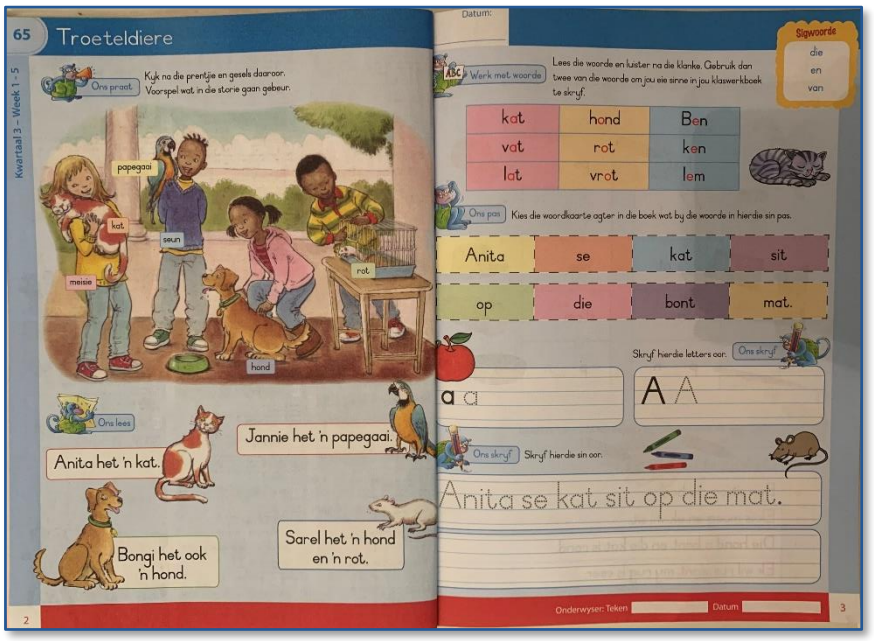
Black printed on yellow background.

Place Value, using different colours.

CO1: Resources utilised during Mathematic

Workbook Analysis	
GDE: Rainbow Workbook Afrikaans Home Language Grade 1 – Book 2 Term 3 & 4  	Bright and colourful front and back cover. CO1: Resources utilised during language lessons CO3 Attention Four different themes. Each theme in a different “main” coloured background throughout the book. CO2: Organisation CO3 Attention Theme 1: Main heading white print on blue colour. (Rest of themes according to the specific colour). Bright colourful picture to introduce the theme.





Instructions in the main colour (dark shade colour print on lighter colour) of the theme with a supporting monkey. These instruction headings include: Ons lees; Werk met woorde; Ons pas; Ons Skryf ; Klanke; Vir die pret. Random colours.

(Each heading has a colourful monkey doing an action related to the heading). Black print on white colour (dotted words to copy, sentences to read). Black print on blue/pink/green/yellow/purple colour (word labels). The middle vowel in the word is printed in red. The bottom of the pages has a red strip irrespective of the main theme background colour. Some include the words Teacher Signature and Date. Different colours are used on pages to separate sections or questions. Sight words in a yellow bubble with words printed in blue on white background. CO3: Listening skills or following written instructions CO3: Attention

Example answer done in blue, and sounds identified in red and indicated with a red pencil to circle them. Random colours.

CO3: Association

CO3: Attention

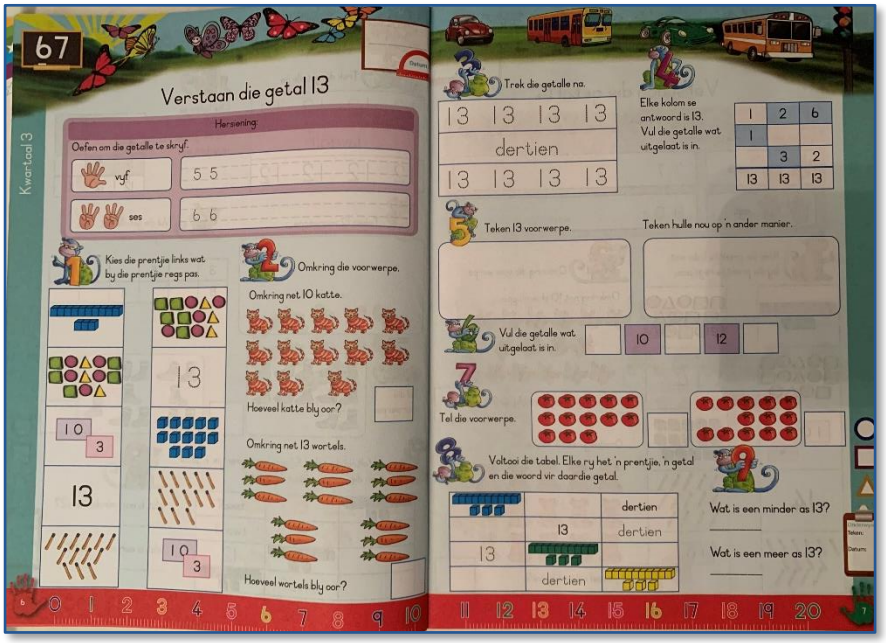
GDE: Rainbow Workbook
Mathematics in Afrikaans
Grade 1 – Book 2

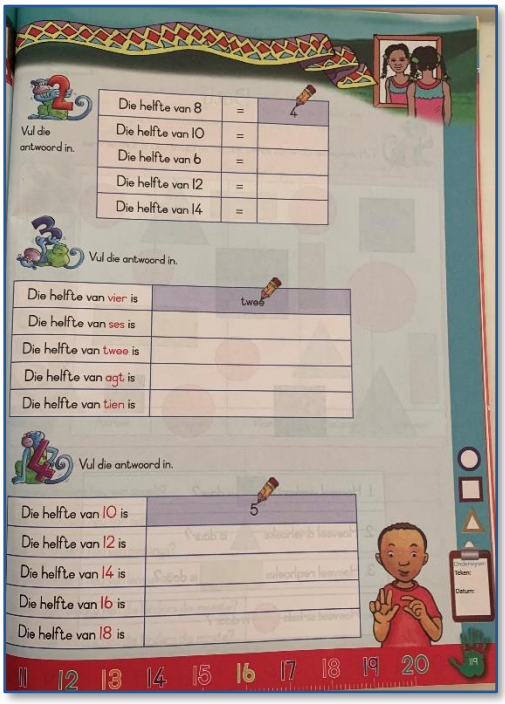
Bright and colourful front and back cover.

CO1: Resources utilised during Mathematics

The background colour of pages are according to Math concepts and shown on the index page.

CO2: Organisation





Each word section consists of 2 pages. Activities to complete are numbered with a colourful illustrated monkey themed number. Colourful number line at bottom of the page. Colour printed on a red background. The instructions are printed in black on the light pastel coloured background based on the math concept. Colourful illustrations as part of the activities Flard cards, units and Tens in a different colour. Coloured Unifix blocks are used to show a number.

CO3: Attention

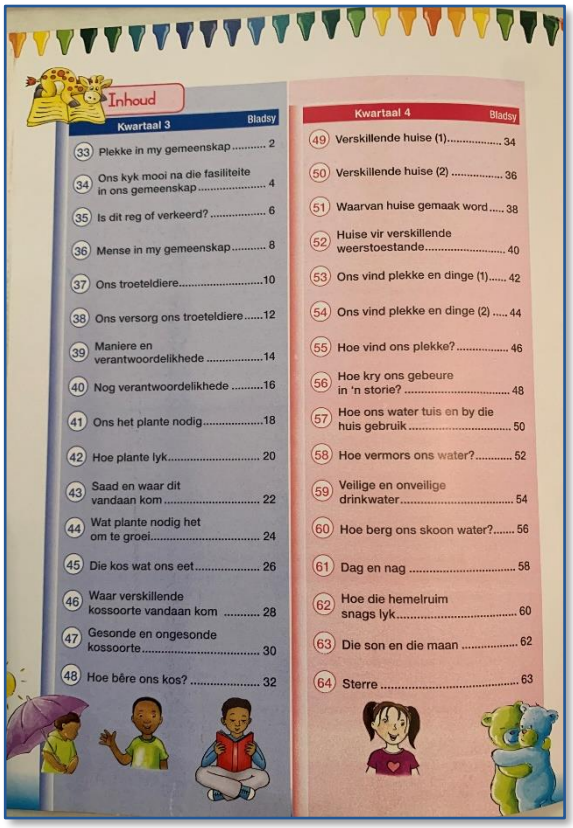
Colour is used to emphasise an important part of the instruction (number)

CO3: Instructions

GDE: Rainbow Workbook
Life Skills in Afrikaans
Grade 1 – Book 2 Term 3 & 4

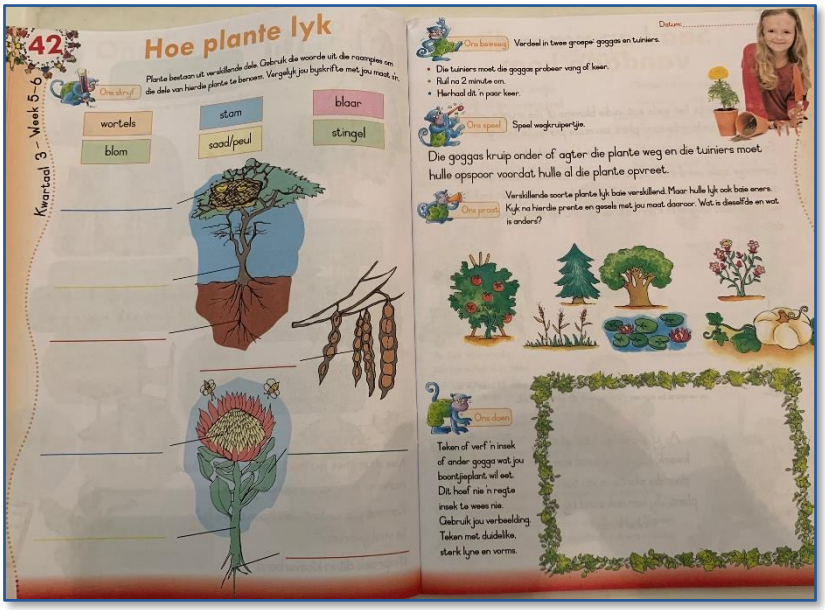
Bright and colourful front cover.

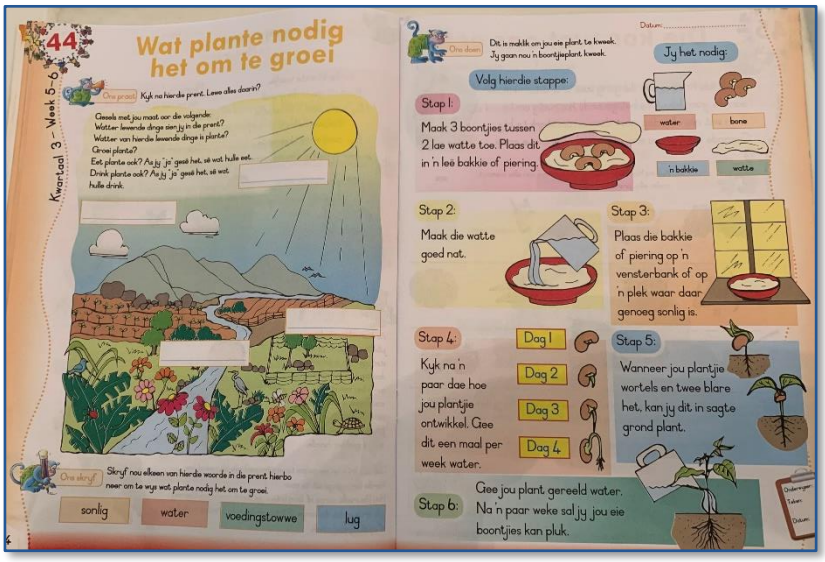
CO1: Resources utilised during Life Skills



Themes colour-coded according to terms (The index showed blue and red, not as printed in Orange/yellow for Term 3 and green for Term 4.

CO2: Organisation





Themes: Main heading Orange/yellow print on white

background (Rest of themes according to the specific colour of the term). Bright colourful picture to introduce the theme.Instructions in the main colour of the term (dark shade colour print on lighter colour) with a supporting picture. Black print on white background

CO3: Attention

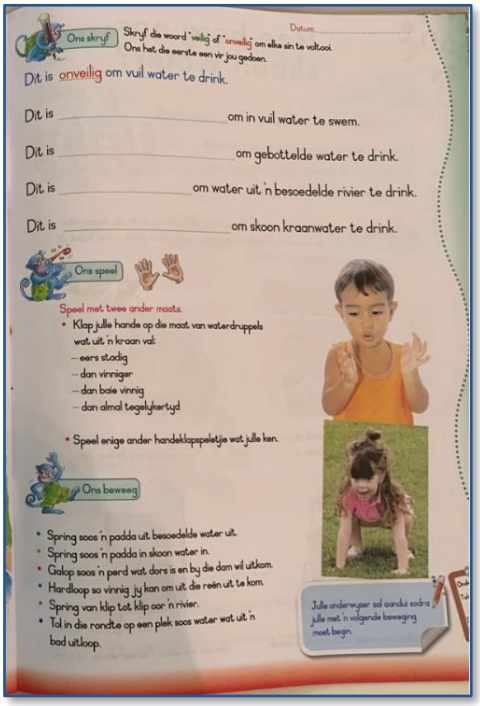
Black print on blue/pink/green/yellow/purple colour (word labels).

Bottom of pages have a red faded strip irrespective of the main theme background colour. On right hand side of odd pages there is a brown clipboard for Teacher. Signature and Date.

CO3: Attention

Different colours are used on pages to separate sections or questions. This can easily help a teacher to direct learners to the specific section that she is reading or referring to.

CO2: Organisation



Ons skryf

Skryf die woord "veilig" of "onveilig" om elke sin te voltooi.
Ons het die eerste een vir jou gedoen.

Datum: .....

Dit is onveilig om vuil water te drink.

Dit is _____ om in vuil water te swem.

Dit is _____ om gebottelde water te drink.

Dit is _____ om water uit 'n besoedelde rivier te drink.

Dit is _____ om skoon kraanwater te drink.

Ons speel

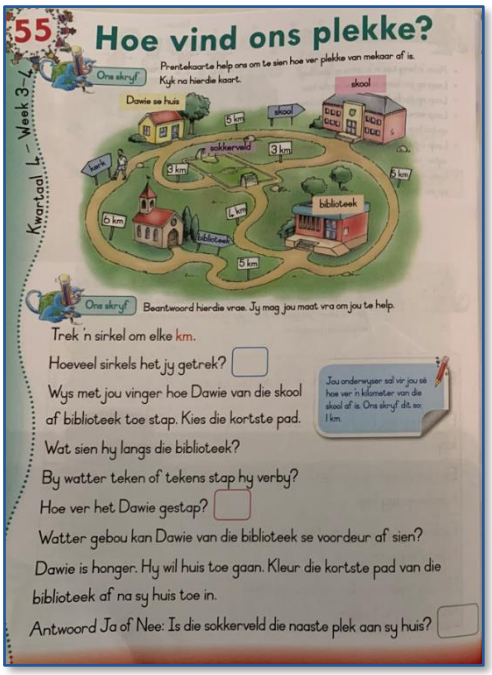
Speel met twee ander maats.

- Klap julle hande op die maat van waterdruppels wat uit 'n kraan val:
  - eers stadig
  - dan vinniger
  - dan baie vinnig
  - dan almal tegelykertyd
- Speel enige ander handeklappspeletjie wat julle ken.

Ons beweeg

- Spring soos 'n padda uit besoedelde water uit.
- Spring soos 'n padda in skoon water in.
- Galop soos 'n perd wat dors is en by die dam wil uitkom.
- Hardloop so vinnig jy kan om uit die reën uit te kom.
- Spring van klip tot klip oor 'n rivier.
- Tol in die rondte op een plek soos water wat uit 'n bad uitloop.

Julle onderwyser sal aandui sodra julle met 'n volgende beweging moet begin.



55 Hoe vind ons plekke?

Kwartaal 4 – Week 3–4

Ons skryf

Prentekaarte help ons om te sien hoe ver plekke van mekaar af is.
Kyk na hierdie kaart.

Dawie se huis
skool
kerk
sokkerveld
biblioteek
5 km
3 km
4 km
6 km

Ons skryf

Beantwoord hierdie vrae. Jy mag jou maat vra om jou te help.

Trek 'n sirkel om elke km.

Hoeveel sirkels het jy getrek? ☐

Wys met jou vinger hoe Dawie van die skool af biblioteek toe stap. Kies die kortste pad.

Wat sien hy langs die biblioteek?

By watter teken of tekens stap hy verby?

Hoe ver het Dawie gestap? ☐

Watter gebou kan Dawie van die biblioteek se voordeur af sien?

Dawie is honger. Hy wil huis toe gaan. Kleur die kortste pad van die biblioteek af na sy huis toe in.

Antwoord Ja of Nee: Is die sokkerveld die naaste plek aan sy huis? ☐

Jou onderwyser sal vir jou sê hoe ver 'n kilometer van die skool af is. Ons skryf dit so: 1 km

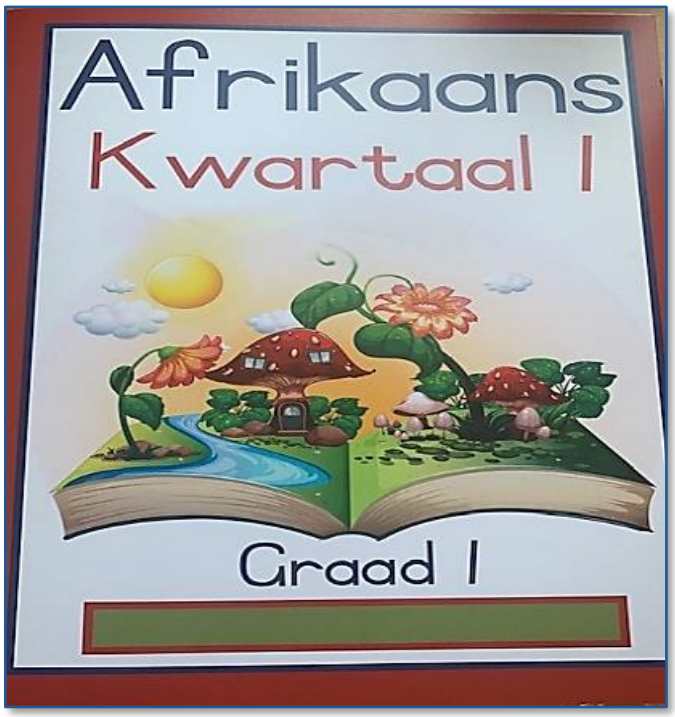
Example answer is done in blue. Red and yellow is used to answer and complete.

CO3: Attention, association

The colour red is used to emphasise kilometres.

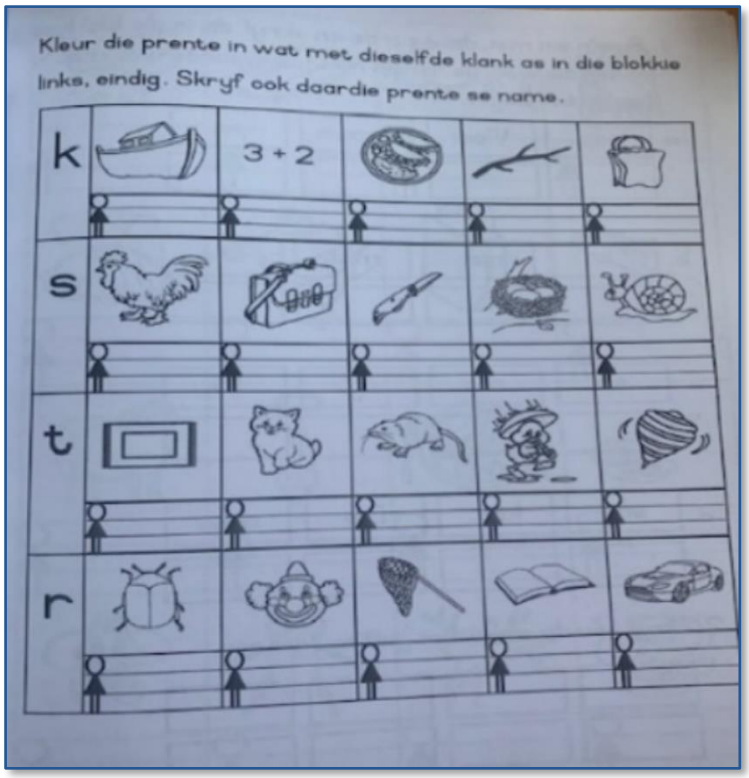
CO3: Attention

Workbooks supplied by the school being researched.
Afrikaans Eerste Taal
Kwartaal 1 Graad 1



Bright and colourful cover.

CO1: Resources utilised during language lessons



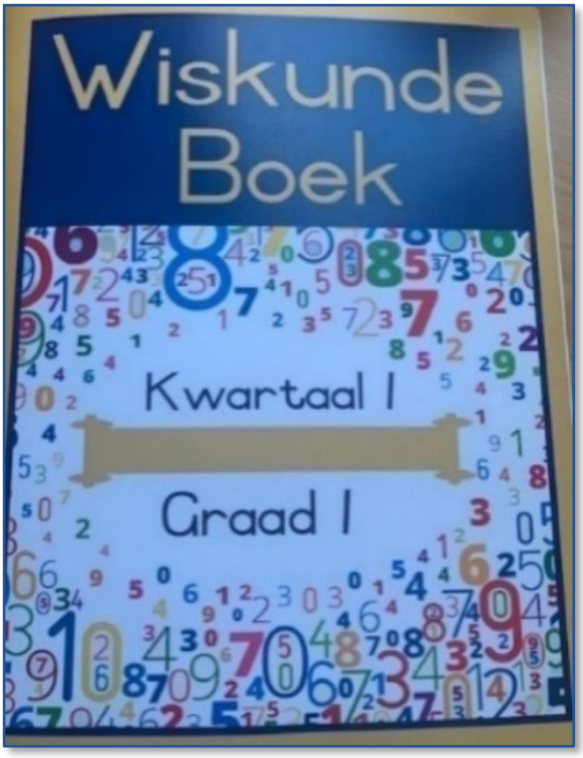
Black print on white paper throughout the book.

CO3: Attention

Colouring is required for some activities.

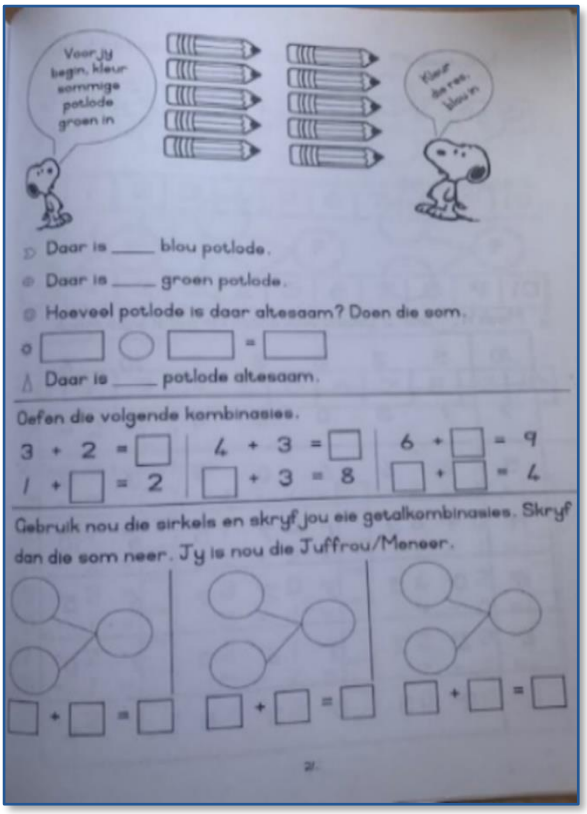
CO3: Association

Workbooks supplied by the school being researched.
Wiskunde
Kwartaal 1 Graad 1



Bright and colourful cover.

CO1: Resources utilised during Mathematics

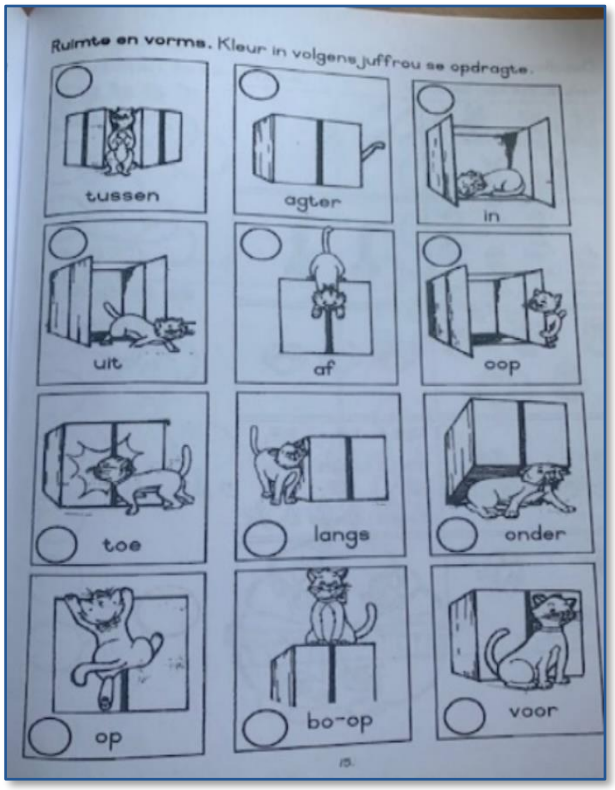


Black print on white paper throughout the book.

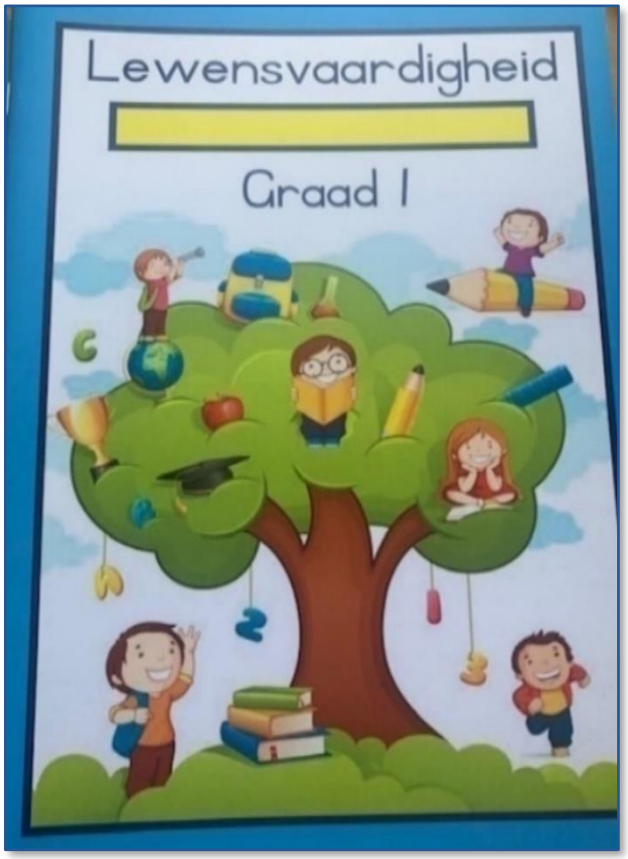
CO3: Attention

Specific colour related instructions are required for some activities.

CO3: Listening skills or following written instructions

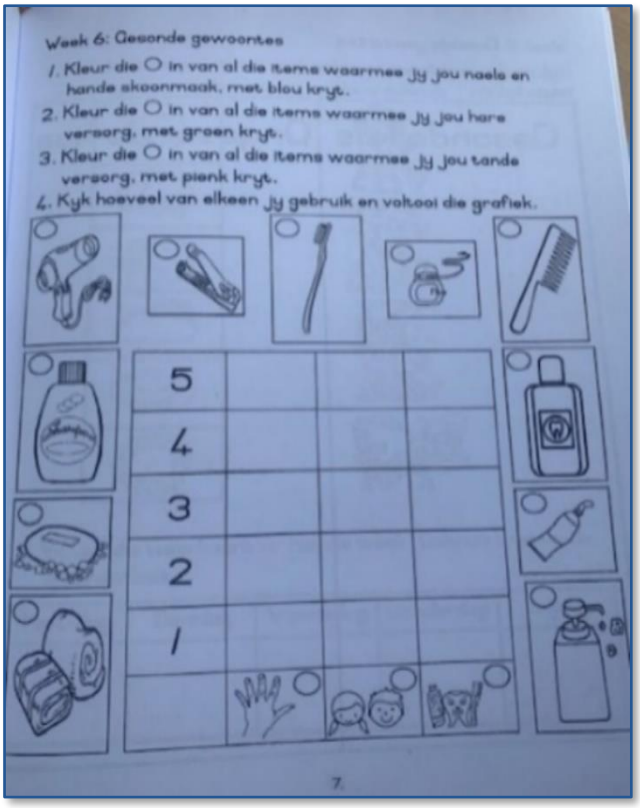
	Colour related teacher instruction task. CO2: Evaluation and Assessment

Workbooks supplied by the school being researched.
Lewensvaardigheid
Graad 1



Bright and colourful cover.

CO1: Resources utilised during Life Skills



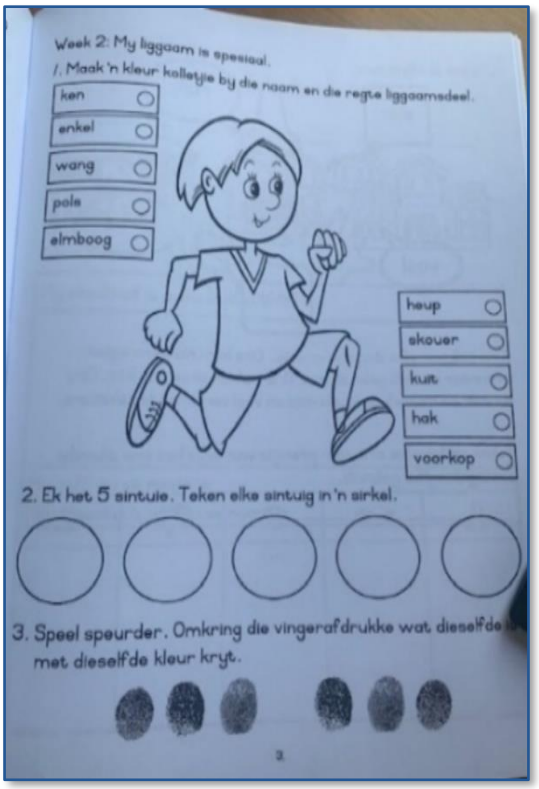
Black print on white paper throughout the book.

CO3: Attention

Specific colour related instructions are required for some

activities.

CO3: Listening skills or following written instructions

	Colour related teacher instruction task. CO2: Evaluation and Assessment

ANNEXURE E: TRANSCRIPTION OF AUDIO RECORDING

An example of my transcription is provided as to how I analysed the PRA-based session. All transcriptions can be viewed on the Compact Disk Read-Only Memory (CD-ROM) included at the back of my mini-dissertation.

THEMES	SUB-THEMES
Theme 1: Colour-based resources utilised to support teaching and learning.	Sub-theme 1.1: Colour-based resources utilised to support the teaching and learning of literacy skills. Sub-theme 1.2: Colour-based resources utilised to support the teaching and learning of numeracy skills.
Theme 2: Utilisation of colour to support classroom management.	Sub-theme 2.1: Utilisation of colour to support classroom organisation. Sub-theme 2.2: Utilisation of colour to support monitoring and evaluation of teaching practices. Sub-theme 2.3: Utilisation of colour to establish a positive classroom environment.
Theme 3: Utilisation of colour to improve learners' academic skills.	Sub-theme 3.1: Use of colour to focus learners' attention. Sub-theme 3.2: Use of colour to enhance learners' cognitive skills. Sub-theme 3.3: Use of colour to develop learners' listening and comprehension skills.

			LO: kids colour themselves according to their real skin colour
716. 717. 718. 719.	Maar weet jy wat, toe ek by graad een's was het ons op daai stadium moes jy praat oor moes jy goed vergelyk en hulle het nooit kleur het hulle ..... jy vat twee goed. Kyk wat is dieselfde, wat is verskillend en wat is interessant. Hulle het nooit gesê kleur is 'n verskil nie Hulle sal sê lank en kort, seuntjie, dogterjie en hare is die kleur oë is dit maar nooit sy vel is donker sy vel is lig. Dit is altyd vir my so interessant gewees.	Deelnemer B	LO: comparing ourselves, never use skin colour, but eyes, height, sex, hair etc.
720.	So hulle kyk anders na mekaar as wat ons na mekaar kyk. Wat skryf ek daar (lag).	Deelnemer E	
721.	Jy is op jou eie daai kant.	Deelnemer A	
722. 723. 724.	Die negatiewe een was daai een en 'n ander negatiewe of watter krisis, nie 'n krisis is nie, maar sê nou maar 'n kind het nie al sy kryte nie. Nou moet hulle goed . Daar staan omkring alles groen wat gesonde kos is of wat ..... (Onduidelike spraak) vat net 'n ander kleur.	Deelnemer B	CO2 Organisation CO1: Resources utilised in general CO3: Listening skills or following written instruction Don't have all their crayons and there is an instruction "circle in green"
725. 726.	Gewoonlik dieselfde ene wie se kryt altyd weg is en ek weet nie wat gebeur met dit nie want dit lê nie op die vloer nie, so ek weet nie waar dit is nie, dit is net weg.	Deelnemer D	CO1: Resources utilised in general Often same child who loses crayons
727. 728. 729.	Maar ek het ook 'n probleem daarmee as hulle ek sê altyd vir hulle, een ding moet een kleur wees. So as hulle 'n hemp inkleur kan hulle die sakke en die knope 'n ander kleur maar hulle moet een kleur kies vir die hemp. Want hulle kleur dit so reënboogstrepe, of so dan kan jy naderhand nie sien wat die hemp is nie.	Deelnemer D	CO3: Cognitive association skills Utilization of colour when drawing

			One colour for one thing… "rainbow'
730.	Of waar eindig hy nie.	Deelnemer B	
731. 732.	Die verskillende goedtjies en alles in sulke strepe want reënboogkleure dan lyk dit …… Ja ……. Ek sê vir hulle een ding in een kleur. Jy kan die blare een kleur, blomme ander kleur maar anders is dit te deurmekaar.	Deelnemer D	
733.	Ja, die detail kan later inkom.	Deelnemer B	
734.	…… (onduidelike spraak) ……Die mooiste goed. Hy doen dit alles in in geel.	Deelnemer C	Preference for yellow
735.	Maar bedoelende sy hele prentjie wys geel.	Deelnemer E	Utilising only one colour
736.	Ja lyk my abstrak. Ja.	Deelnemer C	Abstract
737.	So hy is baie abstrak. Maar is dit nie interessant nie. Ek dink elke mens kyk anders na kleur.	Deelnemer E	People look different at colour
738.	So watter ander uitdagings is daar?	Deelnemer B	
739.	Julle moet nou sê want ek het net nou 2 punte hê.	Deelnemer E	
740.	Daar is nie rêrig vir ons in die skool nie.	Deelnemer A	
741.	'n Kleurblinde person sal 'n uitdaging hê, 'n kleurblinde persoon.	Deelnemer B	Colour blind child may have problems
742.	'n Persoon wat kleurblind is.	Deelnemer E	
743.	Dit is ons werk om dit net vir hom uit te wys.	Deelnemer A	CO2: Organisation Our job to point out colours
744.	Makliker te maak. Hoe beinvloed kleure kinders wat hiperaktief is? Maak hulle dit …….	Deelnemer B	CO2: Classroom Environment Make easier Hyperactivity?

745.	Dit maak hulle anders.	Deelnemer D	Makes them different
746.	Hulle sê so.	Deelnemer E	
747.	As dit te besig is in die klas as die kleure te veel is	Deelnemer B	Hyperactivity: Busy class may be too much for them to cope
748.	Ons moet waak daarteen ook in 'n mate.	Deelnemer B	Need to take caution
749.	Ja, hulle sê so, maar.	Deelnemer A	
750.	Maar tog doen ons almal, bring kleur in ons klas.	Deelnemer A	All use colour in our classroom
751.	Ja jy kannie jou klas sonder dit nie.	Deelnemer B	Cannot have a classroom without colour
752.	Exactly.	Deelnemer A	
753. 754.	Wat doen julle as julle moet toets nè en vra 'n kind moet gaan vat en die woordjie omkring en hy kan nie daai groen identifiseer nie, mag jy dan groen kleur vir hom wys.	Deelnemer E	CO2: Evaluation and Assessment Assessment: colour blind, just give colour if not assessing colour.
755.	Ja.	Deelnemer A	
756.	Ja, ek het vir daai seuntjie	Deelnemer B	
757.	Jy asseseer nie kleur nie, jy asseseer die klank.	Deelnemer D	
758.	Ja, ek kyk ook so daarna.	Deelnemer B	

759.	Wat as jy, kleur asseseer, wat doen jy?	Deelnemer E	If assessing colour?
760. 761. 762.	Wel, dan moet die kind maar 'n potlood kry wat die name op het of soos jy sê of die assosiasie dingetjie. Ek dink mens moet bewus wees as daar so kind is sodat wanneer jy jou vraestelle opstel dit net in gedagte kan hou.	Deelnemer B	CO2: Evaluation and Assessment Use association things Be vigilant when setting up papers (test)
763.	Verder het ek nie	Deelnemer A	
764.	Wat is daar nog wat het jully by punt 2 ..... (onduidelike spraak)	Deelnemer E	
765. 766. 767.	Daar is as kinders met kleurpotlode moet begin teken, nie met 'n grys nie. Dadelik in kleur moet teken dan kan hule nie hulle verwar dat hulle sê nou maar die lyf of die rok in 'n ander kleur moet teken as byvoorbeeld die broek.	Deelnemer A	CO1: Resources utilised during Life Skills Drawing whole picture in one colour
768.	So hulle sal eers die prent teken.	Deelnemer B	
769.	Hulle teken eers die prent as 'n geheel met een kleur. As jy sê teken eers met grys dan kan hulle dit beginne.	Deelnemer A	CO3: Cognitive association skills One colour used
770.	Ag verduidelik dit net so vir haar man.	Deelnemer E	
771.	Ek gaan nie praat nie.	Deelnemer E	
772.	C ..... of J..... kan praat.	Deelnemer A	
773.	Ons het net 4 punte hierop	Deelnemer E	
774.	Maar onthou ons moet klaarmaak.	Deelnemer A	
775.	Maar kan nie dink aan nog iets wat	Deelnemer B	
776.	'n Negatiewe ding is nie.	Deelnemer A	

777.	Dit is eintlik negatief. Uitdagings.	Deelnemer E	
778.	Wat 'n uitdaging is nie.	Deelnemer A	
779. 780.	Dit is altyd daai wat jy gesê het wat die kind nie die kleur het nie kan jy maar vir hom sê hy kan 'n ander kleur vat.	Deelnemer E	CO2: Organisation Don't have colour, use another colour
781.	(kink kop) mmmm As hy nie rooi het nie.	Deelnemer A	
782.	Ja.	Deelnemer B	
783. 784.	Behalwe as ons dit merk soos ons lewensvaardigheid is eintlik maklik met die kleur soos ons dit merk. Dit help baie ja.	Deelnemer C	CO2: Evaluation and Assessment Red: LO Marking work
785. 786.	Ek sê maar altyd vat 'n inkleurpotlood. Jy het mos inkleurpotlode en uitdraaikryte Iewers het hy 'n rooi. Tensy hy nou glad nie meer 'n rooi het nie.	Deelnemer E	CO2: Organisation Have pencils and crayons so should have the colour
787. 788.	Gee vir deelnemer D die papier om terugvoering te gee. Deelnemers praat informeel terwyl hulle wag vir terugvoering.	Deelnemer E	
789. 790.	**Okay, skies man. Okay. So, is julle reg om dan nou terugvoering te gee oor die uitdagings die goedtjies wat nou nie so lekker vir julle werk wanneer ons te doen het met kleur nie.**	**Navorser**	CO1: Resources utilised during Life Skills CO1: Resources utilised in general CO2: Organisation CO2: Evaluation and Assessment CO3: Association CO3: Listening skills or following written instructions

ANNEXURE F: RESEARCHER REFLECTIVE JOURNAL

Research Journal

Sonelle Gerneke (Buytendag)

16 February 2021

Today I received my letter to state that my application was approved for research. The next step is to now get approval from the Gauteng Department of Education. I decided to first contact schools before I apply to the Department of Education to assist with the process of approval.

1 March 2021

I contacted three schools telephonically in Pretoria to request permission for research. All schools preferred an email. A detailed e-mail was sent to all schools who either did not reply or could not assist.

8 March 2021

I contacted another four schools with a detailed email who could also not assist me with the research.

10 March 2021

I then consulted a peer that works at a primary school in Pretoria who consulted the Principal who then received the information from an email as well as a brief discussion. The principal permitted me to research the school should the Department of Education approve. The peer I consulted at the school who is the school counsellor was permitted to facilitate the process and to work with me directly to make the necessary arrangements.

23 March 2021

I emailed the Gauteng Department of education with the request form and my research proposal. I also indicated that the Principal from the school has given permission should the Department of Education give permission.

24 March 2021

The Gauteng Department of Education requested sample consent forms for the teachers as well as a questionnaire. I informed them that I will be conducting PRA-based sessions and will not be using a

questionnaire. I emailed the consent form as requested. At 14:10 I received My GDE Research Approval Letter which I accepted and acknowledge. Permission was given to collect data online. I informed my supervisor.

29 March 2021

Today I consulted the Department of Education website (https://www.education.gov.za/Curriculum/LearningandTeachingSupportMaterials(LTSM)/Workbooks.aspx) to look at the Rainbow Workbooks that form part of the Department of Basic Education's range of interventions aimed at improving the performance of South African learners in the first six grades. These workbooks, in all the official languages, are available at no cost. As my project focuses on the utilisation of colour within the classroom, I had a brief overlook at all the books from Grade R to Grade 3 that are also available online. Each workbook is made up of easy-to-follow worksheets for listening, reading and writing skills that are very similar in the layout. All workbooks comply with the latest Curriculum Assessment Policy Statement (CAPS). For each year a learner gets two workbooks for each subject. Workbook 1, to use from January to June and Workbook 2, for use from July to December. Grade R learners receive four books per year, one for each term. As my research is of a limited scope I have decided to consult and investigate one book for each subject from Grade 1. This includes Afrikaans First Language, English Second Language, Mathematics and Life Skills. I will request hard copies of a completed Grade 1 (workbooks 2) set of books to analyse as they are physically used within the classroom and not on a tablet or computer.

31 March 2021

The GDE Research Approval Letter, permission letter, consent forms and sample of the Journal to be completed were emailed to the principal and the school counsellor who will communicate with me to give the consent forms and journals to the teachers. She will also make the arrangements at the school with the teachers to collect the information required during the PRA session. She will provide the necessary stationery and adhere to Covid-19 protocols. She confirmed that she will inform me when it is suitable for the teachers to collect the information required. I also contacted my supervisor to confirm that we will not obtain the information required from the teachers in person as the GDE only allows online data collection. We communicated and confirmed the journal and that they may complete it in Afrikaans. We agreed that I will deliver the information online and the teachers will be at the school. The consent forms were signed to start with the journals and the consent forms will be re-explained during the first session.

8 April 2021

I confirmed with my supervisor that the teachers are available on 20 April 2021. I also communicated the process of doing the PRA session online and told her that the school counsellor will set everything up at the school, provide resources and take field notes as required. The session will be conducted in Afrikaans.

12 April 2021

I communicated with my supervisor to clarify the process of the PRA session. I also emailed her the script that I will use to conduct the session. I decided to write a script to help me to stay focused and to keep to the point to gain as much data as possible.

19 April 2021

I consulted with my supervisor to finalise the PRA session for tomorrow. We were both happy with the script and how we will proceed. I have made notes from the script to ensure the smooth flow of data gathering tomorrow. I have also contacted the school counsellor to finalise arrangements for setting up the venue, the device to receive the information and instructions and the device to record the session audio-visually.

20 April 2021

I have prepared for my PRA session this morning going through my notes. I have contacted the School Counsellor to confirm the time.

The PRA session is scheduled for 13:45. The 5 teachers from Laerskool Hennopspark in Pretoria, Gauteng will be at the school in one of the classrooms. The school counsellor will co-facilitate the process of setting up the device for the online session to see me and receive the information and instructions. I will deliver the information and instructions for the session online and will be situated at my house in Pinehaven, Krugersdorp, Gauteng. The session will be recorded with another device using video and audio recording. The school counsellor will take field notes.

It is now 13:30 and have communicated with the school counsellor. The venue is set up. The seating is appropriate for everyone to see me. My recording device is set up and ready.

The session started at 13:45, however, due to technical difficulties with the sound of the speaker the process was delayed as they sorted out the volume. The Grade R teacher was not present, and we

decided to continue due to the suitable day and time that was allocated for this afternoon. Two Grade 1, one Grade 2 and one Grade 3 teacher attended the session. The school counsellor also attended to manage the recording of the session, distribution of stationery and taking field notes. The teachers all seemed very chatty and chirpy. They were laughing and cheerful and seemed like they were happy to be there. The session officially started at 13:55. The Grade R teacher joined the session when it officially started. In total there were 5 participants. They viewed me on a projector as I introduced the session. I repeated the first aspect/question at the request of one of the teachers just before I left the session at 14:04. They were given 20 minutes to collaborate. The classroom where the session was hosted was decorated with posters and I noted the light coming in from a window with light blue curtains. I smiled and thought what an amazing classroom, how privileged are these learners within this classroom.

I re-joined the session at 14:24. Participant B gave mostly feedback. The teachers were very enthusiastic to share. It was admitted how surprised they were as to how much colour they use in the classroom. The following is a summary of what was highlighted for aspect A (from my field notes):

- Colour use differed from classroom to classroom
- Bright colour vs Neutral colour was discussed and how it differs for children.
- Use of colour in all subjects.
- Flashcards contain colour.
- A specific case of a colour-blind child needing help to make sure he uses the right colour when given a task. It was mentioned that they heard of pencils that are available for colour-blind children but haven't used them. My own thoughts: I think this is great for colouring of following colour-related instructions using special crayons, but what about readers where the target sound is printed in green or using the GDE workbooks, how do they then cope with those resources?
- Using different colours to emphasise consonants (red) and vowels (blue). ST1.1
- Calm colour throughout the classroom (paint) gives them a relaxed experience. On hot days the lights were switched off as it heated the class but also made them more relaxed. They wondered if the calm colour is also experienced by the children as calming.
- They also use coloured dots for marking.
- They have a colour-based robot for discipline.
- Comprehension during Grade 2 and 3 is taught through using different colours to match questions with answers.

- Parts of speech posters are colour coded to help them link it when using it in their books (eg. verbs, nouns etc would be in different colours).
- When teaching time the clock's "arms" are in different colours which also helps them with marking.
- Compound words are also colour-coded.
- Flard cards also contain colour.
- In terms of counting with the grade 1's dots are paired in groups of 5 using 2 colours (usually white and blue) such as their counting frame that they use in class.
- Also mentioned high usage of primary colours.

The discussion ended at 14:36. The second aspect of the benefits when utilising colour was asked. As many benefits were already mentioned we decided to allocate only 10 minutes instead of 15 minutes to add any additional comments or information.

I re-joined the session at 14:46. I asked them to clarify the calming colour that flows through the classroom is beneficial. During earlier years classes were painted in different colours. Lately, all classes are painted in a neutral, sand almost grey colour. Soft grey. Participant A mostly gave feedback however everyone commented in between to clarify or add information. The session was experienced as enthusiastic. The following is a summary of what was highlighted for aspect B (from my field notes):

- They have observed children having a positive reaction to colour.
- The jungle gyms outside that are painted in bright colours are the ones that mostly attract children to play on.
- They use a colour for every subject book to help with identification. I made the comment: "Dit maak die juffrou se werk ook dan makliker" My thoughts: Using simple strategies such as labelling books in colour for easy identification and having an organised classroom can truly make your life as a teacher easier. This reminds me as a mom of toddlers when I coloured coded toy boxes that contributed to an organised play area and made my life as a mom easier.
- They also said that kids often ask teachers about their favourite colour and give or make them something with that colour.
- Grade R's use clay to mix colours to see what happens when you mix different colours. They also love painting with rainbow colours.
- All three grades use an emotion chart that uses colour to illustrate different emotions. It was related to the emojis we have on our phones. Also linked to the Covid-19 poster to indicate how they feel and how relevant it is.

- All the grades use a different coloured pencil to mark the work in their books instead of grey. Some teacher specifies others allow any colour. It emphasises the correct answer. One teacher commented it is like an eye and brain connection.
- Artwork during Grade 2 is evaluated by the learners and they mostly choose the bright pictures as the "best" even when some pastel "perfect" picture is an option to choose.
- The teachers also commented on how some pencils are used more than others during the year.

The discussion ended at 14:58. The third aspect of challenges when utilising colour was asked. I had to clarify as they did not clearly understand. I highlighted how colour may not always work or be experienced as negative. As aspects were already mentioned we decided to allocate only 10 minutes instead of 15 minutes to add any additional comments or information.

I re-joined the session at 15:08. Participant D gave mostly feedback. They said they have less to say. Said that when colouring or drawing children use too much or too little colour. During assessments when colour is required to perform a task the children may not always have the specific colour that they need. I followed up in terms of an earlier statement of books that they use and asked if they are using the GDE supplied Rainbow books. They do not use them. I will alternatively request hard copies of a completed Grade 1 (workbooks 2) set of books from my community. They feel that the Grade 3 Afrikaans books are not a good standard of work. They use their books and make their things for their books. Their books are mostly printed in black and white. They follow Singapore maths. The session ended with thanking them for their participation and valued information. I commended them on being an awesome team. The session ended at 15:15. The discussion sessions were attended by Karien Botha my supervisor. We also communicated after the session to clarify the use of their books. I have requested the possibility of utilising these books during the holidays. I will still investigate the Rainbow Workbooks as they are offered by the GDE. I have also requested Anneke to ask the teachers to take a photo of their classrooms.

The session took 1 hour and 20 minutes.

Field Notes: Facilitator

20 April 2021

13:45: Sorting out audio, Getting speakers, social distancing, laughing, cheerful, Grade R teacher late, teacher assist to improve the sound.

Observations: posters on wall. Windows, light blue curtains.

Placement of participants to identify during transcription:

OA Short hair

OB Medium brown hair

OD White shirt

OC blond teacher

Meeting started at 13:55

14:04 – Started with 20 minutes collaboration

14:24 – Feedback aspect 1

Responses (notes to reflect on):

- Verbaas
- Klas tot klas
- Helder (rustige, wakker) vs Neutraal (besige)
- Vakke in alle klasse
- Flitskaarte
- Kleurblind, potlode, kind in haar klas.
- Rooi, konsonante? Blou, vokale? – oulik
- Rustige kleur, deurlopende kleur
- Wonder of kinders dit so ervaar
- Rustige gevoel
- Warm, ligte af, buis ligte, maak hulle rustiger
- Kleurgroepe, kolle
- Dissipline robot stelsel
- Graad 2/3 begripstoets, werk lekker, groen, oranje
- Graad 3 plakkate. Byvoeglike naamwoorde, werkwoorde
- Wiskinde tyd; blou
- Twee kleure saamgestelde woorde
- Spreikaart
- 5 kolle (wit) 5 (blou)
- Primere kleure 14:36

14:46 Session 2 Feedback (notes to reflect on)

- Going back: Rustige kleure – sand
- Vroeer jare – Al die kleure
- Laaste jare- sand kleur, grys, sagte
- K hou van kleur
- Kleurvol reaksie = positief

- Klimrame- trek aandag, gaan na hulle toe
- Wekboek in kleur/vak identifiseer
- Kinders vra onderwysers or hulle kleur en gee iets vir hulle
- Graad R klei meng
- Reenboog kleure verf
- Emosies Al 3 grade
- You Tube
- Rooi (kwaad), groen (groen), blou (hartseer), pers (vies), geel (gelukkig)
- Covid plakkate; kwaad (rooi)
- Emoji's (rooi vir woede)
- Merk in boekies – kleur potlood
- Staan regte antwoord uit? Onderwysers tot onderwysers
- Oog/brein konneksie
- Kuns klaar mooiste? Kies die helderste een
- B – Primere kleure is altyd klaar

15: 08 Session/aspect 3

Uitdagings

- Boeke? Te min/te veel, te mooi sien nie (seuns)
- Vraestel
- Het nie altyd die kleur nie
- Kleurblindheid, help om kleur te kry of help
- Singapore wiskunde
- GDE Afrikaans graad 3 nie op standard nie
- Maak eie goed

PRA sessie eindig 15:15

Additional Field Notes

Carla	R		Jacolene	1	
Marie	2	Ilse	3	Willemien	1

Anneke – Co-facilitator

- Record op Zoom
- Record op foon videokamera

1ste Besprekingspunt: Kleur gebasseerde hulpbronne vir bevorderlike leeromgewing

- Mure neutraal geverf om bont plakkate ook in te bring
- Verskil van klas tot klas

- Skrif in swart om nie aandag af te trek nie } Willemien

- Flitskaarte

- Rustige kleur kalmendere kleur – belangrik — Marie
- Vokale & konsonante in verskillende kleure — Ilse

- Kinders in kleurgroepe
- Spogkolle
  — Carla

- Robot ⟶ Dissiplinestelsel
- Seisoen
  — Jacolene

- Begin (Groen) en Einde (Rooi) — Jacolien

(Marie) Byvoeglike naamwoorde in geel
(Ilse) Byboeglike naamwoorde in blou
Selfstandige naamwoorde in rooi
Werkwoorde in groen

- Minute wyser en uur wyser verskillende kleure
- Colour code leesblokke
- 100'e, 10'e spreikaarte
- Verskillende klankies in verskillende kleure

Terugvoer @ Sonelle i.t.v.1ste plakkart (gegee deur Marie)

↳ Hier en daar elaborate en uitvrae bv. Watter tipe kind in kleurvolle / bond klaskamer en watter tipe kind in pastel / neutrale kleure?

↳ Potlode gelabel met kleur – al gebruik?

Juffrouens ook bygevoeg – Ilse oor WISK.

Carla - oor pyle en klanke (Gr R)
Willemien – rye in klas is verskillende kleure
— Stiller tydens brainstorm sessie

<u>2de Besprekingspunt: Positiewe ervaring van gebruik van kleur</u>

- Geniet klimrame
- Wat is jou gunsteling kleur Juffrou
- Hou van kleurvolle klas
- "Inside-Out" – emosies
  (Snacks uitgedeel)
- Kies dikwels kunsprent met helderste kleure in
- Nasorg met ander kleurpotlood
- Verskillende vakke se werkboekies is in verskillende kleur (Assosiasie – makliker vir organisasie en vir Juffrou)
- Gr R klei meng met nuwe kleure

Sonelle sluit weer aan

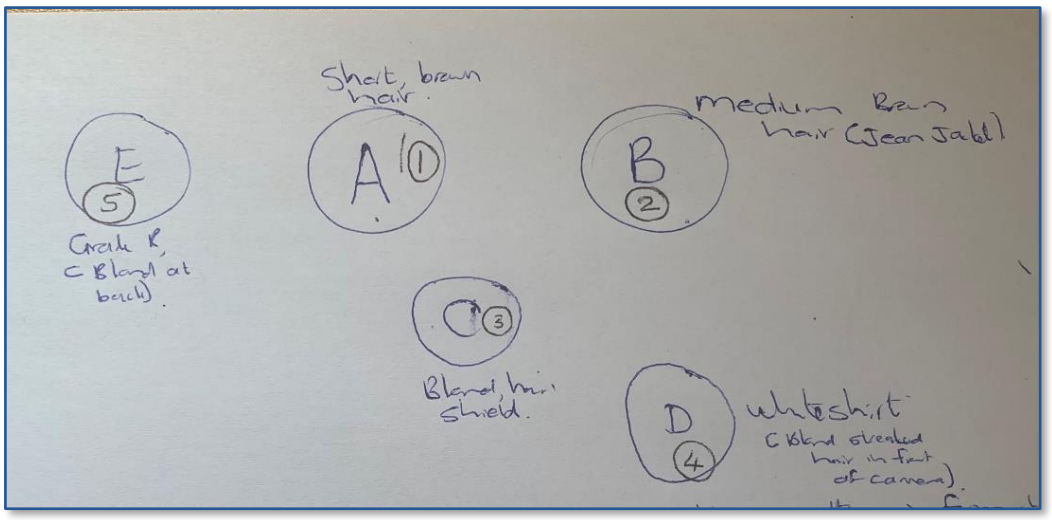
- Vraag oor sagte kleure – voorbeelde
- Terugvoer oor samespreking oor Punt 2 (Ilse)
  - Vra extra vrae oor
- Primere kleure raak eerste op i.t.v. Kleur

3de Besprekingspunt: Uitdagings t.o.v. gebruik van kleur

- Moes nuwe Zoom sessie skep (klein deeltjie van gesprek oor Punt 3 gemis)
  - Behoort wel op foon opname te wees.

22 April 2021

Today I started the transcription of the PRA based session with the teachers from the selected school. I have drawn up a diagram to keep track of the participants. This task was bigger than I thought. I have not finished it and will continue next week. I have decided to do a handwritten transcription first and then have it typed in columns where I can make notes for emerging themes and coding. Due to the audio-video recordings used I had to go back and forth between the computer recording (Zoom session) and the video recording (on-site) to contribute to accuracy. This was a frustration, however, I am grateful for my co-facilitator who managed to gather all the participants and make the data collection process possible. Unfortunately due to COVID this was the only way to do it, but at the end I realised it was possible and successful.



28 April 2021

Today I worked through the Grade 3 English digital workbooks and identified patterns throughout the book and made notes. I chose this book as I wanted to relate to the work as my daughter was in Grade

3 this year. I then browsed through all the Foundation Phase Rainbow books on the GDE website and decided as they are similar in the way they are organised I will only use and analyse the Grade 1, book 2, Term 3 and 4 books which I will receive hard copies of from the school. I will also receive the Grade 1 subject books that the school uses.

1 – 4 May 2021

I have completed the process of transcription. I found my own and co-facilitator field notes helpful (reviewed them before I started) as they guided my thought process towards identifying patterns and themes as I listened and transcribed. I listened to the video audio recording again to ensure that my transcription was accurate. During certain times the speech was unclear and I made a note. I printed the document. I have planned to start analysing the data next week.

10 - 21 May 2021

I familiarised myself with the data, paying specific attention to patterns that occur. I first spent time to become acquainted and familiar with the data captured through transcripts, field notes, document analysis, audio and visual material and the teacher journals, by reviewing all the data sources a few times at the beginning of the analysis process. I then made hand notes and typed notes and made post-it notes of recurring patterns and grouped them accordingly. The following was identified during the initial coding process:

Group 1 Coding: CO1: Resources utilised during language lessons

CO1: Resources utilised during Mathematics

CO1: Resources utilised during Life Skills

Group 2 Coding: CO1: Resources utilised in general

CO2: Organisation

CO2: Evaluation and Assessment

CO2: Classroom Environment

Group 3 Coding: CO3: Attention

CO3: Association

CO3: Listening skills or following written instructions

23 May 2021

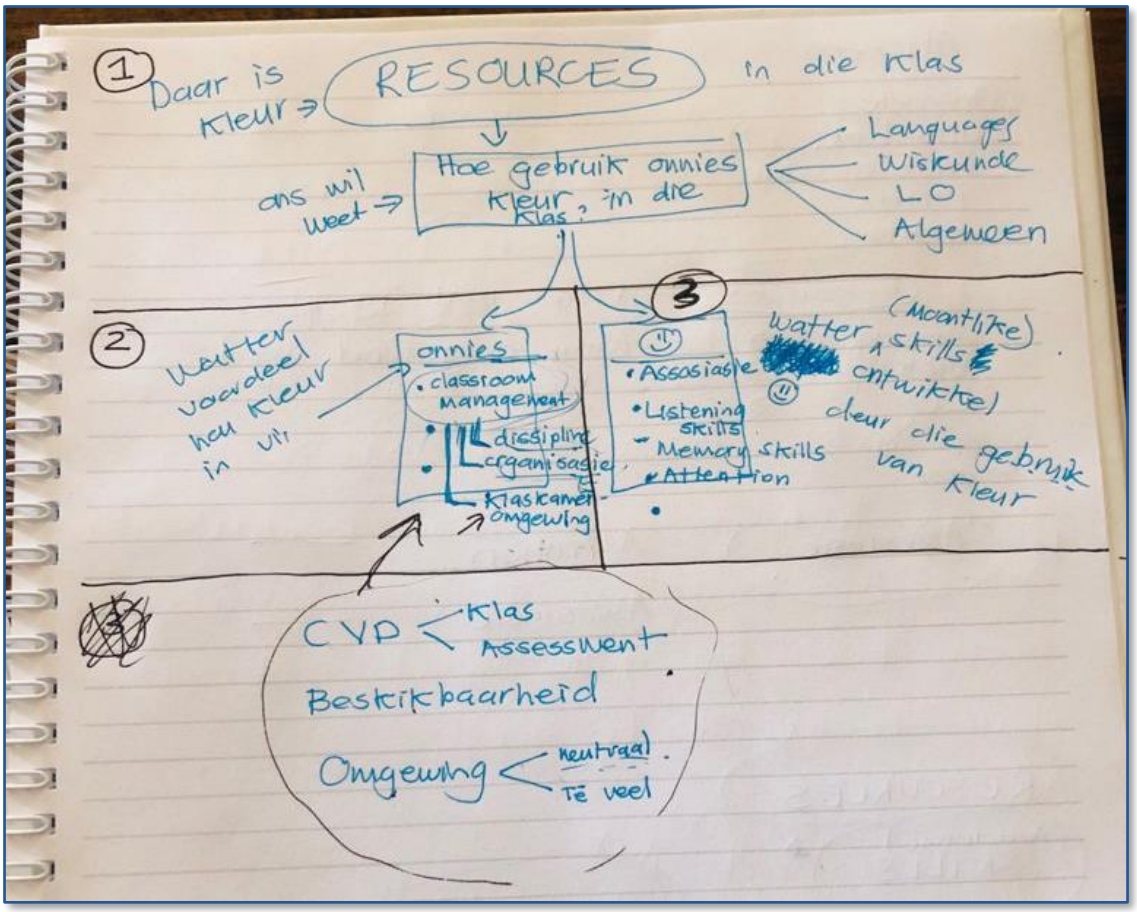
Today I will review all the Grade 1 GDE Rainbow books and the books that the school uses. I am glad that I have hard copies as it makes it easier to browse through the books and go back and forth to identify patterns. After becoming acquainted and familiar with the data captured through transcripts, field notes, audio and visual material and the reflective journals I realised with these books that they contain an extreme amount of colour and thought about the learner that the one participant mentioned who is colour blind and wondered how he will cope with these books. I also wondered about crowded schools in South Africa and if a teacher will be aware of a learner with colour vision deficiency and how she will assist or accommodate such a learner with an alternative book. I also thought about children with attention difficulties and who become easily distracted. I valued the Math book that is colour coded according to concepts. I thought in terms of the organisation how it can help a parent to easily go back to sections for revision that may be an area of concern. In terms of colour–coding themes and sections in the book this may be helpful to a teacher to emphasise or redirect learners. The book truly attracted my attention as I love colourful things in general. Highlighting the sound introduced or the numbers as in the math book may be helpful to draw attention. It grabbed my attention to focus on those specific parts. I value the continuity of organising instructions, numbering, headings and subheadings throughout the books with the use of colour. I do also feel that some sections would work just as well without colour. I found some pages very distracting (too much colour, too much information, and clutteredness) and thought of my son with ADHD and many children who I have worked with who this may be too overwhelming and distracting for and might cope better with black and white printed worksheets with a hint of colour and less clutter. The workbooks provided by the school seemed a bit dull, but I assume it is more cost-effective. It really did not catch my attention. Colour was often part of an instruction to complete or following a teacher given instruction. The black print was also not appealing to me. Some books also seemed cluttered and not well organised. (ST1.1) Many patterns of colour have already emerged from the previous data reviewed. I added notes of those not yet identified on post-it notes.

The following themes have emerged from recurrent patterns/codes identified over the last few weeks of working with all the data collected which I will discuss with my supervisor next week. I have used post-it notes to code and group them. I have only allocated headings for possible themes and sub-themes based on the grouped post-it notes and initial coding.

POSSIBLE THEMES	POSSIBLE SUB-THEMES
Resources implemented in Foundation Phase classrooms	Languages Mathematics Life Skills General
The benefits when utilising colour in Foundation Phase classrooms	Attention Organisation Environment
The challenges when utilising colour in Foundation Phase classrooms	Availability Environment Colour blindness (colour vision deficiency)

26 May 2021

Today I met with my supervisor. After looking at all the categories/patterns/groups we re-evaluated and grouped them more suitably.



7 June 2021

After revisiting chapters one to three and having gone through the research data numerous times I'm thinking that colour is used quite often. It is interesting for me that there are so many skills that learners can get from using colour. I'm viewing the use of colour in my own children's textbooks differently and evaluating if there is value in the manner that it is utilised. Doing an online Zoom learner support session using Boom Cards for sentence construction, it was interesting to see how each question word to elaborate on the picture was in a different colour. The same colour was continuously used for every picture.

RESOURCES UTILISED

ST1.1: Resources utilised during language lessons

ST1.2: Resources utilised during Mathematics

Some of the resources I placed under general if I could not determine with certainty under which subject it belonged.

CLASSROOM MANAGEMENT

ST2.1: Classroom organisation

ST2.2: Monitoring and evaluation of education

ST2.3: The classroom environment

This was challenging to distinguish where they fit. I reminded myself that aspects that relate to the organisation including discipline, labelling, etc that related to the teacher managing the classroom will fit here". I added aspects related to motivation as this is a system that helps the teacher with classroom organisation and discipline. I thought about the learner with colour vision deficiency and that it might be helpful to picture code his books instead of using colour to also assist them and the teacher to quickly and efficiently access books. Being motivated may contribute to attention and focused behaviour I added monitoring and evaluation of education to ST2.2 as some aspects were better explained by monitoring and evaluating learners and not necessarily assessing/evaluating them for "marks". Many aspects fell under the classroom environment that was easily identifiable.

ENHANCEMENT OF LEARNERS' SKILLS, KNOWLEDGE AND ATTITUDES

ST3.1: Cognitive association skills

ST3.2: Listening skills and/or following written instructions

ST3.3: Focused attention

This was also a tricky session. To distinguish association and attention. For associations, I identified any activity or resources used to help the learner make a cognitive link to enhance learning. Attention focused on comments that were explicitly made related to helping them focus. To see, focus attention, "stands out". I added following instructions to listening skills as some of the instructions were written and not only oral that contributed to enriched knowledge within a subject area. When looking at the GDE books it mostly identifies as a resource used in all the subjects, however, based on the PRA session I managed to identify aspects of association, following instructions, attention (the weekly sound in the language book that is always in red grabbed my attention on each page), organisation and evaluation and assessment. The different sections can make organisation for a teacher easy to refer to that colour to quickly find a page number.

The bright coloured pictures caught my attention. The use of colour to section part also helped me to distinguish certain aspects of a task.

The comments made by the teachers to use colour to complete a task or evaluate a concept was clear in the workbooks that they use.

The following initial themes, subthemes, inclusion and exclusion criteria were identified.

IDENTIFIED SUB-THEMES	INCLUSION CRITERIA	EXCLUSION CRITERIA
Sub-theme 1.1: Resources utilised during language lessons	All data that relate to specific resources utilised during first and second language subject lessons as identified by teacher participants during the PRA group discussion, journals completed or classroom photographs.	All data that relate to specific resources utilised during mathematics as identified by teacher participants during the PRA group discussion, journals completed or classroom photographs.
Sub-theme 1.2: Resources utilised during Mathematics	All data that relate to specific mathematic resources as identified by teacher participants during the PRA group discussion, journals completed or classroom photographs.	All data that relate to specific resources utilised during language subject lessons as identified by teacher participants during the PRA group discussion, journals completed or classroom photographs.
Sub-theme 2.1: Classroom organisation	All data that relate to specific classroom organisation practices and behaviour management strategies.	Data relating to the monitoring and evaluation of learners to determine the acquisition of educational outcomes, or the physical learning environment contributing to the functioning of learners within a classroom.
Sub-theme 2.2: Monitoring and evaluation of education	Data referring to how teachers monitor and evaluate learners to determine the acquisition of educational outcomes.	Data relating to specific classroom organisation practices and behaviour management strategies, or the physical learning environment contributing to the functioning of learners within a classroom.
Sub-theme 2.3: The classroom environment	Data relating to the physical classroom environment contributing to the functioning of learners within a classroom.	Data relating to the specific classroom organisation practices and behaviour management strategies, or the monitoring and evaluation of learners to determine the acquisition of educational outcomes.

15 June 2021

Today I continue with chapter 4 and reflect on some of the statements made

"…dan het die kinders nie daar kleur nie, dan is hulle kleur of weg of stomp of wat okal en dan kan mens net sê dat hy maar 'n ander kleur kan gebruik" PRA line 806, 807

In terms of classroom management and assessing learners, the use of colour, in this case, should assist with marking books. If learners are allowed to just use another colour, this will create more work for a teacher when marking to determine who was allowed another colour or if the work was completed incorrectly (ST2.2).

Before I started with section 3 of chapter 4 I had a look at the notes I made previously to help me distinguish between 3.1 and 3.3. as they are so closely related, however still separate entities. 3.1 will focus on cognitive associations that they may make, that may be used throughout the Foundation Phase while 3.3, focused attention is more short term and/or class or grade/age-specific or moment specific to "grab" their attention to learn. I will swop 3.2 and 3.3 as I feel 3.3 is a good follow up for 3.1

IDENTIFIED SUB-THEMES	INCLUSION CRITERIA	EXCLUSION CRITERIA
Sub-theme 3.1: Focused attention	Data that refers to focused attention strategies implemented that may contribute to learners' skills acquisition, knowledge and attitudes towards learning.	Data that refer to the utilisation of colour within the Foundation Phase classroom contributing to the development of cognitive association skills, the development of listening and comprehension skills to enhance learners' skills acquisition, knowledge and attitudes towards learning.
Sub-theme 3.2: Cognitive association skills	All data relating to the contribution of the utilisation of colour within the Foundation Phase classroom to learners' development of cognitive association skills that may contribute to knowledge and attitudes towards learning.	Data that refer to the utilisation of colour within the Foundation Phase classroom contributing to the development of listening and comprehension skills, or the implementation of focused attention strategies to enhance learners' skills acquisition, knowledge and attitudes towards learning.

IDENTIFIED SUB-THEMES	INCLUSION CRITERIA	EXCLUSION CRITERIA
Sub-theme 3.3: Listening and comprehension skills	Data that relate to the value of the utilisation of colour within the Foundation Phase classroom developing listening and written comprehension skills.	Data that refer to the utilisation of colour within the Foundation Phase classroom contributing to the development of cognitive association skills, or the implementation of focused attention strategies to enhance learners' skills acquisition, knowledge and attitudes towards learning.

15 - 19 June 2021

723	**omkring alles groen wat gesonde kos is**

This made me think : Not only are we acquiring knowledge in terms of life skills, but these learners also need to carefully listen to a teacher giving an instruction to follow or they should read an instruction properly to show an understanding of the information taught"

658	**Graad twee's. En wat dink julle is die rede dat hulle dit doen? Net vir interessantheid.**

This made me think of how bright colourful posters may also then attract the learner's attention within the classroom. I decided to browse through the class photos and it was evident that most of the walls were covered with not only bright artwork but also educational posters. Focused attention stood out for me when I saw bright Life skills (Bible) posters on the roof and how it also associated with religion for me "looking up to God"

While I was completing theme 3 I decided to make focused attention subtheme 1. Which I have rearranged above. The flow of information seemed better.

21 June 2021

The last few days have been intensive. Working through all the data, linking it back to literature and continuing to write up the facts and integrate the information. I will now arrange for member checking to take place to confirm the findings and the identified themes and subthemes. This will verify if the results are an accurate representation of their viewpoints.

22 June 2021

I met with my supervisor today to check themes and discuss chapter 4 and going forward with chapter 5. Due to the Covid situation, we have done a WhatsApp member checking session.

23 – 30 June 2021

I have been working for the last week on chapter 5 which was intense. I made some changes and additions to chapter 4 and feel more confident. I am pleased with my work and the findings and conclusion of my research. I do feel that I may have spent too much time but feel confident that I went back and forth to substantiate my findings and conclusions. I will now send the amendments of chapter 4 and chapter 5 to my supervisor.

28 – 16 August 2021

The following themes have been finalised after careful consideration and re-evaluation of the data generated

THEMES	SUB-THEMES
Theme 1: Colour-based resources utilised to support teaching and learning.	Sub-theme 1.1: Colour-based resources utilised to support the teaching and learning of literacy skills. Sub-theme 1.2: Colour-based resources utilised to support the teaching and learning of numeracy skills.
Theme 2: Utilisation of colour to support classroom management.	Sub-theme 2.1: Utilisation of colour to support classroom organisation. Sub-theme 2.2: Utilisation of colour to support monitoring and evaluation of teaching practices. Sub-theme 2.3: Utilisation of colour to establish a positive classroom environment.
Theme 3: Utilisation of colour to improve learners' academic skills.	Sub-theme 3.1: Use of colour to focus learners' attention. Sub-theme 3.2: Use of colour to enhance learners' cognitive skills. Sub-theme 3.3: Use of colour to develop learners' listening and comprehension skills.

Finalised Inclusion and exclusion criteria for Theme 1, 2, 3:

SUB-THEMES	INCLUSION CRITERIA	EXCLUSION CRITERIA
Sub-theme 1.1: Colour-based resources utilised to support the teaching and learning of literacy skills	All data related to colour-based resources utilised to support the teaching and learning of literacy skills.	All data related to colour-based resources utilised to support the teaching and learning of numeracy skills and Life Skills.
Sub-theme 1.2: Colour-based resources utilised to support the teaching and learning of numeracy skills	All data related to colour-based resources utilised to support the teaching and learning of numeracy skills.	All data related to colour-based resources utilised to support the teaching and learning of literacy skills.
Sub-theme 2.1: Utilisation of colour to support classroom organisation	All data related to teachers' utilisation of colour to support classroom organisation.	All data related to the utilisation of colour to support the monitoring and evaluation of teaching practices.
Sub-theme 2.2: Utilisation of colour to support monitoring and evaluation of teaching practices	All data related to the utilisation of colour to support the monitoring and evaluation of teaching practices.	All data related to the utilisation of colour to support classroom organisation.
Sub-theme 2.3: Utilisation of colour to establish a positive classroom environment	All data related to the utilisation of colour to establish a positive classroom environment.	All data related to the utilisation of colour to support classroom organisation, as well as the monitoring and evaluation of teaching practices.
Sub-theme 3.1: Use of colour to focus learners' attention	All data related to the use of colour to focus learners' attention.	All data related to the use of colour to enhance learners' cognitive skills.
Sub-theme 3.2: Use of colour to enhance learners' cognitive skills	All data related to the use of colour to enhance learners' cognitive skills.	All data related to the use of colour to develop learners' comprehension skills.
Sub-theme 3.3: Use of colour to develop learners' listening and comprehension skills	All data related to the use of colour to develop learners' listening and comprehension skills.	All data related to the use of colour to enhance learners' cognitive skills.

17 August 2021

I finally see the light in the tunnel as I put everything together to submit to my language and technical editor.

ANNEXURE G: TEACHERS' REFLECTIVE JOURNAL

Participant C's reflective journal serves as an example of how I analysed each journal. All five journals can be viewed on the Compact Disk Read-Only Memory (CD-ROM) included at the back of my mini-dissertation.

Summary of notes:

Day 1

Math

- Unifix blocks (CO1.2)
- Use crayon to practise writing a number (CO1.2)
- PowerPoint, colour used to keep it interesting (CO1.3)
- Addition, practise with colour blocks (CO1.2)

Afrikaans

- Write in colour (CO1.1)
- PowerPoint, colourful pictures (CO1.1)
- New words

Day 2

Math

- Use colour pencils with worksheet (CO1.2)
- PowerPoint, with lots of colour (CO1.2)
- Stationery (CO1.3)
- Shapes, data handling, Smarties (colour sorting) (CO1.2)

Afrikaans

- Big book with colourful pictures (reading) (CO1.1)
- PowerPoint, colourful pictures (CO1.1)
- New words

Day 3

Afrikaans

- Assessment (CO1.1)
- Worksheet with colour pencil (CO2.2)

Life Orientation

- Worksheets with coloured crayons, PowerPoint colourful (CO 1.3)

Math

- PowerPoint (colour); math method with blocks (CO 1.2)

English

- Colour pencils used in English book (CO 1.1)

Day 4

English

- Assessment with colour pencil (CO 1.1, CO 2.2)

Life Orientation

- Worksheets with coloured pencils (CO 1.3)
- Art; draw with pastels (CO1.3)

Math

- Practise writing numbers, crayons, PowerPoint, Unifix blocks (CO 1.2)

Day 5

Afrikaans

- New letter-sound with colour crayon, patterns done in colour, books with words with colourful illustrations (CO1.1)

Math

- Unifix blocks (CO 1.2)

Life Orientation

- Art; pastels, food colouring (CO1.3)

Day 6

Math

- Minus with Unifix blocks (CO1.2)
- PowerPoint, colourful pictures (CO1.2)

Afrikaans

- Letter/sound in colour (CO1.1)
- PowerPoint, sight words in colour (CO1.1)

Day 7

Afrikaans

- Big book reading (CO1.1)

Math

- Practise shapes with different coloured shapes (CO1.2)

Life Orientation

- PowerPoint; colourful pictures (CO 1.3)
- Use of pencils to complete work in book (CO 1.3)
- Art, coloured cardboard (CO 1.3)

Day 8

Math

- Calculations with coloured straws (CO1.2)
- PowerPoint, colourful pictures (CO1.3)

Afrikaans

- Letter-sound picture is colourful (CO1.1)
- Coloured pencils (CO1.1)
- New words

Day 9

Math

- Word problems with Unifix blocks (CO1.2)
- PowerPoint, colourful pictures (CO1.2)

Afrikaans

- New letter/sound colourful pictures (CO1.1)
- Colourful stationery to practise (CO1.1)
- PowerPoint, colourful (CO 1.1)

English

- English departmental books are colourful, colourful stickers (CO 1.1)

Day 10

Life Orientation

- Bible; Big colourful pictures (CO 1.3)
- Colourful pictures (CO 1.1)

English

- English departmental books are colourful, colourful stickers (CO 1.1)

Math

- PowerPoint, colourful pictures (CO1.2)
- Stationery to complete (CO 1.2)

Afrikaans

- PowerPoint, colourful pictures (CO 1.1)

Day 11

Life Orientation

- Bible; Pictures colourful (CO 1.3)

Math

- Data handling, coloured Smarties (CO1.2)

Afrikaans

- Letter-sound with pencils, pictures=colourful (CO 1.1)

English

- Departmental books colourful pictures (CO 1.1)

Day 12

Life Orientation

- Bible; Pictures colourful (CO 1.3)
- PowerPoint; Colourful pictures, stationery to complete (CO 1.3)

Afrikaans

- Assessment with coloured pencils (CO 1.1)
- PowerPoint (CO 1.1)

Day 13

Life Orientation

- Bible; colourful pictures (CO 1.3)
- Art; pastels, food colouring (CO 1.3)

Afrikaans

- Assessment with coloured pencils (CO 1.1)
- PowerPoint (CO 1.1)

English

- Departmental books colourful pictures and stickers (CO 1.1)

Day 14

Math

- Methods with blocks, PowerPoint (CO1.2)

English

- Stationery/books (CO 1.1)

Life Orientation

- Book/stationery (CO 1.3)

Afrikaans

- Assessment worksheet/pencils (CO 1.1)

Day 15

English

- GDE books, pencils (CO 1.1)

Life Orientation

- Pencils in book (CO 1.3)
- Art; crayons (CO 1.3)

Afrikaans

- Letter/sound in colour, coloured pencils, colour in (CO 1.1)

Day 16

English

- GDE books (CO 1.1)

Afrikaans

- New letter/sound (CO 1.1)

Life Orientation

- PowerPoint colourful pictures (CO 1.3)
- Crayons in book (CO 1.3)

Day 17

Afrikaans

- Worksheet crayons (CO 1.1)

English

- GDE books, pencils used (CO 1.1)

Life Orientation

- Art, paint (CO 1.3)

Day 18

English

- Assessment with coloured pencils (CO 2.2)
- GDE books with pencils (CO 1.1)

Life Orientation

- Pastels, water-paint, crayons (CO 1.3)

Afrikaans

- Worksheet with pencils (CO 1.1)

Day 19

Afrikaans

- New letter-sound (CO 1.1)

Math

- Pencils and worksheet (CO1.2)

English

- GDE books and stickers (CO 1.1)

Life Orientation

- Worksheet with pencil (CO 1.3)

Day 20

Afrikaans

- Assessment with pencils (CO 2.2)

English

- GDE books and stickers (CO 1.1)

Life Orientation

- Pencils and crayons to complete work in book (CO 1.3)

My Classroom Journal

Utilisation of colour in the classroom by Foundation Phase teachers

Name: [redacted]

Grade: 1

Kindly use the journal to reflect on classroom practices and the implementation of resources that involves the utilisation of colour.

Please Note:

This journal may be completed in English or Afrikaans.

Day 1

Col.2

Wiskunde: Gebruik geel om die drie hoek in te kleur. So ons gebruik kleure om te sien of die leerders hulle vorms ken

* math use a colour to identify shape Assessing

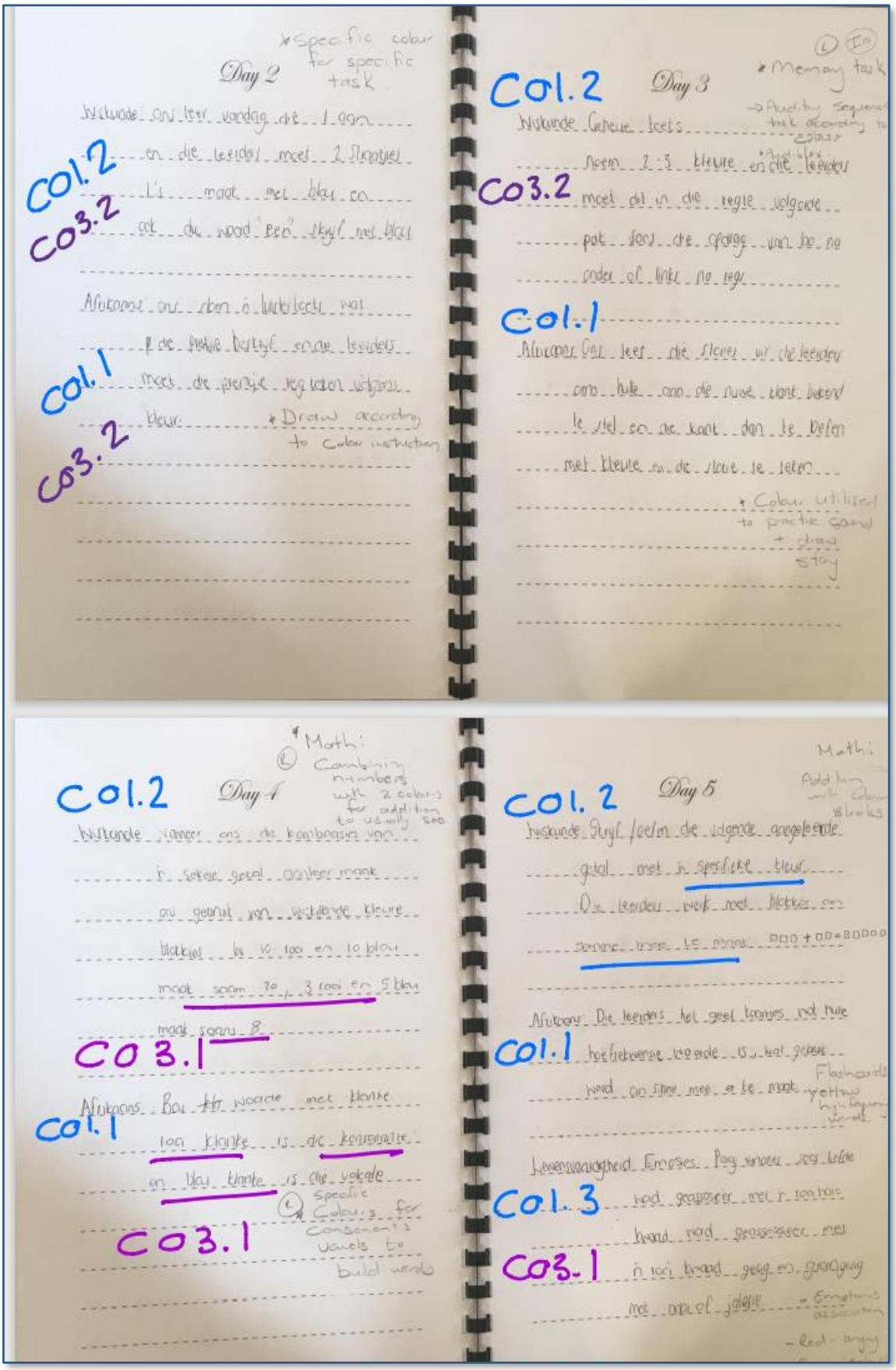
Co2.2

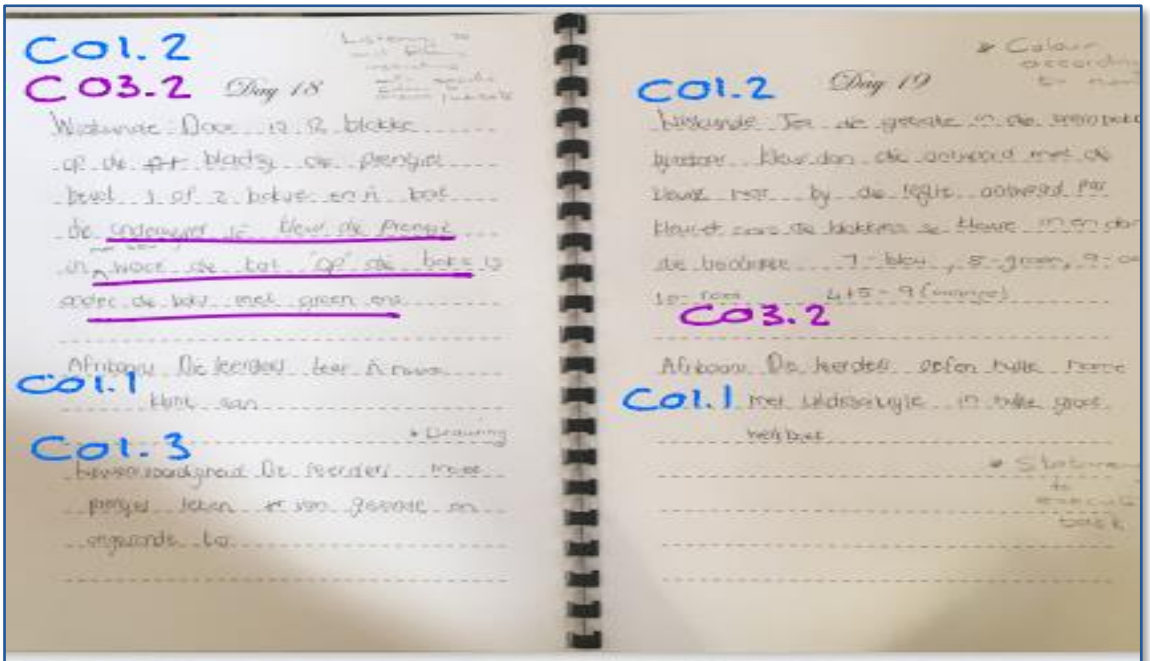
Afrikaans: Aan die begin van die jaar gaan ons Col.1 slegs handskrif patrone by \/\/\/ of UUUU en word met kleure gestryf.

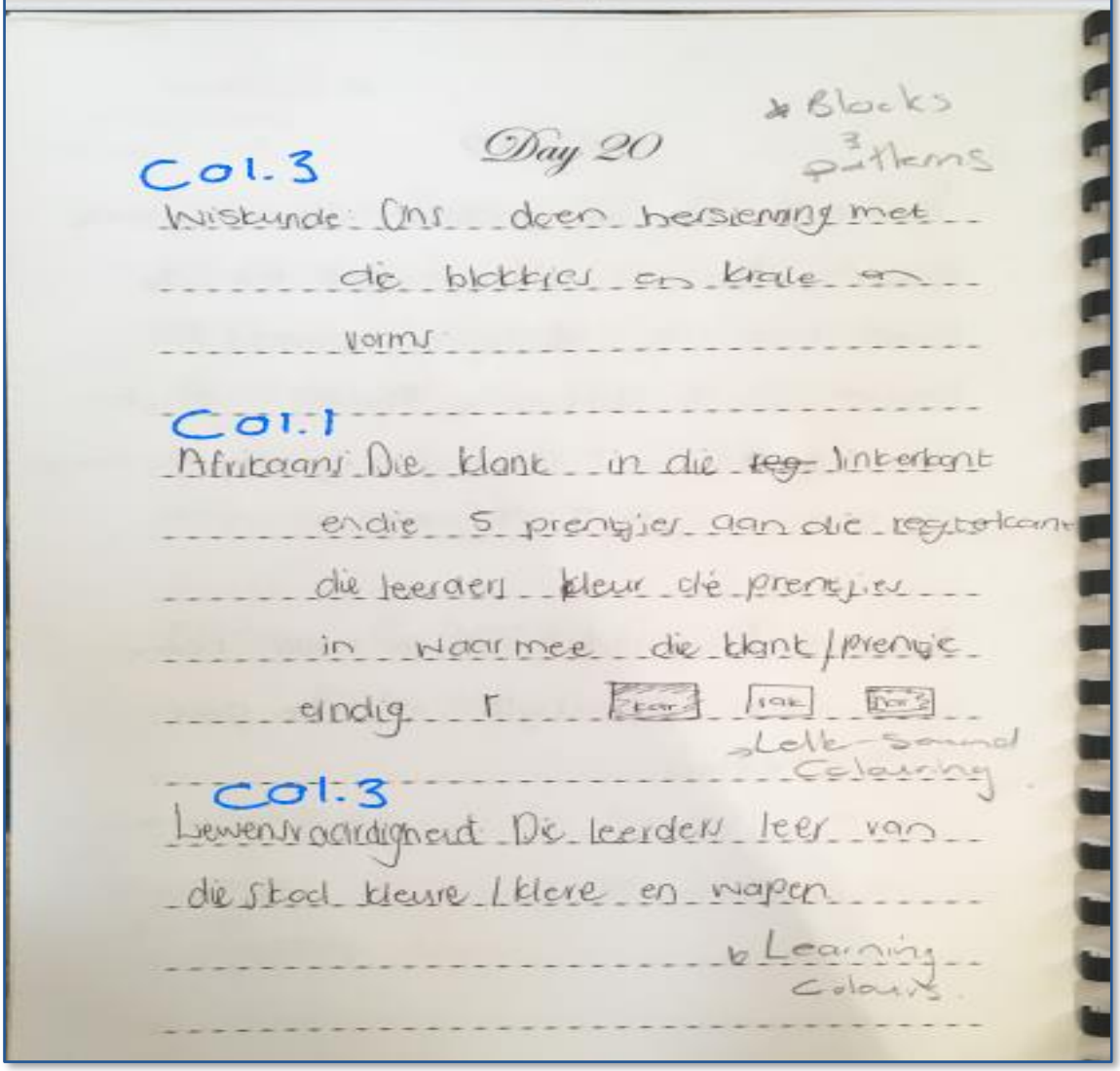
* Handwriting Patterns in Colour.

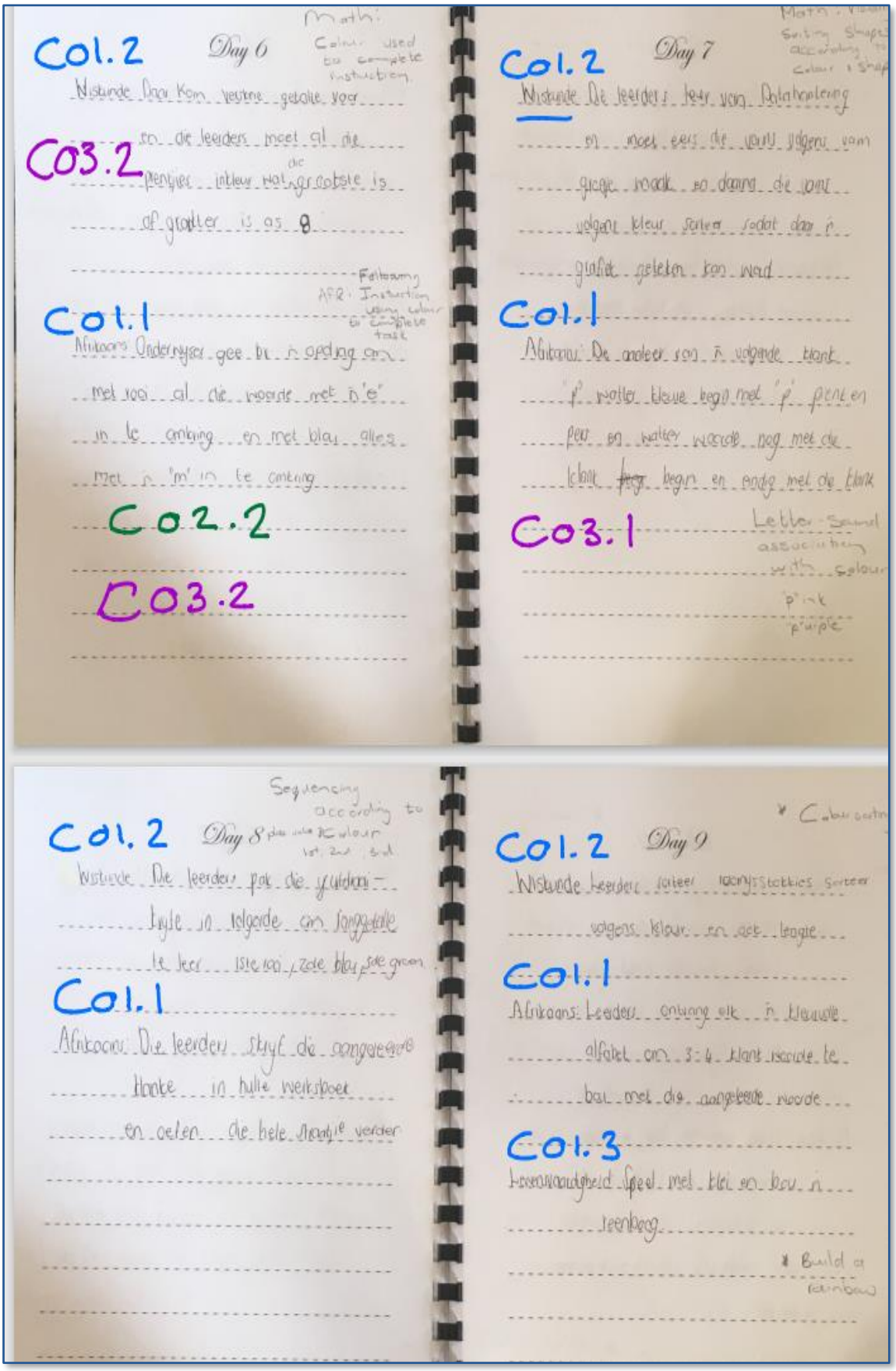
Lewensvaardigheid: Die leerders moet in kol Col.3 op die magnetiese cc lyf maak Co2.2 met vel waar sy ken is by om hulle van hulle liggaam te leer met kleure.

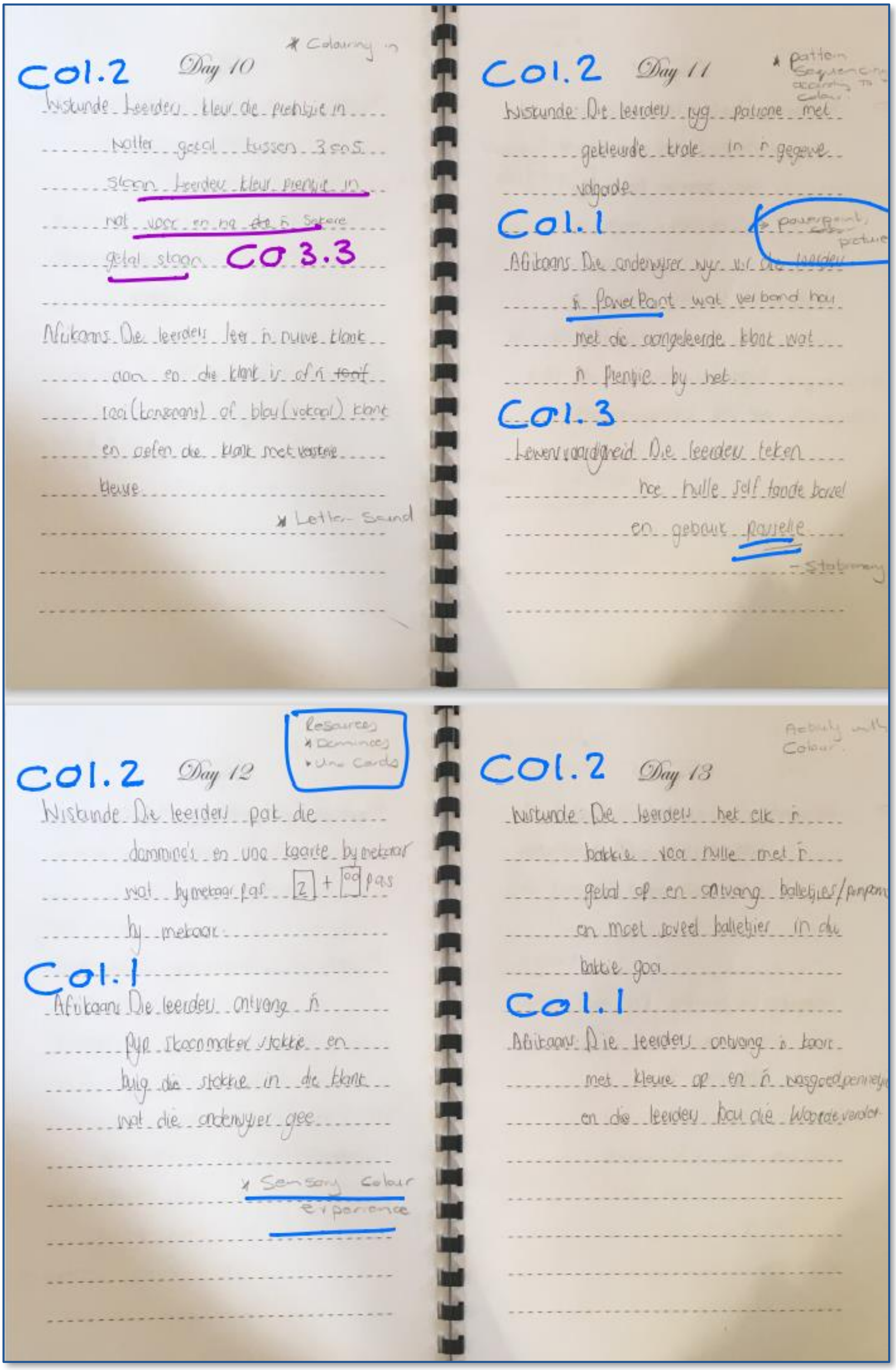
* Identifying body parts Assessing)




Col. 2
Col 3.2 Day 18
Col. 1
Col. 3
Col. 2 Day 19
Col. 3.2
Col. 1


Day 20
Blocks
3 items
Col. 3
Wiskunde: Ons doen hersiening met die blokkies en kraletjies in vorms
Col. 1
Afrikaans: Die klank in die ~~reg~~ linkerkant en die 5 prentjies aan die regterkant die leerders kleur die prentjies in waarmee die klank/prentjie eindig
Lekker Sound Colouring
Col. 3
Lewensvaardigheid: Die leerders leer van die stad kleure/klere en wapen
Learning Colours





Col.2 Day 10 * Colouring in

Wiskunde Leerders kleur die prentjie in volgens getal tussen 3 en 5. Sleen leerders kleur prentjie in wat voor en na die ń sekere getal staan. Co 3.3

Afrikaans Die leerders leer ń nuwe klank aan en die klank is of ń rooi (konsonant) of blou (vokaal) klank en oefen die klank met verskeie kleure.

* Letter Sound

Col.2 Day 11 * Pattern Sequencing according to colour

Wiskunde Die leerders ryg patrone met gekleurde krale in ń gegewe volgorde.

Col.1 * PowerPoint picture

Afrikaans Die onderwyser wys vir die leerders ń PowerPoint wat verband hou met die aangeleerde klank wat ń prentjie by het.

Col.3

Lewensvaardigheid Die leerders teken hoe hulle self fonde bou en gebruik pastelle.

* Stationery

Col.2 Day 12 Resources * Dominoes * Uno Cards

Wiskunde Die leerders pak die dominoe's en uno kaarte bymekaar wat bymekaar pas [2] + [..] pas by mekaar.

Col.1

Afrikaans Die leerders ontvang ń pyp skoonmaker stokkie en buig die stokkie in die klank wat die onderwyser gee.

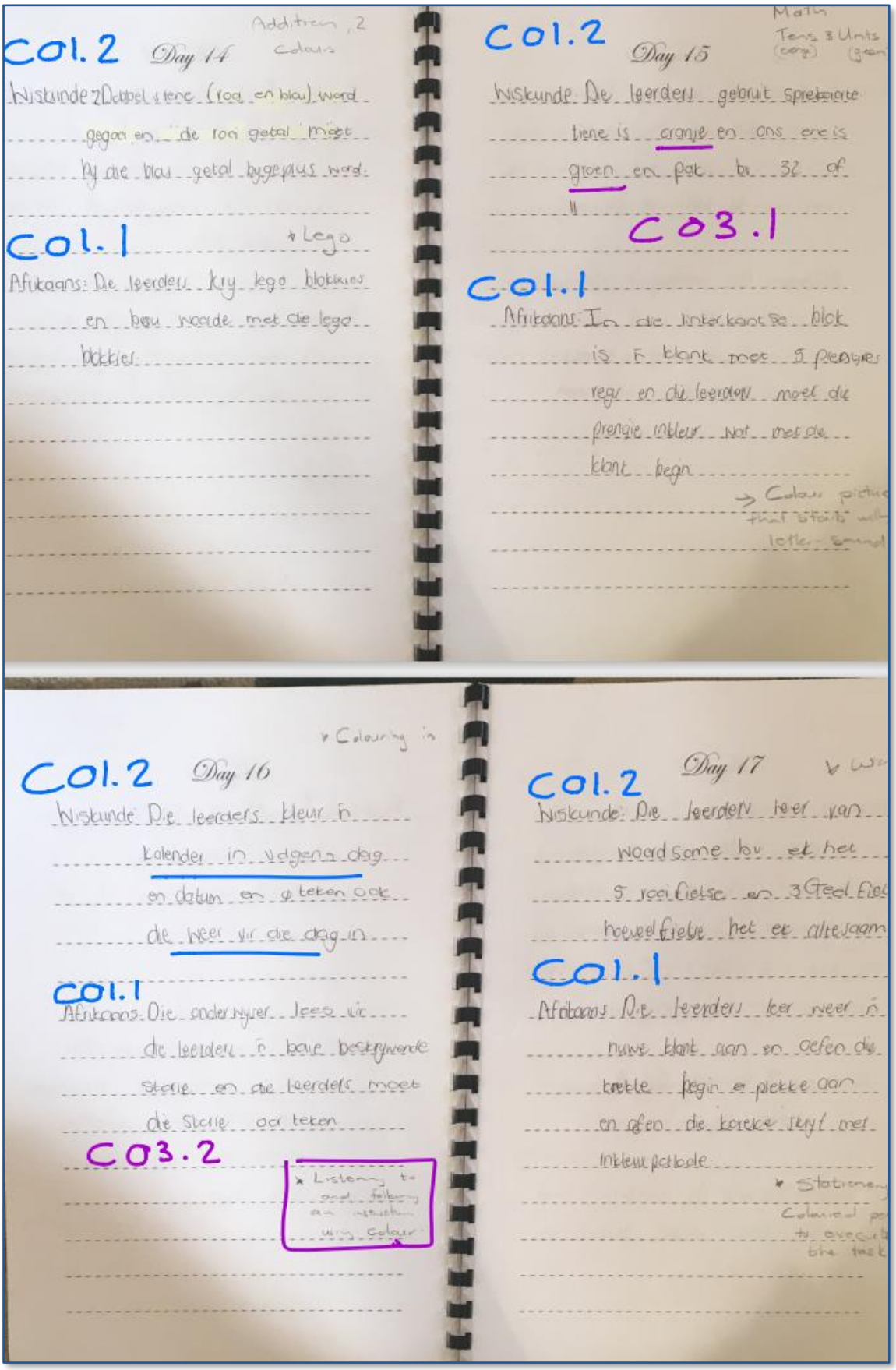
* Sensory colour experience

Col.2 Day 13 Activity with Colour

Wiskunde Die leerders het elk ń bakkie voor hulle met ń getal op en ontvang balletjies/pompoms en moet soveel balletjies in die bakkie gooi.

Col.1

Afrikaans Die leerders ontvang ń kaart met kleure op en ń wasgoedpennetjie en die leerders bou die woorde vanaf



Col. 2 Day 14 Addition, 2 colours

Wiskunde: Dubbel sterre (rooi en blou) word gegooi en die rooi getal moet by die blou getal bygetel word.

Col. 1 * Lego

Afrikaans: Die leerders kry lego blokkies en bou woorde met die lego blokkies.

Col. 2 Day 15 Math Tens & Units (oranje) (groen)

Wiskunde: Die leerders gebruik spreekbeurte tiene is oranje en ons ene is groen en pak bv. 32 of

Col. 3.1

Col. 1

Afrikaans: In die interaktiewe blok is 5 klank met 5 prentjies wat en die leerders moet die prentjie inkleur wat met die klank begin.

→ Colour pictures that starts with letter sound

Col. 2 Day 16 * Colouring in

Wiskunde: Die leerders kleur in kalender in volgorde van dag en datum en 9 teken ook die weer vir die dag in.

Col. 1

Afrikaans: Die onderwyser lees vir die leerders 'n baie beskrywende storie en die leerders moet die storie oor teken.

Col. 3.2

* Listening to and following instructions using colour

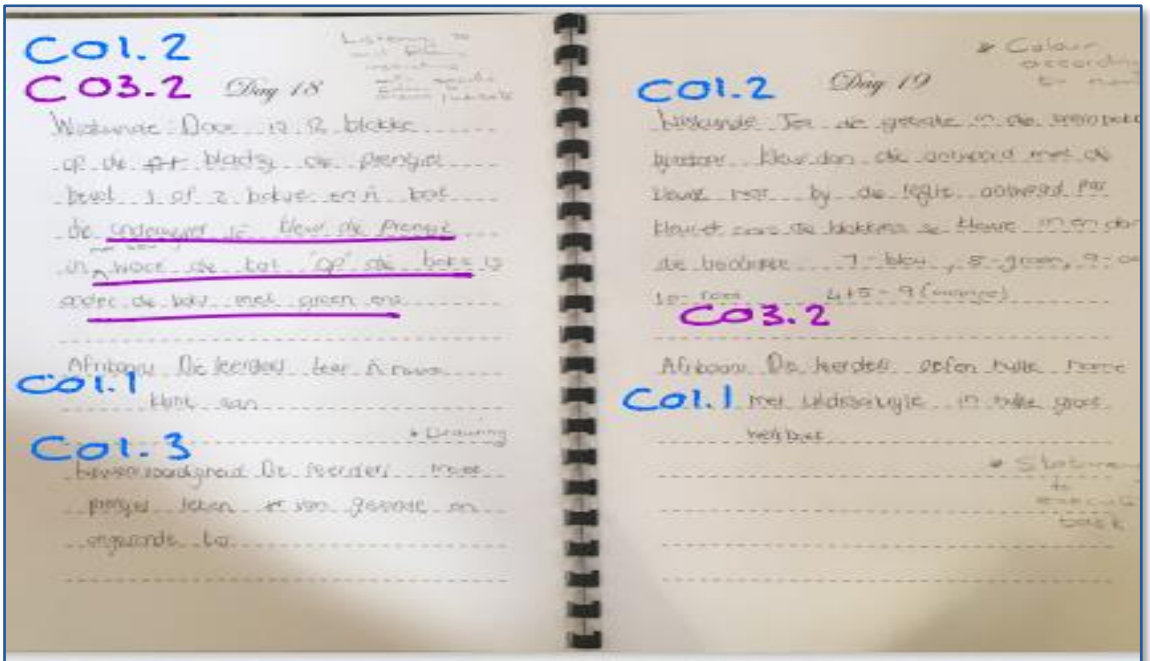
Col. 2 Day 17 * Wo

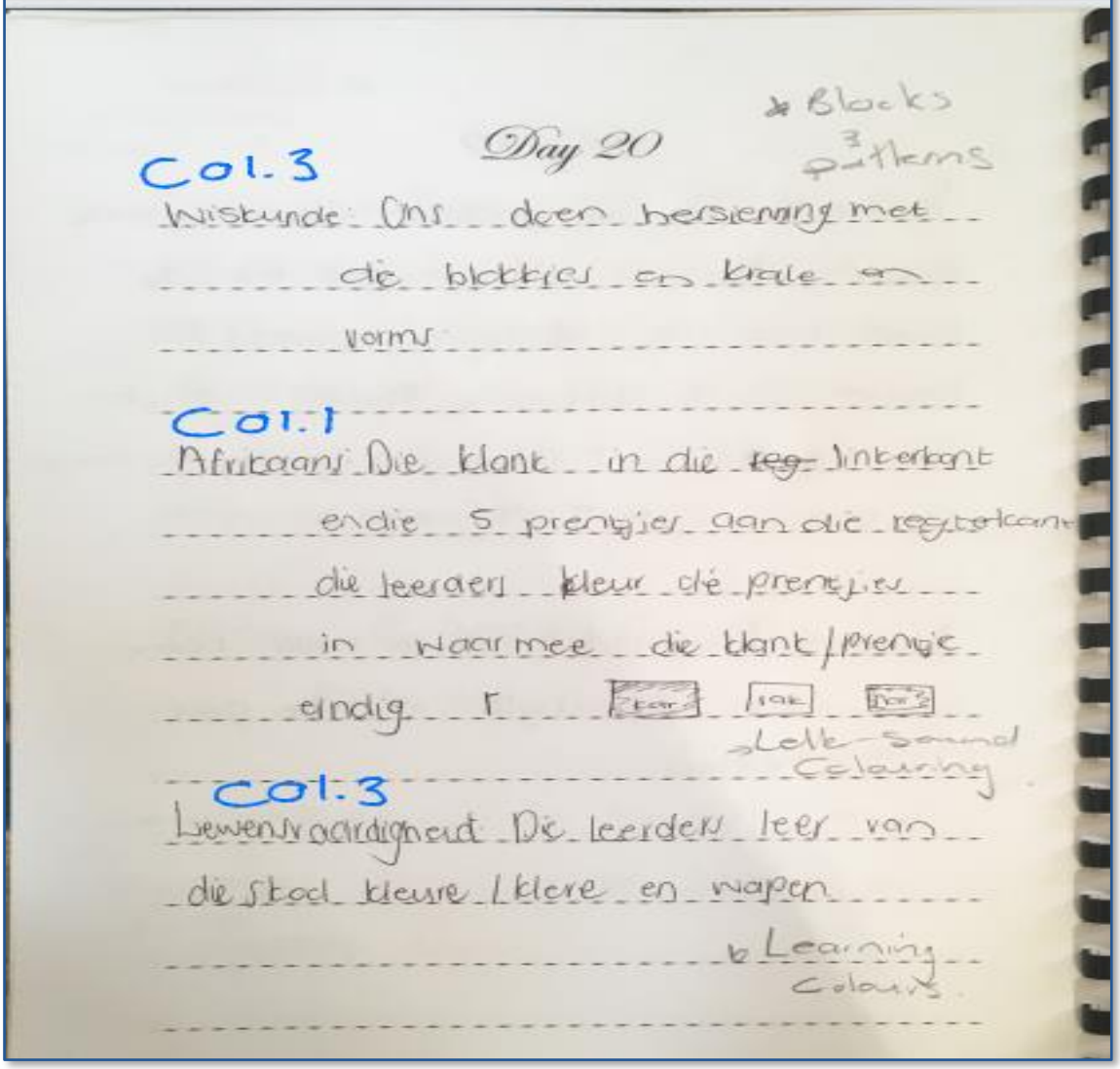
Wiskunde: Die leerders leer van woordsome tot en met 5 rooi fietse en 3 geel fiet hoeveelhede het en altesaam

Col. 1

Afrikaans: Die leerders leer weer 'n nuwe klank aan en oefen die takke begin en plakke aan en oefen die korrekte skryf met inkleurplatsle.

* Stationery Coloured pe to execute the task


Col. 2
Col 3.2 Day 18
Col. 1
Col. 3
Col. 2 Day 19
Col 3.2
Col. 1


Day 20
Blocks
3 patterns
Col. 3
Wiskunde: Ons doen hersiening met die blokkies en kraletjies vorms
Col. 1
Afrikaans: Die klank in die reg- linkerkant en die 5 prentjies aan die regterkant die leerders kleur die prentjies in waarmee die klank/prentjie eindig r
Lekker Sound Colouring
Col. 3
Lewensvaardigheid: Die leerders leer van die stad kleure/klere en wapen
Learning Colours