Enhancing creative thinking and problem-solving in young children by using provocations in visual art activities

by

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Submitted in partial fulfilment of the requirements of the degree

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Dedication

I dedicate this study to my biggest supporters

Mom and Dad

(Willie and Linda le Roux)

Thank you for always believing in me and for motivating me in difficult times.

I love you to the moon and back.

Life is tough, my Darling, but so are you.

Stephanie Bennett-Henry

Acknowledgements

All glory to God above. Lord, thank you for blessing me with this journey as part of Your bigger plan for my life. Thank You for showing me that I am capable of more than I thought. Thank You for placing the most supportive people I could ever ask for in my life to help me through this journey. You have shown me that there is always a light at the end of the tunnel, even though it does not seem like it in the moment. I am thankful, grateful, and blessed beyond measure.

To my Mom and Dad, Linda and Willie, *thank you* is such a simple way to try and show my gratitude for all you have done for me. Mom, thank you for all the motivation, the food, treats and most of all, the love you have shown me throughout my journey. Dad, thank you for always being in my corner, for supporting me financially, for giving me advice when I need it. I am blessed to have been able to share this journey with you and to also have you by my side at the end of it. I love you more than words can explain.

Steyn Botha, where do I start? Thank you, my Love. Thank you for always believing in me, even when I did not believe in myself. Thank you for staying up until midnight working with me. Thank you for consoling me when I had one of my meltdowns and always supplying me with chocolates. I could not have completed this journey without you. It has been tough, but we made it! I love you so much.

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To my four-legged girls, Skyler, Arya, and Bliss, my heart brims with an overwhelming surge of affection whenever I think of each of you. Skyler, through your playful spirit, you have taught me appreciation for the little wonders that often go unnoticed. Arya, my loyal and loving companion, you have been my steadfast pillar of support, offering unwavering comfort on even the darkest of days. And Bliss, your playful antics and whimsical charm have infused my life with laughter and merriment. To all three of you, your unconditional love and loyalty have been an anchor in the storm, a reminder that

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All-done proofreading, Marietjie, thank you for dealing with all the back and forth. I appreciate that you were still willing to edit my dissertation and for all the effort you went through!

Certificate of Language Editing

All-done Editing Services
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30 May 2023

CERTIFICATE OF EDITING

To whom it may concern,

This letter confirms that the revised version of the Master's dissertation titled *Enhancing creative thinking and problem-solving in young children by using provocations in visual art activities* by Monique le Roux was proofread and edited by All-done Editing Services.

The document was edited for grammar, punctuation, spelling, overall style and consistent use of South African English spelling conventions. All amendments were tracked using Microsoft Word's "Track Changes" feature, and consequently, the author had the option to accept or reject each change. A complete edited copy was provided, but the final decisions as to which changes to implement, rested with the author. The list of references was also edited according to the Harvard reference style.

Sincerely,

Marietjie Schutte

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INVESTIGATOR	Monique le Roux
DEPARTMENT	Early Childhood Education
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This Ethics Clearance Certificate should be read in conjunction with the Integrated Declaration Form (D08) which specifies details regarding:

- Compliance with approved research protocol,
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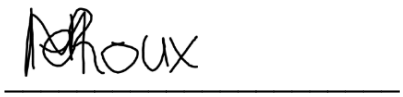
Declaration of Originality

I, **Monique le Roux**, declare that this MEd dissertation:

Enhancing creative thinking and problem-solving in young children by using provocations in visual art

which I hereby submit for the degree **Magister Educationis** at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution.



M. le Roux May 2023

Abstract

Creative thinking skills in preschool children, specifically during art lessons, have decreased over the years affecting their problem-solving skills. Children lack the ability to use their imagination, and when faced with a challenge, they struggle to find innovative resolutions. One of the main reasons for this challenge is when teachers provide many guidelines and examples for completing tasks. Children then rather follow the examples than using their creative thinking and problem-solving skills. This study researched how these skills could be improved, specifically in Grade R children, using provocations during art lessons. The qualitative study used the interpretivist paradigm and a multiple case study methodology to answer the research questions. The conceptual framework was based on the work of Loris Malaguzzi, Pólya, Metcalfe, and Craft. The Reggio Emilia Approach (Loris Malaguzzi) was a big part of the study, the main concepts were built on this theory. Data was generated using a Google form, interviews, observations, and a collaborative discussion.

The findings of the study are that confidence plays a big role in the creative thinking and problem-solving skills of children. Confidence was not originally one of the focuses, but it proved to be a major factor in the study. Other than that, children are not given enough opportunities to solve problems independently in class. School 2 used provocations regularly and thus, their results were enhanced. The children at School 2 showed better creative thinking and problem-solving skills than the other schools.

Key Concepts

Creative accidents

Creative thinking

Critical thinking

Independent thinking and reasoning

Problem-solving

Provocation

Visual art

Young children

Abbreviations and Acronyms

2D – Two dimensional

3D – Three dimensional

CAPS – Curriculum and Assessment Policy Statement

COVID-19

DoBE – Department of Basic Education

ICA – Inductive Content Analysis

IEB – Independent Examinations Board

LoLT – Language of Learning and Teaching

QR – Qualitative Research

REA – Reggio Emilia Approach

TW – Te Whäriki

ZPD – Zone of Proximal Development

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Chapter 1: Background to the study

1.1 Introduction

This chapter explains the reasons for conducting the study and the research questions underpinning the study are named. How the study was conducted is briefly explained. Below is a literature introduction guiding the reader into the study as well as the purpose thereof.

Art is defined by the Department of Basic Education (DoBE), in the *Curriculum and Assessment Policy Statement (CAPS)*, as:

"…a broad field of creative practice that involves the hand, the eye, the intellect and the imagination in conceptualising and creating two-dimensional and three-dimensional artworks, objects and environments which reflect the aesthetic, conceptual and expressive concerns of individuals or groups." (DoBE, 2011a: 8)

The role of creative arts in the CAPS curriculum of South Africa is to introduce all types of art forms, like music, drama, dance, and visual art, to the children. Creative arts in the curriculum aim to build a foundation for cognitive, emotional, social and creative thinking skills (DoBE, 2011b: 9). Developing creative thinking skills thus forms part of the greater importance of teaching creative arts in schools.

The traditional teaching approach is often seen as old-fashioned and has many disadvantages. Teachers following the traditional teaching approach often believe that all children learn at the same pace (Schwerdt & Wuppermann, 2011: 366). This type of teaching approach places focus on listening and does not incorporate different learning styles or interactive teaching (Schwerdt & Wuppermann, 2011: 366). My study focuses on the Reggio Emilia Approach as this approach incorporates the needs and the interest of the children (Lindsay, 2016: 21). The Reggio Emilia Approach allows for interactive teaching and constant reflection for the teachers on their teaching strategies. The children's knowledge and understanding is documented throughout the learning process (Lindsay, 2016: 21).

Creative thinking refers to the ability to find valuable ideas or the mental processes that lead to art, solutions and theories. The United Kingdom released a report, *All Our Futures: Creativity, Culture and Education*, in 1999 that emphasises the importance of

creative thinking in informal as well as formal teaching. The report is still applicable today as the report includes numerous recommendations on how cultural factors can be incorporated to develop creative skills (Fumoto, Robson, Greenfield & Hargreaves, 2012: 18). Creativity goes hand in hand with the ability to solve problems effectively. If a child can think creatively, he or she will be able to solve problems uniquely.

Problems are described as obstacles in our path that need to be resolved (Adair, 2013: 43). As a manner to effectively solve problems, Adair (2013: 45), developed a unified model known as the Bridge model. The Bridge model suggests that children need to understand the problem, ask the correct questions, and develop valuable solutions (Adair, 2013: 43-53).

Turkey, Shanghai-China and Malaysia were reported to be the best performing countries regarding children's problem-solving and creative thinking skills. In the Slovak Republic, Italy and Croatia, boys are more likely than girls to be top achievers – this is in contrast to the performance of the girls in Chinese Taipei, Korea and Hong Kong (OECD, 2014: 100). Referring back to Greenfield (2012: 18), the report by the OECD (2014: 100) stands in contrast to this. The OECD (2014: 93-116) found that a lack of computer usage at home negatively impacted the children's problem-solving performance.

Based on personal experience, one of my teachers told me I was not allowed to make mistakes. Despite this experience, becoming a teacher myself, I developed the philosophy to encourage children to feel free to be human. Human errors and incidental accidents occur as a gateway for learning. Incidental accidents refer to mistakes made by a child that teaches them to use critical thinking and problem-solving skills to develop something unique (Eva, 2017). The book *Beautiful Oops!* (Saltzberg, 2010) and *My Book of Beautiful Oops!* (Saltzberg, 2017) have further inspired me to engage in the concept of embracing creative accidents. In these books, Saltzberg (2010, 2017) emphasises all the beautiful artworks that can be created from creative accidents.

1.2 Background of the study

In this section, the rationale of the study, the research questions and the significance of the study are discussed.

1.2.1 Problem statement

According to Lindsay (2015), young children have lost the ability to be creative and independently solve problems over the years. There are many reasons for the loss of creative thinking and problem-solving skills. In some instances, children are overloaded with work by the packed school curriculum, resulting in teachers having less time to teach creative thinking and problem-solving skills. In South Africa specifically, it could be attributed to the adoption of the CAPS curriculum. With the new curriculum, teachers feel more pressurised to prepare children academically to be school-ready and therefore replace free play with more structured activities.The gap this study aimed to address was the impact of provocations on creative thinking and problem-solving skills. Further, the study aimed to investigate teachers' views on creative thinking and problem-solving skills.

1.2.2 Rationale of the study

Experiencing and presenting art lessons in different learning environments such as private and public institutions has inspired me. Art is a way for people to express themselves, even if one is not necessarily an excellent artist. Art has so many expressive aspects, it does not only have to be drawing, for example. I wanted to determine the possibility for teachers to enhance young children's creative thinking and problem-solving skills using creative prompts in visual art. By being creative, children can express their emotions and ideas without the fear of feeling judged. I wanted to use provocations in visual art to see if it would be possible to spark children's ideas and creative thoughts even further. Most children and even adults believe that they do not have the ability to be creative, hence, provocations in visual art are so important. Provocations spark children's imagination to start creating.

Creative prompts can also be referred to as invitations or provocations. Katz-Buonincontro and Phillips (2011: 275) argued that by being creative and creating all sorts of artworks, young children, as well as adults, can acquire the skill of managing more than one task at a time and also come up with more creative solutions to problems. Using creativity to imagine different solutions to problems, even some that are impossible to achieve, enabled children to solve problems in exciting ways (Ingledew, 2016: 8). Therefore, the relationship between visual art, problem-solving and creative thinking, has already been researched to some extent by Katz-Buonincontro and Phillips (2011: 275) and Lindsay (2015) among others.

The Reggio Emilia-inspired schools are focused on developing creative thinking and problem-solving skills. These schools use provocations in their visual art activities. Provocations are also known as invitations that invite or provoke the children's interest to engage in learning activities. The Reggio Emilia Approach (REA) is based on the idea that children should be encouraged to discover and explore, therefore the provocations were used to invite children to engage in learning (The Compass School, 2017a). The Reggio Emilia Approach can be linked to both an emergent and a negotiated curriculum. With these curriculum designs, the teacher works closely with the children to create the curriculum instead of the teacher making all the decisions. The emergent curriculum design is based on the idea that children learn better when the curriculum is according to their interests, needs, strengths and lived realities (Aslan, 2018: 98). The negotiated curriculum design, just like the emergent curriculum design, integrates a process where what is learned and taught is decided on by the teachers and children to give children ownership of their learning experience, increasing their motivation to learn (Edwards, 2016: 144).

1.2.3 Significance of the study

The study researched the development of critical thinking and problem-solving skills by making use of open-ended provocations, a concept inspired by the Reggio Emilia Approach. This study presented the importance of critical thinking and problem-solving skills and how these skills can be enhanced by using provocations.

This study aimed to investigate preschool teachers' use of provocations and provide them with practical ways to incorporate provocations into everyday teaching to enhance creative thinking and problem-solving skills.

1.2.4 Research questions

Below, the primary and secondary research questions are provided.

1.2.4.1 Primary research question

- How can teachers use provocations in visual art to enhance creative thinking and problem-solving skills in young children?

1.2.4.2 Secondary research questions

- What are preschool teachers' understandings and views about enhancing children's creative thinking and problem-solving skills?
- How can open-ended provocations influence young children's problem-solving and creative thinking skills during art lessons?

1.3 Purpose of the study

The purpose of this study was to investigate how teachers understood and used provocations in visual art classes to enhance the creative thinking and problem-solving skills of preschool children. Furthermore, the researcher perused the literature on the current lack of creative thinking and problem-solving in preschools through observations of nine Grade R classes and interviews with the class teachers (Lindsay, 2015). The independent state of thinking among young children was researched in a multiple-case study. As mentioned before, nine Grade R classes and their teachers constituted the case studies. The Grade R children were observed, and an interview and collaborative discussion were conducted with their teachers. Through the findings, the study aimed to encourage teachers to incorporate provocations to enhance the creative thinking and problem-solving skills of young children in visual art lessons. This was achieved by practically incorporating provocations, such as storybooks and

stained pages in visual art activities as well as conducting interviews with preschool teachers. The children created art from the provocations during the art lessons. Art lessons were used as part of the data generation process to determine teachers' use of provocations to enhance children's problem-solving and creative thinking skills.

During the observations, the children's creative thinking and problem-solving skills were carefully observed. These skills were observed by the way the children handled the provocations presented to them. Not only was it evident that the children had developed problem-solving skills, but their creativity was also tested in terms of how creatively they solved the problem they were facing.

Further, it is important to note that young children face challenges that do not necessarily have clear solutions and they do not have the ability to solve these challenges in creative and innovative ways (Doucet *et al.*, 2018: 10). Mills and Kim (2017) stated that problem-solving is not something that develops naturally. Therefore, this study aimed to determine ways in which these skills could be taught deliberately through the use of provocations in visual art activities.

The association between problem-solving, creative thinking and visual art has been established by various researchers (i.e. Katz-Buonincontro & Phillips, 2011: 275; Ingledew, 2016: 8). The relationship between visual art and provocations has also been thoroughly investigated (Lindsay, 2016: 21). However, combining these concepts is not commonly researched. Therefore, this study aimed to address the gap in research by investigating the relationship between using provocations in visual art and enhancing problem-solving and creative thinking.

1.4 Concept clarification

For this study, the following concepts are defined, as seen below:

1.4.1 Creative thinking

Creative thinking is the ability to see things differently and uniquely; it also refers to innovative and new solutions (Tomaszewski, 2021). Gafour and Gafour (2020: 2) describe creative thinking as a way to solve the problem from a single view avoiding

traditional solutions and focusing on thinking outside the box. Creative thinking enables children to discover and solve new challenges (Gafour & Gafour, 2020: 2). In this study, 'creative thinking' is viewed as unique and innovative ways of completing tasks.

1.4.2 Critical thinking

Critical thinking is described by Hitchcock (2018: 1) as cautious thinking focused on a goal. Critical thinking can also be defined as reasonable, reflective and clear thinking that is focused on deciding what to believe and what to do. Critical thinkers are usually curious people (Tomasso, 2019). 'Critical thinking' is viewed as the ability to think reasonably.1.4.3 Independent thinking and reasoning

Independent thinking refers to the need children have to convince themselves that the information they have acquired is true. Independent thinkers are not scared to share their ideas, even if they differ from the rest of the group's ideas (Center for Nondestructive Evaluation, 2014). Gilbert (2014: 70) describes independent thinking as a 'refusal'. Gilbert (2014: 70) explains that independent thinking is doing something nobody else has done or doing something everyone has done in a way no one has done it before. For this study, 'Independent thinking and reasoning' are viewed as the children's ability to believe in their own opinions.

1.4.4 Problem-solving

Problem-solving refers to the process of creating and applying solutions to problems (Jonassen & Hung, 2012: 155). Problem-solving can also be described as cognitive processes aimed at changing the state of a problem to a solution (Dostál, 2015: 4). In this study, 'problem-solving' is viewed as using one's knowledge to construct a solution to problems or challenges.

1.4.5 Provocation

Provocation refers to a term mostly used in the REA. Provocation refers to an open-ended activity that is created to stimulate the children's imaginations (Durand, 2016).

Keyte-Hartland (2019: 3) explains that provocations are materials that are used by teachers to influence children's thinking, exploration and expression. 'Provocations' are viewed as open-ended activities, invitations or prompts for children to discover or to spark their interest.

1.4.6 Visual art

Visual art is defined as drawings, paintings, sculptures, architecture, films, as well as photographs (Esaak, 2019). Visual art is a unique creation and an expression of freedom (Čolakov, 2018: 68). 'Visual art' is defined as drawing, painting, constructing and sculpting, for the purpose of this study.

1.4.7 Young children

According to Wang (2013: 2), young children can be identified as children from birth up until eight years old. For the purpose of this study, the term 'children' refers to children between the ages of four and six years. Reference was made to the singular, that being child, and the plural being children.

1.4.8 Mistakes

A mistake is an error made when for example, taking part in an activity or attempting to solve a problem(Metcalfe, 2017: 471). Mistakes can lead to enhanced learning if possibility thinking is taught through the mistake McConnon (2016: 19). For the purpose of this study, blotches made on paper by the researcher will be referred to as mistakes. However, these are not mistakes made by the children. This is a representation of mistakes children could make daily.

1.4.9 Skill instruction

The skills introduced in this study, namely, problem-solving and creative thinking, are instructed through the constructivist and enquiry-based approaches. The constructivist approach incorporates learning through social interaction, shared knowledge,

exploring and developing own knowledge (Wu, Hsieh & Yang, 2021: 124). The enquiry based approach incorporates learning through seeking knowledge, asking questions, searching for answers and evaluating new information to create understanding (Jong, Chan, Hue & Tam, 2018: 279), For the purpose of this study, skills will be instructed through a combination of the constructivist and enquiry based approaches.

1.5 Conceptual framework

This study used a conceptual framework because of the various theories underpinning the study. The study required a combination of theories and could not be based on a single theory, therefore, a conceptual framework was appropriate.

The conceptual framework is illustrated as a house to emphasise that the study would not be as solid if one of the concepts were missing. The concepts included in the conceptual framework are the Reggio Emilia Approach, more specifically provocations, the environment as the third teacher and documentation, creative thinking, problem-solving, critical thinking and creative accidents.

Provocations are creative prompts that invite children to take part in lessons. It is meant to provoke thinking from the children. The environment as the third teacher, in the Reggio Emilia Approach, is seen as a valued teaching opportunity. The environment as the third teacher refers to the environment around the classroom as well as how the classroom can be set up to encourage learning. Documentation, in the Reggio Emilia Approach, is seen as an important tool to illustrate children's thinking. Documentation is done by quoting children's thoughts, photographs and artworks, for example. Creative thinking, problem-solving and critical thinking were skills that I aimed to enhance through the use of provocations. Creative accidents refer to mistakes that are made when creating an artwork, in this study, children were challenged to use their creative thinking, problem-solving and critical thinking skills to still create a beautiful artwork in spite of the mistake made. These concepts are all discussed in more detail in Section 2.12.

The theories underpinning the conceptual framework are Pólya's problem-solving theory, Craft's possibility thinking and Metcalfe's creative accidents theory. These theories are discussed in more detail in Section 2.12, where the figure of the

conceptual framework can be seen with a detailed description and explanation of the conceptual framework of this study.

1.6 Research methodology

The section below discussed the methodological approach, research design, selection of participants, data generation and documentation, and the data analysis and interpretation.

1.6.1 Methodological approach

The methodological approach of the study was the qualitative approach. The section below discusses the advantages and disadvantages of the selected approach. Reference is also made to each component's value in the study.

1.6.2 Qualitative approach

This study was completed using a qualitative research (QR) approach. Merriam and Tisdell, (2015: 10) explain the QR approach as focusing on understanding how people analyse their experiences and what meaning they attach to their worlds and engagements. The QR approach collects 'words' as data (Merriam & Tisdell, 2015: 10). QR is open-ended research aimed at exploring and interpreting the data and then arranging it into categories (Campbell, 2014: 3). The goal of QR is to get in-depth data and to understand the research problem from different perspectives (Queirós, Faria & Almeida, 2017: 375).

One of the main advantages of QR is that it is a very detailed way of conducting research. QR enables researchers to view the experiences of the participants holistically and to be a physical part of the data generation process through, for example, observations (Rahman, 2017: 107). QR is adaptable because of the unpredictability of the participants, therefore, the research can change in an instant. QR is a more creative approach to research due to its in-depth nature. The research approach appreciates the unique voice of each participant (Naresh, 2020).

Researchers making use of QR are prone to neglecting the context of the research and mostly focusing on the experiences of the participants. The sample size of QR is considerably smaller than that of quantitative research, therefore, it is not as easy to generalise the findings. One of the main limitations of QR is the possibility that the researcher might not be able to stay objective. With QR, the researchers are actively involved through observations, and thus, it becomes difficult to stay objective (Rahman, 2017: 107). The in-depth nature of QR makes QR very time-consuming compared to quantitative research (Queirós *et al.*, 2017: 372).

QR provided the researcher with an opportunity to observe the participants and to generate in-depth data. To reach the desired findings of this study, a smaller sample size was needed. To achieve success, a smaller sample size was used as it enabled the researcher to work more in-depth with the participants and also to spend more time observing them.

The nature of the study required in-depth knowledge of how the participants' skills could be improved in terms of creative thinking and problem-solving. The study was also based on finding the participants' creative voices; thus it was best to make use of a creative research approach. The creative nature of the approach and the study required adaptability. The QR approach embraced adaptations to the research in terms of the way in which the data was presented, for example. The data does not only need to be presented in tables and with numbers, the data could be presented in the form of a story and with photographs.

The possible limitations of the approach were objectivity and it being time-consuming. When one is involved in the study, objectivity becomes difficult (Rahman, 2017: 107). To stay objective in the study, I remained an observer during the course of the research instead of becoming an active participant. I regularly reported my findings to my supervisors to further ensure objectivity. The in-depth nature of the approach caused the research to be very time-consuming (Queirós *et al.*, 2017: 372). Another main limitation was the possible restriction to generalisation, the research can only be applied to the participants researched. However, it is noteworthy that qualitative research is not intended for generalisation purposes, rather an understanding of the problem must be obtained.

1.6.3 Research design

This study made use of case study design. The advantages, disadvantages, as well as the value of the research design, are discussed below.

1.6.3.1 Case study research design

Case study research is an in-depth way of looking at a research phenomenon. It incorporates different views to understand the primary and secondary research questions. Case studies are used to explore, explain and describe an event. Case studies ask 'how', 'what' and 'why' to fully understand the data generated (Crowe, Cresswell, Robertson, Huby, Avery & Sheikh, 2011: 100).

The specific type of case study chosen for this study was the critical instance case study. The main interest of this type of case study is to investigate unique situations without aiming to generalise the findings (Becker, Dawson, Devine, Hannum, Hill, Leydens, Matuskevich, Traver & Palmquist, 2021). This study was unique and required flexibility, and it was not the aim to generalise the findings. The study's main aim was to investigate how teachers understood and used provocations in visual art classes to enhance the creative thinking and problem-solving skills of preschool children. Therefore, the primary research questions aimed to determine how provocations could be used to enhance these skills. The secondary questions were aimed at the teachers' understanding and views of the children's creative thinking and problem-solving skills, and how provocations can potentially influence these skills.

One of the most significant advantages of using a case study research design was that it created the opportunity to generate much more detailed data. Detailed data was required to correctly answer the research questions of the study. The detailed data was generated from the teachers' understandings and experiences, the children's art, and their thinking trail when creating art. Observations of the children played a vital role in generating detailed data. The data generated through case studies are rare and cannot be generated in big sample groups. The rare data included the artworks the children created and their interpretations. Case studies allow room for adaptation and can be presented in a story-telling manner (Mcleod, 2023). This study required a smaller group to investigate the unique situation.

One disadvantage of case studies is that the findings would most likely not be able to be generalised because of the uniqueness of each situation and the small group of participants. Case studies take up a lot of time, and because of that, some researchers abandon their studies, leaving them unfinished (Mcleod, 2023). This study aimed to understand the unique situation on hand and was more focused on detailed data generation.

This study was particular and required much time, adaptability and detail. Therefore, the case study design best fitted the study and ensured that the data generated could be used to find out exactly 'how', 'what' and 'why' the findings turned out as they did.

1.6.4 Selection of participants

The participants of this study were selected through the purposive sampling method, discussed in more detail below.

1.6.4.1 Purposive sampling

The participants were selected through non-probability, purposive sampling. With purposive sampling, the researcher trusts his or her discernment when choosing participants for the study. This method saves much time by working with suitable participants from the start (Dudovskiy, 2016: 25).

Participants were selected from nine preschools. The preschools included a private preschool; operating in an urban area apart from a primary school; a preschool attached to a private school in an urban area, as well as a preschool attached to a private school in a smaller community, among others.

The primary participants were nine preschool teachers from the respective preschools. One teacher per school was invited to participate in the study, and the teachers taught six-year-old children. Of the nine teachers invited to participate in the research, all nine teachers taught at private institutions. The secondary participants of the study included six-year-old children attending the respective preschools.

By selecting the participants through purposive sampling, suitable participants were selected from the start. The private preschools were selected because of their specific

curricula. The private preschools tend to create less opportunity for creativity. Therefore, the researcher assumed the results would align more with what the study aimed to achieve.

Purposive sampling saved money as well as time when conducting research. The researcher immediately used appropriate participants instead of sifting through possible participants. Purposive sampling is also effective when the type of research requires a specific set of participants (Dudovskiy, 2016: 25).

Disadvantages of purposive sampling include bias, errors in judgement, and the inability to generalise findings. The researcher might make a wrong judgement when selecting the participants and this can delay the study. In this case, the researcher trusted her judgement, therefore, she was prone to becoming biased as the researcher only took her own judgement into account. The specific selection of participants also discouraged the generalisation of the findings because of the specificity thereof (Dudovskiy, 2016: 25). To avoid bias and errors in judgement, I consulted my supervisors throughout the process. By incorporating different views, bias and errors in judgement are less likely to arise.

1.6.5 Data generation and documentation

Data was generated through an electronic qualitative questionnaire, interviews, classroom observations, a collaborative discussion, and artworks of young children.

The data was documented through written notes when observing, as well as photographs taken during the observation of the children. Photovoice was used throughout the whole documentation process. Photovoice is described by MacFarlane (2014) as a process where people in a community could identify, represent and enhance the community through photographs. Photovoice is believed to provide a photographer with the ability to give researchers insight into the cultures and experiences of participants. Photovoice becomes the participants' voice and encourages researchers to think critically about their study through visual images. Photovoice also enables the research to be shared more widely and in an understandable way (Annang, Wilson, Tinago, Sanders, Bevington, Carlos, Cornelius & Svendsen, 2015: 245). Photovoice formed part of the observations during which the

children's creativity was captured. In this study, photovoice was used as a way to tell a story through photographs. The researcher took the readers with her during the data generation process by photographing each step and incorporating it as documentation.

1.6.5.1 Electronic qualitative questionnaire

In order to gain background information on each teacher participating in the study, the researcher used electronic qualitative questionnaires in the form of Google Forms. The researcher probed for information regarding the years of experience of the teacher, the language of learning and teaching (LoLT) of the school, and how they presented art lessons at each school.

Qualitative questionnaires use open-ended questions on a specific topic (Braun, Clarke, Boulton, Davey & McEvoy, 2021: 241). When looking at electronic qualitative surveys, the participants were asked to type out their answers instead of having pre-determined answers. The main advantage of using electronic qualitative questionnaires is that it allowes for various views and experiences to be generated as the answers are not pre-determined (Braun *et al*., 2021: 242).

Another advantage of electronic qualitative questionnaires is that a broad field of participants can be reached (Rahman, 2023). It is also cost-effective if the aim is to reach a large group of participants (Rahman, 2023).

Disadvantages of electronic qualitative questionnaires include the possibility of participants not responding to the questionnaires, and if the questions are not posed as open-ended questions, participants can only choose from available options to answer the questions provided (Rahman, 2023). When a drop-down list of answers is provided, the participants do not share their true thoughts.

The qualitative questionnaire in this study was done online to reach the participants in different areas before going to the schools. Making the questionnaires electronic also made it easier to keep track of all the participants' responses.

1.6.5.2 Semi-structured interviews

Jamshed (2014: 87-88) recommends semi-structured interviews for researchers working with qualitative research. Semi-structured interviews can be used when data is generated, recorded, challenged, and reinforced. Semi-structured interviews are commonly used, referring to more in-depth interviews with planned open-ended questions (Jamshed, 2014: 87-88). Semi-structured interviews use various questions, invitations and resources to draw the participants into the research. Open-ended and theoretical questions are combined in semi-structured interviews (Galetta, 2013: 45). Coronavirus disease (COVID-19) made meeting face-to-face difficult in terms of safety, therefore, the interviews were conducted online to ensure the safety of all participants. The online interviews enabled the researcher to record the sessions, with permission from the participants.

Semi-structured interviews ensured that interview time was used to the fullest by being prepared and guiding the interview in the exact direction the research required (Jamshed, 2014: 87-88). Semi-structured interviews enable all participants to participate, even if they cannot read or write. The non-verbal reactions of participants could also be observed and the researcher had control over the interview in terms of the participants' responses (Sociology Group, 2021).

The disadvantages of semi-structured interviews include time and bias. Semi-structured interviews are very time-consuming because of the in-depth nature of the interviews, especially within qualitative research. Other than that, researchers risk becoming biased when conducting the interviews. It is hard to remain objective when actively involved in the interviews (Desai, 2014). In order to circumvent bias, I transcribed the participants' responses verbatim, only removing words like 'uhm'.

In the interviews, the participants were asked about the art lessons they taught in class; this included how often the art lessons took place, and the planning thereof. Furthermore, they were asked about their understanding of provocations, creative thinking and problem-solving, and creative accidents. The questions asked in the interviews were mostly open-ended questions, therefore, semi-structured interviews were more applicable to this study. To ensure that the interviews were not too time-consuming, I ensured that I was well-prepared for the interviews. Bias can be a

challenge when conducting semi-structured interviews. To ensure that there was no bias, I recorded the interviews for my supervisors to provide input.

I documented the interviews by writing notes during the interviews and recorded the interviews, with the consent of the participants. The written notes assisted in providing detailed responses, and the recordings made it easier to go back if part of a response was missed.

1.6.5.3 Classroom observation

Observation refers to watching participants to better understand their experiences, feelings, and ethnography (Jamshed, 2014: 87-88). Using this research technique, a researcher observes participants' experiences and behaviour in a natural environment. The purpose was to generate data according to how participants reacted naturally rather than how they said they would react (Fuel Cycle, 2020). During the observation period, Photovoice was incorporated to document the creativity participants displayed, and notes were taken to keep track of the children's reasoning behind their creativity.

The advantages of observations include directness and the environment, among others. Directness refers to the ability to generate data immediately as the participants engage in the research. Events can be researched as they happen. The environment wherein the research took place was natural, therefore, none of the reactions were staged. The neutral environment, referred to in this case, was the classrooms at the nine respective preschools. The participants were free to act naturally, and the researcher gathered accurate data (Kangal, 2021).

According to Kangal (2021), the main disadvantage of observation is the lack of control. The lack of control can be a disadvantage because it might lead the research in a different direction than expected. The sample size must be much smaller than with quantitative research in order to observe the participants in-depth (Kangal, 2021).

The main concepts observed were the teaching styles of the preschool teachers and how these styles affected the children's creativity and problem-solving skills as well as the children's interpretations of the provocations and their ability to work with their creative accidents. Lastly, I evaluated the art lessons to determine if the lessons were

successful. The lessons' success, in this case, depended on how well the lesson was planned and presented by the teacher as well as how children reacted to the provocations presented.

The observations were documented through photos, the artworks of the children, and, more importantly, through written notes on the observation schedule. Through written notes, the details of the observations could be referred back to, and through the photos, the observations could be depicted visually. Therefore, direct quotes were made from the written notes, and the pictures supported the observations.

1.6.5.4 Collaborative discussion

A collaborative online discussion was important for engaging participants to ask questions, share their thoughts and explain their ideas and opinions (Zheng, Xu, Li, & Su, 2018: 91) Zheng *et al*. (2018: 91) reported that collaborative discussion has a positive effect on problem-solving as a group. Collaborative discussions generate a wide range of discussions that might sometimes become off-topic. Working through that data can be challenging for researchers (Zheng *et al*., 2018: 93).

For this study, an online collaborative discussion was conducted with the teachers that participated in the study. The teachers were asked their opinions about the art lessons that they presented with provocations. The teachers were allowed to bounce ideas off of each other and to elaborate on each other's thoughts and opinions.

An online collaborative discussion allowed me to effectively conceal the identity of each participant, and the participants were all able join the discussion from different locations (Clark, 2003: 23). However, there were large volumes of data to work through as a researcher, and it was very time-consuming. The questions could be shared between the participants, but some participants ended up not contributing because others were answering more questions (Clark, 2003: 24).

In order to eliminate the participants not contributing to the discussion, I posed certain questions to specific participants and subsequently gave the rest of the participants a chance to answer the questions.

1.6.6 Data analysis and interpretation

The inductive content analysis method was used to analyse and interpret the data generated.

1.6.6.1 Inductive content analysis

Inductive content analysis (ICA) is a data analysis method used in qualitative studies. Researchers identify categories developed from, among others, documents and recordings. ICA enables researchers to reduce large amounts of data by developing categories. When analysing data, researchers read through the raw data and write headings. After that, the headings are combined to find similar categories in the data (Houston Chronicle, 2021).

The main advantage of ICA is that it enables the researcher to actively engage with the raw data and analyse it to identify categories. ICA is also highly reliable and can be based on raw data-like recordings, interviews, and other data (Phil, 2013). ICA requires skills and practice to ensure that the researcher is not biased, and that the process is not time-consuming (Houston Chronicle, 2021).

The interviews were transcribed from the recordings to be able to store them in hardcopy format and also to be able to identify categories in the interviews. The data was analysed from the nine interviews to identify prominent categories in the responses. These categories were discussed further to answer the research questions. Through the observation sheets of each class, I evaluated whether the lessons were a success, this refers to if the children responded to the use of provocations assumed to contribute to the development of creative thinking and problem-solving skills in young children. I analysed the observation sheets with the help of photographs and artwork to determine the success of the lessons.

1.7 Ethical considerations

Participants of this study voluntarily consented to and participated in the research. In the case of the children, their parents gave informed assent on their behalf, considering they were minors. However, they also consented by colouring in a consent form that they were able to understand. Further, the participants were kept anonymous

by using pseudonyms, and all data collected was kept confidential. The children were observed, and only relevant components were assessed. The study's objectives were discussed with the participants to manage expectations on behalf of the researcher and the participants.

Photographs taken during the observation did not include the names or faces of the children. The interviews with the teachers also did not include anything that could give away the teachers' identity. If any of the participants wished to withdraw for any reason, they were allowed to withdraw from the study at any given time.

1.9 Trustworthiness

The trustworthiness of this study is discussed in detail in Section 3.10. With this, the strategies used to ensure trustworthiness in this study are also discussed.

1.10 Chapter outline

The outline of this study is provided below:

Chapter 1

Chapter 1 provides the background of the study, including the problem statement, rationale, significance and purpose of the study. In this chapter, the primary and secondary research questions are discussed. The key concepts are also discussed in this chapter. The purpose of this chapter is to provide better insight into the study.

Chapter 2

The literature review is discussed in Chapter 2. The literature review provides an overview of a wide variety of literature from different authors to support the research questions of the study. In the literature review, the Reggio Emilia Approach is discussed in detail, in combination with creative thinking and problem-solving skills.

Chapter 3

In this chapter, the research methodology of the study is discussed. The reasoning behind the research methods and approaches chosen is explained. The qualitative method was used in combination with purposive sampling. The data generation methods are also discussed in detail, in this chapter.

Chapter 4

The data generated in this study is discussed in this chapter. The data is discussed as seen, without drawing a conclusion yet. All the generated data is discussed in detail as observed by the researcher and the data is illustrated through the use of pictures.

Chapter 5

Conclusions and recommendations are presented in this chapter. The findings of the study are discussed in combination with the literature review from Chapter 2. The results are linked to the research questions and suggestions for further research are made.

1.9 Conclusion

The main focus of Chapter 1 was to provide background information on the study and the information to follow in the next chapters. Section 1.2.4 discussed the primary and secondary research questions, the conceptual framework was briefly

discussed, and concepts used in the study were also clarified. Throughout Chapter 2, the literature review will be discussed, as well as the conceptual framework.

Chapter 2: Literature review

2.1 Introduction

In Chapter 1, the study was summarised in terms of the purpose, as well as the primary and secondary questions that guided the study. The chapter presented the problem statement, the background and outlined study's summary. Further, the conceptual framework and essential concepts were named, and Chapter 1 provided a clear insight into the study.

Creative thinking and problem-solving skills have decreased in young children over the years (Lindsay, 2015). In this chapter, literature sources on creative thinking and problem-solving were perused along with the Reggio Emilia Approach. The importance of art, imagination, and the role of art in education are among some of the topics discussed.

2.2 Background of the study

Figure 2.1: Background of the study

To better understand the reasoning behind the study's focus, I have created the visual illustration in Figure 2.1 above. The first important elements of the study were creative

thinking and problem-solving. The reason for the inclusion of these elements in the study was that these were the skills I wanted to ensure teachers understood to help them enhance their development in young children. The word 'enhance' describes perfectly that the aim was to improve the development of the skills further than they have already been developed by adding to the existing knowledge. The focus of the study was young children. To **'enhance' 'creative thinking'** and **'problem-solving'** skills in **'young children'** I wanted to incorporate **'provocations'** during **'visual art'** lessons. The skills should be taught in a way that it becomes a disposition, a characteristic or a habit to act in a specific way (Sockett, 2009: 293). Teaching these skills as potential dispositions will result in the children developing these skills in a more embedded manner (Sockett, 2009: 293). The purpose of the study was to investigate teachers' understanding of provocations as well as how the teachers incorporated provocations to attempt to enhance the creative thinking and problem-solving skills of children.

2.3 The role of art in Early Childhood Education

There are numerous benefits to art education in general, like critical thinking, problem-solving, enjoyment, communication as well as the knowledge children acquire. The only way for children to fully benefit from this is if the teacher is fully equipped to provide quality art education. Teachers, in general, do not all agree on the actual purpose of art education – the documented purposes range from keeping children occupied, therapy, fine-motor skill enhancement, a way of communicating, meaning-making and problem-solving skills enhancement (Lindsay, 2017: 22).

Lindsay (2017: 4) states that art activities have transformed from open-ended, creative activities to teacher-centred crafts and activity sheets. This transformation is due to teachers' confidence or lack thereof when presenting art lessons. Teachers feel incompetent in teaching art because of a lack of art skills and content knowledge, and this includes the knowledge of different genres and the history of art (West, 2018). The lack of knowledge and skills leads teachers to believe they should demonstrate visual art activities. If the instruction is to draw a person, the teacher will draw an example on the board, resulting in children copying the teacher instead of being creative (Lindsay, 2017: 4).

Art, specifically drawing at first, is a critical part of a child's cognitive development (Narey, 2017: 2). Children realise through the marks they make on paper that they are creating meaning. They learn that through art, they can 'speak' and show others what they are feeling. This important aspect is overlooked by so many teachers. Teachers interpret art as taking too much time, something that children struggle with, and as an aspect that does not have to be graded (Narey, 2017: 9). Another concern is that teachers do not trust their creative abilities, and therefore, they do not expect much from the children. Art should be seen and appreciated for its value to our education system.

Through art, children test ideas and solve challenges they might face. This exploration results in experimentation and solution-finding; therefore, art enhances problem-solving skills (Kohl, 2022). Ways in which children might experiment is mixing paint colours, for example. Further, art also encourages social and emotional skills. When participating in art activities at school, children have to share equipment by taking turns (Kohl, 2022). Children are also taught to not laugh at others' attempts, which in turn will lead to children appreciating one another's uniqueness (Kohl, 2022).

2.3.1 Art forms

There are several art forms, but visual art is most relevant to this study. Visual art refers to primarily visual forms of artistic expressionthat are meant to be be seen and enjoyed (Unbound Visual Arts, 2022). Types of visual art include ceramics, sculpture, drawing, painting, and design, among others (Unbound Visual Arts, 2022). Painting and drawing are discussed in more detail below.

2.3.1.1 Painting

Painting is a significant milestone for children to achieve. Painting is not only fun for children, but it also helps them develop hand-eye coordination, focus on detail, develop their creativity and problem-solving skills, and learn the colours (Kids U – Early Learning Preschool and Daycare, 2015). Painting can also become therapeutic for children as they can express themselves through different colours and brush strokes (Kids U – Early Learning Preschool and Daycare, 2015).

2.3.1.2 Drawing

Drawing in early childhood education is important for establishing the correct pencil grip, for fine-motor skills as well as preparing a child for writing (Papandreou, 2013: 85). Drawing starts open-ended, and as time progresses, teachers start asking children to create representations of real-life objects (Papandreou, 2013: 86). Some teachers also view drawing as a time-filler activity, when it is actually a lot more important.

2.3.2 The importance of art

Art is a way for young children to communicate their emotions. A line or a circle is much more than a line or a circle. Those shapes represent the young child's creativity and imaginative abilities (Golomb, 2011: 247). Art enables young children to tell a story, exhibit important events or people, and explore with shapes and colours. Art enables young children to create and express imaginary worlds (Golomb, 2011: 252).

Art is seen as a daily part of inquire, learning and exploration. Art is not focused on meaning or conveying messages, but rather the effect it has (Pacini-Ketchabaw, Kind & Kocher, 2017: 7). The way through which the art is created and how it made the child feel is what is important. Art is a way of expressing one’s emotions (Pacini-Ketchabaw et al., 2017: 7).

To learn the language of art, children must explore the different art mediums with their bodies through their senses and movements. Children, for example, explore the texture of crayons, pastels and the movement thereof over paper or cardboard. The children will also experiment with colour and discover a way to express themselves effectively through drawings, sculpting or painting (Pelo, 2017: 17).

2.3.3 Art as self-expression

Expression through art has been around for ages (Degges-White & Colon, 2014: 3). Many cultures used art to share their history, like cave drawings, for example.

Expressing oneself by being creative comes naturally (Degges-White & Colon, 2014: 3). Children enjoy singing, dancing, acting, and drawing if they are allowed to do so.

It is commonly known that the creation of art helps the right side of the brain to develop, and art develops many more important skills (Kohl, 2022). The ability to create art enables children to express themselves, communicate, and interact with the world (Kohl, 2022). Art is one of the first ways that children learn to interact with the world, even before they can speak.

Children communicate visually through art. They might share an experience through art, like a birthday party they attended. Art could be used to express emotions that might be difficult to talk about (Kohl, 2022). It is important to remember that art is about the process, not the product. The expression through art happens during the creation process; therefore, it does not matter how perfect the product is (Kohl, 2022).

When children face challenges and they might need a psychologist, they might not always want to communicate about the challenges they are experiencing. Psychologists can then incorporate art as a means for children to communicate (Degges-White & Colon, 2014: 4). Through what the children create, psychologists can then more easily analyse what is taking place in the child's life.

2.4 Critical and creative thinking

Moylett (2014: 73) emphasises that for young children to think critically and creatively, they must be given the opportunities to explore and embrace their ideas, to make their links, and to choose their ways of completing tasks. Allowing young children to have their ideas encourages them to explore their imagination and make discoveries for themselves (Ingledew, 2016:8). Giving young children the opportunity to make their links allows them to predict what might happen and to test those predictions. When young children are encouraged to choose their way to complete tasks, they learn how to adjust their ways to reach their goals (Moylett, 2014: 74).

Creative thinking is a skill that enables children to solve everyday problems, preparing them for the ever-changing world. Creative and critical thinking are cognitive processes in the brain (Fox & Schirrmacher, 2015: 23). The cognitive process involved in critical and creative thinking leads to new solutions to problems. Lateral thinking is

a way of using the brain to lead to creative thinking; thus, this way of thinking is appropriate when promoting creative and critical thinking (Fox & Schirrmacher, 2015: 23).

Creative thinking skills are necessary for the development of problem-solving skills. Creative thinking and problem-solving skills can be practised through simple activities, such as taking the child's mind out of their current situation and transporting the child to a different time. The teacher can ask the child questions like how they would paint without a paintbrush or even without the paint (Mayesky, 2015: 33).

2.4.1 The relationship between critical and creative thinking

The Foundation for Critical Thinking (2019) reported a lack of critical thinking in children. Creative and critical thinking work closely together. When a child struggles to find a solution through reasoning, imagination can ensure a solution and vice versa. Teachers can enhance the cooperation between the two ways of thinking if they understand the importance of the relationship themselves (Eva, 2017).

Figure 2.2 below symbolises a metaphor for the relationship between critical and creative thinking. The eggshell illustrates problem-solving thinking in general, the white of the egg is creative thinking, and the yolk of the egg is critical thinking. The diagram is shaped like an egg to show that if the shell breaks or one of the elements is removed, problem-solving skills cannot develop effectively.

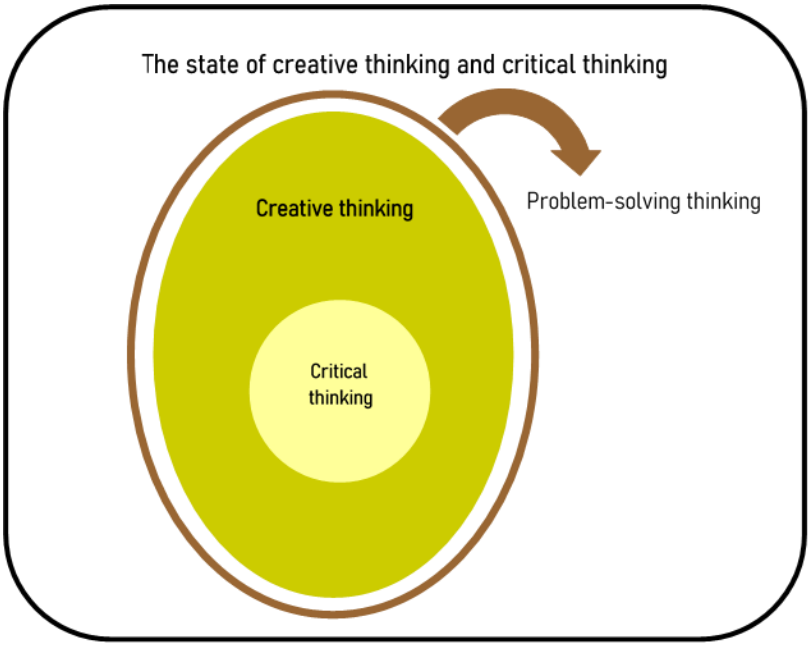

Figure 2.2: The egg-metaphor

The relationship between critical thinking and creative thinking.

2.5 Imagination

A key concept for critical and creative thinking is imagination (Ingledew, 2016: 8). Imagination allows a child not only to create but also to visualise their ideas. Imagination leads to unique ways of solving problems or reaching goals. When young children learn by imagination, they can explore what they know by creating imaginary situations or worlds (Moylett, 2014: 75).

The inability to imagine will result in an inability to change (James & Brookfield, 2014: 3). If you cannot imagine a better outcome to a certain task you will not be inspired to change how you complete the task. The strict rules and rigid classroom assessments make it difficult to incorporate imagination. Imagination is very unpredictable, and there is no way of knowing where children's imaginations will lead them (James & Brookfield, 2014: 3).

Although unpredictable, children's imagination can be harnessed to engage them in lessons to ensure improved understanding and greater accomplishments (James & Brookfield, 2014: 6). For teachers to engage children through their imagination, they must be able to apply imaginative thinking themselves. Imaginative thinking refers to the ability to think outside of the box. In the teachers' case, they should be able to

understand the children's different views and immerse themselves into the children's imaginary worlds (James & Brookfield, 2014: 6). Engaging children through imagination will lead to creativity.

2.5.1 Play as a tool to develop imagination

Imaginative play starts as early as 18 months in children. They start by pretending that an object is something else than it really is, later as their cognitive abilities expand, they start playing from their imagination alone (Weisberg, 2015: 252). According to Vygotsky (Nilsson & Ferholt, 2014: 926), creativity can be identified in children from a very young age. When children play, their truest form of creativity is evident. Play is open-ended and there are no restrictions regarding fantasy and reality (Nilsson & Ferholt, 2014: 925). Creativity stems from combining previous knowledge and skills with new ideas. Children might act out what has been modelled to them and add their twist to the re-enactment. Through play, children realise they can change what is before them using their imagination (Fleer, 2021: 358).

2.5.2 How imagination leads to art

Vygotsky emphasised the importance of imagination for artists as well as scientists. He believed everything in the world made by man is created from imagination (Nilsson & Ferholt, 2014: 923). Imagination can also be described as 'original thinking', especially when looking at ordinary objects (Garrett, 2014). Those who can imagine can create (Nilsson & Ferholt, 2014: 926). Imagination in art is potent, it allows artists to alter how ordinary things are viewed (Garrett, 2014). Artwork can in turn also influence imagination. For example, looking at a piano painting, the brain allows one to imagine the music coming from the piano, and to see people dancing to the music.

2.6 Creativity

Most adults recall moments when teachers criticised their creative attempts. As an effect of this criticism, their confidence in expressing themselves through art was affected later in their lives. When a preschool teacher is not confident to express

themselves through art, it negatively influences the creative process of the children in their class (Lindsay, 2015).

According to Stone (2012: 277), Vygotsky believed that creativity combines knowledge and thoughts in unique ways to create something completely different. Stone also argued that creativity depends on the child's culture and the richness thereof. In Vygotsky's view, more sophisticated forms of creativity come from higher-order thinking (Stone, 2012: 279). The Reggio Emilia Approach is a learning approach that values creativity and problem-solving, and is essential for development, therefore, the Reggio Emilia Approach is discussed below.

Being creative is not only for the enjoyment of adults and children but also to feel significant (Kapoor & Kaufman, 2020: 2). Being creative can help children escape from reality by distracting them. A creative distraction was vital during the COVID-19 pandemic, for example. The COVID-19 pandemic created uncertainty among children, who feared what effect the virus would have on them and their families. During this time, children could escape through drawings and share them with friends and family. Sharing their creativity further encouraged a sense of significance in children (Kapoor & Kaufman, 2020: 2).

In 2009, Kaufman and Beghetto created the Four C Model of Creativity. Although this model was created a while ago, it continues to hold relevance in the context of creativity. The model consists of four Cs, the first being the Mini-c level of creativity, the Little-c level of creativity, the Pro-c level of creativity and lastly the Big-c level of creativity (Kaufman & Beghetto, 2009). For this study, I will further discuss the first two levels of creativity as those are the levels applicable to young children.

The Mini-c level of creativity refers to creating anything new and meaningful to the child (Kaufman & Beghetto, 2009). This creation might not be something big, it might be a drawing a child brought home for the first time. The Little-c level of creativity reflects growth from the first level. Through feedback and encouragement, improvements are made to create something valuable for others (Kaufman & Beghetto, 2009). An example would be a child's parents that exhibit one of their drawings on the fridge because they enjoy looking at it.

2.6.1 The importance of creativity in in early childhood development

Creativity enhances problem-solving skills, when faced with a problem, being creative allows one to look at the problem from different angles than the one previously used (Carver, 2022). Creative people are more adaptable, as they can adapt their thinking (Bajaj, 2021). Developing creativity in children fosters a positive attitude towards learning and showing respect to others (Bajaj, 2021). Children experience emotional satisfaction when living out their creativity. Allowing children the freedom to be creative enables them to better regulate their emotions by providing a means of expression (Bajaj, 2021).

2.7 Problem-solving

Problem-solving refers to the ability to think of new and innovative solutions to challenges. Problem-solving can be learned from modelled behaviour from adults. Teachers should communicate the challenge and discuss with the children how it can be solved (Dostál, 2015: 4). The teacher should illustrate trust in the child's solutions to encourage them to continue exploring different solutions.

Problem-solving skills can be learned through practice. Teachers provide space, time, and materials to encourage problem-solving (Dostál, 2015: 4). Time is provided by discussing challenges and exploring alternatives to find a solution that best fits the challenge. Moving the desks around in the classroom allows for space to discuss the possible solutions in groups. Lastly, the teacher can supply open-ended materials for physical problem-solving (Dostál, 2015: 4).

In the book *Engaging Young Engineers – Teaching Problem-Solving Skills Through STEM*, Stone-MacDonald, Wendell, Douglass and Love (2015: 43) describe four phases of problem-solving appropriate for younger children. These four stages are: *think about it*, *try it*, *fix it*, and *share it*. These four problem-solving phases are known as the 'problem-solving framework for emergent engineering'.

During the first phase, *think about it*, children brainstorm possible solutions as well as consider the wants and needs of the people experiencing the problem (Stone-MacDonald *et al*., 2015: 43). During the second phase, *try it*, children can work individually or in groups to try one of their solutions (Stone-MacDonald *et al*., 2015:

43). The *fix it* phase requires documentation of what the outcome was and how to improve on the solution (Stone-MacDonald *et al*., 2015: 44). Lastly, during the *share it* phase, the children draw and talk about their solution as a way of documenting. During the final phase, the children reflect on their first solutions and what finally solved the problem (Stone-MacDonald *et al*., 2015: 44).

Later on, in Section 2.11.5, I discuss the father of problem-solving, George Pólya, alongside his problem-solving method.

2.7.1 The importance of problem-solving in early childhood development

Problem-solving builds the confidence of children from an early age. Problem-solving involves making decisions and feeling happy and confident in making future decisions (Marlborough School, 2020). Furthermore, solving problems in groups teaches children to look at problems from different perspectives (Marlborough School, 2020).

Emotional intelligence, creativity, teamwork, and decision-making are important factors in developing problem-solving skills (Dhanani, 2019). A solution or a problem usually affects people, knowing how to manage emotions helps one find better solutions (Dhanani, 2019). Creativity allows children to envision different solutions than they would normally think of. Children might struggle to solve a problem, but working in a team could help them see the problem from a different perspective (Dhanani, 2019). Decision-making teaches children to decide. Therefore, they become more confident and less insecure.

2.8 Creative accidents

Another concept crucial to critical thinking, creative thinking and problem-solving is making mistakes. In her research, the psychologist Janet Metcalfe (2017: 470), demonstrated that incorporating feedback after making mistakes contributes to enhanced learning. However, Metcalfe believes errors should be corrected with corrective feedback (Metcalfe, 2017: 471).

Metcalfe mentioned that as long as ‘educated’ mistakes were made, it is easy to correct them and recall the correct information later on. Educated mistakes are when

the action was thought through, for example when a sum is calculated but added incorrectly. The process was still followed, random numbers were not written down as the answer (Nebel, 2019). The correct process needs to be understood and children should pay attention to it to correct their mistakes. Creative accidents are more easily corrected when the reasoning behind the correct answer is explained to the child (Nebel, 2019).

Although Metcalfe focused on correcting the mistakes, the study focused more on embracing these mistakes. In this study, these mistakes are referred to as 'creative accidents'. To embrace the creative accidents children make, the concepts of the Reggio Emilia Approach below were incorporated.

Barney Saltzberg illustrates perfect examples in his books of creative accidents and what accidents could turn into (Saltzberg, 2010; Saltzberg, 2017). In combination with the books, *Beautiful Oops!* (Saltzberg, 2010) and *My Book of Beautiful Oops!* (Saltzberg, 2017), Corinna Luyken wrote the book *The Book of Mistakes* (Luyken, 2017). Through her book, Luyken not only encourages children to accept that mistakes can turn into opportunities but also encourages a more positive outlook rather than seeing only the negative (Luyken, 2017).

2.9 Approaches to education

There are several approaches to education, below some of these approaches will be briefly discussed in order to understand the most prominent differences between these approaches and the Reggio Emilia Approach. For this study, I discuss the following approaches in detail: Montessori, Waldorf, Te Whäriki, and the Reggio Emilia Approach. The Reggio Emilia Approach is discussed in more detail, as the approach guides this study.

2.9.1 Montessori

Doctor Maria Montessori started her career as a medical doctor in an asylum for young children (Schonleber, 2021: 13). She realised that the children required stimulation. In an attempt to stimulate their minds, she developed a method focused on sensory

learning, practical skills, the natural world, and materials used to spark the children's interest (Schonleber, 2021: 13).

A Montessori classroom is usually an open space with child-sized furniture (Lillard, 2017: 16). There are different spaces separated by small shelves. Each subject has an area laid out with hands-on material to teach each subject. The Montessori classroom has at least three different ages of children grouped together in one class (Lillard, 2017: 17). The children do not receive a specific seat, they move around during the day. When the teacher presents lessons, the lessons are usually presented to small groups or to individual children. Lessons are presented to children when they are ready for the specific lesson (Lillard, 2017: 18). Children can also decide if they want to work individually or in groups.

The objects used to attract children's attention are placed on the shelves and are usually made from wood or natural materials (Lillard, 2017: 18). These objects are painted in bright colours, as these colours spark children's interest. The objects are designed to teach different skills through repeated use (Lillard, 2017: 20). Like the Reggio Emilia Approach, this approach is child-centred, however, the combination of ages is a new concept. The informal teaching style is one of the main things that sets this approach apart from the rest.

2.9.2 Waldorf

Rudolf Steiner invented the Waldorf approach, which focuses on the hands, heart, and head. This refers to doing, feeling, and thinking (Sunbridge Institute, 2022). In the Waldorf approach, children create their textbooks by drawing and writing in journals. When the children write their own lessons, they create meaning, allowing them to absorb the knowledge more effectively (Sunbridge Institute, 2022).

By encouraging children to explore, discover and invent, life-long learners are created by the Waldorf approach (Sunbridge Institute, 2022). The competitive nature involved with tests is removed from the classroom as children learn to foster a love for learning (Waldorf Education, 2022). What sets this approach apart from the others, is that this approach includes the arts in all their work (Waldorf Education, 2022). These schools are often viewed as art schools because of this. The approach is focused on mixed classes and appreciating each other for their differences. These differences include culture, race, and religion. The subject 'eurythmy', which refers to movement and arise

within the soul (Waldorf Education, 2022), is another concept that sets this approach apart from the other approaches.

2.9.3 Te Whäriki (TW)

The Te Whäriki approach is the National Curriculum of New Zealand. The main belief of the TW is to ensure a strong foundation for each culture in the world (Ministry of Education, 2016: 10). The success of the TW is owed to the belief that children will succeed academically when their learning is based on respect and understanding for their roots (Ministry of Education, 2016: 10). The children are taught different languages, but the new languages are built on their home languages (Ministry of Education, 2016: 10). The children are given the opportunity to learn in their own language and become bilingual.

'A tona wa', meaning 'in their own time', is a saying in New Zealand referring to each child's development (Ministry of Education, 2016: 15). Each child learns in their own way and time, and applies their knowledge differently. In combination with learning the curriculum, the children are also taught what is expected of them from their culture.

The TW approach is play-based and allows children to explore, represent and communicate. Four principles underpin the approach, these principles include: empowerment, holistic development, family and community, and relationships (Ministry of Education, 2016: 21). The empowerment of children focuses on developing the children's potential and to respect and value them. When outcomes are planned, the whole child needs to be considered, this includes their physical, cultural, social, cognitive, spiritual, and emotional development (Ministry of Education, 2016: 22). The well-being of the children is closely related to the wellbeing of their families, therefore, each child is encouraged to share their knowledge from home in class. Relationships are an important part of the TW approach, because through relationships children are provided with the opportunity to sound their ideas and theories (Ministry of Education, 2016: 23).

Compared to the other approaches, the TW approach is more focused on developing the child holistically through a more cultural approach.

2.9.4 The Reggio Emilia Approach (REA)

Lella Gandini, an official liaison for the Reggio Emilia Inspired schools in the United States of America shared that the Reggio Emilia Approach was started during the second world war when determined parents built a school from any materials they could find (Bartlett, 1993: 113). Loris Malaguzzi joined the initiative as a young teacher, creating a school free from the control of the Catholic church and rather a school dedicated to the education of all children (Bartlett, 1993: 114). The parents and the community remained involved in these schools with the teachers.

The REA is an internationally-recognised approach that is focused on providing early childhood learning of high quality. The REA is closely related to the theory of John Dewey, because of the emphasis placed on the children's opportunities to discover and explore for themselves (Baker, 2014: 985). The REA is focused on the education of children below the compulsory school age, from birth to six years (Moss, 2016: 167). The REA views the child as strong, competent, rich in resources and unique, with basic needs and rights. A school in the REA is a place where children participate, construct and research freely. The teacher functions as a supervisor rather than an instructor. The teacher is also an observer, documenting all the children's progress (Baker, 2014: 985).

Loris Malaguzzi, the founder of the REA, focused on placing art studios (known as ateliers) and visual art professionals (known as atelieristas) in every preschool to enhance creativity. The "hundred languages" created by the REA strives to emphasise the right, of everyone, to express and make meaning in a range of ways with different points of view, languages, materials, working with your mind, emotions or hands. The environment should allow for creativity and expressiveness to ensure that children feel comfortable expressing themselves through one of the hundred languages (Lindsay, 2016: 21). Margaret Brooks considered drawing to be a language and a tool for thinking and meaning making (Brooks, 2009: 2). Loris Malaguzzi liked to take the school supplies, children and teachers into the public to teach there for the day (Barclay & Browne, 2019: 9). This was a way of making the school more visible, showcasing the work the school does, and also making the school and children feel more valued. In 2019, Mimosa School in Auckland, Johannesburg did the same thing.

They called this project ‘Open Streets’ day and incorporated the streets of Johannesburg like the environment as the third teacher (Barclay & Browne, 2019: 9).

Loris Malaguzzi introduced the concept of ‘the 100 languages’ in a poem. The ‘100 languages’ refers to understanding, organising learning and creating knowledge. The ‘100 languages’ is imaginative, communicative, expressive, logical and cognitive. Some of the ‘100 languages’ include talking, drawing, writing, dancing or acting. The concept of the ‘100 languages’ goes hand in hand with the ‘multiple intelligences’ theory by Howard Gardner; children are encouraged to create and learn in their own ‘language’ (Reggio Emilia Australia, 2018). The REA places visual art in the centre of education as a graphic language (Lindsay, 2016: 21). Gardner introduced the concept that there is more than one type of intelligence. Gardner identified eight bits of intelligence. The intelligence most like graphic language is the visual-spatial intelligence. This intelligence refers to the ability to create and transform visual images. This links to the imagination; we visualise or create in our minds and then transform the image into the real world by creating (Gardner, 2017: 35).

Children express their unique language through interaction with numerous elements. John Dewey found that children learn through interaction with materials, the environment as well as people (Schilpp & Hahn, 1989: 605). According to Dewey, art can be connected to research because children are encouraged to experiment so that skills and knowledge are developed through art (Lindsay, 2016: 21).

Communication is a key factor in the Reggio Emilia Approach. As explained by Carlina Rinaldi, management, staff, children and families are involved in making decisions on various levels regarding the children’s education (Ghafouri, 2012: 1). Carlina challenged teachers to reconsider their identities as constructed in relation to the relationship teachers have with parents, colleagues and children (Ghafouri, 2012: 2).

The REA curriculum was originally designed for children before compulsory school age, as mentioned earlier. The REA curriculum is centred on children and the developmental expectations for the children are prepared by age group (Arseven, 2014: 167). Creativity takes the focus of this curriculum and the curriculum is flexible, providing teachers with freedom (Arseven, 2014: 167). Children are encouraged to learn through lived experiences and family participation is seen as essential to the children’s learning.

The REA is also called a ‘laboratory of culture’ where a child is encouraged to imagine and have a safe space to express themselves and experience different things. This approach creates an environment where the children can form their image of the world and of how they would like to participate in the world (Hočevar, Šebart & Štefanc, 2013: 480). Relationships are a primary factor in the REA and are viewed as ‘dynamic forces’ working toward the same purpose. Relationships assist children in developing a sense of confidence and self-worth (McNally & Slutsky, 2016: 1927). Below, the concepts of the REA, applicable to the study, are discussed. These concepts include documentation, provocations and the REA teachers.

2.9.4.1 Documentation

Documentation is a process unique to the REA (McNally & Slutsky, 2016: 1931). Through the documentation process, the REA attempts to share results in new ways and in ways that are accessible to everyone (McNally & Slutsky, 2016: 1931). The results can be shared through photographs even if the recipient speaks a different language, for example.

In the Reggio Emilia-inspired schools, documentation is used to show how the children construct their knowledge. Documentation takes place in many forms: it can be through photographs, observations, audio recordings, or video recordings, among others. The documentation of the children’s work is also used to exhibit the children’s progress to parents (Lim & Cho, 2019: 369). Documentation is a product or a process to inform the public of the school’s content (Vecchi, 1998: 140)

Documentation does benefit not only the children and their parents but also the teacher. Through the documentation process, the teacher can revisit the lesson they presented (Baker, 2014: 991). Teachers can reflect on their teaching by examining their notes about children’s interpretations as well as the photographs taken. The teachers become more aware of how the questions they ask can serve as a provocation to create responses from the children (Baker, 2014: 991).

In the Reggio Emilia Approach, an Italian term ‘progettazione’ is often used to describe flexible planning done by parents, administrators, or teachers (Moran, Desrochers & Cavicchi, 2007: 82). Through ‘progettazione’, emerging themes are used to project

original curriculum planning and program planning such as school schedules. As part of the originality of the curriculum design, documentation and assessment are also designed to fit the needs and interests of the children. The documentation adapts to the changing curriculum teachers (Moran, Desrochers & Cavicchi, 2007: 82). Through documentation, the teacher can provide a detailed description of the context in which learning took place.

2.9.4.2 The use of provocations

The term provocation is often a term frowned upon when heard with regard to Early Childhood Education. Provocation, however, has a different meaning in Early Childhood Education. Provocations are a way of engaging children in learning. The use of provocations forms an important part of the REA. Provocations refer to items or activities set up to engage the children in exploring a new concept. Provocations are also known as a prompt, invitation or learning trigger. The provocations act as a prompt to provoke a reaction from the children in the form of curiosity, conversation, discovery, or exploration (McAvan, 2020). Provocations also refer to an open-ended activity with no specific outcome, the outcome is created by the children through exploration, imagination and innovation. The children can either work in groups or explore individually (Durand, 2016).

Provocations should be set up in a manner that is aesthetically intriguing for the children. Various containers, colours, sizes and items can be used for the provocations displayed in the classroom (McAvan, 2020). Provocations include items, such as books, magnets, magnifying glasses, questions the children might have, events such as holidays, seasons, the use of light, as well as items from nature like an insect or a leaf used to spark the young children's creative thinking (Racheous, 2014).

2.9.4.3 The REA teachers and the role of the environment as the third teacher

In the REA, there are three participants: the teacher, the child and the environment. The REA recognises the value of the environment as a teacher by granting children the freedom to imagine and be creative. The importance of the environment as a third teacher is more than only what we see, but also how we feel. The environment forms

part of the provocations used in the REA, meaning that the way a room is organised contributes to children's learning. Mirrors placed around the class, natural light where children are drawing or even a different scent can start a conversation among the children (Strong-Wilson & Ellis, 2017: 43). Creativity stimulates the development of problem-solving skills by encouraging children to create their own solutions. With the use of the REA approach and incorporating provocations in visual art, children's creativity can improve and, as a result, children's problem-solving skills can also be enhanced.

In REA-inspired schools, each space is designed in such a way as to have a purpose and an identity (McNally & Slutsky, 2016: 1927). For example, attention is paid to details in bathrooms, kitchens, and hallways. Exhibits of collaborative work between teachers and children can be seen throughout REA-inspired schools (McNally & Slutsky, 2016: 1928). These permanent or temporary exhibitions aim to spark conversations and invite children to examine. This is another element of the REA that makes the approach so unique.

2.9.4.4 The image of the child

In June 1993, Loris Malaguzzi presented a seminar in Italy regarding the image of the child in the REA (Malaguzzi, 1993). According to Malaguzzi (1993), teachers create an image of each child as they get to know the child. The image teachers have of each child guides them in how to behave around, talk to, listen to and observe the child. Teachers need to consider each child's environment, as their environment is connected to them, and the connections they have made are brought into class. Malaguzzi emphasised the importance of promoting the child's education and keeping the child's happiness and health in mind as well (Malaguzzi, 1993). Although this source is from 1993, the information is still applicable as the founder of the REA presented it.

In the REA, the child is viewed as powerful, competent, strong, and rich in potential (McNally & Slutsky, 2016: 1926). Teachers see children as valuable and able to create their learning; this image guides the role of the teacher as facilitator. The respect REA teachers have for children sets this approach apart from others. Children are trusted to construct their own knowledge (McNally & Slutsky, 2016: 1926).

2.9.4.5 Art in the REA

The REA encourages children to express themselves through art. Art is seen as a way of learning through different art styles, like drawing, movement, and role-play (Aden & Theodotou, 2019: 161). REA-inspired schools usually include an atelier, an art studio set out with art equipment like clay, paint, crayons, and paper (Aden & Theodotou, 2019: 161). Children are not told what to create, their art is rather guided by their interests and what the child wants to express. Creating art further engages children in exploration (Aden & Theodotou, 2019: 163). As stated previously, the REA is focused on enabling children to question and to challenge, therefore, art is important in the REA.

In contrast to other approaches, the REA offers no step-by-step instructions on how to create art (The Compass School, 2017b). There are no examples to follow, as the art is more focused on the experience and exploration than the result (The Compass School, 2017b). There is no right or wrong way to be creative because each child's art is unique. The environment is calm and relaxing, and each child's experience is different.

2.10 Preschool teachers' contribution to art education

For a teacher to holistically support the development of creativity through art, the teacher requires knowledge of art and theory and an understanding of children's development (Novaković, 2015: 154). The main goal of a teacher is to create an environment that encourages children to explore and experiment with new textures and designs, among others. Teachers must ensure that the child is allowed to manipulate different materials and textures. Children learn best through touch, movement, sight, and hearing (Novaković, 2015: 154). The role of the teacher is to familiarise the children with different techniques in art, but not to show them step-by-step examples of how they should create art (Novaković, 2015: 155). Art is a way of expressing your feelings and expecting children to all create the same art piece takes away this element.

Tavin (2014b: 44) argued that art is violent. He made this statement because teachers lay out the rules of art to children from a very young age. These rules create

boundaries for children when expressing themselves (Tavin, 2014b: 44). In the end, the teachers lay out these rules for children to become something or someone. Mostly, these somethings or somebodies are not who they truly are; therefore, they are repressing the children (Tavin, 2014b: 45).

2.10.1 Preschool teachers' training in art education

The programmes educating future teachers focus on the curriculum, how to manage the children and everyday challenges that might occur in the classroom (Hetrick, 2013: 274). However, the actual teaching of art is not viewed as an important topic. It is more important to work through the techniques, necessary to teach art, than we think.

Hetrick (2013: 275) suggested that art teachers should be free to explore what they want to achieve through art education. Many art teachers use their position as teachers to work through their trauma. An example of this can be seen in the movie, *Mona Lisa Smile* (2003). In the movie, the art teacher used her position to empower the girls in her class, as she was oppressed because of her gender. Allowing future teachers to work through their own trauma before walking into a class can change their motivation behind teaching art (Hetrick, 2013: 275). The effects thereof can be positive on the education of art in schools.

2.10.2 Preschool teachers' perception of art

Zupančič, Čagran and Mulej (2015: 25) completed a study where preschool teachers had to rate the importance of art compared to other subjects. The results showed that language, mathematics, and movement rated higher than art (Zupančič *et al*., 2015: 25). Therefore, teachers felt that art was not an important part of education in preschools.

Teachers understand that their role in art education is to teach children to look deeply and in detail at art. To envision what was not necessarily seen and to pay more attention to what was expressed in the art. However, Tavin (2014a: 438), believes that art is stupid. With this statement, he meant that art should be simple. We should teach children to look for the simple things. We expect too much of children instead of allowing them to just create (Tavin, 2014a: 439).

Teachers need to have knowledge of not only practical skills when teaching art but also background knowledge of art (Probine, 2020). This includes art history, for example. The biggest challenge when teaching art is having confidence. Teachers can improve their confidence through self-reflection (Probine, 2020). Identifying when and why the teacher lost his/her confidence can help them find strategies to build their confidence, like being more prepared, for example.

2.10.3 Preschool teachers' influence on creativity

Through creativity and art, children can be taught resilience. Resilience is especially important for children struggling with trauma at a very young age. Heise (2014: 27) researched the possibility of teaching resilience through art education. According to Heise (2014: 29), providing children with a safe space to visually express themselves allowed them to work through their feelings. However, the curriculum does not necessarily allow children to create violent images. Therefore, creating a safe and non-judgemental place for children is difficult. Teachers can help children with much more than just creative thinking and problem-solving skills through art. For teachers to reach their full potential, they require the support of the curriculum developers and school management (Heise, 2014: 29). Further, they also need to believe in themselves as competent educators.

2.11 Grand theories relating to this study

Grand theories are often used as part of exploration in research. Grand theories are ideas from big thinkers like Jean Paget and Erik Erikson (Cherry, 2020). The ideas they shared are often applicable to different studies, and their ideas usually revolved around problem-solving, thinking, and mental processes (Cherry, 2020). For the purpose of this study, I discuss the theories of Howard Gardner, John Dewey, Jean Piaget, Lev Vygotsky, Erik Erikson, and George Pólya.

2.11.1 Howard Gardner

Howard Gardner introduced the Multiple Intelligences Theory suggesting that all people have varied intelligences and solve problems in different manners

(Armstrong, 2017: 1). Gardner challenged the standard IQ test, as he argued that everyone does not think in the same way, therefore, their intelligence could not be measured the same. Gardner focused the idea of intelligence on the ability to solve problems (Armstrong, 2017: 1). He introduced eight different intelligences, namely, Linguistic intelligence, Logical-mathematical intelligence, Spatial intelligence, Bodily-kinaesthetic intelligence, Musical intelligence, Interpersonal intelligence, Intrapersonal intelligence, and Naturalist intelligence. The Spatial intelligence is more applicable, as the study explores art, therefore I discuss the theory and the seven types of intelligences in more detail below.

Linguistic intelligence

This intelligence can also be referred to as 'word smart'. This intelligence refers to the ability to manipulate language as a writer, storyteller, or journalist, for example (Armstrong, 2017: 2).

Logical-mathematical intelligence

This intelligence involves manipulating numbers and reasoning logically, as a mathematician, accountant, or scientist (Armstrong, 2017: 2).

Bodily-kinaesthetic intelligence

The ability to use one's whole body to express feelings and create with your hands refers to the Bodily-kinaesthetic intelligence (Armstrong, 2017: 3). This intelligence requires balance, coordination, strength, and flexibility.

Musical intelligence

This intelligence requires sensitivity to pitch, rhythm, and melody (Armstrong, 2017: 3). Musical intelligence is the ability to transform and express oneself through music.

Interpersonal intelligence

Interpersonal intelligence refers to the ability to perceive others' intentions, feelings, and moods (Armstrong, 2017: 3). This requires sensitivity to gestures and facial expressions.

Intrapersonal intelligence

This intelligence refers to the ability to know oneself. Intrapersonal intelligence includes knowing your strengths and weaknesses and inner awareness of moods, motivations, intentions, and self-discipline (Armstrong, 2017: 3).

Naturalist intelligence

The naturalist intelligence refers to the expertise of flora and fauna of one's environment (Armstrong, 2017: 3). This includes the knowledge of cloud formations and mountains. The naturailist intelligence can also be referred to as a *way of knowing* rather than knowledge.

2.11.1.1 Spatial intelligence

Spatial intelligence includes occupations, such as artists and inventors. This intelligence requires sensitivity to line, form, colour, space, and the relationship between objects (Armstrong, 2017: 2). It also includes the ability to visualise and create from the ideas in one's mind. People who identify with this intelligence tend to think in pictures and are very aware of shapes, colours, objects, patterns, and textures (Gardner, 2011: 179). People who identify with this intelligence enjoy working with clay, drawing, constructing and building puzzles. The spatial intelligence enables people to imagine, pretend and visualise solutions (Gardner, 2011: 179).

Spatial intelligence is the most important skill that this study deems important to enhance in all children. Utilising people's thought processes in spatial intelligence can help enhance spatial intelligence skills in young children. Below is an illustration of the eight intelligences proposed by Gardner. The spatial intelligence, or picture smart, is taken out from the rest of the intelligences to show its importance to the study.

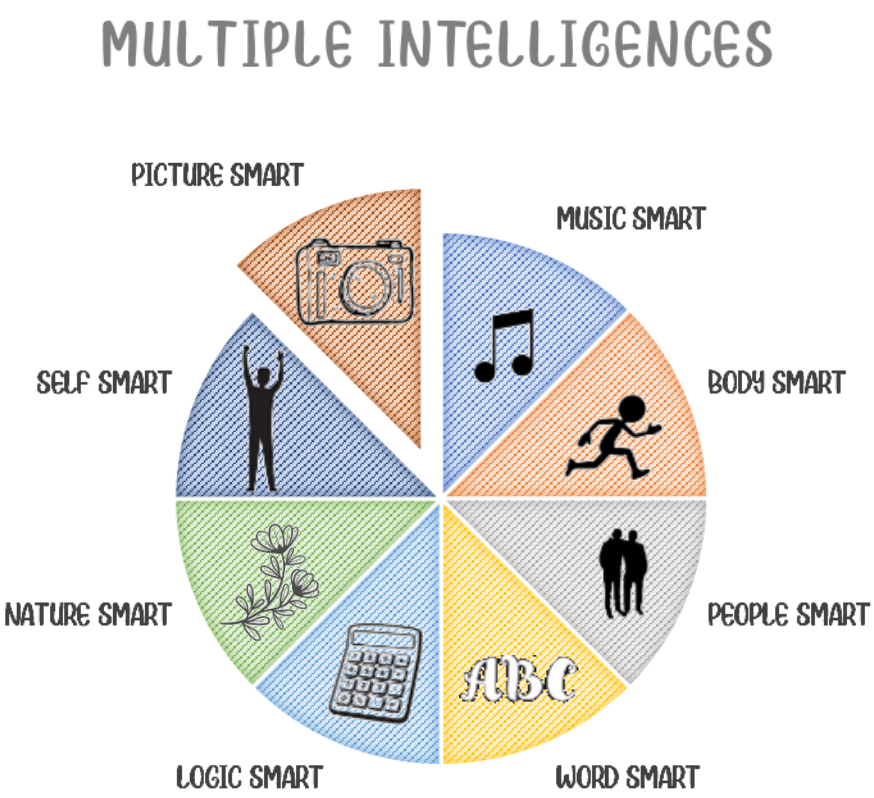

Figure 2.3: Gardner's Multiple Intelligences (Adapted from Kunesh, 2022)

2.11.2 John Dewey

Dewey proposed 'progressive education' as he felt unsatisfied with the traditional education system. He suggested that the curriculum should include age-appropriate and engaging material (Williams, 2017: 92). John Dewey envisioned classrooms as a space where children could solve problems together and where teachers functioned as facilitators (Williams, 2017: 92).

John Dewey believed that the school curriculum should apply to the children's lives (Dewey, 2018: 345). Some critics argue that Dewey's belief in practical education would prevent children from acquiring basic academic skills. He visualised education as developing practical skills and learning through doing (Dewey, 2018: 345).

Looking at this study compared to Dewey's philosophy, it is clear that the two walk hand-in-hand. Just like Dewey, education is also viewed as learner-centred in this study. It is critical for children to effectively explore and construct their learning in order to fully grasp new knowledge.

2.11.3 Jean Piaget

Jean Piaget proposed the Cognitive Development Theory, wherein he believed children's thinking developed through four stages (McLeod, 2020). These four stages are namely, Sensorimotor, Pre-operational, Concrete operational, and Formal operational. Below, each stage will be discussed:

Sensorimotor stage

This stage of thinking develops between birth and 2 years old. During this stage, the child explores the world through their senses, and they acquire object permanence (McLeod, 2020). They start learning that an object still exists even if they cannot necessarily see it.

Pre-operational stage

Between the ages of 2 and 7 years, children start representing the world through language and mental images (McLeod, 2020). During this stage, the child is not capable of logical problem-solving yet.

Concrete operational stage

During this stage, children become less self-involved, and they start thinking about the feelings of others. They also begin to understand that specific properties of objects remain the same, even if they change in appearance (McLeod, 2020). This stage of thinking develops between the age of 7 and 11.

Formal operational stage

Children begin to think abstractly during the formal operational stage of thinking (McLeod, 2020). They no longer require physical items in order to solve a problem. They are now able to solve hypothetical problems. This thinking starts to develop from the age of 12.

As this study focuses on children between the ages of 4 and 6, the pre-operational stage is applicable. Through art, the child can express their image of the world visually. Although children cannot logically solve problems yet, they are learning how to solve them in this stage. Laying the foundation properly is very important to acquire good problem-solving skills. Therefore, by enhancing problem-solving skills at this young age can improve the overall problem-solving ability of children.

2.11.4 Lev Vygotsky

Through the Zone of Proximal Development (ZPD), Lev Vygotsky found the difference between what children can accomplish on their own in comparison to what they can accomplish with the help of an experienced person (Danish, Saleh, Andrade & Bryan, 2016: 7). Through scaffolding, or help from a more capable person, children can now explore solutions they previously could not achieve on their own. Incorporating the ZPD theory into learning empowers children to feel more supported to transition to the next developmental stage (Danish *et al*., 2016: 7).

Vygotsky's ZPD guides the development of problem-solving skills in the study. The provocations create the necessary scaffolding that enables the children to solve problems on their own. The ZPD aims to ensure that children will be capable and confident enough to solve problems independently. The concept starts with what the child knows and then uses scaffolding to assist the child in understanding new concepts. The scaffolding is removed bit by bit until children can solve problems on their own (Warren, 2016).

The ZPD was used in the study in combination with the provocations. The provocations were used as the scaffolding material to help and encourage children to solve problems on their own. Below is an illustration of Lev Vygotsky's ZPD.

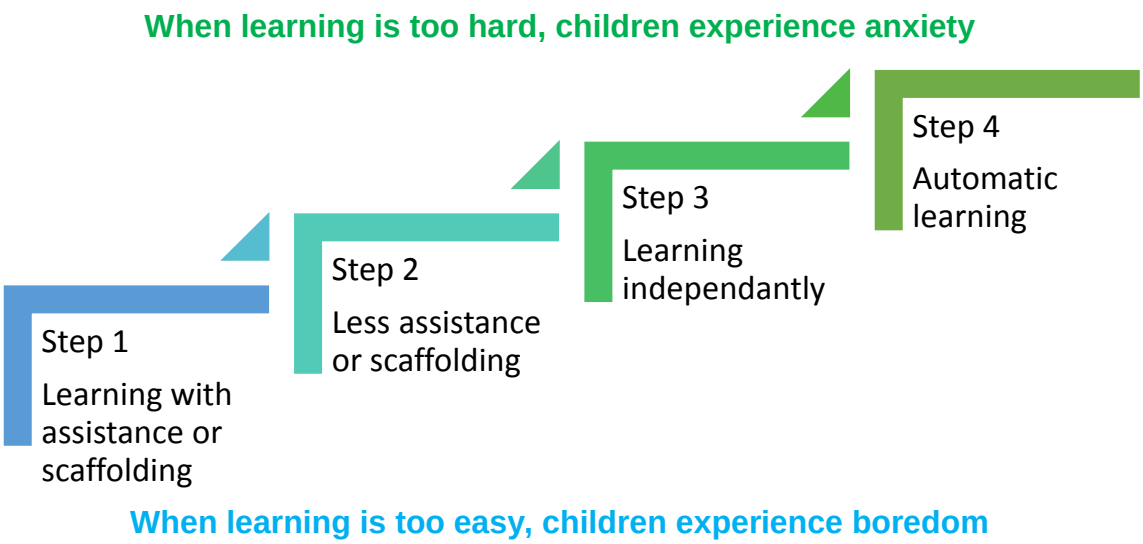

Figure 2.4: Vygotsky's Zone of Proximal Development (Adapted from Warren, 2016)

2.11.5 George Pólya

In 1945, George Pólya introduced the four steps of problem-solving relating to mathematics (Pólya, 2004: 5). However, these problem-solving steps are applicable to more than just mathematics. These four steps include: understand the problem, devise a plan, carry out the plan, and finally look back. Below, these steps are discussed in more detail:

Understand the problem

More often than we realise, children are unable to solve problems simply because they do not understand the problem. Therefore, the first step is ensuring the child understands the problem by asking leading questions like 'What are you asked to find or show?' (Pólya, 2004: 6).

Devise a plan

After a child fully understands the problem, he/she can start looking at the most suitable strategy to solve the problem (Pólya, 2004: 8). Choosing the correct strategy comes with practice.

Carry out the plan

When a child understands the plan and settled on a strategy, all that is left is to implement the strategy. When the strategy is implemented and it does not solve the problem, a new strategy is chosen and tested (Pólya, 2004: 12).

Look back

By looking back and reflecting on the process involved with solving a problem, one can gain a lot of insight (Pólya, 2004: 14). Reflecting on what worked and what did not work enables one to find the correct strategy faster when faced with a new problem.

When faced with a creative accident, the child still needs to find a way to solve the problem of what to do next. Therefore, empowering the child with the four steps above can enhance their problem-solving skills.

2.12 Conceptual framework

The conceptual framework of this study is based on numerous aspects of different theories. Although the theories might seem overwhelming, the researcher only focused on some aspects of each theory to create the conceptual framework an during the data analysis. The concept that mainly influenced the conceptual framework was the Reggio Emilia Approach (REA). The principles of the REA, namely, provocations, the environment as the third teacher, and documentation form part of the framework. The concepts are illustrated in the image (see Figure 2.5) of the conceptual framework below. The other aspects in the framework include ‘creative thinking’, ‘problem-solving’, and ‘creative accidents’ respectively.

The house's foundation is the REA because it formed the basis of the study. The principles of the REA, namely: ‘provocations’, ‘the environment as the third teacher’ and ‘documentation’, are illustrated as necessary parts of the house. The concepts form the windows and the door to indicate the importance of the concepts to achieve the aimed results.

‘Creative thinking’ and ‘problem-solving’ form part of the walls extending from the foundation. The study assumed that the skills could be developed through the REA and its principles, which flow from the purpose of the study. ‘Creative accidents’ are shown as a pet door. The dog coming through the door creates the idea that the door can swing open and close. The image created by the open door indicates that creative accidents are adjustable. The accidents will never be the same.

Right before the serendipitous process, the children should be able to incorporate the steps of possibility thinking into their thinking. Lastly the ‘serendipitous process’ takes the form of the roof combined with the rainbow. This is because the roof completes the house, and the rainbow shows completion. The serendipitous process was, therefore, the moment when the children achieved creative freedom and when they could solve problems in creative ways. The serendipitous process refers to when the concepts all come together in an unexpected way.

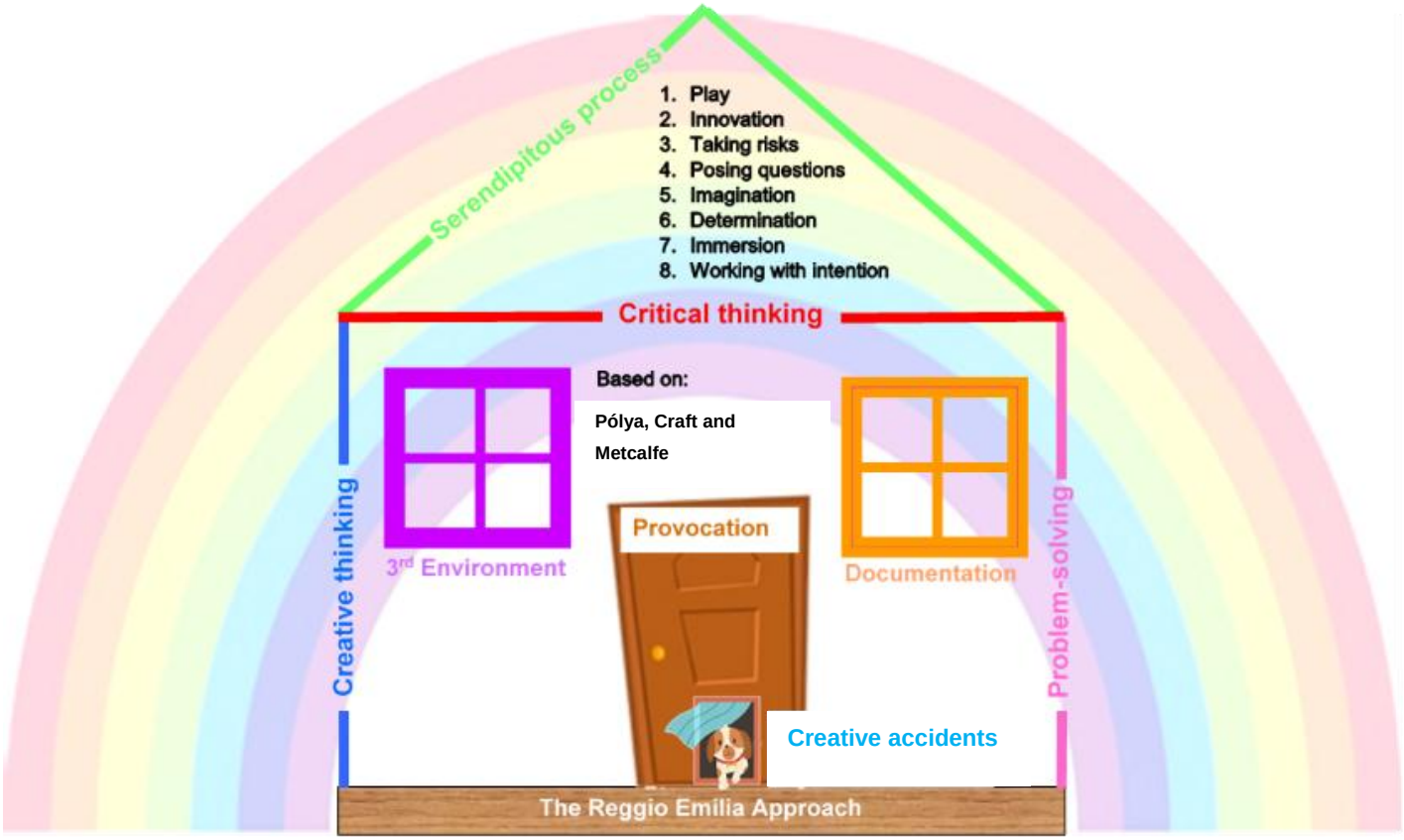

Figure 2.5: Conceptual framework

2.12.1 The Reggio Emilia Approach in the conceptual framework

The REA is inspired by the founder, Loris Malaguzzi. The work of Loris Malaguzzi was influenced by numerous theorists and philosophers, the best-known being Vygotsky, Bruner, Bronfenbrenner, Dewey and Piaget. What sets the REA above other approaches is that children are trusted as the creators of their own knowledge and the leaders of the curriculum (Smidt, 2013: 23).

The REA was of great importance for this study. The freedom given to children is exactly what the study was about. The study aimed to see what children could create on their own, thus they needed the freedom to explore and discover. Therefore, the REA is the basis of the conceptual framework to indicate its importance in laying the foundation. The REA encourages emergent learning, children learn through discovery and through exploration, thus they are learning through their own lived experiences. The other concepts are all linked to the REA in some way, this indicates that the REA influenced all the other concepts.

2.12.1.1 The use of provocations

Loris Malaguzzi introduced the concept of provocations or invitations. Provocations are set up according to the children's interests (Durand, 2016). Provocations aim to provoke children to think and explore. Provocations enable children to interact with real-life objects, books and other materials that deal with their interests. The children get to experience and explore their interests and create knowledge and ideas from provocations (Haughey, 2016).

Provocations are open-ended activities, the outcomes of the activities are determined by the children's reactions to the provocations (Durand, 2016). It is important that provocations be set up in a way that is inviting for the children to encourage them to explore and discover the provocations provided (McAvan, 2020). Provocations are not set up according to the teachers' interest, children are observed to determine what they are interested in learning and the theme of the provocations should be based on the observations (Racheous, 2014). Again, through the use of provocations, the children are encouraged to learn through lived experiences.

The use of provocations forms part of a critical element in the house, the aim of this is to show that the use of provocations was also important in the study. Provocations form an important part of the conceptual framework because it was also the aim of the study to encourage the use of provocations, not only in art lessons but in all lessons.

2.12.1.2 Documentation

Documentation plays an important part in the REA. Documentation can be in the form of pictures, drawings, transcripts of conversations or even comments (Lim & Cho, 2019: 378). The documentation is a trace of learning and can be used as part of assessments. Above all, the documentation provides insight into what the children are thinking and how they are learning (The Compass School, 2018). Documentation played a big part in the research, it helped to ensure that the research was understandable and the researcher could actively engage in the data-gathering process.

2.12.1.3 The environment as the third teacher

The environment in an REA school provides an opportunity for experimenting, exploring and developing. The environments are well thought through by the teachers, and invitations are placed specifically to engage learners (Strong-Wilson & Ellis, 2017: 42). The environment needs to be considerate of the individual as well as group exploration. The environment enables the teacher to become a partner to the children instead of dictating what should be done (Bear Park, 2020). The environment played a crucial role in the success of the study. Provocations were placed within the environment to engage the learners in creative problem-solving.

2.12.2 Problem-solving skills

Problem-solving creates solutions to solve difficult issues or situations (Lucidchart Content Team, 2019). Problem-solving is a key cognitive process needed to change the problem into a solution (Dostál, 2015:4). In the conceptual framework, problem-solving is one of the walls supporting the house. This image indicates the importance of problem-solving skills in the study. In order for children to develop problem-solving skills, they have to be givem the opportunities to explore these skills (Dhanani, 2019). If a mistake was made, the teacher should encourage the children to find a solution to the problem themselves, before asking for help. These skills could be taught slowly and start with simple activities such as, for example, cutting open a snack if the cannot manage to tear it open themselves.

For children to achieve the possibility thinking stage, they need to possess the ability to solve problems. The four problem-solving stages and the theories supporting the study are discussed in Section 2.12.7.

2.12.3 Creative thinking skills

Creative thinking is linked to problem-solving. Creative thinking refers to finding a new or different solution to a problem. Creative thinking encourages children to think outside the box and look at problems from all sides (Rock Content, 2020). Creative thinking is also one of the pillars supporting the study. Problem-solving cannot

effectively be achieved without the ability to be creative. Creativity enables children to not only solve new challenges but also discover those previously overlooked.

Giving children the opportunity to solve problems on their own, will in a way force the children to come up with creative solutions (Kohl, 2022). If one solution does not work and the teachers way of thinking is not forced onto the children, they will be able to find a creative solution to solve their problems.

2.12.4 Critical thinking skills

Creative thinking might not always provide children with valid solutions, but it will enable them to think outside of the box. Critical thinking skills will enable children to find a creative solution that is rational, relevant and possible to achieve. Padget (2012: 8) indicates that critical thinking requires a range of elements, namely cognition, competence, disposition and being an active participant in society. Critical thinking is a crucial skill needed to be competent in higher-order thinking. Critical thinking is deliberate, rational, and relevant. The skill is used to decide what to believe or what to do. Critical thinking is also described as being a disciplined process of conceptualising, applying, analysing, synthesising and evaluating. This definition relates creative thinking to the steps of Bloom's Taxonomy. For children to think critically, they need to follow Bloom's steps: create, evaluate, analyse, apply, understand and remember (Padget, 2012: 8).

2.12.5 Creative accidents

Accidents are part of our everyday life. We learn through accidents, and it is an important part of learning. When children make creative accidents, and are given the opportunity to correct themselves, it has a lot more value than ignoring the accidents or aiming for perfection (Eva, 2017). In so doing, children are encouraged to embrace their creative accidents as possibilities. Creative accidents are combined with the possibility thinking theory. For children to fully embrace their accidents, they need to have the ability to look at a problem as a possibility. In order to incorporate the concept of possibility thinking, children first need to live through experiences where they mde mistakes and were expected to resolve it. The possibility theory (McConnon, 2016: 19) is discussed in more detail with the theories supporting the study in Section

2.12.7.2. Children, just like adults, will make mistake on a daily basis. Teaching a child not to be upset about it, but instead seeing the possibilities behind the mistake teaches children valuable life lessons (Eva, 2017). They will be able to better cope with challenges in life as they are able to come up with solutions.

2.12.6 Serendipitous process

The serendipitous process refers to the moment all the conceptual framework elements come together. Before the serendipitous process could be reached, the child should have been able to practice possibility thinking. The steps of possibility thinking include: play, innovation, taking risks, posing questions, imagination, determination, and immersion working with intention. The REA, along with the related principles, combined with creative accidents, are used to enhance creative thinking, critical thinking and problem-solving skills. Through creative accidents, children are able to create something unique. The moment the children find creative solutions is referred to as the serendipitous moment.

2.12.7 Theories supporting the study

Below, the theories underpinning the study are discussed. The theories include Pólya's Problem-Solving, Craft's Possibility Thinking and Metcalfe's Creative Accidents.

2.12.7.1 Pólya's Problem-Solving Theory

Leong, Toh, Tay, Quck and Dindyal (2012: 360) discussed the four stages of problem-solving created by George Pólya in a study about problem-solving. The four stages of Pólya's problem-solving method include the following: understanding the problem, devising a plan, carrying out the plan and lastly, looking back. For a problem to be solved effectively, the problem has to be understood, thereafter a plan is devised and implemented. The fourth step requires the solution to be evaluated. The 'look back' stage requires the problem-solver to think whether he or she can see a result after implementing the solution (Leong *et al*., 2012: 361).

This theory was crucial to the study because the study was aimed at improving problem-solving skills in young children. By incorporating the problem-solving stages, the children are better equipped to solve problems in the future.

2.12.7.2 Craft's Possibility Thinking Theory

McConnon (2016: 19) explains a term introduced by Craft, called "Possibility Thinking", as a way of stimulating imagination in young children. This is accomplished by a change in children's thoughts from what they see to what they might see. This concept encourages children to focus on what is in front of them, and to challenge and change what they see to what they want it to be. When looking at possibility thinking, there are eight focus points. These eight focus points include: playing, being innovative, taking risks, question posing, imagination, determination, immersion and working with intention. The researchers, Craft, McConnon, and Matthews, found that it is critical to stand back and give children the freedom to explore and develop their creativity effectively (McConnon, 2016: 19). Possibility thinking is the ability to see possibility in everything. Possibility thinking enables one to escape from negative situations and creative blocks. It involves seeing possibilities in everything and eliminating the fear of failure experienced by children and adults (Maxwell, 2019).Figure 2.6 is a model introduced by Craft as the 'Possibility Thinking model'. The model explains how the teacher and child could work together to accomplish success. The teacher enables the child by providing them with space, time, standing back and giving the child the right to act for them to be able to accomplish the eight steps of possibility thinking (Craft, McConnon & Matthews, 2012: 20). The most important section of this model in the study is to provide the children with freedom. This model encourages child-led thinking instead of dictating to the children.

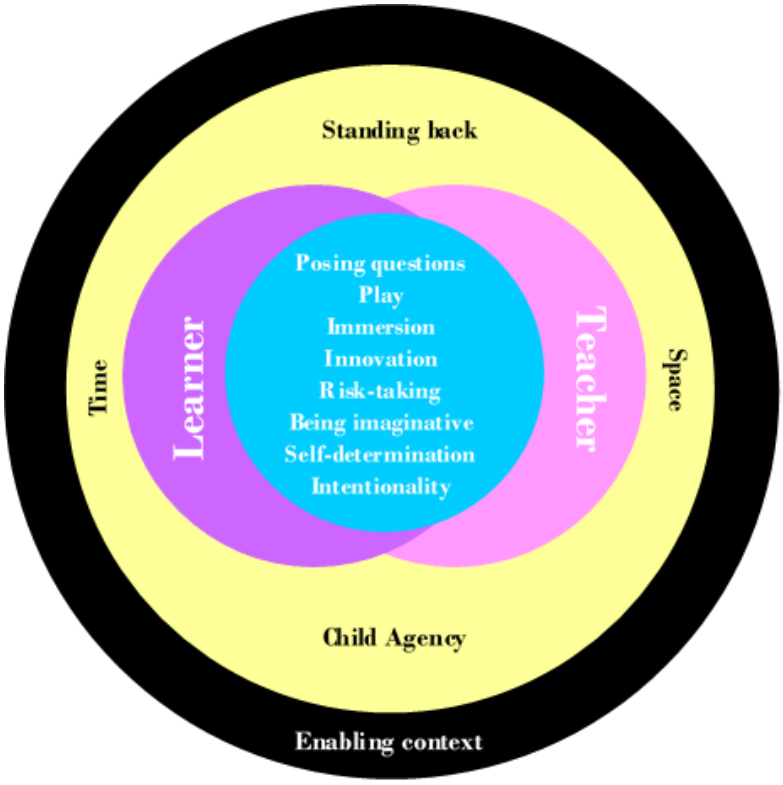

Figure 2.6: Possibility thinking model

(Adapted from Craft, McConnon & Matthews, 2012: 20)

2.12.7.3 Metcalfe's Creative Accidents Theory

Metcalfe believes that corrective feedback can address and eliminate accidents (Metcalfe, 2017: 470). Children learn through accidents, so having accidents is still a crucial part of learning. This study focused on Metcalfe's belief that creative accidents should be embraced to learn instead of correcting the accidents. Therefore, children were encouraged to embrace creative accidents.

2.12.7.4 Combining the theories

Pólya's problem-solving theory is at the centre of the identified theories. The children follow the steps to accomplish success when solving a problem. Possibility thinking combines with Metcalfe's theory on creative accidents; possibility thinking encourages children to embrace creative accidents by removing the fear of failure from their minds.

Creative accidents are encouraged by providing the children with provocations. The provocations evoke a reaction from the children. It is crucial for teachers to grasp the

concept of provocations, in terms of the argument above, and to understand the value of provocations in attempting to improve the creative thinking and problem-solving skills of preschool children.

2.13 Conclusion

In conclusion, art is very important in education overall to assist in utilising the imagination of children. Critical thinking, creative thinking and problem-solving are crucial skills in children's development. The REA is an approach that is unique in its ways of changing the education system. Although there are various aspects to the REA, the aspects that most influenced this study were documentation, provocations and the environment as the third teacher. This study aimed to incorporate the principles of the REA in combination with creative accidents to enhance and improve creative thinking and problem-solving skills. By incorporating the REA and possibility thinking, I aimed to place focus on the importance of learning through experiences. A child would not be able to understand the idea of a mistake if they had not made one yet.

In Chapter 3, the research methodologies of the study are discussed as well as the data generation methods.

Chapter 3: Research methodology

3.1 Introduction

In the previous chapter, the literature relating to this study and the theories underpinning the study were discussed. In this chapter, I discuss how this study's research methods and design were chosen and used. The advantages and limitations of the methods and the reasoning behind each method are discussed.

3.2 Research onion

Saunders, Lewis and Thornhill (2019: 130) proposed a 'research onion' to explain and include all the aspects of the research methodology. Each layer represents a different element critical to any study (Saunders, Lewis & Thornhill, 2019: 130). Figure 3.1 below indicates how the research progressed from an abstract idea to more detail as to how the data was generated. I adapted the research onion to also include the sampling method used for selecting the participants and the research sites. I added this section because I feel the sampling method is just as important as any of the other elements. Below is the research onion applicable to this study:

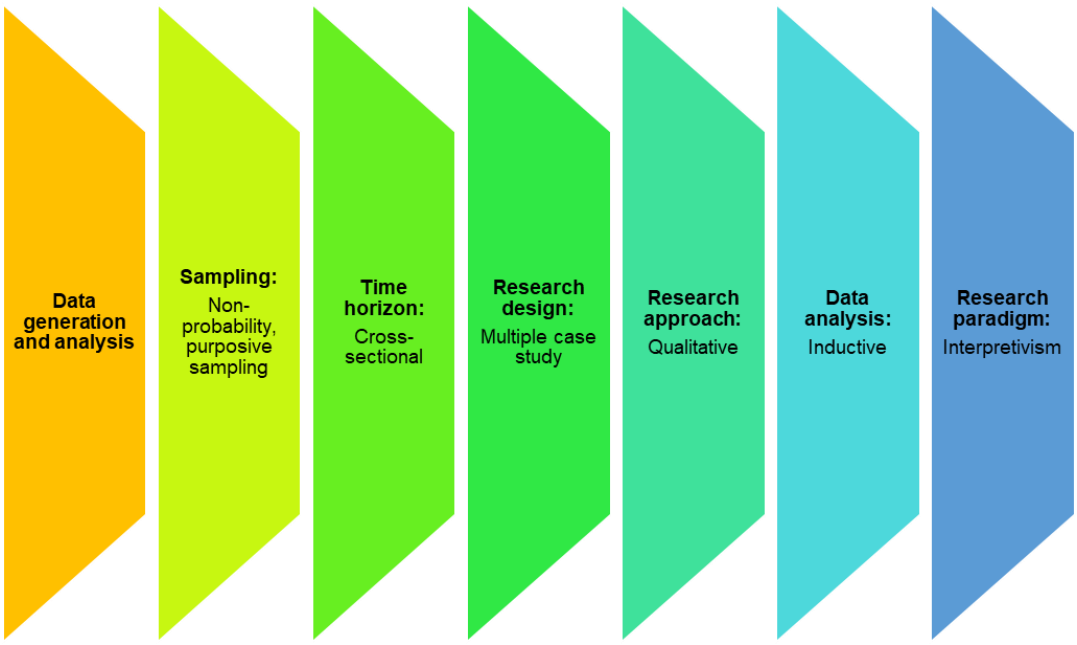

Figure 3.1: The research onion of this study

(Adapted from Saunders et al., 2019: 130)

The research process followed in this study was based on the process presented by Fink (2000: 4). Fink (2000: 4) divided the research process into seven steps, namely, thematising, designing, interviewing, transcribing, analysing, verifying and reporting. Figure 3.2 indicates the seven steps as well as a summary of each step:

Figure 3.2: The research process (Adapted from Fink, 2000: 4)

The research started with identifying the research problem. As art and creativity are important parts of learning for me, I wanted to determine how to enhance those skills in young children. I believe that children learn best through play and having fun; therefore, art was the most suited research topic because children are able to create

freely and express themselves through art. Further research indicated that art and creativity had been researched before, and it has not been researched in combination with problem-solving skills yet (Katz-Buonincontro & Phillips, 2011: 275). After identifying the gap in research, I decided on the study title and incorporated visual art, provocations, creative thinking, and problem-solving.

For the next step, I determined how the data was going to be generated. I decided on using an electronic qualitative questionnaire, semi-structured interviews, observations of the teachers presenting the art lesson and of the children while they are interacting with the provocations and a collaborative discussion. I incorporated the use of photographs, as part of Photovoice, and the children's artworks as part of the data.

The schools chosen to participate in the study were purposely chosen to represent different environments. These environments included a private preschool in an urban setting, a private school accommodating children from 3 months up to matric, and a private school in a rural setting also accommodating children from 3 months up to matric. The participating schools were all private institutions to save time, as a public school would have required authorisation from the Department of Education. Furthermore, private institutions tend to create less time for creativity, therefore, the private institutions would better align with what was aimed to be achieved through the study's findings. Conducting the research at private institutions would then provide a clearer difference in the children's creative thinking and problem-solving skills when incorporating provocations as part of the Reggio Emilia Approach. Government institutions are not always as resourceful as private institutions which results in them being more creative with the resources they do have. These schools were then contacted to request permission to conduct the research at their schools. After securing school permission, I prepared all the resources needed for the study. The teachers participating in the study were asked to present the lessons in order to ensure that the children were observed in their natural environment. Asking the teachers to present the lessons gave me the opportunity to stay objective and to avoid any direct involvement with the children. Observing the teachers while teaching gave a clear idea of how the children are taught daily. I set up a general lesson plan, for an art lesson, of what I expected. This lesson plan is available in Appendix E.

The research was then conducted at each school after carefully explaining to each teacher how data was going to be generated. The data was analysed using the thematic analysis method. Information was highlighted that corresponded in all the data generated, these words or phrases are known as coding. Through coding, categories were created.

The next step in the research process was determining whether the research questions were answered or not. This step was incorporated with the analysis step. Throughout the analysis of the data, the primary and secondary research questions were kept in mind to ensure that the categories created answered those questions.

The final steps included reporting what could be seen and then creating conclusions from what was perceived in the data. The findings were reported in combination with the researchers' opinions and comments.

3.3 Methodological approach

This study was based on the qualitative research approach. Qualitative research refers to research about people's experiences, feelings, emotions, lives, and behaviours (Rahman, 2017: 103). Educational research, specifically, refers to gaining more information about the education process or developing a specific body of knowledge where education is concerned (Khaldi, 2017: 15) This study was based on using the qualitative research approach to develop educational research. Educational research was developed by understanding teachers' perceptions of children's creative thinking and problem-solving skills, and how these can be improved. Therefore, qualitative research allows researchers to generate more in-depth data than they would have generated when working with numbers and statistics. Qualitative research aims to generate perspectives from multiple people to create meaning and to fully understand the research question rather than to generalise it (Rahman, 2017: 103). Qualitative research also provides researchers with the opportunity to study participants in their natural environments, producing more accurate data (Azungah, 2018: 384).

Creswell and Creswell (2018: 43) described qualitative research as a way to explore and understand groups or individuals. Qualitative data is generally generated from the participants' natural environment (Khaldi, 2017: 21). The data is analysed by looking

at small words or ideas and then transforming the words or ideas into categories for interpretation (Khaldi, 2017: 21). Generating data for a qualitative study can either be interactive or non-interactive referring to the role the researcher plays during the data generation stage. For the purpose of the study, that made use of interactive data generation, interactive data generation is discussed in more detail in this section. Educational research usually places the researcher in the role of an observer. During interactive data generation, the researcher aims to understand how individuals react to a certain phenomenon. This type of interactive data generation is known as phenomenology (Khaldi, 2017: 22). The phenomenology in this study, was that the researcher aimed to understand teachers' perceptions of children's creative thinking and problem-solving skills. In combination with understanding teachers' perceptions, the researcher also aimed to determine how children's creative thinking and problem-solving skills could be enhanced.

There were many advantages to using the qualitative research approach. The biggest advantage was gaining detailed insight into the participants' experiences, opinions, and feelings. The research approach aimed to understand the phenomenon holistically (Rahman, 2017: 104). The researcher can also be actively involved in the research by conducting interviews and observations. The research method was open-ended, and the participants felt comfortable voicing their opinions without the opinion of the researcher being forced onto them (Azungah, 2018: 384). The researcher remained objective during the duration of this study by havingby having access to the study supervisors' opinions during the observations as well as the data analysis stage. The supervisors of this study contributed to the study as second opinions to eliminate any possible bias of the researcher.

As the researcher, I made use of a smaller sample size due to the uniqueness of the study. The study was seen as unique because children's creative thinking and problem-solving skills have not yet been researched in combination with provocations. In my view, the study is unique because children's creative thinking and problem-solving skills have not been researched in combination with provocations. The smaller sample size allowed me to gain in-depth knowledge on the research topic instead of struggling through piles of data. Although the analysis of the data was more time-

consuming because of the in-depth nature thereof, the reasoning behind the smaller sample size was justified.

The researcher chose the qualitative research method in order to gain more insight and to answer the research question from of an in-depth investigation. The training and experiences of the researcher also influenced the type of method they chose to use (Creswell & Creswell, 2018: 65). As a teacher, I am trained to pay attention to detail and because of my love of writing stories, I chose the qualitative approach for my study. The qualitative method, as mentioned earlier, focuses on in-depth knowledge to understand the phenomena rather than just gaining surface knowledge. Therefore, referring to understanding the research question means gaining in-depth knowledge of whether the use of provocations in visual art could enhance the creative thinking and problem-solving skills of young children. Rahman (2017: 105) explained that the smaller sample sizes involved in qualitative research, make it difficult for findings to be generalised. The study was not aimed at generalising the findings but rather aimed to investigate how teachers understood children's creative thinking and problem-solving skills, and how teachers could use provocations during art activities to enhance these skills.

3.4 Metatheoretical paradigm

The word paradigm, in Greek, means pattern. Specifically in educational research, a paradigm is used to describe the researcher's view of the world (Kivunja & Kuyini, 2017: 26). The researcher's view of the world includes their thoughts, beliefs, and perspectives (Kivunja & Kuyini, 2017: 26). Kivunja and Kuyini (2017: 26) explain that researchers' view of the world influences how they interpret and form meaning of the data generated. The paradigm also influenced which data generation and data analysis method to be used. There are four major research paradigms. These paradigms include positivism, interpretivism, critical theory and constructivism. For this study, the interpretivist paradigm was applicable. Interpretivism relates closely to the qualitative research approach, as the paradigm is more focused on in-depth knowledge. The interpretivist paradigm takes into account the era leading to social

development, circumstances, and cultures influencing the participants (Alharahsheh & Pius, 2020: 41).

The main belief of the interpretivist paradigm is that reality is created by each person, no one's reality will look the same as it is subjective to what they perceive (Alharahsheh & Pius, 2020: 42). Further, interpretivists believe that people's knowledge cannot be taken away from them (Alharahsheh & Pius, 2020: 42).

The interpretation of the interpretivist paradigm rejects the idea that sense does not form part of our reality (Rehman & Alharthi, 2016: 55). Rehman and Alharthi (2016: 55) explain that interpretivists believe that there are multiple realities instead of a single reality. Researchers applying the interpretivist paradigm are emotionally involved with their subjects and they understand their subjects' version of reality by linking it to their previous knowledge of reality. Therefore, the researchers put themselves into the shoes of their subjects to fully understand how they interpret reality.

In combination with the interpretivist paradigm, interpretive phenomenology or hermeneutics could also have had an influence on this study. Interpretive phenomenology refers to interpreting and understanding participants' experiences (Tuohy, Cooney, Dowling, Murphy & Sixsmith, 2013). Phenomenology focuses on the lived experiences of the participants. The main aim of an interpretive phenomenologist is to interpret and describe these lived experiences to gain a better understanding of the phenomena on hand (Tuohy *et al*., 2013).

In summary, the interpretivist paradigm is set on experiencing the whole phenomenon instead of focusing on certain parts. The research was greatly influenced by the researcher's interest in further exploring the research question and participants' experiences through interviews and group discussions (Alharahsheh & Pius, 2020: 42). The reason for using this paradigm in the study was due to its holistic nature. The intrepretations of the paradigm's beliefs corresponded with the aims of qualitative research. Therefore, interpretivism benefitted the study by providing the opportunity to generate in-depth data and by valuing participants' experiences and opinions.

3.5 Role of the researcher

Bapir (2012: 5) describes qualitative research as focused on humans, researching different realities, interpreting data in a manner that supports the research topic, and attempting to understand and give meaning. Suzuki and Kopala (1999: 42) distinguish between the roles of a quantitative and qualitative researcher. The qualitative researcher's role is discussed in this study, as the study was based on the qualitative approach. The qualitative researcher is an actor, meaning the researcher becomes a part of the world of the participants. The researcher becomes involved by being a participant or non-participant observer as well as interviewing the participants (Suzuki & Kopala, 1999: 42). The researcher aims to live the participants' experiences. In this study, the researcher conducted non-participation observations and extensive interviews, where the participants' experiences were studied in detail.

Qualitative research can be difficult to understand. Qualitative researchers are encouraged to tell their stories through their research, but simultaneously, they are warned not to get too involved in their research. Telling a story makes it difficult not to be biased when gathering and analysing data (Holloway & Biley, 2011: 971). It has been reported that qualitative researchers get carried away and ask leading questions during an interview instead of open-ended questions (Holloway & Biley, 2011: 971). Holloway and Biley (2011: 971) describe this as the *Insider-Outsider Perspective*.

The qualitative researcher is a life-long learner when engaging in the data-generation process. The researcher has no control over the participants and does not aim to control their reactions or emotions, the researcher aims to learn from the participants (Suzuki & Kopala, 1999: 43). By opening themselves up to being learners, qualitative researchers can fully enter the world and experiences of the participants (Suzuki & Kopala, 1999: 43). The researcher did not attempt to control the outcomes of this study. Allowing the teachers to teach as they see fit and allowing the children to express their idea of creativity and problem-solving resulted in reliable and valid data. The researcher became a learner in this study to ensure that bias did not influence data generation.

Qualitative researchers are involved in their studies. Any emotion, whether positive or negative, intense or mild, is important in qualitative studies (Suzuki & Kopala, 1999: 45). To fully comprehend the data, these emotions need to be taken into account.

During the study at hand, the researcher made written observations about the emotions of the teachers and children. If a teacher was nervous or anxious, it was recorded and constituted part of the data analysis stage. The participants' emotions influenced how they reacted during the data generation process.

When completing data generation, qualitative researchers tend to get overly involved emotionally. This results in qualitative researchers analysing data according to their emotions (Suzuki & Kopala, 1999: 46). Therefore, it was imperative that the researcher showed empathy and understanding towards participants when generating data but took a step back when analysing the data. The researcher needed to stay objective when analysing the data in order to control the possibility of bias (Suzuki & Kopala, 1999: 46). During the data generation stage of this study, the researcher associated with the participants to fully understand their emotions and their daily lives, however, during the analysis of the data, the researcher viewed the information as faceless data. The researcher looked at what was written on the documents instead of thinking about the emotions of the researcher and the participants.

Holloway and Biley (2011: 972) are convinced that qualitative researchers are translators, which could lead to many possibilities for bias. When translating, researchers may give a different meaning to information than what the participants intended. The hidden meaning may be missed, or hidden meaning may be given to straightforward data (Holloway & Biley, 2011: 972).

Qualitative researchers are often criticised for not justifying their research methods enough and not being open about their methods (Noble & Smith, 2015: 34). The findings of qualitative research are also often criticised for being biased and mostly being the researcher's opinions (Noble & Smith, 2015: 34). Noble and Smith, (2015: 35) suggest nine strategies qualitative researcher can incorporate to ensure the credibility of their findings. These nine strategies are listed below:

1. Owning up to personal bias that may have influenced the study.
   In my own study, I realised that I may have focused more on one teacher's data in comparison to the other teachers' data because I felt it was more relatable to my study. Realising that I was being biased helped me to also look more carefully at the rest of the data generated.

2. Continuous reflection on methods used to ensure that the methods are relevant to the study and the data gathering.

   Continuous reflection was done on what I can improve in the observation lessons that were to follow, especially in terms of what worked and what did not work. The amount of time between the observations assisted in producing the time for reflection.

3. Keeping a record of all decisions and ensuring that all data are interpreted consistently.

   I ensured that I recorded all my notes immediately during the observations, interviews and the collaborative discussion. The data was also recorded using the same layout, ensuring consistency.

4. Representing different perspectives by referring to similar and contrasting research.

   In my literature review and research methodology, I aimed to find literature that was contrasting to ensure that I knew about different perspectives and so that I did not focus on one perspective only. I aimed to stay open-minded and to read as much as possible about the study, instead of claiming to already have all the knowledge.

5. Detailed descriptions and notes of participants to support the findings of the study.

   Detailed notes were made during all the data-gathering sessions like the interviews, observations and collaborative discussion. These notes were kept in my research notebook. General comments and notes were made throughout the duration of the study about anything that might have sparked an idea in my mind.

6. Clear explanations with regard to the processes followed during the interpretation and analysis of data.

   The data analysis and interpretation processes are clearly explained in Chapter 3.

7. Gain perspective from other researchers to minimise researcher bias.

   I contacted my supervisors as well as fellow researchers quite a lot during this study to ask for their opinions. Their outsider views assisted me in looking at the research from a different perspective and to minimise the bias that was forming in my mind.

8. Giving participants the opportunity to view transcripts and to comment on whether the transcripts reflect reality or not.

   Participants should be given the opportunity to view the transcripts. For this study, the participants were given the opportunity to view the full dissertation. Asking each participant to view their transcripts posed to be challenging considering the difficulty to find time in their schedules to conduct the interviews and the collaborative discussion. However, the transcripts were available for the participants to view at any time.
9. Using a variety of sources and participants (data triangulation) to create thorough findings.

   A list of different sources was researched to gain more knowledge on the topic of this study. The sample size of the study was kept to only nine teachers and their classes. Although the sample size was not big, the participants still varied from each other in a number of ways. I aimed to find teachers from different settings, different types of schools, ages, and years of experience.

In contrast to the other sources, Bapir (2012: 11) describes validity as believing and having confidence in your knowledge but not being sure of its truth. He further describes validity as to what extent the findings accurately represent the phenomena being researched. This indicated to me, as a qualitative researcher, that one of the most important roles of a qualitative researcher was to believe in your knowledge as well as the knowledge you gain from the findings. The study's trustworthiness is discussed in Section 3.11.

3.6 Research design – case study research

Over the years, case study research has become more popular because of the increasing knowledge and understanding of this type of research. A case study refers to an in-depth study of a person or a group of people (Gustafsson, 2017: 1). Case study research is aimed at understanding how or why the chosen phenomena work the way they do (Yin, 2018: 33). Case studies are commonly named after the situation or study applied with regard to how many cases are involved (Yin, 2018: 44). Therefore, if more than one case is involved in the study, it is referred to as a multiple-case study. Multiple-case study allows the researcher to analyse and generate data

from different situations and contexts. The data generated from a multiple case study is labelled as reliable because the data is generated from multiple sources and the similarities and differences between the sources are compared (Gustafsson, 2017: 9).

Yin (2018) defines a case study as a 'two-fold' design. Yin (2018) explains that a case study researches the phenomenon in its actual context in-depth because the researcher believes that the phenomenon cannot be studied abstractly. The researcher believed that the conditions within the real context would provide more in-depth data (Yin, 2018: 45). The whole aim of case study research is not to separate the participants from real-world conditions. Experimental research, for example, aims to remove the participants from any real-world conditions (Yin, 2018: 46). Bassey (1999: 23) describes case study research as being difficult to organise; however, researchers recognise the complexity of data generated from case studies. Case studies can, therefore, provide data to support alternative interpretations of phenomena. Bassey, (1999: 23) further describes case study research as being open to different interpretations of reality, and the insights gained from these interpretations can be used to discover a solution to the problem researched.

This study studied nine different schools and nine Grade R teachers. Although nine schools and teachers were part of the study, only three of these schools and teachers' data was presented in the study because of the richness of the data generated from these schools. The purpose of this study was to research teachers' views on children's creative thinking and problem-solving skills. In conjunction with that, the purpose was also to provide teachers with practical ways to incorporate provocations in everyday teaching to enhance children's creative thinking and problem-solving skills. Although determining whether provocations could have an influence on children's abilities is a field that needs much more research, I was able to get a glimpse of what the implications might be with this study. Therefore, data were generated from multiple sources to compare the similarities and differences between the sources and multiple cases. The researcher chose a multiple-case study to generate more in-depth knowledge on the research question. Studying multiple cases enabled the researcher to gain information from more than one source for comparative purposes.

Cohen, Manion and Morrison (2007: 256) share that, unlike experimental research, where variables are manipulated, case study research investigates a specific individual or group with the idea of gaining in-depth knowledge.

There are many limitations related to case study research. Research procedures still need to be applied to any case study research, not following the procedures will end in improper research and the study might seem sloppy. To avoid this, the study needed to have proper procedures in place (Yin, 2018: 50). Another limitation of case study research is that it cannot be generalised. Case study research is comparable if two or more cases were researched, however, case study research can still not be generalised (Yin, 2018: 52). In the past, case studies were seen as time-consuming and a very disorganised method of data generation. However, as time went by, the method improved. The study of participants does not have to be as time-consuming as ethnographies, and case study research was designed to generate data in the field without having to spend as much time in the field. Further, having proper data analysis strategies in place cancelled out the disorganisation associated with case study research (Yin, 2018: 53). The main limitation of case study research, as pointed out by Cohen *et al.* (2007: 256), is that case study research cannot generally be cross-checked as it is subject to bias and researcher subjectivity. Cohen *et al.* (2007: 256) highlighted that observer bias and subjectivity are difficult to prevent, no matter the attempts made to minimise the prevalence thereof.

One of the biggest advantages of case study research is the ability to accurately measure what the study intends to measure (Sprinz & Wolinsky-Nahmias, 2007: 34). The reason for this advantage is because case study research focuses on understanding the context in which data is generated, which in turn provides construct validity. Case studies can also identify new theories throughout the research, as the responses of the participants are unpredictable (Sprinz & Wolinsky-Nahmias, 2007: 35). This is an advantage, as the new theories could identify an even deeper understanding of the phenomenon at hand. Another advantage of case study research is the ability to generalise findings by proving that similar outcomes can be achieved by different methods (Sprinz & Wolinsky-Nahmias, 2007: 39). Thus, case study research does not attempt to generalise findings based on similar variables in a study, but rather by proving that no matter the path, the results may be similar. Further, Cohen *et al.* (2007: 256) share that case study research is presented in a way that is

more understandable and accessible to the public. The findings are put in plain language for everyone to understand. Case study research also contributes to the world it is researching. In other words, the findings of case study research can be interpreted, and the recommendations can immediately be used (Cohen *et al.*, 2007: 256). In this case, the schools, teachers and parents can use the recommendation of including provocations in their daily teaching.

Case study research has received criticism in the past for selection bias, which refers to researchers choosing participants based on their biased thoughts and feelings (Sprinz & Wolinsky-Nahmias, 2007: 39). However, researchers have defended these claims by explaining that selection bias helped them to prove whether a specific variable is needed for the outcome they had in mind (Sprinz & Wolinsky-Nahmias, 2007: 39). The limitations of case study research are more based on misconceptions, rather than limitations (Sprinz & Wolinsky-Nahmias, 2007: 45).

3.7 Participants and research sites

The population targeted by this study was qualified preschool teachers as well as preschool children in Grade R or between the ages of 5 and 6 years. The primary participants in this study were the teachers, and the secondary participants were the preschool children. The children in each of the classes were secondary participants as they were observed in collaboration with the teachers. Their reactions to the lessons presented were vital to the study as their reactions indicated whether their creative thinking and problem-solving skills were triggered by the lessons. Teachers and children complement each other. Teaching was not effective if learning did not take place. This specific population was chosen because the group should already have been taught the necessary problem-solving and creative thinking skills for their age according to the prescribed curriculum. Therefore, the teachers' views and educational styles were clear when working with the children. Further, the children had a larger vocabulary and understanding of what was explained and taught to them. Therefore, they better understood what was expected of them and that mistakes were not really mistakes.

The schools and teachers were given the names School 1 up to 9, and Teacher 1 up to 9. The children from each school were named according to their school as, for

example, 1.3 to signify child 3 at School 1. This made it easier to keep track of which school was referred to. The specific sample set was the following schools:

School 1

The school is a small private preschool in an urban setting. The school accommodates children from 3 months to Grade R. The school's LoLT is Afrikaans. The school had only 10 children in the Grade R class, and the teacher was still new to teaching. The view of the school is to let children be children and they have a farm-like atmosphere to the school. This school will be known as 'School 1' for the rest of the study.**School 2**

School 2 is a private school accommodating children from age 3 months to Grade 12. The school is also in an urban setting but is much more formal than the first school. The LoLT of the school is English. The school is Reggio Emilia-inspired and Grade R is known as Stage 5. There were 23 children in this class and the teacher had quite a few years of teaching experience. This school will be referred to as 'School 2' for the remainder of the study.

School 3

School 3 is a private school in a rural setting. Lately, the setting is classified as urban, however, the school still has more of a rural feel. This private school accommodates children from 3 months through to Grade 12. The LoLT of the school is Afrikaans and English. The Grade R class was combined with the Grade RR class and consisted of 12 children. The classes were combined because of the limited enrolments for Afrikaans learners. The teacher had many years of experience in teaching. The teacher studied in the Further Education and Training phase, which is Grades 10 to 12, but later moved to Early Childhood Education. The school is formal in its teaching. Further on, the school will be known as 'School 3'.

School 4

School 4 is a private school accommodating children from 3 months up to Grade 12. The LoLT of the school is English and the curriculum followed is IEB. Teacher 4 had 5 years of teaching experience and taught a class of 15 children.

School 5

This school is a private preschool. The LoLT of School 5 is Afrikaans and the CAPS curriculum is followed. The class I observed only had 8 children and the teacher was an experienced teacher. The teacher had 10 years of teaching experience.

School 6

School 6 is a school that follows the IEB and CAPS curriculums. This school accommodates children from the age of 3 months up until Grade 12. The LoLT is English and the class consisted of 20 children. Teacher 6 only had 3 years of teaching experience.

School 7

This school is a private preschool with English as the LoLT. School 7 follows the CAPS curriculum. The class consisted of 12 children and the teacher had 12 years of teaching experience.

School 8

School 8 is an Afrikaans private preschool. The teacher of this school taught a class of 25 children. She had 15 years of teaching experience and wais, therefore, an experienced teacher. This school follows the CAPS curriculum.

School 9

This school is a private school accommodating children from the age of 3 months up to Grade 12. The LoLT is English and the IEB curriculum is followed . Teacher 9 had 6 years of teaching experience and she taught a class of 15 children.

The sampling method chosen for this study was non-probability sampling, and specifically, purposive sampling. This sampling criterion focused on the researcher's judgement as to who would be a good fit for the study (Etikan & Bala, 2017: 1). The advantage of making use of purposive sampling was that this method could be used in qualitative research that required multiple goals (Berndt, 2020: 226). The choice of the sample could also be justified on theoretical as well as logical grounds. Although, there were still disadvantages to this method. The choice of the sample could be biased and if the choice was not explained clearly, the sample choice could be difficult to defend (Berndt, 2020: 226).

The researcher planned for specific types of schools to use in the study to prevent bias. The researcher wanted to include a variety of schools; therefore, chose to use a school in a rural setting, an urban setting with a rural feel, and a school in an urban setting, among others. Each school indicated which teacher should participate in the study, and the researcher did not select the teacher. The reason for using purposive sampling was mainly to select schools that were accessible in terms of distance and safety. The participants were chosen based on their schools. The schools provided teachers and classes they felt would best fit the research study.

3.8 Data generation

The data was generated through electronic qualitative questionnaires, classroom observations, semi-structured interviews, Photovoice, and a collaborative discussion. Each data generation method is discussed below.

3.8.1 Electronic qualitative questionnaire

For this study, an electronic qualitative questionnaire was set up to gain demographic information on the participants and their schools before interviewing and observing them. An electronic qualitative survey can be called a Google form, or an online form participants are asked to complete. Electronic qualitative questionnaires enable the researcher to reach a bigger sample group, get quick responses, and generate the data easily (Jones, Baxter & Khanduja, 2013: 6). With electronic qualitative questionnaires, the researcher made use of visual representations that engaged the participants. Visual representations could be anything from cute cartoon pictures to graphs for explaining the research. The use of images engaged participants because it automatically made the qualitative survey more interesting than just having words on a page (Olivers, Peters, Houtkamp & Roelfsema, 2011: 362).

The limitations of electronic qualitative questionnaires include a low or no response rate (Jones, Baxter & Khanduja, 2013: 6). This can be a big problem when the researcher expects to generate data from a large group. However, this study only had nine participants who completed the form, therefore, this was not a problem as in-depth data was solicited.

The participating teachers were asked to complete a Google form, used as the electronic qualitative questionnaire, before conducting the interviews and observations to better understand the school they worked at and their teaching styles. The form functioned as background information to help the researcher prepare better for the observation lessons.

3.8.2 Semi-structured interviews

Semi-structured interviews are open-ended interviews mixed with some close-ended questions (Newcomer, Hatry & Wholey, 2015: 365). During the interviews, the researcher could also ask follow-up questions to get participants to elaborate on their answers. Semi-structured interviews require much preparation, and it is time-consuming. Conducting individual interviews with a large group results in many transcripts to analyse, which takes up much time (Newcomer *et al*., 2015: 366). Conducting semi-structured interviews allowed the researcher to ask open-ended questions (Newcomer *et al*., 2015: 367), and because the interviews were individual, the participants could share their thoughts freely.

The teachers participating in the study were interviewed before the observation lesson. They were asked how they taught art lessons, incorporate provocations and handle mistakes during art lessons, among others.

The interviews were conducted over Zoom in order to make a recording of the interview as well as for COVID-19 safety measures. The main purpose of the interviews was to better understand how the schools operated and how the teachers' viewed and taught the phenomenon. The interviews allowed for an inside look at what happened during school art lessons. In Appendix G, the interview questions can be viewed.

3.8.3 Classroom observations

Classroom observations refer to studying the participants in their natural environment to gain more insight into a topic not yet well-researched (Queirós, Faria & Almeida, 2017: 376). Through observation, data could be generated from multiple sources without interrupting the participants in their natural environment. Classroom

observation was a way of generating data that was not intrusive, the researcher stayed on the sidelines without getting involved in the situation (Queirós *et al.,* 2017: 376).

Observing participants required the researcher to stay in the participants' environment long enough to make sense of their daily lives and why they reacted the way they did to certain phenomena (Woodside, 2010: 321). According to Hancock and Algozzine (2006: 47), there are five factors to consider when conducting classroom observations. The first factor is identifying what should be observed before going into the field (Hancock & Algozzine, 2006: 46). The second is that the researcher should create a guide for when the observations are taking place to keep track of what the intent of the observations was (Hancock & Algozzine, 2006: 46). The third is the most important factor, the researcher should gain access to the participants, and clearly state who he/she is observing and why (Hancock & Algozzine, 2006: 47). Being open about the observation gains the trust of the participants, and the researcher should remember to stay on the sidelines. Staying on the sidelines means that the researcher should refrain from actively engaging with the participants during the observations. The fourth factor explains that the researcher should be mindful of their role as a researcher to avoid bias, as the researcher is actively involved during the observation (Hancock & Algozzine, 2006: 47). The last, and fifth, factor requires the researcher to follow the ethical requirements of the study (Hancock & Algozzine, 2006: 47). Therefore, the researcher needs to obtain consent from the participants before any observations can take place. A full discussion regarding the consent obtained for this study is provided in Section 3.12.1.

The disadvantage of classroom observations is that it was time-consuming, and the researcher has to be available to visit the specific place where the data was generated (Queirós *et al*., 2017: 376). The interpretation of the observations can also be biased if the researcher does not stay objective (Queirós *et al*., 2017: 376). In order to avoid being biased, during this study, the researcher made use of second opinions from the supervisors.

The researcher observed primary and secondary participants. The primary participants referred to the teachers, and the secondary participants to the children. The primary participants were observed on how they presented the lesson, their incorporation of mistakes in art, and how the provocations provided were used to

awaken the creative abilities of the children. The secondary participants were observed on how they reacted to the teachers' use of provocations in art lessons. Their artworks were observed and compared to the literature to determine if they could apply problem-solving skills and still be creative.

As mentioned earlier, learning through play and expressing one's creativity was important to me as the researcher of this study. Therefore, this study focused on children's creative thinking and problem-solving abilities. Nine different schools were chosen based on their locations and whether they had Grade R classes. The Reggio Emilia Approach lies close to my heart because of the embedded principles. The 100 languages of children proposed by the founder of the approach, Loris Malaguzzi, was something I tried to remember during everyday teaching in my class. Children have their abilities, which differ greatly from their friends' abilities. The concept of the 100 languages explains that children learn and communicate in diverse ways and that each child is unique in their approach, much like when they engage in creating artwork. Some children may be more mathematically minded and prefer using straight lines and shapes more so than a more artistic and abstract child.

The researcher visited the nine different schools and observed an art lesson presented by the teacher. A broad idea was given to the teachers of what was expected of them. The broad idea included them using either the book *'My Beautiful Oops'* or *'The Book of Mistakes'* as the main provocation, getting the children's creativity flowing. They were also given a hand puppet they could incorporate as they wished. Further, the children were divided into three groups. The researcher provided A4 pages with 'mistakes' combined with scrap paper, glue and coloured pencils or crayons to create something from the 'mistakes'. This activity was the main activity. The first side activity involved building wooden blocks, which incorporated problem-solving skills. The second side activity involved covering the table with a large piece of paper and setting out paint supplies. There were paintbrushes and sponges provided to the children; however, they were encouraged to use their hands and fingers to explore and mix colours. A complete discussion regarding how each school's children reacted to this activity is presented in Chapter 4.

As part of the classroom observation, notes were taken during the entire observation as well as photographs. The artworks created by the children were kept as part of the

observation. The notes and photographs helped with the documentation process as they assisted the researcher in remembering what happened during the observation and what each child had to say about their artwork. The documents contained comments about each child's artwork, the observation schedule, and an observation report. The artwork and photographs were evidence of the lessons presented by the teachers.

The researcher took on the observer role and did not interfere with the lesson. The reason, therefore, was to ensure that the teacher and the children were in their comfort zones and natural states. The researcher did not interfere with the lessons and was seated at a table to the side. The researcher also documented the lessons regarding how the children described their artworks. The classroom observation schedule is available in Appendix H.

3.8.4 Photovoice

Photovoice is a data generation and analysis method that has become increasingly popular in education research. However, the method is still developing and, because of that, still faces much criticism (Tsang, 2020: 137). The approach to Photovoice used in this study is the phenomenological approach to Photovoice. This approach refers to creating meaning from photographs and finding patterns in the various photographs used in the research (Tsang, 2020: 137).

One of the main advantages of using Photovoice was for the researcher to be able to see the true personality of each participant; in the photographs they were in their natural environments. The participants were not influenced by the researcher by, for example, being guided in an interview (Tsang, 2020: 139). Photographs also enhanced the study's trustworthiness by providing physical evidence (Tsang, 2020: 139).

Researchers should be careful not to misinterpret the photographs and lose the actual meaning behind them (Tsang, 2020: 139). To avoid interpreting the photographs to accommodate the researcher, the researcher kept notes during the observations to support the photographs. The photographs were thus supported by notes made at the

same time as the photographs were taken, to minimise making up citations for the photographs.

3.8.5 Collaborative discussion

Collaborative discussions are designed to work through a specific issue. Collaborative discussions are similar to group interviews; however, contrary to group interviews, the discussion during a collaborative discussion is generated as data (Tausch & Menold, 2016: 2). Collaborative discussions are set up to engage with the participants in a discussion where they explore similarities and differences in opinions rather than the researcher posing questions and the participants answering (Tausch & Menold, 2016: 2).

Collaborative discussions can be challenging to manage if too many participants participate. The researcher might struggle to keep track of every participant's contribution, in such a case. Further, the group might get too noisy, and some might get distracted. Therefore, the perfect sample size would be 6-8 participants (Tausch & Menold, 2016: 3). Analysing the data could be time-consuming due to the messy nature of the data generation method.

The sample size for this study was nine participants, therefore, they were able to interact easily, and the researcher was able to keep track of the discussion. This data generation method added valuable data to the study because the participants were able to express their opinions freely and build on each other's ideas.

As mentioned in the research design, participants were informed from the beginning that after completing the electronic qualitative questionnaire, conducting the interviews, and presenting the observation lesson, they would all partake together in a collaborative discussion via Zoom. The teachers were asked various questions relating to how they experienced the lessons and various questions relating to how they experienced the incorporation of provocations. The teachers were allowed to contribute to each other's ideas and opinions.

3.9 Data recording procedures

The data generation methods mentioned above needed to be recorded to analyse the data later. The data recording procedures are discussed below.

3.9.1 Recording of the electronic qualitative questionnaire

The electronic qualitative questionnaires were completed using Google Forms. Therefore, the forms could easily be downloaded from Google Sheets, which is linked to Google Forms, into a Microsoft Excel document. Google allowed for the responses on the form to be downloaded as one document. The questions were listed at the top, and the nine responses were listed under each question. This made the recording easy, and almost no time was spent recording the generated data.

3.9.2 Recording of the semi-structured interviews and collaborative discussion

The semi-structured interviews and the collaborative discussion were conducted over Zoom, allowing for the interviews to be recorded for transcription later. The transcription of the interviews and observations was done in moderate detail by the researcher; unimportant phrases, like ‘uhm’, were left out of the transcriptions. The reason for this omission was to save time and to minimise unimportant phrases in the transcriptions. The transcriptions were time-consuming but ensured the quality of the transcriptions.

3.9.3 Recording of the observations

An observation schedule was used to ensure that everything intended and unintended was observed. The observation schedule was split into three sections. Section A observed the teacher’s teaching style, looking at the influence the teacher’s teaching style had on the children and how the teacher introduced the provocations. Section B focused on the children’s interpretation of the provocations, and this looked specifically at whether the children showed creativity, confidence, and consistency. Section C intended to evaluate how the artworks changed from the beginning ideas to the end and how well the teacher’s lesson corresponded with the lesson outline provided. The

observation schedule was completed electronically to easily store and record the intended observations. A further document was set up with the unintended observations, explaining in detail everything observed with quotations, where possible. Recording the observation notes as soon as possible was essential to ensure that the researcher still recalled everything observed.

3.9.4 Recording of the artworks

During the lessons presented by the teachers, the children were expected to create artwork. The explanation behind each artwork was written down in the researcher's observation book with a number corresponding to a number written on each artwork. The explanation behind each artwork was later typed out in a Microsoft Word document. The artwork of each school was filed according to each school for easy access at a later stage. The artwork was also individually photographed to be easily inserted into the research document later in the study.

The artwork expected in the study was anything that showed each child's creativity. They had to work with the splatters and stains on their paper to create something creative that showcased their abilities. If they could see a pig in the splatters, for example, and successfully used the splatters as a pig and added feet and grass to the picture, they would have been successful.

3.9.5 Recording of the photographs

Each photograph taken at the schools was first uploaded to folders named with each school's pseudonym. Thereafter, the photographs were censored to protect the identities of the teachers and the children. Later, the photographs were copied into a Microsoft Word document to caption each photograph, explaining what was taking place in the photograph. This enabled the researcher to copy and paste the photographs and captions into the study, where required.

3.10 Data analysis and interpretation

The data analysis method used in this study was inductive data analysis, which is discussed in detail below.

3.10.1 Inductive data analysis

Inductive data analysis refers to researchers working through each line of the generated data to determine the categories that emerge from the data (Azungah, 2018: 393). The categories were the generated data elements that corresponded to the data generated. These categories were determined by keeping the research questions in mind. This type of data analysis ruled out the possibility that the researcher had pre-determined the outcome (Azungah, 2018: 393). The researcher did not prescribe to the participants what they should say and how they should act in their natural environment.

One way of conducting inductive analysis is to list each case's keywords in a table, which are known as the case codes, and then determine the overlapping codes (Azungah, 2018: 394). The overlapping codes are then grouped into categories, forming the overall categories of the study.

Azungah (2018: 394) raises a concern that this method of analysing the data can be subject to the researcher’s bias. When analysing the data, researchers may look for the data or theme that confirms their initial beliefs and assumptions (Azungah, 2018: 394). Therefore, it is important to look at the data with an objective rather than a subjective view.

The researcher analysed the data generated by identifying overlapping categories in all the cases. The categories were placed into columns to easily identify the overlapping categories. Assigning numbers to the data and then comparing the categories complicated the process. To stay objective, the study's supervisors also looked at the categories presented in the data to eliminate researcher bias.

3.11 Quality criteria

When looking at validity and reliability, they refer to research and data that are trustworthy and credible (Nieuwenhuis, 2016: 80). The key criteria for trustworthiness was introduced by Lincoln and Guba (1985: 991), as applicability, credibility, conformability, and dependability. Lincoln and Guba (1985: 316) explain that validity is sufficient to establish reliability. Involving more than one observer or researcher can help to establish trustworthiness. Therefore, in this study, the secondary opinions of the supervisors ensured that the researcher was not biased.

In qualitative research, the term triangulation refers to the use of a variety of sources to develop a clear understanding of a phenomenon (Nieuwenhuis, 2016: 81). A triangle is the strongest shape and different sources forming this triangle of data ensured that the research was trustworthy. The triangulated findings from the data contributed to the trustworthiness of the data, as the reader was able to see the same pattern throughout the research (Nieuwenhuis, 2016: 81).

Credibility is the accurate depiction of the participants' views and the researcher's interpretation (Cope, 2013: 89). The credibility of a study can be enhanced by verifying the study's findings with the participants. When the researcher can prove that the data generated is true and not compromised by the researcher's bias, it is referred to as confirmability (Cope, 2013: 89). Authenticity can be seen in the way the researcher quotes the participants' passion (Cope, 2013: 89). The readers are drawn into a qualitative study by the emotions of the participants and how these emotions are depicted.

To support the trustworthiness of this study, the researcher included various data generation methods. These methods included an electronic qualitative survey, interviews, observation, and a collaborative discussion. Further, the researcher minimised possible bias by asking the supervisors to weigh in on the findings. The participants were also allowed to verify the study's findings. All the recordings and transcripts were kept safe as a track record for the study.

According to Klein and Myers (1999: 72), researchers, or people in general, understand complex ideas by breaking them down into smaller sections and by understanding the smaller sections' relations. This concept is better explained in the

Principles for Interpretive Field Research designed by Klein and Myers (1999: 72). Seven principles were introduced, which are discussed below:

1. The fundamental principle of the hermeneutic circle

   This principle refers to the belief that understanding is achieved by breaking down complex ideas into smaller parts (Klein & Myers, 1999: 72).

   During this study, I focused on the separate terms present in the title to ensure that I aimed to understand each of the smaller concepts before I formed a bigger concept. For example, the terms provocations, problem-solving, critical thinking, and creative thinking were all discussed separately.

2. The principle of contextualisation

   The background of the study should be clearly explained to show how the research has changed the situation (Klein & Myers, 1999: 72).

   The background of each of the schools is clearly explained in Chapter 3 and 4. The impact the study had on these schools through the use of provocations is also explained further in Chapters 4 and 5.

3. The principle of interaction between the researchers and the subjects

   This refers to how the generation of the data has affected the ideas and opinions of the researcher (Klein & Myers, 1999: 72).

   As a researcher, no matter how hard one tries not to, one walks into an observation with an idea of what the outcome will be. One has set opinions on what one thinks the participants' answers will be. However, I was open to new ideas and I allowed the teachers to share their thoughts. My thoughts and opinions changed after paying attention to the teachers and not focusing on my own ideas.

4. The principles of abstraction and generalisation

   The data needs to be represented by following the first two principles (Klein & Myers, 1999: 72). The data should be broken up into smaller pieces and the overall effect of the study should be clearly depicted.

When analysing the data, each teacher's data was discussed separately, thereafter, all the data was combined to create a general analysis. The analysis of the data is discussed in Chapters 4 and 5.

5. The principle of dialogical reasoning

   The researcher should describe how the research findings might have differed from the initial thoughts (Klein & Myers, 1999: 72). The findings might not align with the researcher's initial expectations or intentions.

   In Chapter 5, the researcher's initial thoughts compared to the final findings are discussed.

6. The principle of multiple interpretations

   The participants may hold varying views and interpretations. The difference should be highlighted and discussed in the findings (Klein & Myers, 1999: 72).

   The participants all had different views, some of their views were aligned, while others differed. These views are discussed in Chapter 4.

7. The principle of suspicion

   The researcher should keep in mind that the participants' views might be biased (Klein & Myers, 1999: 72). Therefore, the participants' contributions should be handled with sensitivity.

   Although the participants may not be able to substantiate their opinions, it was still interesting to hear their diverse perspecives. However, these opinions should be handled with sensitivity.

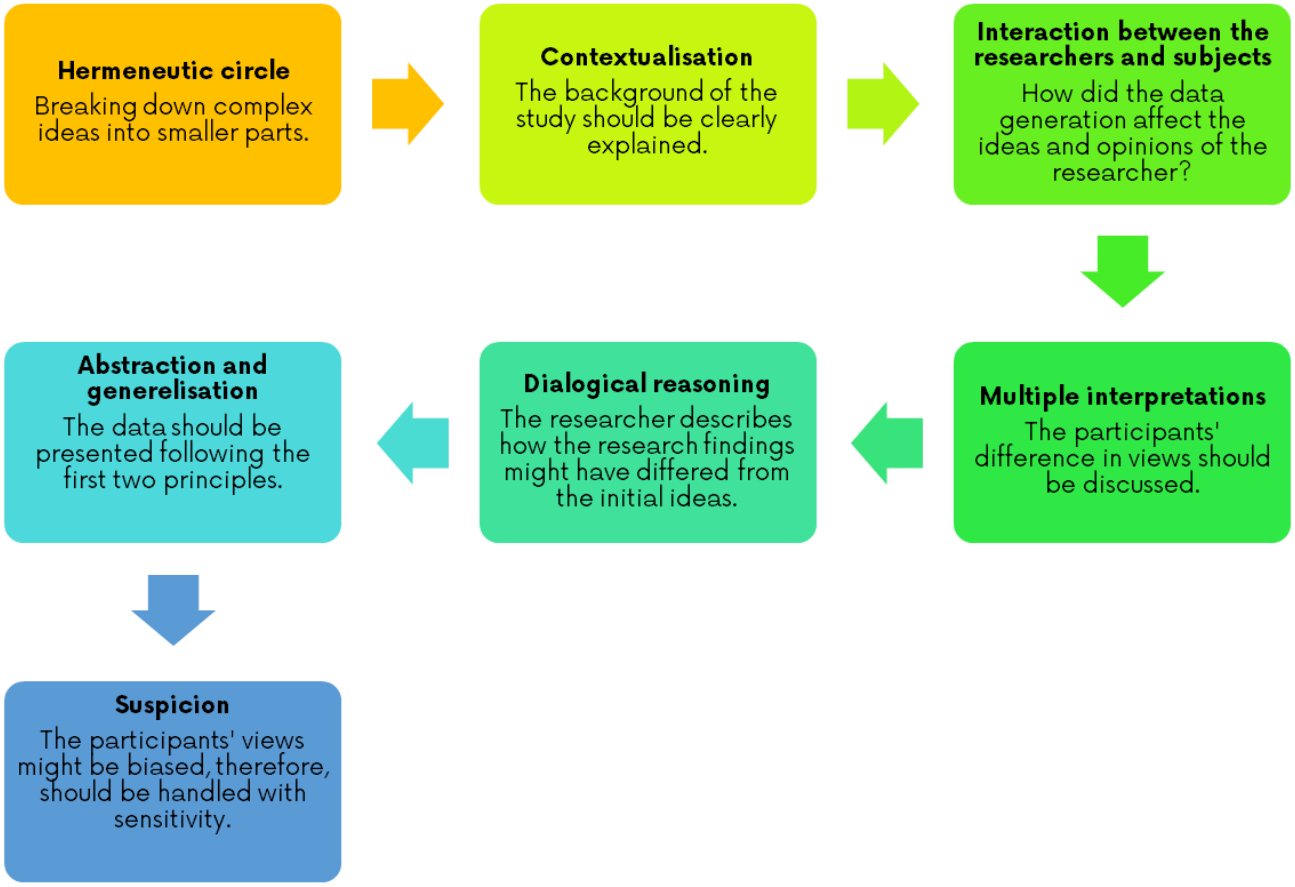

Figure 3.3: The Seven Principles for Interpretive Field Research

(Adapted from Klein and Myers 1999: 72)

While the Seven Principles of Klein and Myers (1999: 72) were established a few years ago, these principles still remain relevant and applicable to current research. These principles were incorporated to ensure the trustworthiness of this study. Below, Figure 3.3 summarises the seven principles.

3.12 Ethical considerations

The ethical considerations of this study are divided into two sections. The first relates to consent, and the second relates to confidentiality and anonymity. These two sections are discussed in more detail below.

3.12.1 Consent

There were various ethical aspects to consider in this study. The first was informed consent and voluntary participation. When participants were chosen, it was essential that the participants agreed to freely take part in the study (Arifin, 2018: 30). The participants also had to clearly understand what was expected of them, and they had to give consent (Arifin, 2018: 30). For this study, the participants were informed of the expectations, and they were not forced to take part in the study. The participants were able to withdraw at any given time if they did not want to be part of the study anymore for whatever reason. The teachers and the school management board were asked to give written consent. The parents were asked to give consent for the children, since they were underage. Further, the children also gave assent by completing a child-friendly form.

3.12.2 Confidentiality and anonymity

Confidentiality and anonymity were the second considerations. The teachers were assigned code names, Teachers 1-9 to protect their privacy. The names of the schools were also kept confidential by referring to them as Schools 1-9. The children were referred to as, for example, Child 1.3, which indicated that the child was at School 1 and was the third child at School 1. During the Zoom interviews and collaborative discussion, the teachers were asked to change their display names to their given pseudonyms. They were also asked not to mention any identifying details during the collaborative discussion. The teachers' cameras were also switched off during the Zoom meetings. During the Zoom meetings, recordings were made, the teachers were informed about this and asked for consent before the recordings were made. Further, in the photographs taken, the children's faces are not shown. The children's names were also not shown in any notes or photos.

The Faculty of Education Ethics Committee of the University of Pretoria granted the necessary permission to conduct research before any schools were contacted or visited. All data generated were safely stored at the University, where only the researcher and the research supervisors could access it.

3.13 Conclusion

Chapter 3 provided a clear understanding of the methodologies and approaches used to conduct this study. The ethical considerations required for the study were also discussed in detail. Through this chapter, the reasoning behind the methods used in this study, can be seen. In Chapter 4, the data generated is discussed in detail. The codes identified from each case and the overall categories are discussed, as the researcher observed them.

Chapter 4: Data analysis

4.1 Introduction

In Chapter 3, the research methods used in this study were explained as well as the approaches used to conduct the study. In this chapter, the data generated is discussed as determined during the data analysis. Each school and the data collected from that school are discussed in detail in this chapter, alongside photos to give the readers a visual representation of the data and to explain the study's findings. Although nine schools formed part of this study, only three of those schools form part of the data discussion in this chapter because of the richness of the data collected from these three schools which would result in a more detailed and focused data analysis and discussion. Teacher 1 was chosen because she was the teacher with the least experience, Teacher 2 was chosen because she is situated at a school that implements the Reggio Emilia approach and lastly Teacher 3 was chosen to incorporate a realistic school environment where substitute teachers sometimes have to teach the lessons for the day. The other teachers provided shallow responses which justified the need for teacher training. The data analysis process is discussed in more detail in the next section.

4.2 Data analysis process

Each teacher's data separated the discussion of the generated data, the electronic qualitative questionnaire data, and the collaborative discussion data. Each teacher's data consisted of the interview and the observation conducted at the school. Table 4.1 below shows the different data sources that were generated as well as a description of each data source:

Table 4.1: Explanation of the data generation sources

Type of data	Description
Electronic qualitative questionnaire	Before the interview and observation were conducted, the teachers each filled in an electronic qualitative questionnaire. It was in the form of a

		Google Form to provide background knowledge to the researcher.
Teacher's data	**Interview**	Each teacher was interviewed using an interview schedule that can be viewed in Appendix G.
	Observation	Each teacher presented an art lesson which the researcher observed. Data was recorded using an observation schedule that is available in Appendix H.
Collaborative discussion		At the end of all the interviews and observations, the teachers were asked to take part in a collaborative discussion where they could all share their thoughts with each other as well as the researcher.

The data generated is first discussed separately then each data set is compared to the rest of the generated data. The data was analysed by searching for keywords in each data set. After that, the keywords were all written down under headings determined by the questions of the different data sources, like the interview schedule, for example. The keywords and headings were then all combined to determine the categories of the combined data. All the categories are discussed in detail in this chapter. Figure 4.1 shows how the data was analysed:

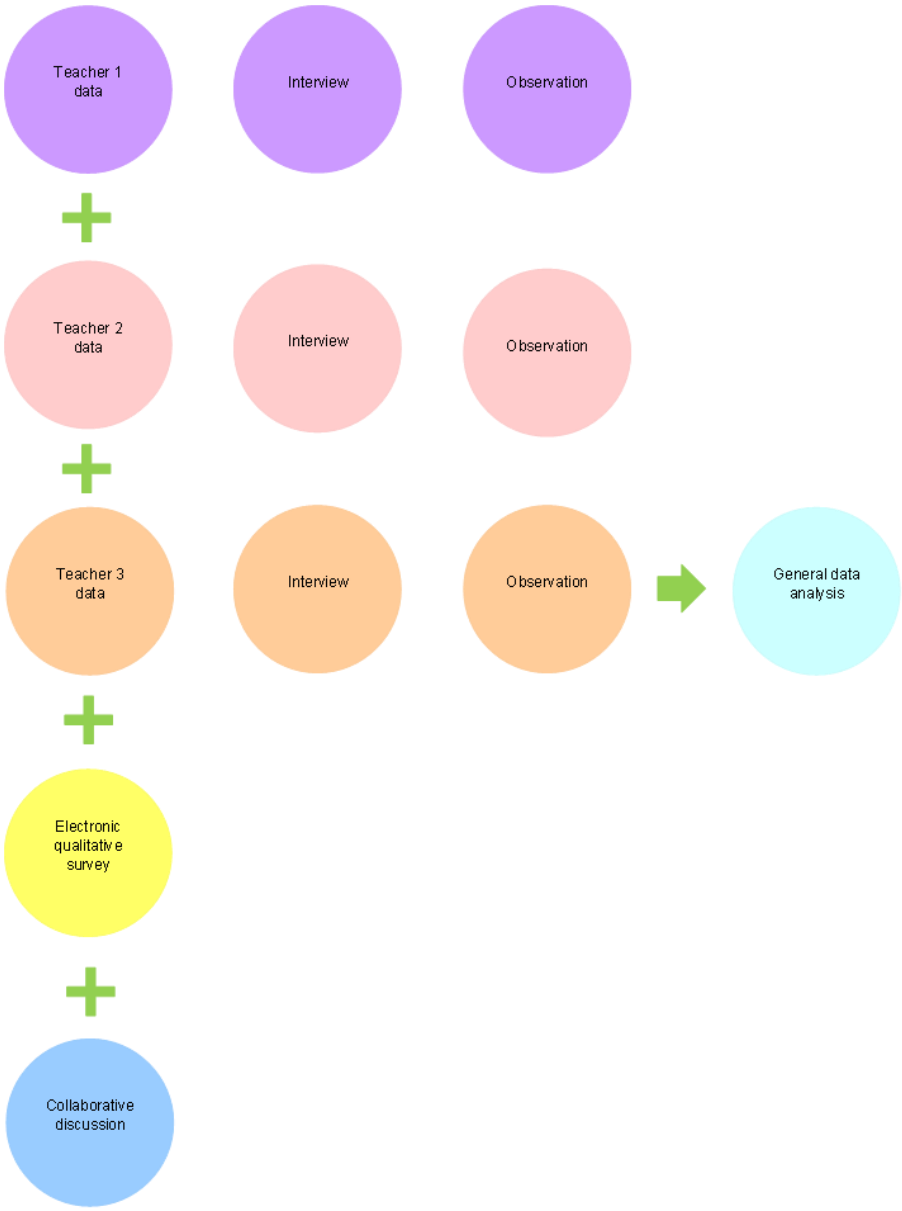

Figure 4.1: Data analysis process

The art lesson at each school started with a discussion and reading of the books. The stations were set up for the block building as part of problem-solving, painting on the large sheet of paper as a group creative activity, and creating something from the ‘mistakes’ on the A4 paper, which was the main activity. These ‘mistakes’ can be referred to as creative accidents[1].

Figure 4.2: School 2

The Teacher introduced the lesson by discussing what art is.

[1] Creative accidents were not really mistakes but rather a big part of the provocations used. It refers to an accident made while trying to create an artwork, which could be turned into something beautiful.

Figure 4.3: School 1

One of the children interacted with the block play station.

Figure 4.4: School 3

The painting station set up at School 3. The children engaged with stamps combined with the paint.

Figure 4.5: School 1

Some of the children worked at the main station, the A4 papers with mistakes.

4.3 Explanation of the categories

The data gathered emanated from keywords in each of the data sets. The keywords were then used to identify categories in the data. During the analysis of the data generated in this study, different categories were prominent in the data. Table 4.2 sets out the different categories identified for each teacher as well as for the collaborative discussion:

Table 4.2: Prominent categories in teacher's data

To further divide the data, for a more precise understanding, subcategories were created under each of the teacher's main categories. Table 4.3 explains the subcategories:

Teacher 1	Teacher 2	Teacher 3	Collaborative discussion
Areas for improvement with the implementation of provocations	Enhancing children's creative thinking skills	Creative thinking skills of the children	Creative accidents
The environment and its influence	Enhancing children's problem-solving skills	Problem-solving skills evident in the children	Creative thinking and problem-solving skills
The children's creative thinking and problem-solving abilities	Elements for successfully incorporating provocations	The role of the teacher and areas for improvement	The use of provocations
	The role of the teacher and her influence		

Table 4.3: Subcategories evident in the teachers' data

	Teacher 1	**Teacher 2**	**Teacher 3**
Main category	Areas for improvement with the implementation of provocations	Enhancing children's creative thinking skills	Creative thinking skills of the children
Subcategory	The teacher's influence	Elements for successfully enhancing children's creative thinking skills	The influence of confidence on creative thinking skills
Subcategory	The creative thinking skills evident in the children	The teacher's influence on the development of creative thinking skills	The use of provocations to enhance creative thinking
Subcategory	The problem-solving skills evident in the children	Creative accidents present in the environment	Creative thinking skills evident in the children
Subcategory			Creative accidents present in the classroom

	Teacher 1	Teacher 2	Teacher 3
Subcategory			The teacher's influence on the development of creative thinking skills
Main category	The environment and its influence	Enhancing children's problem-solving skills	Problem-solving skills evident in the children
Subcategory	The classroom environment	Confidence as a key factor in developing problem-solving skills	Everyday problem-solving
Subcategory	The environment set by the teacher	Successfully enhancing problem-solving skills	Creative problem-solving
Subcategory			The teacher's influence on the problem-solving skills of the children
Main category	The children's creative thinking and problem-solving abilities	Elements for successfully incorporating provocations	The role of the teacher and areas for improvement

	Teacher 1	Teacher 2	Teacher 3
Subcategory	Enhancing children's creative thinking skills through confidence	The importance of an introduction to new topics	The role of the teacher in children's development
Subcategory	Enhancing creative problem-solving skills	The children's creative thinking and problem-solving skills concerning provocations	The importance of problem-solving and confidence
Main category		The role of the teacher and her influence	
Subcategory		The classroom environment	
Subcategory		The role of the teacher	

4.4 A brief introduction to each teacher

Under this section, each teacher's background information is briefly discussed to understand their circumstances and environments better before looking at the generated data of each of them. All teachers that participated in this study identified as female because male teachers are very scarce in the field of Early Childhood Education. Owing to ethical reasons, the schools that participated in this study were all independent schools.

4.4.1 Teacher 1

Teacher 1 is situated in an urban area in a private preschool. The class only had 10 children and they spoke Afrikaans as their home language. The teacher was still new to the teaching environment, with less experience than the other teachers. The school made use of the CAPS curriculum. Teacher 1 had 2 years of teaching experience.

Teacher 1's categories were *areas for improvement with the implementation of provocations*, *the environment and its influence*, and *the children's creative thinking and problem-solving skills*. There were a number of recommendations with regard to how the provocations could have been better implemented, therefore, the category, *areas for improvement with the implementation of provocations*, arose. The environment set by Teacher 1 was one of creativity and freedom, the influence of that environment could clearly be seen. The children's creative thinking and problem-solving abilities, as they were observed, needed to be studied in detail as it is one of the main categories of this study.

4.4.2 Teacher 2

Teacher 2 was situated in an urban setting, teaching in a private school that accommodated children from 3 months of age up to 12. Teacher 2 had the biggest class compared to the other teachers', with 23 children in her class. The LoLT at School 2 was English. Although the school incorporated a combination of the CAPS and IEB curriculums, their main difference was that the Reggio Emilia Approach was followed at this school. Teacher 2 had 14 years of teaching experience.

Three main categories were evident for each teacher, except for Teacher 2. Teacher 2's data was rich with information and resulted in four categories. Teacher 2's categories were *enhancing children's creative thinking skills*, *enhancing children's problem-solving skills*, *elements for successfully incorporating provocations*, and *the role of the teacher and her influence*. Teacher 2 provided a number of useful examples, therefore, most of the notes made on Teacher 2 and the children in her class were elements for success. According to the lesson plan, the data generated from Teacher 2 served as a measurement of success as the teacher included the expected outcomes. Teacher 2 was used to working with provocations because she worked at a Reggio Emilia-inspired school.

4.4.3 Teacher 3

Teacher 3 was situated in a rural area, although the area had expanded in recent years to be more urban. School 3 still had a farm feel to it. The IEB curriculum was followed at the school and there were 10 children in this class. The LoLT was Afrikaans. However, due to the limited number of children who had enrolled in Afrikaans, the teacher had a mixed class of Grade R and Grade RRs. Teacher 3 had 20 years of experience in teaching.

Teacher 3's categories that stood out were *creative thinking skills of the children*, *problem-solving skills evident in the children*, and *the role of the teacher and areas for improvement*. The creative thinking skills of the children in School 3 became a category because of how the children struggled to think creatively and how those skills were suppressed with stamps, for example, during painting. The children's problem-solving skills also became a category because of how well the children were able to solve everyday problems. The role of the teacher and areas for improvement was added as a category to show how a teacher can influence children and also the need for the use of provocations.

Table 4.4 compares all nine teachers that participated in the study:

Table 2.4: Comparison of the nine teachers that participated in the study.

Teacher	Type of school	LoLT	Curriculum	Years of experience	Class size
Teacher 1	Private preschool	Afrikaans	CAPS	2	10
Teacher 2	Private school ranging in age from 3 months to Grade 12	English	IEB and CAPS in combination with the Reggio Emilia Approach	14	23
Teacher 3	Private school ranging in age from 3 months to Grade 12	Afrikaans and English	IEB	20	10
Teacher 4	Private school ranging in age from 3 months to Grade 12	English	IEB	5	15
Teacher 5	Private preschool	Afrikaans	CAPS	10	8
Teacher 6	Private school ranging in age from 3 months to Grade 12	English	IEB and CAPS	3	20
Teacher 7	Private preschool	English	CAPS	12	12
Teacher 8	Private preschool	Afrikaans	CAPS	15	25
Teacher 9	Private school ranging in age from 3 months to Grade 12	English	IEB	6	15

4.5 Collaborative discussion

Three subcategories emerged from the collaborative discussion's data,. The subcategories were *creative accidents*, *creative thinking and problem-solving* and *the use of provocations*.

The separate categories of the teachers and the categories of the collaborative discussion were combined into overall categories evident in the study. These categories are listed below:

Category 1: Strategies for the successful implementation of provocations

This category arose from the subcategories *Areas for improvement with the implementation of provocations, Elements for successfully incorporating provocations*, and *The use of provocations*.

Category 2: Creative thinking skills

The subcategories *Enhancing children's creative thinking skills*, *Creative thinking skills of the children*, and *Creative thinking and problem-solving skills* were combined to create this category.

Category 3: Problem-solving skills

The category was created from the subcategories *Enhancing children's problem-solving skills*, *Problem-solving skills evident in the children*, and *Creative thinking and problem-solving skills*.

Category 4: The role of the teacher

This category arose from the subcategories *The role of the teacher and her influence* and *The role of the teacher and areas for improvement*.

Category 5: Environment

This category emerged from the subcategories *The environment and its influence* and *Creative accidents*.

Table 4.5 explains each category and its subcategory:

Table 4.3: Overall categories and subcategories of the data gathered.

Category 1	Strategies for the successful implementation of provocations		
Subcategories for category 1	Areas for improvement with the implementation of provocations	Elements for successfully incorporating provocations	The use of provocations
Category 2	Creative thinking skills		
Subcategories for category 2	Enhancing children's creative thinking skills	Creative thinking skills of the children	Creative thinking and problem-solving skills
Category 3	Problem-solving skills		
Subcategories for category 3	Enhancing children's problem-solving skills	Problem-solving skills evident in the children	Creative thinking and problem-solving skills
Category 4	The role of the teacher		
Subcategories for category 4	The role of the teacher and her influence	The role of the teacher and areas for improvement	
Category 5	Environment		
Subcategories for category 5	The environment and its influence	Creative accidents	

4.6 Electronic qualitative questionnaire

The electronic qualitative questionnaire was set up to gain background knowledge on each of the schools and the teachers. The questions that were asked were regarding the teachers' years of experience, the number of children in the class, the curriculum used and a few other questions relating to art lessons presented in the class. This data source was discussed first as it provides the reader with background information on each school.

Looking at the experience range of the three teachers, there was quite a difference. Teacher 1 was the least experienced with 2 years of teaching experience, Teacher 2 had 14 years of teaching experience and Teacher 3 had 20 years of teaching experience. The types of teaching styles also varied from teacher to teacher. Teacher 1 was recorded, by the researcher, as being *"… a very relaxed teacher"*, Teacher 2 was observed, by the researcher, as being more *"interactive and practical"*, and Teacher 3 was identified, by the researcher, as being more *"adaptable to the children's needs."*

The class sizes of School 1 and School 3 were the same with 10 children in each class. School 2, however, was quite a large class with 23 children in the class. Either the CAPS or IEB curriculum was followed at the schools or a combination of the two, as was the case at School 2.

Schools 1 and 3 indicated that they had art lessons throughout the week, whereas School 2 only had two art lessons a week. The duration of the art lessons in Schools 1 and 3, was approximately 30-40 minutes per lesson, School 2 dedicated 1-2 hours to art lessons. All three schools made use of smaller groups when presenting art lessons, however, Teacher 2 mentioned in her interview that *"… the class does seem a lot more cohesive and relaxed if I'm doing big group, like whole class, group art."* Teacher 2 still tended to break the class up into smaller groups as she can interact better with the children when they are in smaller groups.

It was interesting to see that the teachers preferred to break the art activities planned for the week into smaller activities throughout the week instead of having a main activity with side activities to contribute to one artwork. All three schools also indicated that they left their classrooms set up as it was for art lessons instead of moving the

chairs and tables around. Schools 2 and 3, however, said that they also present some art lessons outside.

Table 4.6 compares all nine teachers that participated in the study:

Table 4.4: Comparison between all nine teachers that participated in the study

Teacher	Teaching style	Number of art lessons per week	Time spent on art lessons	Big or small group	One main or smaller art activities	Classroom setup
Teacher 1	Very relaxed	5	30-40 minutes	Small group	Smaller activities	Same
Teacher 2	Interactive and practical	2	1-2 hours	Small group	Smaller activities	Same/outside
Teacher 3	Adaptable to children's needs	5	30-40 minutes	Small group	Smaller activities	Same/outside
Teacher 4	Strict and practical	3	45 minutes	Small group	Smaller activities	Same
Teacher 5	Adaptable and caring	5	30 minutes	Small group	Smaller activities	Same/ outside
Teacher 6	Friend-type teacher focused on children's needs	3	45 minutes	Small group	Smaller activities	Same
Teacher 7	Interactive and loving	1	2 hours	Big group	Smaller activities	Same
Teacher 8	Caring but strict	2	1 hour	Big group	Smaller activities	Same/ outside
Teacher 9	Artistic and adaptable	5	30 minutes	Small group	Smaller activities	Same

4.7 Analysis of the generated data from the teachers

This section separately discusses the data generated from the three participating teachers. Under the analysis of each teacher's data, the evident categories are also discussed.

4.7.1 Teacher 1

The analysis of Teacher 1's data produced three prominent categories. These categories were (1) areas for improvement with the implementation of provocations, (2) the environment and its influence, and (3) the children's creative thinking and problem-solving abilities. These three categories are discussed in more detail below.

4.7.1.1 Areas for improvement with the implementation of provocations

Teacher 1 made an attempt to include provocations in her lesson, but due to her limited experience in incorporating provocations on a daily basis, there are some areas that could still have been improved.

4.7.1.1.1 The teacher's influence

During the interview, the teacher initially seemed confident in her teaching abilities, especially concerning an art lesson. Quoting from her interview, she stated that she *"…believes it is about the process that goes into it and not about the product."* However, during the introduction to the lesson, the teacher seemed unsure of herself and of the lesson. In the observation notes, I wrote that although I explained the lesson clearly via email and during the interview, the teacher's lesson was "*… very basic."* Teacher 1 seemed unsure of what was expected and continuously asked the researcher if she was presenting the lesson the way it was expected. The idea she created was that she possibly did not understand what exactly was expected during the lesson. The children displayed limited creative abilities resulting in them copying their friends' artwork and affecting their confidence. In the observation notes related to Teacher 1, I noted that the children *"… wanted to fit in more than stand out."*

The introduction of the lesson was acceptable when looking only at School 1's lesson, however, when comparing the introduction to the other schools, many improvements could be made. As mentioned before, Teacher 1 seemed unsure about the lesson, therefore, the introduction was very basic. The teacher read *The Book of Mistakes* but did not allow for much interaction from the children. Teacher 1 explained the vocabulary in the book and emphasised that making mistakes was a good thing. As written in the observation notes by the researcher about Teacher 1, *"The children thought the book was funny and were very excited."* The teacher could have elaborated more on the discussion, allowing the children to predict rather than just reading from the book. The researcher could also have had a meeting with the teacher again before the lesson to ensure that she knew what was expected and that she was confident.

Apart from the teacher not allowing for much interaction during the introduction, the teacher also did not interact much with the children during the rest of the lesson. Not allowing the children to interact during the introduction resulted in the children not being as engaged in the lesson as they could have been. The teacher could have engaged more with the children by asking them what they were creating and probing their creative thoughts.

4.7.1.1.2 The creative thinking skills evident in the children

The creative thinking skills of the children could still be improved. When working with the mistakes on their papers, most ignored the mistakes or tried to fix them. Child 1.8[2] tried to fix the mistakes and said the following about the artwork:

"This is a bunny that went to the fish shop. They want to buy fish. They want this one and this is the food. Those pictures are of the sun and the moon. He is going to buy that fish because he is alone."

Child 1.8 used a piece of orange paper to try and cover the coffee stain on the paper given to the children. Further, Child 1.8 chose to colour over another one of the coffee

[2] The children from each school were numbered according to the school they are from. Child 1 from School 1 is 1.1, for example. Child 1 from School 2 is 2.1, Child 1 from School 3 is 3.1 and so forth.

stains in order to conceal it. Child 1.10 also attempted to fix the mistakes on the paper by covering the coffee stains with orange paper. However, this child indicated problem-solving skills when a mistake was made while drawing. The child realised that a mistake was made and tried to fix it by covering it with another piece of paper. Child 1.10 said the following about their artwork:

"Here is the cat and this is a bunny. The bunny wants to try jumping and eating the carrot, but he can't jump yet. The cat is trying to get the bunny. This is a man that is invisible with a bandage over his whole head."

Figure 4.6: Child 1.8's artwork

Child 1.8 attempted to fix the coffee stains on the paper by pasting orange-coloured paper over the stains.

Figure 4.7: Child 1.10's artwork

Child 1.10 also tried to conceal the coffee stains by pasting orange paper over them. However, problem-solving skills are evident in the way Child 1.10 attempted to fix a mistake made while drawing.

Child 1.3's artwork was a perfect example of how the mistakes on the papers were ignored. Child 1.3 did not attempt to incorporate any of the paint smears on the paper, instead, Child 1.3 ignored the smears and drew a picture of a bunny. Child 1.3 said the following about the artwork:

> *"That is an Easter bunny and that is a balloon and that is me."*

Figure 4.8: Child 1.3's artwork

Child 1.3 ignored the paint smears and drew a picture of a bunny.

The only child who demonstrated creative abilities by incorporating the mistakes on the paper was Child 1.1. The child made use of the tear in the paper to create a dinosaur. The tear became the dinosaur's mouth. Child 1.1 did exhibit not only creative thinking skills but also problem-solving skills. Child 1.1 noticed the tear and decided to transform it into something unique. The following was said about the artwork:

"It's a zebra dinosaur."

Figure 4.9: Child 1.1's artwork

Child 1.1 exhibited excellent creative thinking and problem-solving skills.

4.7.1.1.3 The problem-solving skills evident in the children

The problem-solving skills of the children regarding everyday objects were very good. Except for the children making plans to cover up the mistakes on the paper, one wanted to use a sharpener. However, the sharpener seemed to be broken, the child kept on trying to fix the sharpener until he eventually managed to clear out an old piece of pencil from the sharpener. He sharpened his pencil perfectly after that. The teacher's teaching style did not necessarily encourage problem-solving skills, referring to the notes from the observation of Teacher 1, I wrote that *"… she would normally intervene whenever the children experienced a challenge."* A recommendation I can make is that the teacher should let the children explore and not be too worried about the mess.

By intervening, the teacher took away a golden opportunity for the child to learn problem-solving skills. The children were being taught that they do not have to struggle to solve a problem; they could go to their teacher to fix it. The teacher should have allowed the children to struggle (Dostál, 2015: 4); through struggling, they would not only have found a solution to their problem, but they would have gained confidence from achieving success (Dhanani, 2019).

4.7.1.2 The environment and its influence

The Reggio Emilia Approach shows that the environment acts as a third teacher, if implemented correctly. The environment can be a key factor in developing children's creative thinking and problem-solving skills.

4.7.1.2.1 The classroom environment

The environment is very important for children to incorporate their creative thinking and problem-solving skills successfully. The teacher creates a classroom environment and Teacher 1 created an encouraging, relaxed, and creative environment. The teacher's teaching style encouraged creativity.

For Teacher 1, setting an encouraging environment was very important. Teacher 1 said during the interview that *"You don't want to discourage [the kids]."* She explained her statement by saying *"Especially when they are so excited to show you the picture…"* Teacher 1 was focused on staying positive throughout the day and encouraged the children to try their best. During the introduction to the lesson, the children immediately associated with the book regarding making mistakes and they recalled how their teacher always reminded them that mistakes were necessary to learn.

Although Teacher 1 had a lot of potential to create a positive environment for the children, her own fears might have stood in the way. The children could have been encouraged to make a mess just as much as they were encouraged to make mistakes.

4.7.1.2.2 The environment set by the teacher

Teacher 1 was passionate about art leading to enthusiastic participation from the children. When Teacher 1 was asked about the usual participation of the children during art lessons she used an example of a lesson where the children made binoculars to go bird watching outside, and she said that *"… usually when you do it in such a fun way like with the binoculars, they are very enthusiastic, because they want to draw what they saw."* The children were enthusiastic to start creating because of

the creative environment set by the teacher. The book that was used as a provocation contributed to their enthusiasm as they enjoyed the book and found it funny.

As seen in the observation notes made by the researcher about Teacher 1, *"… the teacher was still enthusiastic about art, and it could be seen through the children's artwork."* Teacher 1 also indicated during the interview that she *"… believe[s] in creativity."* However, Teacher 1 got nervous when one of the children started smearing glue all over his paper. The teacher eventually took the glue container away and only left the child with a smaller container with much less glue in it. The child had a unique idea to use the scrap papers and paste it on the glue to create an artwork. Teacher 1 nearly stopped the child's creative thinking when she took the glue away.

Much can be learned from children as well. If Teacher 1 rather interacted with the child she would have realised his wonderful idea instead of stopping his creative thinking.

4.7.1.3 The children's creative thinking and problem-solving abilities

The children's creative thinking and problem-solving skills, at School 1, could still be developed more. This could be done through the right environment and the use of provocations. School 2's children were regularly exposed to provocations and compared to their results, their creative thinking and problem-solving skills were of a higher standard.

4.7.1.3.1 Enhancing children's creative thinking skills through confidence

As mentioned in a previous section, the children at School 1 lacked confidence in their artwork, even though they were encouraged to make mistakes and to try their best. During the observation, it seemed the children's confidence was because of their abilities that could still be improved. During the interview with Teacher 1, she described a previous child in her class that was unable to follow instructions. She explained that: *"All he draws is a man type of thing. It does not matter what we learn about, that is what he draws. Let's say we learned about pets, then we spoke about pets the whole*

week, we even brought a dog to school, all those types of things. But that is the only thing he will draw."

Making reference to the child described, the teacher was asked whether she thought it had something to do with the child's confidence. The teacher answered by saying: *"It's difficult to say because how do you know if he doesn't do it?"* This child's situation is another example of the confidence that the children were lacking. However, as mentioned when I discussed the environment in the classroom, the children were encouraged, and their confidence was not broken down, as the teacher believed that you should not discourage a child.

A lot has already been said about the creative abilities of the children. The teacher's love for art and creativity could be seen in the children's artworks, whether they incorporated the mistakes into their artworks or not. Some children relied heavily on referencing their friends' artwork rather than trusting their own creative abilities. It was mentioned numerous times in the observation notes of School 1, that the children copied from their friends. One specific note was that *"some children had no idea what they were doing until they looked to their friends' artwork for help."* This statement can be supported by looking at Child 1.3, 1.4 and 1.10's artwork descriptions. Child 1.3 said:

"That is an easter bunny and that is a balloon and that is me."

Child 1.4 said:

"I made a princess with a bunny."

Child 1.10 said:

"Here is the cat and this is a bunny. The bunny wants to try jumping and eating the carrot, but he can't jump yet. The cat is trying to get the bunny. This is a man that is invisible with a bandage over his whole head."

These three children incorporated bunnies into their drawings because they saw a bunny in their friend's artwork. Although their artworks looked different from their friends' they still had to look for inspiration and validation before attempting to start their own artwork.

4.7.1.3.2 Enhancing creative problem-solving skills

Another area for improvement was the children's creative thinking and problem-solving skills. The children were clearly able to solve everyday problems, like with the sharpener, for example, however, it was not a unique way of solving a problem. The way the child tried to fix the sharpener could have been copied from when his teacher tried to clean it out. The type of problem-solving skills that this study targeted focused more on innovative ideas that we would not normally consider. The children's abilities to solve the problem they experienced with the mistakes on the paper were not as good as was expected. Nine of the ten children were not able to work with the mistakes or solve them in a creative manner. They might have been more creative if the children had received a blank paper. They were able to be creative when they were not expected to work something specific into their artwork. This indicated that they might not be able to adapt their thoughts and once again solve the problem they faced. They rather ignored what was given to them.

When Teacher 1 was asked about the creative thinking and problem-solving skills of the children in her class, she indicated that the children were *"… unsure…"*, *"… need guidance*", *"… there [it] was prescribed to them what to do"* and *"… they find it difficult to do it themselves."* The teacher was also asked how she thought the children's creative thinking and problem-solving abilities could be improved. Her suggestions were allowing more opportunities for the children to practise these skills and allowing them the freedom to express themselves.

Creative accidents, a term described in Chapter 2, refer to an unexpected mistake that occurs when children are creating or being creative. It is something they have to work with or something that forces their thoughts to adapt in order to incorporate the mistake. Teacher 1 attempted to incorporate creative accidents into her lessons, referring to the child who drew nothing other than a man. Her solution to try and accommodate this 'mistake' into their theme of Pets was to encourage the child to add his pet to his drawing and saying: *"… it is okay because your pet is also part of your family."* Teacher 1's positive attitude towards mistakes played a big role in building the children's confidence.

4.7.2 Teacher 2

During the analysis of Teacher 2's data, four categories were created. These categories were (1) enhancing children's creative thinking skills, (2) enhancing children's problem-solving skills, (3) elements for successfully incorporating provocations and (4) the role of the teacher and her influence. These categories are discussed in more detail below.

4.7.2.1 Enhancing children's creative thinking skills

How Teacher 2 worked with provocations and used them to enhance the children's skills could be used as an example of successful implementation. She encouraged the children in her class to believe in themselves. She attempted to enhance their creative thinking and problem-solving skills daily.

4.7.2.1.1 Elements for successfully enhancing children's creative thinking skills

Whenever Teacher 2 had to introduce a new topic to the children, she sparked their interest by using provocations and a class discussion. The teacher used an introductory lesson to teach the children the skills that would be expected of them. During the lesson observed for this study, Teacher 2 started the lesson by discussing creativity. The children interacted throughout the discussion, sharing their ideas of creativity. Some of the children shared the following ideas:

"Creativity is painting and drawing as well as you can."

"To try your best to paint."

The teacher then continued to name examples of different types of creativity, like *"… dance, modelling clay, drawing, and painting."* Teacher 2 also built on the children's existing knowledge to gain their interest. For example, Teacher 2 seized the opportunity to remind the children what a title, author and illustrator are.

4.7.2.1.2 The teacher's influence on the development of creative thinking skills

Something very evident while working with Teacher 2 was how confident she was while teaching and the confidence she taught her children through the environment she created. During the interview, Teacher 2 was asked if she felt confident teaching art lessons, she highlighted how teachers could empower themselves through technology. She said that *"…there are so many resources available to us now, like cool ideas and stuff like Pinterest, which gives you a lot of inspiration."* Other than that, her confidence could also be linked to her 14 years of experience in teaching. During the observation of School 2, the teacher was confident while presenting the lesson because she was well-prepared, and knew what she wanted to achieve. A note that stood out from the observation was *"whenever the children were asked to share their thoughts, it was very creative, and they were confident to share their weird and unique thoughts."* I was surprised at the children's confidence in their abilities and thoughts. I also noticed that the children in this class worked with purpose while creating their artworks, and their friend's creations did not influence them in the least. The children's confidence might have stemmed from daily interaction with the Reggio Emilia Approach. They were given plenty of opportunities to think outside the box.

Creative thinking and problem-solving were two of the main topics in this study. Therefore, the teachers were asked about the children's creative thinking and problem-solving skills in their classes. Teacher 2 said that she did not *"…think they're very well developed."* She explained that she experienced many children expressed a desire to start afresh or erase their mistakes when they made them. As a teacher, Teacher 2 had high expectations of the children in her class and she wanted them to be able to use their creative thinking skills to the best of their abilities. She often said that she *"… also would have liked to see them interact with those mistakes or 'oopses', if you will, a little bit more in a creative way."*

According to Teacher 2, the reason the children struggled to fully access their creative thinking skills was because they were too hard on themselves, they competed with their friends, and they were constantly comparing their work to that of their peers. A possible solution for engaging the creative thinking skills of the children could be *"… more opportunities…"* and *"… proper tangible practical lessons…"* as stated by Teacher 2 during the interview.

Referring back to the observation of School 2, it was clear to me that the children's creative thinking was not as lacking as the teacher might have thought. The teacher started the lesson with an introduction to creativity, from the start the children were engaged in the lesson by the questions the teacher asked. While she read the books, she allowed time for the children to let their imaginations work and to share what they thought could be added to the drawings on each page. This interaction with the children can be linked to possibility thinking, The children were encouraged to identify the possibilities of what could have been added to the drawings. Two of the children shared the following ideas:

"I would add a fence, so it looks like she's jumping over the fence."

"I would add lots of colours, like a rainbow."

None of the children were hesitant to share their ideas and had quite unique ideas. Allowing the children the time to think sparked their creativity very well and allowed for possibility thinking to take place. By the end of the discussion the teacher encouraged the children to use their *"… creative brains …"*, this term beautifully described, in a child-friendly way, what was expected of the children. Child 2.7 was very excited about the opportunity to be creative, and the child incorporated the coffee stains on the paper into the artwork. Child 2.7 created two separate artworks in which the stains were turned into fish. The following was said about the artworks:

"I made fishies from the stains."

"This is a sea and there is a pufferfish, and someone dropped their phone and there are bubbles."

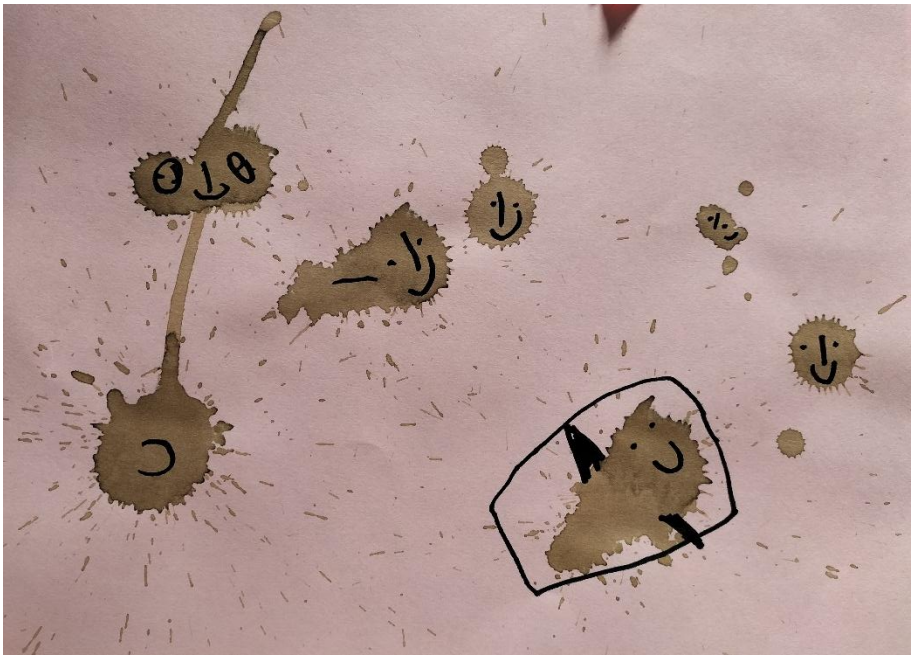

Figure 4.10: Child 2.7's artwork

Child 2.7 created fish from the coffee stains on the paper.

Figure 4.11: Child 2.7's artwork

In the second artwork created by Child 2.7, the child created a pufferfish and bubbles from the coffee stains and pasted a paper that resembled a phone.

4.7.2.1.3 Creative accidents present in the environment

Although Teacher 2 indicated that creative accidents were not a conscious part of any lessons, they were unplanned and spontaneously incorporated into the lessons. Multiple opportunities arose for the children to practice their creative thinking and problem-solving abilities as well as possibility thinking. For example, during the interview, Teacher 2 spoke about broken toys and torn pictures in her classroom. She explained that whenever a toy broke or a paper tore, the children were allowed the opportunity and creativity to attempt to solve the problem by fixing the toy or the paper.

The children at School 2 attempted to use glue or Prestik to fix the torn paper. Quoted from the interview, one child *"… remembered (my) lesson and said can't we just stick a piece of paper over it."* When creative accidents arose during an art lesson, for example, Teacher 2 tried to bring the other children's attention to the mistake that was made, not to discourage the child that made the mistake, but to encourage that child and the rest of the children. The teacher showed the other children how the child fixed their mistake to build up the child's confidence in their way of thinking. The way in which they fixed their mistake again linked to possibility thinking, the children were able to see a possibility in their mistakes. The other children then wanted to show their teacher what they have done and share their thinking. All the children's confidence was boosted by the interaction.

The environment created by Teacher 2 was an environment where the children were confident to share their ideas, because they were not scared of being judged. During the observation, the environment in the classroom was observed as being filled with opportunity and imagination. In the observation notes, the following was said about the teacher: *"The teacher's excitement was infectious, and the children automatically became excited as well."* Other than that, the teacher *"… sets a safe environment where the children can freely explore and discover."* The teacher encouraged the children to think outside the box and she valued each child in the classroom. The opinions and thoughts of each child were seen as a valuable contribution to the topic at hand. The environment was welcoming and encouraged the children to express themselves freely.

4.7.2.2 Enhancing children's problem-solving skills

Problem-solving skills should not only be taught for solving everyday problems, but they should also be taught in a way that encourages children to solve problems creatively (Dhanani, 2019).

4.7.2.2.1 Confidence as a key factor in developing problem-solving skills

As mentioned before in other sections, confidence was a main factor when looking at how problem-solving could be enhanced. Children might struggle to solve problems creatively or in unique ways if they were not confident. As we have already established, School 2's children were confident in their attempts because they experienced the confidence of their teacher. Children look up to their teacher as a role model and inspiration for who they would want to be someday.

During the observation, one of the children at the paint station was so enthusiastic about mixing the colours and discovering new colours, that the paper ripped. Teacher 2 added more paper underneath so the child could continue exploring. By the end, his side of the paper was full of paint with nowhere else to paint anymore. The teacher then turned the paintbrush around and showed the child that he could draw with the tip of the handle of the paintbrush in the paint.

Figure 4.12: School 2 painting station

A child at School 2 used the back end of the paintbrush to draw in the paint after his teacher showed him what he could do.

Teacher 2 applied possibility thinking by turning the paintbrush around and showed the child new ways to work with the paint on the paper. Teacher 2 indicated that she felt the children's problem-solving skills in her class were not developed to the level she would have liked them to be. She explained that their level of problem-solving was *"… very 2D."* By 2D, she meant that the children were not given enough opportunities to work with concrete materials to solve problems. During the interview with Teacher 2, I proposed to her a scenario where a child had created a beautiful artwork of a pig and then messed paint on it. I asked the teacher how she thought the children would react to it. Her response was that she thought *"… a lot of them would ask to start again, to try over."* However, she also explained that if she encouraged the children and sparked their thoughts by asking probing questions like, *"What do pigs roll in?"*, they might have been able to incorporate the paint splatter into their artwork.

The children at School 2 attempted to fix the mistakes on the paper rather than to be creative and incorporate the mistakes. They had the idea that they had to restore the papers to their original state before they could work on the papers. Although, it was nice to see that none of the children ignored the mistakes, they either attempted to fix the mistakes or they incorporated the mistakes. They would attempt to fix the mistakes by pasting other papers over it or they used the mistakes in their drawings and turned it into something creative. Child 2.2 and Child 2.3 were two children who attempted to fix the mistakes on the papers. The children were able to incorporate possibility thinking by creating something with the mistakes. The following is what they had to say about their artwork:

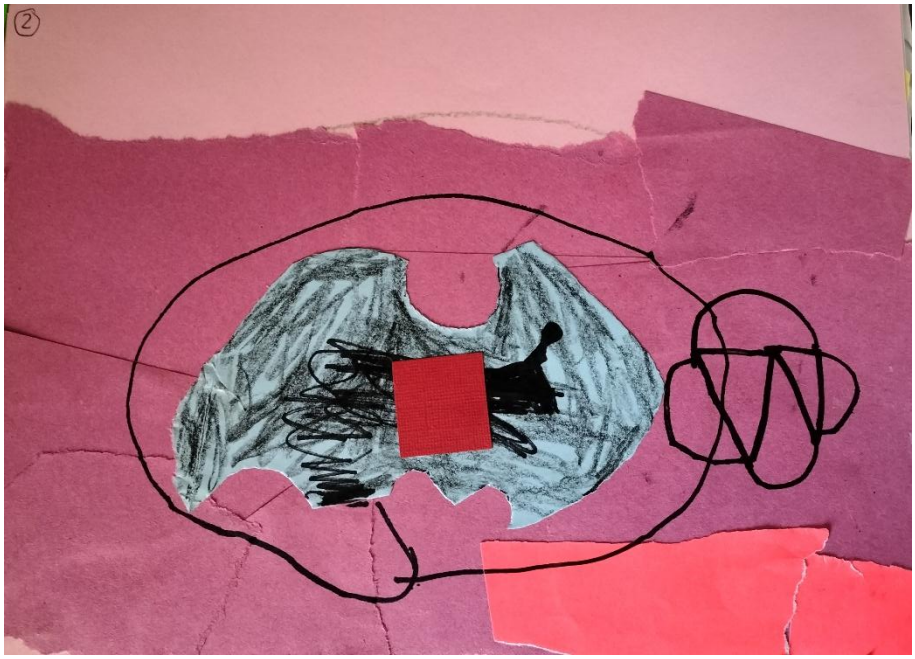

Figure 4.13: Child 2.2's artwork

"I made a bat with a paper on it. I pasted paper.""I made a dragon, and this was fixing the tear."

Figure 4.14: Child 2.3's artwork

4.7.2.2.2 Successfully enhancing problem-solving skills

In the interview, we discussed how problem-solving could be enhanced or improved, Teacher 2 felt that *"… we should be holding our kids with a higher expectation of their capabilities."* In our world, most parents, maybe even teachers, felt that there was not

enough time to wait for a child to tie their shoes on their own, for example. Therefore, everything was done for the children because it was quicker to do so. Teacher 2 highlighted technology's role in the deterioration of the children's problem-solving skills. Children were not expected to figure out riddles or to build puzzles, *"they just play TV games."* Children should be allowed to struggle in order to learn. As Teacher 2 said, *"… you are only really pushed into making tough critical problem-solving decisions when you have to."*

Teachers needed to remember that the children they were teaching were still learning the strategies to solve problems effectively and in unique ways. We as teachers, are responsible for teaching the children these skills and strategies. Therefore, the environment created by the teacher needs to be encouraging and safe, and allow for creative thinking. Children's opinions and ideas should be seen for their value. Teacher 2 understood this and created the necessary environment for the children to grow and discover problem-solving skills. During the observation, Teacher 2 paid attention to the children's artworks. She engaged with the children encouragingly by asking probing questions and providing guidance where needed. As documented in the observation notes, *"She asked them about their creations, and she motivated them to think of possibilities that they could add."*

Figure 4.15: School 2 main station

Teacher 2 interacting with one of the children. The child drew a frog and she encouraged him to think about the environment frogs live in to motivate him to incorporate the mistakes on the paper.

4.7.2.3 Elements for successfully incorporating provocations

The way in which new topics was introduced to children could influence how they reacted to the topic. If the introduction was done in such a way that did not draw the children's attention, they would not want to learn about the topic (Katsinde, 2011). However, if the introduction was exciting and engaging, the children would get intrigued and ask questions.

4.7.2.3.1 The importance of an introduction to new topics

In order for children to understand what you are trying to teach them, you have to introduce the topic to the children properly. The excitement of Teacher 2 was infectious, and it immediately got the attention of her class. Her tone of voice, facial expressions, and confidence kept the children engaged throughout the discussion. Teacher 2 illustrated a positive attitude that could also be seen as encouraging. School 2, as previously mentioned, taught at a Reggio Emilia-inspired school, therefore, Teacher 2 was given plenty of professional development opportunities to incorporate

the approach into her teaching. The positive effects of using this approach could clearly be seen in Teacher 2's class.

During the observation lesson, the teachers were expected to use the books provided, leading to a class discussion. However, this was not the only way Teacher 2 usually introduced a topic. As mentioned in the interview, the teacher explained that she also used *"… an object of beauty so we will bring in something interesting or abstract and kind of just see how the kids react to those objects."* The children were then allowed to use those random objects as inspiration to create what they saw in those objects.

The children were not prescribed what they should do. Other than that, in the case where there was a child that was maybe not as artistic as the rest, the teacher made use of shapes. There were times when Teacher 2 guided the children when doing art and for the more mathematically inclined children she would incorporate shapes, *"… just tell them what kind of shapes they're using and let them create based on that."* During the observation lesson, I could see that all types of creativity were included in the classroom and that Teacher 2 spent quality time to properly introduce new concepts to the class.

Figure 4.16: Teacher 2

Teacher 2 introducing the topic of creativity and making mistakes with the use of the books provided.

4.7.2.3.2 The children's creative thinking and problem-solving skills with regard to provocations

Although there might have been some room for improvement regarding the creative thinking and problem-solving skills of the children, during the observation I noted that there was a good range of these skills among the children of School 2. Once again, none of the children ignored the mistakes on the papers, they either incorporated the mistakes or they attempted to fix them. It would seem as though the more artistic children were able to incorporate the mistakes and be creative, whereas the more mathematically inclined children were able to rectify the mistakes on the papers. The children of School 2 were given plenty of opportunity to explore and discover freely, resulting in them finding their voices among the 100 languages of the Reggio Emilia Approach.

Again, the environment the children were in daily went hand-in-hand with the successful development of the children's creative thinking and problem-solving skills. The researcher had already established that the environment created by Teacher 2 encouraged the development of these skills, however, the environment at home was just as important. Teacher 2 highlighted the main factor that prohibited the children from effectively developing these skills, during the interview she said the following: *"I think it's got to do with, you know, how kids are raised, if there are two working moms and nannies that are also a bit busy with the household jobs as well."*

4.7.2.4 The role of the teacher and her influence

As noted before, the teacher could have a big influence on the development of the children's skills. The environment and how the teacher chose to set up the environment could either be an advantage or a disadvantage (Novaković, 2015: 154).

4.7.2.4.1 The classroom environment

The teacher of a classroom had many responsibilities to ensure the children's skills are developed to their full potential. Some of these responsibilities included building confidence, ensuring that the environment was suitable, proper introductions to new

concepts, engaging with the children and ensuring that they remained engaged during lessons, sparking creative thoughts, and encouraging out-of-the-box thinking.

The environment created by Teacher 2 has been numerously reported as safe, confident, encouraging, creative and imaginative. Therefore, it was clear that the environment Teacher 2 created was suitable for the effective development of the children. Teacher 2 always had the children's interest at heart and instead of focusing her themes on what she felt comfortable teaching, or what was prescribed, she observed the children and effectively created themes based on their interests. As Teacher 2 mentioned in the collaborative discussion, introducing provocations should happen in a *"… natural way …"* and it should be generated or decided on by *"… observing the children and their behaviours …"*.

4.7.2.4.2 The role of the teacher

As seen in all the previous categories, Teacher 2 not only exhibited confidence during art lessons by being well-prepared, but she also effectively enhanced the confidence of the children in her class by encouraging them to share thoughts and ideas no matter how bizarre they might have been. The children in School 2 were not afraid to dare and to share what they have done; they were confident because of their teacher's positive reinforcement. Teacher 2 drew the attention of the rest of the class to applaud a child who used out-of-the-box thinking. This method encouraged the rest of the class to also incorporate their unique thoughts in order to get recognition from the teacher and the rest of the class.

The introduction of provocations should be done naturally. Children should not be forced to engage with a topic or a theme, their interest should be sparked naturally. Teacher 2 preferred using class discussions when a new concept was introduced. By having class discussions, Teacher 2 encouraged the children to participate in the lesson and they made the lesson their own by linking the new knowledge to their existing knowledge. Children learn best when they are able to explore and discover for themselves, therefore Teacher 2 used random objects or beautiful objects to spark the children's thoughts and creative ideas.

Teachers and parents need to be reminded that children in Grade R are still very young and although we strive to enable them to be independent and to be confident in their unique thoughts, they still require guidance to reach that stage of their development. Therefore, when the children were engaging in an art activity, Teacher 2 took time to sit with each child and to encourage them to widen their thoughts. If a child was drawing a pig, she will encourage the child to think about the pig's environment and to add that to their artwork.

Teacher 2 not only ensured that the children engaged in the lesson, but she also engaged with the children as well. Looking at the picture of the pig again, it showed the commitment Teacher 2 had to engage with the children in her class. She strived to spend time with every child to develop each child on a personal level. One strategy might work for five of the children, but the rest of the class might need a different strategy. Therefore, engaging with each child was very important to understand how the child learned and how the child could be motivated to develop to the best of their abilities.

4.7.3 Teacher 3

The analysis of Teacher 3's data resulted in three categories. An important factor to note was that Teacher 3 was absent from school on the day of the observation, her daughter presented the lesson. Teacher 3's daughter is also a teacher, however, she is a FET teacher. Unfortunately, due to the distance to School 3, I was unable to observe the lesson on a different day. These three categories are (1) creative thinking skills of the children, (2) problem-solving skills evident in the children, and (3) the role of the teacher and areas for improvement. These categories were discussed in detail below.

4.7.3.1 Creative thinking skills of the children

The creative thinking skills of the children in School 3 were lacking and not as developed as I expected them to be. Imagination is a key factor in developing creative thinking skills (Garrett, 2014). Children's confidence could also have an effect on how successfully their creative thinking skills are portrayed.

4.7.3.1.1 The influence of confidence on creative thinking skills

When any thinking skills are involved, it is important to have the confidence to express these thinking skills. For creativity to develop, children need to be confident as confidence and creativity create a positive relationship for achieving success (Gunawan, Kartono, Wardono & Kharisudin, 2022: 1013). The children in School 3 were confident when thinking creatively, however, as mentioned in the observation notes, *"… they did not really know what they wanted to create. They just kept adding to their pictures…"*. Teacher 3 was asked during the interview how she would describe the participation of the children during an art lesson. Teacher 3's response was that sometimes children disliked art because they were not confident in their abilities. She explained further by saying *"everybody actually likes drawing, the only reason they don't like art is because they think that they don't do it well enough."*

Teacher 3 also explained that when a teacher's art skills were more basic and not like an artist's, *"… the children associate with you."* It built the children's confidence knowing that their teacher was also not an expert. When looking at how the children handled creative accidents during lessons, Teacher 3 indicated that how the children handled these mistakes had a lot to do with confidence. Some children had enough confidence to make a plan without even informing the teacher, however, other children who lacked confidence would become very upset. Teacher 3 used the following example to explain her statement:

> *"About two years ago I had a boy in my class that was highly intelligent, however, whenever he made a mistake, he would sit still and think that his work is not good enough. This boy would then refuse to continue, he would want a new paper and start afresh."*

4.7.3.1.2 The use of provocations to enhance creative thinking

In addition to fostering confidence, children's creative thinking skills can be stimulated through provocations. During the interview Teacher 3 explained that she used provocations although she did not know the terms used in the Reggio Emilia Approach. Teacher 3 used provocations, as they were known in this study, to stimulate an

intelligent boy in her class. The type of provocations that Teacher 3 used was random art supplies like pipe cleaners, scissors, ice cream sticks, disposable cups, and pegs.

Teacher 3 did not call the children's attention to the supplies she packed out; she relied on the children's exploratory abilities to lead them to ask questions about the supplies. She would challenge the children by encouraging them to *"… build the highest tower …" or "… build (her) a house that (she) can stay in."* The idea of provocations was to provoke the children's interest and encourage exploration (Durand, 2016). It was nice to hear how Teacher 3 worked with provocations even though she did not necessarily exactly know that there were terms like provocations.

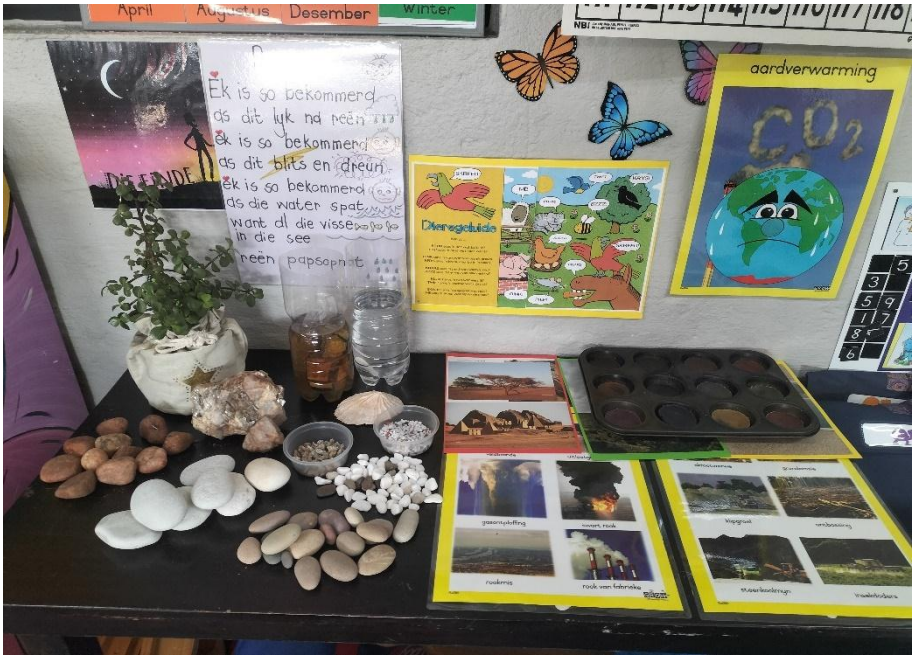

Figure 4.17: Provocations packed out as a themed table.

Relating to the week's theme.

4.7.3.1.3 Creative thinking skills evident in the children

During the observation, I expected to observe more creative thinking and problem-solving skills from the children than I saw. The substitute teacher on the day of the observation could have influenced the children's skills. The children might have felt out of place without their teacher, which resulted in them not being in their natural environment. However, during the observation Child 3.1 created a very creative pig drawing. Child 3.1 created a video game and got so inspired that the drawing was

extended to both sides of the paper. Child 3.1 incorporated the splatters on the page into bombs shooting from a pig's hooves. Child 3.1 said the following regarding the drawing:

"I will go into the [name] machine and in the pig machine and change into a robot. Teacher, do you see the king pig? He says he will go into the [name] machine and become super strong so I can protect you. And look what he changed into now! [turns the paper] Then he became evil. All the evil is in his crown. He had 2 hooves, then he went into the machine and now he has 9! The splatters are bombs that shoot out of his hands. But I haven't drawn their tails yet."

Figure 4.18: The front of Child 3.1's artwork

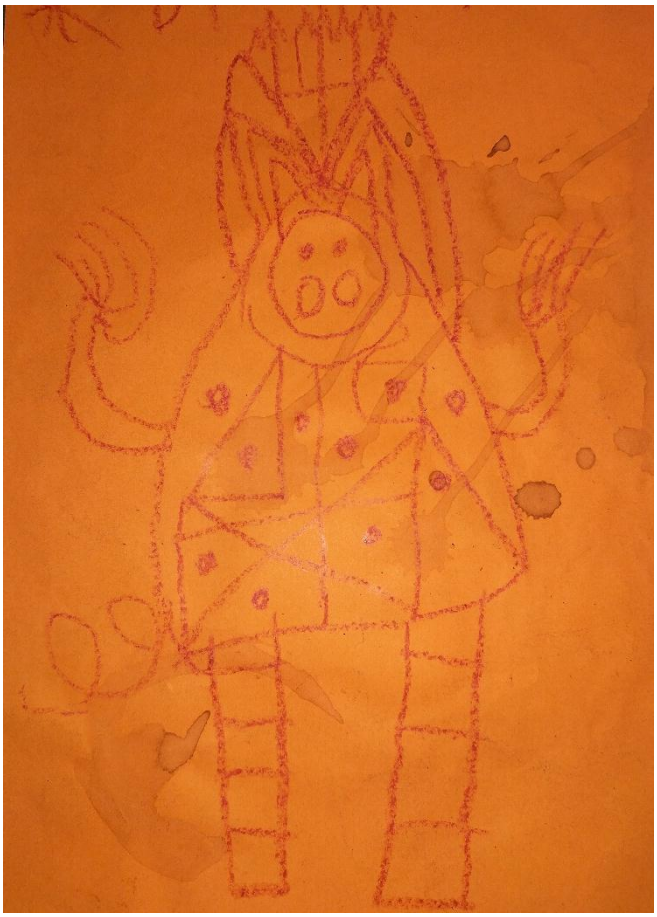

Figure 4.19: The back of Child 3.1's artwork

The rest of the children did not express much creativity or interest in the activity, as it was not properly introduced. A concerning picture was drawn by Child 3.5, she drew a picture of her mother with the following explanation:

"I made a scary mommy monster! Mommy got hurt and now she has a plaster. This is mommy [name]."

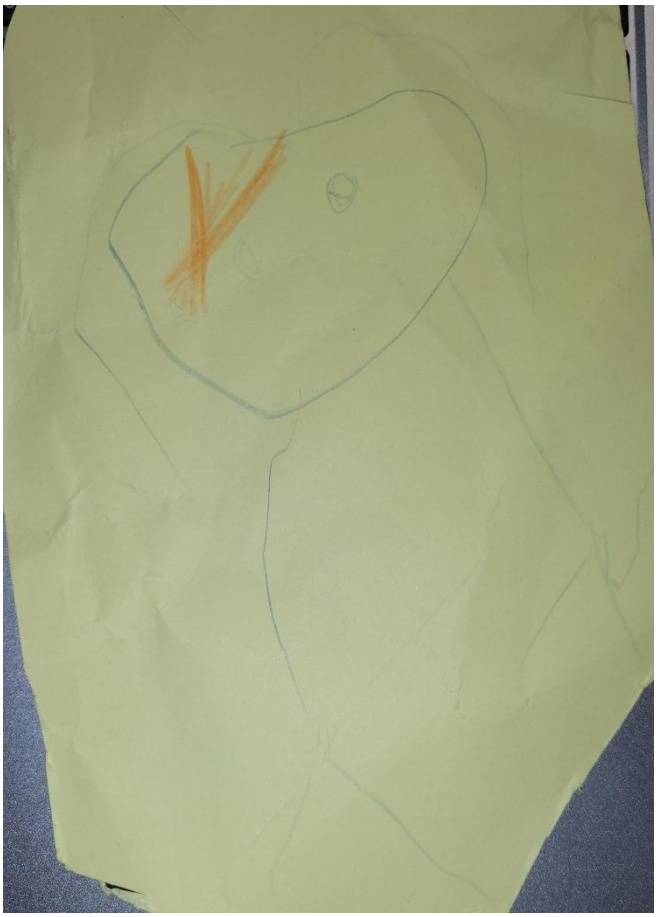

Figure 4.20: Child 3.5's artwork

The background regarding Child 3.5 and the picture that was drawn is unknown. As written in the observation notes, *"… I expected more from the children after the interview …"*. However, the absence of Teacher 3 during the observation lesson opened a whole new theme of research. During the observation at School 3, the researcher thought about the influence on the children's skills when their teacher was present and when she was absent, and that it could be researched in future.

4.7.3.1.4 Creative accidents present in the classroom

Most of the creative accidents that took place in School 3 were when water fell over when they were painting, or when the children messed paint on their artworks. Most

of these accidents required the children to solve their problems in a way that was modelled by their teacher. Teacher 3 shared that the way in which the children handled creative accidents had a lot to do with, once again, confidence. If the child's confidence was good enough, they would be able to solve creative accidents independently. She encouraged the children to rather incorporate the mistakes they had made rather than to start afresh. She was very happy about the progress she made with a child in her class. She said the following:

"I have made progress with a child in my class this year, the other day he messed paint on his paper, and he turned it into flowers."

Encouraging children to incorporate their mistakes and the children realising they still made something beautiful was very important when building their self-esteem. Another important factor in how children dealt with accidents or mistakes was the role teachers played. Teachers needed to be encouraging and positive. Teacher 3 indicated that *"… it has a lot to do with how we (teachers) influence their thinking."* Therefore, never judging a child's artwork was even more critical. Teachers should be the ones saying it was beautiful, not the ones pointing out their mistakes.

4.7.3.1.5 The teacher's influence on the development of creative thinking skills

Looking at the data generated regarding School 3, I believe that a teacher's influence did play a big role in a child's abilities. During the observation, the children did not do any of the things that the teacher described in the interview. They did not want to create artworks on the day of the observation. The substitute teacher encouraged them to keep drawing and said things like *"I still see too many white spaces on your paper."* However, it did not faze the children, *"they continuously said they do not want to create"*, as written in my observation notes.

Figure 4.21: Children interacting with the A4 paper with 'mistakes' on it

Each child creating their own artwork.

Teacher 3 was a teacher who tried her best to not only encourage but also empower the children in her class to have the confidence to solve their own problems. She strived to teach them to be independent, however, incorporating a mistake you have made into your artwork could still be challenging. Teacher 3 suggested a different view on this study and proposed that instead of giving the children clean pages with mistakes on them, paint splatters or stains, should be made on an artwork they have already made. Making such a mark on their completed artwork might motivate them on a different level to try and restore their artwork to its previous beauty.

When Teacher 3 was asked about the overall creative thinking abilities of the children she said that the children *"… have a lot of capabilities to solve their problems, but they don't always get the opportunity."* She went on to discuss how formal schooling took away the children's freedom of choice and thinking in general. Children were expected to sit in specific seats, and write in certain books with certain stationery, they had no choices. Teacher 3 believed that children should be given the opportunity to make choices. Therefore, she did not set specific seats for the children, or places for the children's bags.

Allowing the children to make choices daily regarding their day should in theory enable the children to work with more purpose. However, as mentioned before, the children could not work with purpose when they were creating their artworks. They just kept on adding to their artworks as they went, they had no specific idea in mind. As noted in my observation notes, *"… the children did not have a plan, therefore, it (the artworks) could not be compared to what was planned."* I would have expected the children to have more confidence and purpose in their attempts after the interview with Teacher 3.

4.7.3.2 Problem-solving skills evident in the children

The main observation I made during my visit to School 3 was that the children could solve problems, but not creatively. The children were able to clean up a mess by themselves, for example, but they were unable to create something from a splatter on their pages.

4.7.3.2.1 Everyday problem-solving

As mentioned before, Teacher 3 believed in teaching the children skills to ensure their independence when they were older. Therefore, she showed them where to find the cleaning supplies in the class to enable the children to fix their own mistakes in the event of water that messed, for example. Once again, confidence played a role in how the children used these opportunities. A child that did not have enough confidence would still go and tell the teacher even though they knew where to find everything they need to fix their mistake. When the children did fix their own mistakes *"… they are proud of it"*, as mentioned by Teacher 3 during the interview.

During my own practical lessons as a student teacher, I noted how we underestimated the abilities of children, myself included. Many times, I created lessons that were not challenging enough or that did not fill the allocated time for the lesson. Regarding the underestimation of children's abilities, Teacher 3 said that she thinks *"… it is important for them [the children] to realise that they need to solve their own problems and that mom won't always be around, but I think we don't trust our children enough to solve problems."* This statement indicated that children were not only underestimated by their teachers, but by their parents as well. Teacher 3 mentioned numerous times that

children required opportunities to learn and to grow, these opportunities were not given to them at home or at school.

Referring back, Teacher 3's idea of not allocating specific spots for the children's bags helped to teach them adaptability. Children will be children and when they arrive in the morning to find someone else's bag in their usual spot they got upset. They were then encouraged to make a plan and to find another spot. For Teacher 3 it was important to teach the children that *"… you won't always get what you want in the world."* Teacher 3 was constantly thinking about the bigger picture; therefore, she was already preparing the children in her class for when they started working and studying one day. She made the following statement that might be a driving factor for her:

"We have to teach our children to be adaptable, I mean work is so scarce these days that you cannot just accept that you will get a job you have to go and create a job."

4.7.3.2.2 Creative problem-solving

Relating the children's problem-solving skills to creativity is a challenge. Although these children were capable of solving problems in their everyday lives, it was not done in a creative way. During the observation, the children cleaned the class themselves by washing all the painting resources and clearing the tables. However, these were all basic skills taught by their teacher, it was a skill that was always going to be the same. For example, if paint was messed on the floor, you were always going to use the same types of things, either a tissue or a cloth, to wipe up the mess.

For this study, the idea was that problem-solving skills should be developed in such a way that children were able to solve problems uniquely. The way the children at School 3 solved the problem of the mistakes on the papers, were mostly unoriginal. It was mentioned before that the children did not incorporate the mistakes; they simply ignored the mistakes. These were not good problem-solving skills illustrated by the children. If the children were confronted with problems they were used to, they were able to solve them. However, if they were confronted with a new situation that they have never been in, they struggled to apply their problem-solving skills effectively.

4.7.3.2.3 The teacher's influence on the problem-solving skills of the children

An encouraging environment was important for these skills to be effectively developed and for the children to effectively apply these skills. During the observation, the substitute teacher gave the children stamps to use while painting on the big paper.

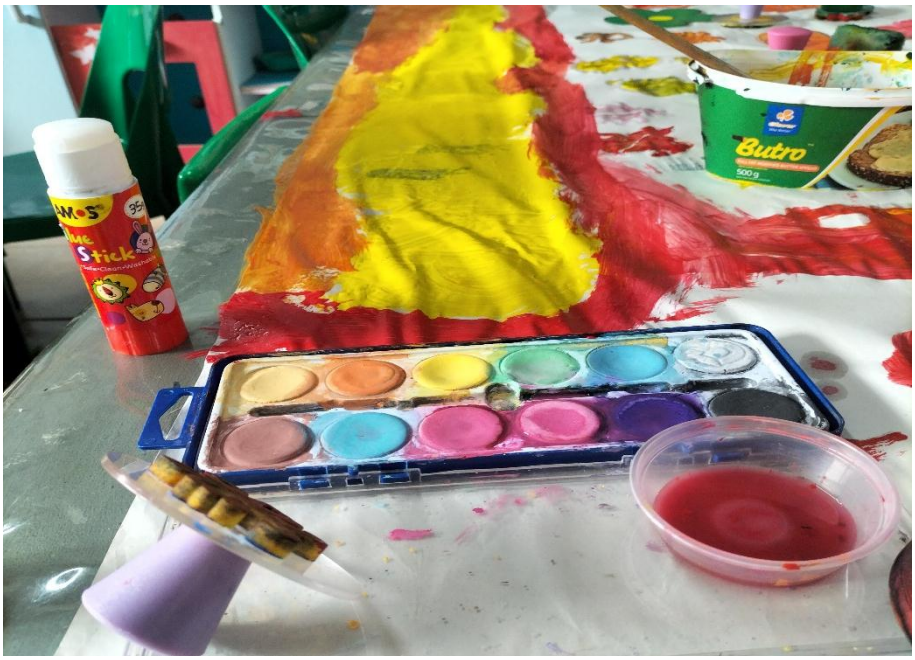

Figure 4.22: The stamps used at the paint station

The use of stamps did not seem to be encouraging the children to develop their creative thinking skills. Luckily, the teacher realised this and started encouraging the children to paint something and not only use the stamps. Incorporating stamps with the paint station did not allow for the children's creative skills to be fully displayed. The children kept returning to the easy methods of using different stamps to create a picture.

Some children did play around with the paint colours to try and determine what other colours they could make. When looking at the images below, it was clear that the paint station intrigued some children more and allowed them to also explore. Even though it was not in the more focused activity of this study, which was working with the A4 papers.

Figure 4.23: One child mixed the colours available to create orange

Figure 4.24: One child painted sunset colours

Later stamping pictures and shapes onto it.

4.7.3.3 The role of the teacher and areas for improvement

The teacher played a vital role in successfully developing children's skills. The introduction to new topics, engaging children in the lessons and making children an active part of their learning, for example, depended on the teacher and how she managed her classroom.

4.7.3.3.1 The role of the teacher in children's development

The teacher played a vital role in the development of children's skills. In this regard, the skills at hand were problem-solving and creative thinking skills. Teacher 3 based her art lessons on the theme of the week. She sparked the children's interest by having a classroom discussion on the carpet. During the interview, she indicated that *"mostly we (the teacher and the children) read a story"* as part of exploring the week's theme. After the discussions, she explained to the children what was expected of them, in other words, the goal for the week. Teacher 3 used an example of when their theme was *Book Week*, the goal of that week was for the children to create their books. Teacher 3 believed that explaining to the children the week's goal allowed them to be better prepared and perform better towards these goals as they knew what was expected of them early on.

Children's interests could be sparked in various manners. Only using one manner could stop intriguing the children. When only books were used, as Teacher 3 said they do, the children might not get as excited as they could be. Provocations played an important role in focusing the children's attention on the task at hand. Although it was mentioned earlier that Teacher 3 used random art supplies as provocations during free play, these provocations could also be handy during lessons. Looking back at the observation at School 3, the substitute teacher started on the carpet, and they had a short discussion of the week's theme: recycling. However, as quoted from my observation notes, *"according to the general lesson plan set up, the lesson did not match any expectations. None of the provocations given was used."*

4.7.3.3.2 The importance of problem-solving and confidence

Teacher 3 taught the children how to solve their own problems and she enforced this empowerment throughout the school day; however, the children needed to be given more opportunities to solve unknown problems in creative ways. Earlier on, I mentioned that the children at School 3 were only able to solve challenges they were familiar with, like cleaning up a mess they made. However, during the observation, I noted that the children did not possess the confidence to explore new challenges and to solve them.

The teacher realised that the children required more opportunities to be creative and to think for themselves, she mentioned this numerous times throughout the interview. In one instance she explained that her own child used to colour animals in rainbow colours and her teachers said she should colour it in natural colours. Teacher 3 felt strongly that children should be able to colour animals in rainbow colours if they like, it was part of their creative development.

Teacher 3 realised the importance of children having the confidence to solve problems on their own, therefore, she encouraged the children to become independent. I think that Teacher 3 could be more encouraging in terms of creative thinking abilities. The children's creative thinking was a bit limited, especially considering that the children were given examples of how to draw what needed to be drawn. Referring to the interview with Teacher 3, she explained that after reading The Three Little Pigs, they *"… found an easy way to draw pigs."* In contrast to this, she also explained that she made use of shapes a lot to enable the children to draw the pictures easier. She explained that they *"… keep practicing shapes and then I [the teacher] give them an example of what I [the teacher] think a pig looks like."* The use of shapes could be encouraging; however, examples were still given. The children should be encouraged to think about what a cow looks like and to try and draw it themselves. Real-life pictures could rather be used as examples.

As mentioned, a teacher has many responsibilities in the classroom. Being involved with the children is crucial. During the observation, the substitute teacher appeared to be uninvolved. Referring to the observation notes I wrote, *"the teacher made no attempt to get involved or to ask the children about their creations."* This was very disappointing for me as I wanted to see the teacher interact with the class. The teacher

mostly remained in her own corner during the lesson, leaving the children to carry on as they saw fit. It would possibly have been different if Teacher 3 was present, but this cannot be proven as the substitute teacher was observed with the class.

4.8 Collaborative discussion

A collaborative discussion was held via Zoom with all nine teachers to share their thoughts after the lessons were observed in each school. Teacher 1 experienced connectivity challenges, which made it difficult to communicate with her. The questions were sent to her after the meeting for her to potentially contribute more to the discussion. However, Teacher 1 did not contribute much to the overall discussion. The main categories identified during the collaborative discussion were (1) the use of provocations, (2) creative thinking and problem-solving skills, and (3) creative accidents. The categories were discussed in more detail below.

4.8.1 The use of provocations

A word that came up often during the collaborative discussion, was the word *'freedom'*. The teachers felt that provocative teaching allowed the children freedom to explore and discover. Teacher 2 shared that provocations *"… allow the children to have the freedom to actually express to their teachers what they are interested in and what are they finding interesting and what is actually contributing to their everyday life."* Teacher 3 was very happy that the children got the opportunity to *"… think for themselves a little bit …"*, instead of being prescribed what they should and should not do. Teacher 2 agreed with Teacher 3's statement and indicated that she enjoyed having a provocation that *"… literally provokes the children to have that analytical thinking and that problem-solving."* The teachers loved that the provocations provided for in the observation lesson sparked the children's unique thoughts and removed the children from their comfort zones.

The teachers were asked what differences they noted when presenting the observation lessons with the provocations provided to them, compared to their everyday art lessons. Teacher 2 brought attention to the fact that art was personal and open for interpretation, dependent on each child or person. She then expressed how

nice it was to experience the children being more relaxed and naturally engaged with the materials instead of having a structured lesson. Teacher 3 shared that she enjoyed seeing the children's creative abilities in a lesson that was not theme-bound like usual lessons. Teacher 3 was surprised by the abilities of the children in her class.

Teacher 1 expressed her enthusiasm regarding the incorporation of provocations on a daily basis. She explained that the observation lesson impacted her class by sparking their creative thoughts, and they kept incorporating what they learned during that lesson in other situations as well. She shared the story of one of the children that got red paint splattered over her drawing and the child said *"wait, I can turn it into a ladybug."*

Teacher 3 started incorporating books as provocations in other lessons and allowed the children to predict what they thought would happen. Teacher 3 stated that the children could *"… participate …"* and let their *"… imagination …"* go.

Teacher 2 shared an interesting explanation of how provocations should be decided on. As teachers, we are sometimes so focused on achieving the outcomes of the lesson and following the curriculum that we forget about the interests of the children. Teacher 2 explained that the children's behaviours should be observed in a natural way and provocations should be created from that.

4.8.2 Creative thinking and problem-solving skills

Teachers 2 and 3 were surprised that most of their children tried to fix the mistakes on the papers and did not incorporate the mistakes. Teacher 2 started working actively to guide her children to look *"… at different creative ways of fixing mistakes."* Teacher 3 shared that a child in her class could not handle making mistakes, although during the observation lesson, he realised that it was *"… okay if you make a mistake."* Teacher 2 shared the idea that the observation lessons taught resilience to children. Instead of just focusing on the themes that needed to be covered, the teachers were given the opportunity to teach life lessons, like, *"… mistakes don't automatically mean failure."*

The teachers felt strongly about the children being put under too much pressure by teachers, parents, and themselves. Society is high-paced and does not allow for children to fall behind, as soon as they fall behind, they stay behind, as there is no

time to catch up. Teacher 2 indicated that this *"… puts a lot of competition between our kids."*

Teacher 3 shared that *"… somehow parents think their child has to be good in all areas."* All the teachers agreed on this statement, adding that the pressure parents put on their children to perform scared them for Grade 1. Especially Grade R children were scared into doing things by threatening them with terms like *"… if you don't do your homework you can't go to Grade 1."* Teacher 3 highlighted the importance of making mistakes, as it is the way we learn and practice.

4.8.3 Creative accidents

During the collaborative discussion, the teachers were asked to share how the children in their classes incorporated the creative accidents on the papers, specifically those who did incorporate the accidents. Teacher 2 explained that it depended on what type of child you were working with. Therefore, the children who were able to be creative were the more artistic children who always spent their free time in the art corner. Teacher 3 shared that it also depended on the confidence level of the children. She explained that the children that had confidence issues did not want to dare, they were *"… limited by themselves."* Teacher 3 further added that if the children continuously received these opportunities, the more their confidence might grow.

Teacher 3 also indicated that the children's artistic abilities were not yet developed enough. They might have had creative thoughts, but their abilities were lacking, therefore, she made use of shapes to help the children. Teacher 3 made use of shapes as a starting point to encourage the children to attempt drawing or painting. Teacher 2 shared this sentiment and added that the shapes sparked the mathematically inclined children's minds to see that art could still be fun for them as well and it encouraged them *"… to see art in a different light."* As Teacher 3 stated, if the children had the basic shapes down, *"… they can explore further."* Teacher 2 added to this by proposing that teachers generalise the skills of the children to enable them to recognise these shapes in their environment and not only when the teacher tells them what shapes to use.

Teacher 2 expressed her concern for the future self-esteem of the children in her class, as she experienced that some of them reflected on their friend's artwork to get inspiration. She was concerned that the comparison between friends might end up damaging their self-esteem. Teacher 3 used the saying, *"beauty is in the eye of the beholder"*, to explain that teachers should not judge children's artwork, teachers should be careful what they say to the children and rather try to see their artworks through their eyes.

As mentioned before, Teacher 2 made use of positive reinforcement to encourage the children to embrace their mistakes. She describes this method as using *"… the kids as a motivator as well..."*. What she meant by this was that she called the other children's attention to the child's work who incorporated mistakes. This encouraged the children to also try and think of creative ways to use their mistakes.

Teacher 3 felt strongly that children were not given the opportunity to think for themselves, as their teachers told them what to do every minute of the day. Both Teachers 1 and 2 agreed with the statement and explained that teachers encouraged children to think outside of the box and be creative, however, at the same time they are expected to look exactly like their friends, wearing the same uniforms and lining up.

One of the questions during the collaborative discussion was whether the teachers experienced a change in children's creative thinking skills after incorporating the creative accidents into their lessons. Teacher 3's children did not like the mistakes on the papers and were *"… initially a little bit irritated …"*, as they preferred to have their work faultless. However, Teacher 3 shared that it forced the children to start seeing possibilities instead of problems.

For Teacher 2 it was important to build the children's self-esteem in order for them to not focus on their faults but rather to see the possibilities. She wanted them to appreciate their hard work and to see that what they created was still *"… pretty cool and beautiful …"*. Another interesting take on building the children's self-esteem was shared by Teacher 3. She explained that the observation lesson encouraged the children to *"… view their peers as an equal."* All the children received papers with mistakes on them, and now the child that usually got too excited and ripped the page

was not looked down on. All the children had to work with a mistake and attempt to incorporate the mistake.

4.9 Final thoughts on the data analysis

The final thoughts on the data analysis is a discussion centered around the data generated, with a focus on significant data from the analysis. The five categories presented in Section 4.5 were discussed as part of the final thoughts.

The nine teachers that formed part of the participants in this study were quite different from each other. The years of teaching experience of the nine teachers differed, Teacher 1 being the youngest one in the sample. The classroom sizes differed; Teacher 2 had the largest number of children in the class. The different environments in which the teachers taught were more or less the same in terms of the schools all being private schools, even though the locations might have differed. How lessons were planned at all of the schools were more or less the same. They mostly had formal lessons planned by the Grade R teachers at each school, and then more informal lessons decided on by each teacher.

The most important factor that had to be considered when comparing these nine schools, teachers and results, was the teachers' teaching styles and their personalities when it came to handling classroom mistakes. Teacher 1 was nonchalant compared to Teacher 2 who was actively involved in the lessons. However, when comparing the observation of the substitute teacher at School 3 with Teacher 1, Teacher 1 seemed more involved than the substitute teacher. The main reason for the difference in Teacher 2's teaching style seemed to be that she was Reggio trained and she taught at a Reggio Emilia-inspired school. The other teachers both taught in traditional schools where CAPS or IEB was applied with no specific approach to teaching.

Teacher 2 was sent on regular professional development with regard to the Reggio Emilia Approach to ensure that the approach was implemented as effectively as possible. The effects of the Reggio Emilia Approach could clearly be seen in School 2. The children were much more confident regarding working with what was given to them, sharing their thoughts, and overall work. The children worked purposefully, and there was no hesitation among them.

Looking at Schools 1 and 3, the children did not work with as much purpose and confidence. There were a few children that showed much creative thinking; however, they were in the minority. The children at School 2 were used to provocations and enticing things being brought into the class to spark their thinking. Therefore, the children interacted with the materials brought in for this study in a more interactive and explorative way.

Although the children of School 3 were also used to random provocations, it seemed that the absence of their teacher affected their performance. School 3's results have made quite the impression on me regarding new possibilities for a research topic. The results of School 3 were not satisfactory for this study; however, the influence of a teacher's presence was shocking. I did not realise that the teacher had so much influence. As a teacher, I assumed that when there was a substitute teacher, the children in my class would continue as usual. However, after observing School 3, I saw that this was not the case.

The teacher also greatly influenced how positively or negatively a child reacted to a challenge. Teacher 1 encouraged the children to work with the mistakes. She was focused on teaching the children that mistakes were part of life, it could be seen and heard throughout the class. Whenever someone made a mistake, all the children would recall how their teacher always told them that mistakes were okay.

Teacher 2 did not necessarily focus on teaching that mistakes were part of growing up. However, through the environment she created, it was a natural concept. The children were confident enough to dare without the fear of failure because they knew if they failed, they could always fix it, try again, or create something new. They were confident in their abilities. Teacher 3 encouraged the children to make mistakes and to learn from them but in a more practical way. As mentioned earlier, Teacher 3 focused on independence in cleaning up after themselves. Solving problems creatively was not necessarily of great importance.

The children's creative thinking and problem-solving skills differed vastly from school to school. School 1's children could solve everyday problems, like with the sharpener, and they could incorporate creative thinking with their problem-solving. Some of the children were very creative, however, there were still some of the children that did not have the confidence and rather copied their friends. School 2's children showed

amazing creative thinking abilities combined with problem-solving. They were able to incorporate the creative accidents by using their imagination. Some of the children rather fixed the mistakes than to create something from them, however, they still showed problem-solving skills. The children at School 3 showed practical, everyday problem-solving skills, but no creative thinking was evident. One or two of the children were creative, but they did not incorporate the creative accidents.

An interesting theme that emerged during the study was the children's confidence and how it affected how they worked through familiar and unfamiliar challenges. Although the children at School 1 exhibited some uncertainty, it is possible that possessed the necessary abilities. However, without the confidence to exhibit their abilities, the results point to inability. The children in School 2 exhibited the necessary confidence and, therefore, their abilities were shown more clearly. With School 3's children, it was difficult to say whether they had the necessary confidence or not. From the observation, I would say that their abilities were more habits than abilities. They were used to cleaning up after themselves, it was nothing new. However, it would seem that their abilities were not exhibited.

Reflecting on all the data collected, I would say that School 2 helped to clearly illustrate the difference the incorporation of the Reggio Emilia Approach could have, especially with regard to the use of provocations. The children at School 2 showed much more skill, initiative, and confidence than the other schools.

4.9.1 Category 1: Strategies for the successful implementation of provocations

Teacher 1 seemed unsure of what was expected of the lesson as well as in her teaching abilities. The books, *The Book of Mistakes* and *My Book of Beautiful Oops,* made available as a provocation, were read as a normal storybook and not as something to spark the children's imagination and creativity. Most of the children also ignored the marks on the A4 papers and tried to rather fix the marks by pasting something over it or by simply drawing over it. Teacher 2 exhibited excitement and confidence when she taught the children in her class. She understood the importance of properly introducing a new topic. As mentioned before, Teacher 2 taught at a Reggio Emilia-inspired school, therefore, she knew how to effectively use provocations. She kept the children interested in the lesson by engaging with them and allowing them to

provide possible solutions to the mistakes made in the book. The children's confidence and imagination allowed them to present creative solutions. Although the children did not all necessarily physically exhibit their solutions and still tried to fix the marks on the A4 papers, they could at least think creatively.

When the teachers were asked about their interpretation of the term provocations, they all connected the idea to freedom. The children had the freedom to express what they were interested in, and they were given the freedom to think for themselves. The teachers felt that the provocations for this specific lesson challenged the children to step outside their comfort zones. The use of provocations not only showed the teachers that they were underestimating the children's abilities, but they also experienced how open-ended materials could challenge children in a good way.

4.9.2 Category 2: Creative thinking skills

When a new lesson was introduced, Teacher 2 not only made use of provocations but also of discussions. Discussions could be a good way to encourage children's thinking skills. During the lesson observed, Teacher 2 encouraged the children to think creatively during the initial discussion. She asked them about art and their perception of art. She did not just tell them what art was and what types of art there were, she allowed the children to answer those questions.

The confidence with which Teacher 2 taught the children played a significant role in the confidence of the children. The teacher exhibited confident behaviour and the children in turn were also confident in their attempts. Teacher 2 made use of technology to learn new art skills or to find creative art projects that allowed the children to express themselves.

The teachers were shocked when they realised the children in their classes tried to fix the marks on the papers instead of trying to work with them to create something new. After the observation lesson, Teacher 2 got to work on educating her children to see possibilities instead of mistakes. The use of provocations and papers with marks on them encouraged a child in Teacher 3's class to realise that making mistakes was not the end of the world and that you could still make something beautiful from a mistake.

4.9.3 Category 3: Problem-solving skills

The children at School 2 were encouraged to explore and to find solutions to problems by trying. The teacher encouraged the children and guided them to think outside the box. Teacher 2 felt strongly about allowing children to solve problems more concretely than only 2D, like on a computer, for example. I asked Teacher 2 how she thought the children in her class would react if an artwork they created got a mark on it or something was spilt over it. Her answer was that they would want to start over unless she encouraged them to see possibilities instead of mistakes.

How Teacher 3 educated the children in her class about problem-solving could be effective, however, it was not creative. Teacher 3 aimed to teach the children independence, to teach them that they could solve problems independently and that they did not always need an adult. This way of thinking did in a way teach confidence and independence, however, the way in which the children solved problems was basic and exactly as they were taught. It was evident that they were told how to solve a problem and they were not given the opportunity to find a way for themselves, therefore, they could not think creatively.

When it came to problem-solving skills, the children were scared to think outside the box because their solutions would be different from their friend's and they wanted to fit in. As much as they wanted to fit in they also wanted to be the best. The children did not have the knowledge to realise that competition could be a good motivator to become better. Competition rather discouraged the children and broke down their confidence.

4.9.4 Category 4: The role of the teacher

Teacher 2 encouraged the children in her class to participate confidently in lessons. She drew the other children's attention to someone who was able to think creatively and they applauded that child. This showed the children that they would get recognition if they tried and that they would not get laughed at if they had strange ideas. A child also learns through examples, and as mentioned before, Teacher 2 modelled confident behaviour. The teacher creates the environment for children and it has a big impact on how the children's skills develop. The environment created by

Teacher 2 was safe, confident, encouraging, creative and imaginative. The teacher did not make children feel that their ideas were silly, she showed them that she could come up with even sillier ideas and that nobody laughed at her for thinking in such a bizarre way.

Teacher 3 strongly believed that children should know what was expected of them, therefore, she clearly explained the week's goals to the children each week. Teacher 3 tried to teach the children confidence by making them feel comfortable, by telling them what to expect, for example. However, this method was not effective. When the children were confronted with the unknown, they did not know how to react to it. Teacher 3 also liked to introduce a theme by reading a book about it, this became predictable and the children needed to be surprised with new ways of teaching. During art activities, the teacher also gave the children examples of what their artworks should look like. Although she started with shapes and encouraged the children to think about what shapes they needed to use, she was still showing them exactly how it should have been done and how it should have looked.

4.9.5 Category 5: Environment

Teacher 1 created a restricted creative environment. By restricted creative environment, I mean that she did allow creativity, but within limits. When the children got too creative and it started getting messy, Teacher 1 stopped the children. She was not comfortable being outside of her comfort zone. Although Teacher 1 still created an encouraging environment and an environment where making mistakes was acceptable, the environment was still restricting. Allowing opportunities for children to explore their creative thinking and problem-solving skills required an environment where it was encouraged.

In combination with a limiting environment, Teacher 3 shared that children were also limited by themselves. Teacher 3 felt that the children did not have the suitable creative abilities yet to create something from the marks on the paper. However, it was not about the end product, it was about the children exhibiting their creative thinking skills. It did not have to look like they wanted it to look, it had to show that they were able to imagine a solution to the marks on the paper.

Again, the confidence of the children was brought up by the teachers. The teachers explained that they experienced a lot of children looking at their friend's work for inspiration instead of trusting their own creative skills. The thought Teacher 3 shared about the lesson enabling the children to view their peers as equals, was something that should be encouraged daily.

4.10 Conclusion

During the analysis of the generated data in Chapter 4, it was evident that confidence played a bigger role in the development of children's creative thinking and problem-solving skills than I originally thought. The teacher and her beliefs regarding the importance of art and how art should be presented, was also an important factor in the successful development of creative thinking skills.

As a teacher myself, and researcher, I was shocked to see the state of the creative thinking and problem-solving skills of the children. I was particularly surprised to see how children's problem-solving skills have deteriorated in the last few years.

However, with the use of provocations and handing children their own learning experience back, I am positive that the creative thinking and problem-solving skills of children can be improved.

The results of the study were discussed in combination with the research from the literature review in Chapter 5. In Chapter 5, the similarities and contradictions between the results of this study and the literature are also discussed.

Chapter 5: Conclusion and recommendations

5.1 Introduction

In Chapter 4, the data generated in the study was presented and the categories that emerged from the data were highlighted. In Chapter 5, these findings are discussed in relation to the literature review from Chapter 2 and the theories that supported the study. Further, the primary and secondary research questions are answered by making reference to the analysed data and the findings of the study. The limitations, as well as recommendations of the study, are also discussed in this chapter.

5.2 Literature control

The literature review in Chapter 2 served as a basis for comparing the study's findings. Firstly, the similarities between existing literature and the findings of this study are discussed. Thereafter, the contradictions between the existing literature and the findings of this study are discussed.

5.2.1 Comparing similarities of existing literature with the findings of this study

Below are the similarities found between the literature and the results of the study. The section is split into subsections in order to understand the literature better.

5.2.1.1 Critical and creative thinking

In the literature reviewed, Lindsay (2017: 4) was referenced in relation to art activities that have been transformed by teachers from open-ended activities to teacher-centred crafts. This could clearly be seen in the data generated. During all nine of the interviews, the teachers stated that they guided the children when doing art activities, and some of them went as far as drawing step-by-step on the board for the children to follow. Art displayed in the classroom or somewhere at the school was usually very formal in terms of guidelines given for every step. In contrast, when the children were left to express themselves and be creative, their art was sent home. I think the reason

teachers tended to send home creative artworks was because they felt the imperfections of those artworks reflected badly on their teaching abilities.

Children must be allowed to think for themselves to develop their creative and critical thinking skills. The exercise encouraged the development of their imagination as well (Ingledew, 2016: 8). Children needed to choose their way of completing a task, and through that, they determined what worked and what they needed to change (Moylett, 2014: 73). Referring to the children at School 3, they were able to solve problems, but not creatively. Looking at the generated data, it was as if the children at School 3 were not able to imagine, they were more focused on reality. The teacher focused on encouraging them to develop in terms of what would be expected of them in the future, like a girl would have to run a household, for example. The teacher tried her best to prepare the children for what might come across their paths in the future but she forgot that they were only children and they were still exploring and creating their own meaning. I found that sometimes teachers and parents expected children to be grown-ups earlier than they should be. It might be because of the rushed lifestyle most people live, there is no time for teaching children skills, they are expected to know without being taught.

5.2.1.2 Imagination

Children need to be encouraged to explore their imagination. Allowing them to choose a spot for their bags each morning is not enough to encourage creative thinking and problem-solving skills. Teacher 1 stopped a child from following his ideas because it got too messy. When I asked the child what he was trying to do, he explained that he was painting the glue all over the page and then he wanted to tear papers and put it on top of the glue. His teacher never asked him what he was doing, she just assumed he was playing and not doing what was asked. Children should be left to explore their own ways of completing a task. By the permissions granted through the children's informed assent letters that could be found in Appendix D, I was granted permission to interact with the children by their parents and by the children themselves. By interacting with the children I could gain insight into their thoughts when they created the artworks.

According to James and Brookfield (2014: 6), engaging children through imagination will lead to creativity. During the introduction to the lesson at School 2, the teacher read one of the books to the children and before showing the children what was added to the drawing on the next page, she asked the children what they would have added. There were answers like:

"I would add rocks."

"I would add a fence, so it looks like she's jumping over the fence."

"I would add lots of colours, like a rainbow."

The teacher encouraged the children to share their creative thoughts and she never laughed at them or criticised what they said. She encouraged them to think even further outside of the box. The artworks presented at the school were very creative as a result of the encouragement from the teacher.

5.2.1.3 Creating an environment for problem-solving

Creative people are flexible in their thinking and are, therefore, adaptable (Bajaj, 2021). This statement was accurate during the interviews with the teachers. Teacher 3 shared a story of a child that would just sit and look when he messed water on his paper, for example. He had no idea how to handle the situation and he could not adapt. A child who was able to think creatively would have cleaned the mess and either kept working on the artwork or started afresh. This child probably also did not possess the needed confidence to trust a solution he came up with.

Teachers created the environment to develop problem-solving as well as the time and materials. Problem-solving is a skill that can be learned by practising (Dostál, 2015: 4). Teacher 3 was focused on teaching the children in her class life skills. Therefore, she provided them with opportunities and materials to solve their problems. When a child dropped something on the floor, they were encouraged to clean it up, and they knew exactly where to find the cleaning supplies. If they had an art lesson, the whole class cleaned up afterwards by either washing the paintbrushes or packing away crayons. The children were given the opportunities to solve problems; however, it was mostly focused on when they made a mess. I believe it was because of the teacher's

practical teaching style. She wanted to ensure that the children she taught could take care of themselves one day.

Problem-solving builds children's confidence, especially when they successfully solved the problem on their own (Marlborough School, 2020). The children at Schools 1 and 3 did not exhibit confidence and they could not creatively solve the problem of a mess on the paper they had to draw on. The children at School 2 were encouraged to share their ideas and solve problems independently. They were also exposed to their teacher's confidence. The children at School 2 were able to work with the splatters on their pages, and they were confident in their attempts.

5.2.1.4 Possibility thinking

Luyken (2017) encouraged children to accept their mistakes and see an opportunity instead of looking at the mistake negatively. Teacher 2 spent time looking at each of the artworks the children in her class created. One child was not happy about the coffee stain on his page but started drawing a frog nonetheless. She sat with him and encouraged him to think about what environment a frog lives in. The child could then see the possibility of the stain turning into a leaf the frog could sit on. If teachers and parents can teach children this skill they would be able to solve problems more creatively and with the needed confidence.

4.2.1.5 Teachers' influence on art education

Allowing future teachers to work through their trauma before teaching art to children could significantly impact how they taught art (Hetrick, 2013: 275). I firmly believe that this could make a significant change in how art is being taught. Looking back to the data generated from Teacher 3, she focused on allowing children to colour their artworks any colour they chose because this was an emotional trauma she endured. If teachers did not work through their trauma the cycle would continue where teachers criticised the children's artwork and the child then experienced trauma and believed they could not be creative. Walking into a classroom and teaching art without any negative connotation can positively impact how the children experience art.

Teachers, and parents, expected too much of children instead of allowing them to express their creativity (Tavin, 2014a: 439). As mentioned before, when teachers needed to exhibit children's art, the teachers expected perfection from the children. They expected the Pinterest image they saw. Teachers believed that the end product would reflect on them as teachers, but this was not true when it came to art products. The end product reflected the child's creativity and abilities. Parents and teachers should have the children's perspectives into consideration and expressed pride in their artworks to encourage their continued creative expression.

5.2.2 Contradictions between existing literature and the findings of this study

In the section above, I discussed the similarities between the generated data and the literature of this study. In this section, the contradictions between the generated data and the literature can be seen.

5.2.2.1 The change in art education and teacher' influence

Initially, I thought that the reason for art transforming from open-ended activities to teacher-centred activities was due to teachers not having enough confidence to teach art lessons (Lindsay, 2017: 4). However, after conducting the interviews with the teachers and observing them in their classes, it became clear that it was not due to their lack of confidence but rather because they strived for perfection. The teachers all indicated that they were confident to teach art because of all the resources available, like Pinterest.

Narey (2017: 9) states that art is seen by teachers as something that takes too much time, something children struggled with, and an aspect that does not require grading. Although I still believe all of these reasons to be true, I have found a different reason to be even more accurate. Teachers interpret art as a mess. When observing Teacher 1, she got very nervous when some children became covered in paint, and another child was smearing glue all over his page. She immediately sent the children to get cleaned up and removed most of the glue left in the container. That stopped the children's creative thinking right in its tracks because they thought what they did was a mess and was wrong.

Lindsay (2015) states that most adults can recall a time when their creative attempts were criticised, and it causes the teachers to lose confidence in their creative abilities. When observing Teacher 3, I noticed that she took that critique and how it made her feel as a way to encourage the children to use the desired colours when colouring their artworks. With this, I mean that if the child wanted to colour their chicken pink, the teacher allowed them to. She was specifically criticised because the colours she used were not realistic; therefore, she was focused on allowing the children the choice when she got the chance to teach.

5.2.2.2 The importance of making mistakes

Metcalfe (2017: 470) shares that research has shown that making mistakes followed by corrective feedback leads to improved learning. However, looking at the data generated, I disagree with this statement. Correcting a child when they have made a mistake, even by explaining why it was wrong, did not result in better learning. It resulted in children being unable to make decisions for themselves and always looking to an adult or a friend to help them fix their mistakes. All the children that were part of this study have been corrected in some way by an adult before, therefore, when they made a mistake while creating their artworks, they turned to their teacher to help them. Instead, we should encourage children to find solutions and not just immediately provide the correct answer, or what we thought was appropriate for completing specific tasks.

5.3 The relation between data gathered and theories supporting the study

The three theories that supported the study were Pólya's problem-solving theory, Craft's possibility thinking theory, and Metcalfe's creative accidents theory. In this section, these theories are discussed with regard to how the data generated related to these theories.

Pólya's problem-solving theory referred to four stages of problem-solving, which included understanding the problem, devising a plan, carrying out the plan and looking back (Leong *et al*., 2012: 361). When looking at the data gathered, I cannot say with

certainty that even half the children that participated in the study, passed the first step. The children had to understand the problem to be able to solve it creatively. The children were not able to do so.

Craft's possibility thinking theory required enhancing children's imaginations by teaching them to look for possibilities in their daily lives McConnon (2016: 19). The children at School 2 were mostly able to see the possibilities of what the marks on the paper could become and they attempted to visually illustrate those possibilities. The children at Schools 1 and 3 were not able to see possibilities, they viewed the marks in a realistic way and, therefore, the marks became a problem.

Metcalfe's creative accidents theory is based on the belief that mistakes are vital to the learning process (Metcalfe, 2017: 470). Most of the children that participated in the study were bothered by the marks on the papers. The children wanted perfect papers and they wanted to produce perfect artworks. Teachers and parents were too focused on having everything perfect that they forgot about the vital role mistakes played in children's learning. Children should be allowed to make more mistakes and to make a mess when learning.

5.4 New insights

Something that I overlooked and that should have been obvious, especially as a teacher, was the fact that everything was done for children. Teachers 2 and 3 had much to say about children not getting enough opportunities to solve problems themselves. Teacher 2 indicated that it could be because parents were busy and just wanted to get it over and done with, or it could be that the nannies appointed for the children did everything for them. Teacher 2 explained that some children in her class would manipulate the nannies by using the threat of telling their parents that the nannies did not help them. In fear of that, the nannies did everything for the children. Teachers sometimes did exercises for children instead of taking the time to teach the child a new skill. This could be because of a lack of time or too many children in a class that required attention. Allowing for more opportunities cannot be achieved only at school level, it needs to be granted at home as well.

COVID-19 might have also impacted our education system more than we wanted to believe. Something interesting that Teacher 3 shared with me was that she noticed children started struggling more with speech after COVID-19. She indicated that she thought the reason was that the children and teachers had to wear masks. The teacher's mouth was covered the entire time, and the children could not hear properly or even see their teacher's mouth. Therefore, they started saying what they heard and words got mispronounced or sounds were not formed the way they should have been. Many of our children are now attending speech therapy because of this. Our main focus during COVID-19 was catching up on as much lost time as possible, as the children were behind on the curriculum. However, we did not anticipate the rest of the challenges that came with it. The impact related to this study might have been that children were denied the opportunity to engage in art lessons or they were denied creativity when doing so. Like many teachers, parents could also have wanted the perfect art that they saw on Pinterest.

Another new insight that could be seen in the analysed data was the possible effect of confidence on the development of children's skills. Initially, I took into consideration the confidence levels of the teacher, however, the teacher's confidence levels did not have such a significant impact as the children's confidence levels. Not many children that participated in this study had the confidence needed to develop their skills successfully. The children at School 2 were the most confident in their attempts and I believe it was due to how their teacher encouraged them. However, overall I found that many children lacked the needed confidence, and it had a bigger impact on the results than I originally anticipated. As mentioned before, confidence critically impacted children's creative thinking and problem-solving skills. If the children were not confident in their attempts they would not produce work to the best of their abilities.

5.5 Answering the research questions

In this study, there was a primary research question as well as two secondary research questions. These questions guided what should be researched as well as how the study should be researched, as these questions had to be answered by the findings of the study. The secondary research questions were derived from the primary research question, which was further broken down into secondary questions.

Therefore, the secondary questions are discussed first, and lastly, the primary question is discussed. These questions are discussed separately and answered in the next section.

5.5.1 Secondary research question one

The first secondary research question of this study was:

> *What are preschool teachers' understandings and views about enhancing children's creative thinking and problem-solving skills?*

As mentioned earlier, research showed that teachers do not view art as an important subject compared to other subjects (Zupančič *et al*., 2015: 25). The research was more focused on how teachers perceive art education in general than what their views are about enhancing these skills. When observing the art lessons presented by the teachers, I noted that the teachers all reacted differently. Teacher 1 wanted to intervene throughout the lesson, Teacher 2 facilitated but kept her distance to ensure creativity, and Teacher 3 did not engage with the children. Observing this indicated that Teacher 1 wanted perfect art. She did not want the children's attempts to reflect badly on her. Teacher 2 attempted to encourage the children's creative thinking and problem-solving skills by asking them leading questions and guiding them to think about new possibilities. Teacher 3's nonchalant attitude did not stop the children from developing their creative thinking and problem-solving skills; however, it also did not encourage the development of these skills.

During the interviews, I specifically asked the teachers what their understanding and perception of the children's creative thinking and problem-solving skills were. When asked about the current state of the children's creative thinking and problem-solving skills, Teacher 1 was unsure of her answer, although she indicated that the children needed much guidance when it came to problem-solving. When the children had to build something from blocks, for example, they needed her or their friend's help to do so. She felt strongly that there was a need for the children's creative thinking and problem-solving skills to be developed further. She explained that, to her, it seemed as though the children were being prescribed daily on what to do and how to do something. She also indicated that the children's lack of abilities was because of low self-confidence and the children's fear of being wrong. Teacher 1 shared that she

thought children's creative thinking and problem-solving skills could be better developed if they were given more opportunities to solve problems themselves and if they were not put in boxes. She explained that they should be free to think for themselves, for example, instead of showing them how to draw a person let them look in the mirror and draw what they see.

Teacher 2 believed that the children's creative thinking and problem-solving skills were not very well developed. She explained that they tried to fix their problems by covering them up rather than interacting with the problem in different ways and being creative in solving it. Teacher 2 shared that children were very hard on themselves, especially by comparing themselves with their friends. Teacher 2 also felt strongly that children's creative thinking and problem-solving skills should be improved. She motivated her response by explaining that they were not left to struggle and to figure things out for themselves. Parents were constantly working, and the appointed nannies were too busy with the household jobs, and they ended up doing everything for the children instead of teaching them. Teacher 2 indicated that technology also played a big role in the deterioration of children's creative thinking and problem-solving skills. Instead of solving riddles or building puzzles, children played TV games. The type of problem-solving children were exposed to were 2D and not 3D, which also impacted how well their skills developed. Teacher 2 also felt that children should be given more opportunities in the class environment and the curriculum. Children should be held to higher expectations of their abilities. Lessons could also be structured differently to allow for problem-solving skills. If a child struggled, it could build their character and push them to make decisions to solve their problems. Teachers underestimated the children's abilities, and they also expected to have art that looks perfect instead of encouraging the children to express themselves through art.

Teacher 3 thought that children had many capabilities but did not have the opportunity to exhibit them. Teacher 3 had experienced children saying that cleaners would clean the mess that they made. Teacher 3 focused on teaching the children to clean up after themselves as a type of problem-solving. When the children solved their problems, they were proud of themselves for solving a problem that they created. Teacher 3 also felt there was a need to improve the children's creative thinking and problem-solving skills. However, Teacher 3 was more focused on the problem-solving skills and not the creative thinking skills. Teacher 3 explained that teachers and parents needed to

teach children to adapt to the world that we live in. Again, it was proposed by Teacher 3 that children should be given more opportunities and that everything should not just be handed to them and done for them.

In general, all the teachers agreed that children's creative thinking and problem-solving skills were lacking and that children were not given enough opportunities to practice their problem-solving skills. If children are unable to solve basic problems it cannot be expected of them to solve these problems creatively on top of that.

In my opinion, as researcher and teacher, I agreed with the participating teachers. Children were not able to solve problems as effectively as they should have been. For children to go out into the world one day and become the next leaders, problem-solving is an important skill to learn. In that regard I agreed with Teacher 3 who believed that we as teachers should have been preparing children for the world they would one day become a vital part of. As teachers and parents, we need to go back to the basics and start with concrete problem-solving skills before expecting our children to solve problems creatively. However, creative problem-solving should always remain the goal. By incorporating provocations, creative problem-solving is possible. In Section 5.5.2, the possible effect of provocations is discussed.

5.5.2 Secondary research question two

The second secondary question of this study was:

> *How can open-ended provocations influence young children's problem-solving and creative thinking skills during art lessons?*

Provocations serve as a prompt to get a response out of the children by provoking their curiosity, discovery and conversation (McAvan, 2020). Provocations are open-ended activities with no specific outcomes (Durand, 2016). The term 'provocations' came from the Reggio Emilia Approach, therefore, if teachers are not familiar with the approach, they would not necessarily know the crucial role it plays in developing problem-solving and creative thinking skills in children. Teacher 2 taught at a Reggio Emilia-inspired school, but Teachers 1 and 3 were unfamiliar with the approach.

Teacher 1 unconsciously used provocations in terms of physical resources as well as the environment. For example, the children would make binoculars to look at birds

outside and draw the birds when they returned. Teacher 1 liked to show children the real thing before they were expected to draw it. She encouraged the children to use their senses, to look at and feel the object, for example. Provocations were supposed to be more of an exhibition in the classroom that the children could interact with in their own time instead of how Teacher 1 was engaging the children in the lessons.

Teacher 2 explained that when she did art activities, it was usually provocation-based. She started with a discussion and an object of beauty. An object of beauty could be something exciting or abstract that the teacher would bring to class see how the children reacted to it. The children were then given the materials needed and they created whatever was sparked by the object.

Teacher 3 indicated that although she was not familiar with the terms, she used provocations. Teacher 3 set up a theme table for every theme with interesting objects relating to the theme that the children could interact with. Other than that, she would put out random art supplies on a table and leave the children to discover it for themselves and to make something with the supplies. Sometimes she would guide them in what to make.

The way provocations were being usedais not necessarily how it was intended to be used by Loris Malaguzzi, founder of the Reggio Emilia Approach. Provocations are meant to provoke thought and discovery, it is meant to be aesthetically pleasing and packed out for the children to explore by themselves. The types of provocations used by the teachers participating in this study were more controlled. The children were shown items, for example, and they were expected to think creatively from that.

For the lessons that were observed, the teachers read one of the books that were made available as a provocation in an attempt to stimulate the children's creative thinking. I could see the difference between School 1 and 3 and School 2. The teacher at School 1 read one book to the children and did not interact enough with the children during the introduction. Teacher 3 did not read any book and let the children start creating. Teacher 2, on the other hand, read both stories and made the whole introduction very interactive, encouraging the children to think and share their ideas.

Overall, it could be seen that the children at School 2interacted better with the provocations. Their creative thinking and problem-solving skills were better than the other two schools, although still lacking. It was important to remember that children

exposed to provocations reacted well to them. It proved to me, as a researcher, that provocations could be a significant factor in enhancing or better developing the creative thinking and problem-solving abilities of young children.

In my opinion, using open-ended provocations during art activities could positively influence children's creative thinking and problem-solving skills. The results of School 2 supported this statement, as the children at School 2 demonstrated a greater ability to use their imagination compared to the children at the other schools. Although other factors influenced the children's creative thinking and problem-solving skills, these children had wonderful ideas with the marks on the papers. Regularly incorporating provocations, not only during art activities, has the potential to encourage children to develop their creative thinking and problem-solving skills further.

5.5.3 Primary research question

The primary research question of this study was:

How can teachers use provocations in visual art to enhance creative thinking and problem-solving skills in young children?

As mentioned in the previous section, the teachers involved in the study used provocations differently than originally intended by the founder of the Reggio Emilia Approach. This does not mean that the way in which they used it was wrong, it means that it could be better utilised.

Packing out random art materials, as in the case of Teacher 3, and bringing in an object of beauty, as in the case of Teacher 2, could still be used as it provoked the children's discovery, exploration and thinking. Teacher 1's use of the environment was a good idea to encourage children to explore physically, not just with their eyes.

I would suggest that provocation stations should be set up. The station could be changed weekly and does not have to be related to a theme. The teacher could use something the children were interested in, like leaves, to guide the station. With leaves as an example, there could be leaves with magnifying glasses, books regarding different leaves from different trees, and art materials to make 3D or draw 2D leaves. The possibilities are endless. The children could even put leaves in paint and stamp them on paper. Engaging the children in the station by letting them pick the leaves for

the station themselves could also provoke them to explore. Provocation stations could also improve, among others, children's multi-sensory development, thus, the children's learning.

Another type of provocation could be bringing in a *beautiful thing*[3]. Each child could be asked to bring something special to them and these items could be used to make something else. If the children brought buttons, for example, they could create a leaf with them.

For provocations to really have an impact on the children's creative thinking and problem-solving skills, they need to be used in such a way that it provokes the children to interact with them. If the children looked at it and it did not pique their interest or make them want to explore it, it was not being used effectively.

From the generated data and observing the nine schools participating in the study, I have noticed that for provocations to really have an impact, teachers should be trained on what exactly a provocation is and how to use them. It was also important to note that provocations were based on the children's interests. The main goal at the end of the day remained to spark the children's interest, this would not happen if the topic was not intriguing for them. Teachers needed to understand the concept behind provocations, and they also had to incorporate provocations daily. Even if provocations were changed weekly, they needed to form part of the learning environment. Provocations will not be effective if only used once in a while.

5.6 The relationship between the theoretical framework and the data

In Chapter 1, the theoretical framework was introduced and discussed in greater detail in Chapter 3, as part of the study's methodology. The framework's foundation was the Reggio Emilia Approach with creative thinking, problem-solving and critical thinking as the supporting beams. Provocations, documentation, the environment as the third teacher, and creative accidents were important aspects of the theoretical framework. To complete the cycle and achieve the Sserendipitous process, the child should have

[3] 'Beautiful thing' is a term used in the Reggio Emilia Approach to refer to anything a child finds special. This can be an item with sentimental value or something as simple as a rock that the child picked up and found beautiful.

been able to incorporate Craft's possibility thinking steps into their thinking. These steps include play, innovation, taking risks, posing questions, imagination, determination, immersion and working with intention (Craft, McConnon & Matthews., 2012: 20). Other theories that formed part of the theoretical framework were Pólya's problem-solving theory and Metcalfe's creative accidents theory.

The Reggio Emilia Approach was a big theme throughout the study, as the study focused on the use of provocations, a Reggio Emilia concept. Despite working with young children, two of the participating teachers did not know what the Reggio Emilia concepts consisted of. However, they still incorporated some of the concepts. Looking at what Teacher 3 said, she did not know the terms used in the approach, but she did incorporate open-ended provocations in her classroom. Teacher 1 used the environment as a third teacher during art activities, but provocations were not necessarily incorporated. Teacher 2 taught at a Reggio Emilia-inspired school. Therefore, she incorporated the aspects of Reggio Emilia into her daily teaching. The data gathered at School 2 showed that provocations have the potential to positively influence children when regularly incorporated. The children at Schools 1 and 3 were not familiar with provocations and did not react as well to the use of provocations. Some were able to create something unique from the marks on the papers; however, the majority of the children attempted to hide the marks by pasting papers over it or drawing over the marks.

How the children solved problems and their overall problem-solving skills played a big role in how they could solve the problem of having a stain or a splatter on their page. In order to achieve possibility thinking, children should have possessed adequate problem-solving skills. I was shocked to the limited problem-solving skills displayed by the children, as well as their apparent inability to even attempt to solve a problem. During the interview with Teachers 2 and 3, they indicated that parents were prone to doing everything for their children instead of encouraging them to find the solution or at least one solution that worked for them.

Creative thinking is an essential aspect needed for developing problem-solving skills. Creative thinking encourages children to look at problems from all sides (Rock Content, 2020). After examing the generated data, it is evident that this statement could not be more accurate. Throughout Chapter 4 when analysing Teacher 3's data,

it was notable that the children at School 3 were able to solve problems, but without not with much creativity. Creative thinking, together with problem-solving, resulted in creative solutions. However, if children could not think creatively, it influenced their problem-solving abilities, and they would most likely not be able to solve problems effectively.

Creative thinking might appear to be more imaginary or unachievable, this is when critical thinking should step in (Padget, 2012: 8). Critical thinking enables children to evaluate the feasibility of their creative solutions and make the necessary adaptations to ensure the solutions are achievable. Without focusing on the achievability of the solution, I would like to have seen the children at least come up with bizarre solutions. The children at School 3 were thinking too realistically; therefore, they could not achieve creative thinking. If they went back a step and were encouraged to imagine and share their crazy ideas, they could later be brought back to reality. This study showed me that imagination is an important step in creative thinking, if this step is skipped and replaced with thinking realistically, children would end up not being able to solve unknown problems, as could be seen in the data of School 3. The children at School 2 showed great potential for creative thinking. Referring back to how they reacted to the book read about making mistakes, the children came up with their own creative, somewhat bizarre ideas to fix the mistake the author made while drawing.

It was difficult to say that even one of the children who formed part of the study achieved the serendipitous process. None of the children was able to incorporate possibility thinking to such an extent that they could creatively solve the problems at hand. The children at School 2 were closest to achieving the serendipitous process. They were able to incorporate the provocations in such a manner that it exhibited some creative problem-solving, however, not all of them were able to do it. It was only the few extreme cases that were capable of creative problem-solving.

5.7 Limitations of the study

During the semi-structured interview with Teacher 2, she sparked the idea that I could have generated my data differently. With regard to the lessons the teachers presented, the provocations could have been different. I could have rather used a completed

artwork the children made and messed something on it. In doing so, I believe the children would have reacted to the provocations more enthusiastically as they were already proud of their artworks. Instead of ignoring the stains on the paper, they would have worked with the stains to attempt to restore their artworks to its previous beauty.

As for limitations, the sample size used in qualitative research has raised some concerns. Some might argue that a smaller sample size is advantageous, especially for gaining in-depth knowledge. However, due to the smaller sample size, generalising the study's findings was more challenging, although that was not the main objective (Rahman, 2017: 105). Further, because of the research's in-depth nature, the data analysis was more complex and time-consuming (Rahman, 2017: 105).

The process of generating and analysing the data was very time-consuming but worthwhile in the end. I was able to gather the data I wanted. However, the concerns raised regarding the sample size were valid and could be improved by gathering data from more schools in follow-up studies. It might have changed the results drastically if I had generated data from more schools. If I started with homogenous schools and then moved over to different types of schools, it could also have had different findings. By this, I mean first focusing on government schools and then moving to private schools, for example.

Another limitation of the study was the restricted timeline. If more time was spent at each school introducing provocations and allowing for more frequent experimentation, exploration and practice, the children would have reacted differently to the provocations presented.

5.8 Implications and recommendations

In this section, recommendations are made to schools, teachers, and parents that could be implemented to improve children's creative thinking and problem-solving abilities. Ideas for possibly expanding the research to similar areas are also discussed below.

5.8.1 Recommendations

The recommendations made for the schools, teachers, and parents are grouped into subsections in order to better understand the main categories present in the recommendations. The recommendations could be better organised according to what the recommendation related to, rather than whom the recommendation was for. The subsections consisted of (1) *the use of provocations*, (2) *creative thinking and problem-solving skills*, (3) *creative problem-solving*, and (4) *teaching confidence*.

5.8.1.1 The use of provocations

The recommendations with regard to the use of provocations are aimed at the teachers, parents, and the schools. The recommendations made can be seen below:

For children to react better to provocations in future and to develop their creative thinking and problem-solving skills more, they should be exposed to provocations more often. Exposing the children to provocations more often will ensure that they feel comfortable exploring the provocations.

In order for the children to comfortably explore these provocations they need to be challenged more often. Not only with provocations but by allowing them to solve problems independently.

Teachers can use provocations more productively by allowing an opportunity for independent problem-solving. An example of how this can be accomplished is the introductory lesson of Teacher 2, wherein she asked the children to make predictions before she showed them what was in the book.

When teachers decide on provocations it should be guided by the children's interest. Children should be observed to determine their interests and the provocations should stem from that.

If provocations are set up according to the children's interests, the children will want to explore them. Teachers should encourage children's discovery to spark their imaginations and through that, their creativity.

Universities and other higher education institutions should consider including the Reggio Emilia Approach into their modules. The Reggio Emilia Approach could make

a big impact on children's creative thinking and problem-solving skills. Teaching future teachers the elements of the Reggio Emilia Approach will enable them to use provocations more frequently and effectively in daily lessons.

5.8.1.2 Creative thinking and problem-solving skills

The recommendations made on how the children's creative thinking and problem-solving skills could be enhanced are aimed at the teachers. These recommendations to the teachers can be viewed below:Teachers should realise that children are capable of more than teachers think they are. Teachers tend to underestimate the abilities of children and thus oppress their skills and the further development thereof.

As soon as teachers realise children's capabilities, all possible opportunities can be utilised to allow for independent problem-solving by the children. Teachers should refrain from prescribing to children how a problem should be solved.

Allowing opportunities for independent problem-solving will result in children seeing possibilities instead of problems. Teachers should encourage children to see these possibilities in any situation, rather than becoming negative when their artwork does not end up as planned.

There is an urgent need for teachers and higher education institutions to focus on more creative education. It is not only needed for teachers to encourage the children in their classrooms to be more creative, but it is also important for higher education institutions to educate future teachers more about how to include and encourage creativity and problem-solving into their lessons.

5.8.1.3 Creative problem-solving

The recommendations made below are mainly focused on teachers and schools; however, these recommendations can also benefit parents when encouraging their children and developing confidence in their abilities.

I would recommend allowing the children more opportunities to explore new solutions to problems. Allowing for problem-solving opportunities has been mentioned

numerously, however, children should be challenged to come up with different solutions, not only one solution.

Children should be given more open-ended materials to work with so that their imagination can take flight. Through discovering the possibilities of open-ended materials, the children will learn to think of creative solutions to problems.

Possibility thinking should be taught to the children if teachers expect creative problem-solving. Teachers cannot expect a skill from children that they were never taught.

My recommendation to all the teachers is to guide the children and encourage them to see possibilities, not just hand them a new paper and create the idea that mistakes are wrong and that they cannot be turned into something beautiful.

With teaching children possibility thinking, they should be encouraged to find a solution instead of teaching them a solution. It carries a lot more value for children's learning if they create their own knowledge.

In this learning process, children should be allowed to make a mess in their attempts to solve problems and to learn. The more mess they make the better, teachers should embrace the mess rather than to try and avoid it.

Children are all different and they think differently; therefore, they should be encouraged to think that they are good enough and that their friends are not better than them. Children should feel that their attempts are valued. It is not about having the perfect picture, it is about enjoying art and expressing their own ideas and creative abilities.

The Te Whāriki approach followed as the National Curriculum in New Zealand, sparks the thought and the need to develop a culturally sensitive curriculum in South Africa. The TW approach was developed to achieve academic success by basing children's learning on respect and understanding of their roots. The TW approach teaches children that through relationships they have the opportunity to voice their ideas and thoughts. Creative thinking and problem-solving skills could be developed more holistically through a culturally sensitive curriculum.5.8.1.4 Teaching confidence

The recommendations made in this section are applicable to the schools, teachers and parents. Educating children on confidence needs to start at home and should be reinforced at school on all levels.

Teachers should start with modelling confidence before they attempt to teach the children anything. If a child is confident in their attempts, they will keep trying even after the first attempt fails.

The schools need to create a confident and creative environment for the children. Although the classroom environment is very important and the teacher needs to ensure that the environment allows for confidence and creativity, it is just as important to ensure that this culture is carried throughout the whole school.

Children need to step outside of their comfort zones to learn problem-solving skills and resilience. Children will be confident enough to do this if the environment cherishes confidence and if it is modelled and taught by the teacher.

The teacher needs to step out of her comfort zone as well if she wants the children to step out of their comfort zones. It is not enough to only teach children about confidence, the teacher should model confident behaviour.

Teachers and parents should refrain from prescribing to children what they should do. It is crucial for children to be forced, in a manner, to think outside the box and to do so confidently.

Children should be surprised by new teaching techniques and tasks to see what the children are capable of and whether they have the needed confidence to trust that their attempts are good enough.

5.8.2 Expanding similar research to other areas

After analysing all the data and identifying areas that could have been researched differently, I identified a few possibilities for further research. Handing the children a paper that was already stained or had a splatter on, did not provoke their creative problem-solving skills as much as it could have. Maybe changing it up a little and messing on an artwork they have already created could have provoked their skills more because they now have to find a way to make the artwork beautiful again. It could possibly serve as a better motivation than handing them a paper that already had a stain on it.

Confidence became a big theme in the data generated even though it was not originally thought of as important. The influence of confidence on children's abilities, more specifically their creative thinking and problem-solving skills, could be a topic for further research in the future. The topic could even be extended to look at teachers' confidence and how they could portray confidence, and in that way model confident behaviour to the children in their class.

Another interesting topic could be to research what effect teaching possibility thinking to children could have on their creative thinking and problem-solving skills. A new trend arose a few years ago where parents and teachers would teach children self-affirmations in an attempt to achieve confidence. Self-affirmation refers to a form of motivation to maintain a positive self-image and to fight off the idea of not being competent or enough (Cascio, O'Donnell, Tinney, Lieberman, Taylor, Stretcher & Falk, 2015: 623). If teachers and parents were able to teach this to their children, possibility thinking can also be achieved. Teaching children to see possibilities instead of focusing on the negative could encourage the development of their creative thinking as well as problem-solving skills.

I have noticed in this study that a proper introduction to lessons is very important. I would be interested to research the effect it could have on children's progress if more time was spent to introduce lessons and new concepts in detail. Due to limited time, teachers tend to rush through the introduction in order to get through the work.

Teacher 3's absence on the day of the observation lesson sparked the idea to research the influence of a teacher's presence on children's performance. I would like to research whether a teacher's absence can influence a child's performance to such extremes that they are not capable of completing tasks that they normally can complete if the teacher is present.

5.9 Challenges experienced throughout the study

Throughout the study, several challenges occurred. These challenges were either personal challenges or professional challenges relating to the study. The first challenge I experienced was finding schools and teachers willing to participate in the study, and I contacted numerous schools with no response back from them. Fortunately, I managed to find nine schools that were willing to participate in the study.

The teacher at School 1 made it very difficult to work with her as she was not very cooperative. It was difficult to communicate with her; she did not respond to my emails, so I resorted to using WhatsApp where she just read the messages. I asked her several times to complete the Google form, known in the study as the electronic qualitative questionnaire, but she still did not. I contacted the head of the school to ask her to complete the form and finally got a response on the form. During the collaborative discussion, Teacher 1 logged out of the meeting early on and said she had difficulties with her internet connection. However, she did not contribute much to the discussion and just agreed with the rest of the teachers. She was given another opportunity to provide feedback which she did not do.

During my study's data-gathering stage, Covid-19 regulations were still in place, making it difficult to meet with the participants in person. I set up Zoom meetings to interview the teachers and conduct the collaborative discussion.

Using Zoom was a good alternative as I could still communicate with the participants; however, load shedding[4] was the next challenge. Load shedding created a major challenge when scheduling meetings, especially the collaborative discussion. The date and time of the collaborative discussion had to be moved several times to accommodate the different load shedding schedules of the participants and the researcher. Other than that, I had to schedule my working time to fit into the load shedding schedules to ensure that I had an internet connection.

The laptop I used at the start of my studies made it very difficult to complete work on time. The laptop did not work without being plugged in, which meant during load shedding I could not work. I then switched to a new laptop and nearly lost all my work. Fortunately, I was able to retrieve all the data.

Falling ill was a challenge that helped in a sense, I had the time to work, however, I did not have the energy to work, even though I was at home. It was a challenge that hindered my progress quite a lot.

Working full-time while studying was not an easy task. Especially when reports were due, and there was so much pressure from the school to have reports done. Generally,

[4] Load shedding refers to the interruption of power supplied to the country, South Africa, in order to lighten the load on the power stations.

balancing work, studies, social life, relationships and your household can be a big challenge. Sometimes the stress of balancing everything also sets one back on progress.

5.10 Conclusion

In conclusion, the role of confidence had a greater impact than originally thought. When teachers got stuck in old ways of teaching, it was to the disadvantage of the children. Teachers should welcome new techniques and open-ended materials. It is not about perfection, it is about children expressing themselves and their abilities confidently. Teachers should model confident behaviour and encourage children to do the same.

Making mistakes was good and taught children to see possibilities and apply creative problem-solving skills. A free environment was crucial for teaching the skills, and if children were restricted in how they could solve problems they were again taught that their ideas and thoughts were wrong.

Using provocations in lessons provoked children's thinking and encouraged exploration and investigation. Imagination came with new objects. Allowing the children to interact with open-ended provocations taught them to think outside the box and set their imaginations free.

Children are capable of more than we allow them to be. Parents and teachers should be reminded that children need to experience a sense of freedom and not only have certain expectations of them. Let them show us they are capable of solving problems themselves, instead of placing them in boxes according to what we think they are capable of.

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Appendix A: Informed consent for school boards

REQUEST FOR PERMISSION TO CONDUCT A RESEARCH STUDY

Dear School Management Board

I am a registered Master's student at the University of Pretoria and I am completing a Master's degree in Early Childhood Education. As part of my degree requirements, I need to conduct research which I choose to conduct at your school. I hereby request your permission to conduct my research at your school with one of your teachers and one of your preschool classes where learners are between the ages of four and six. The topic I am conducting my research on is:

Enhancing creative thinking and problem-solving in young children: using provocations in visual art activities

The purpose of this research is to explore and describe how the use of provocations in visual art lessons can enhance or improve the creative thinking and problem-solving skills of young children.

Teachers play a significant role in the creative thinking and problem-solving skill development of learners. The way teachers present art lessons has a big impact on skill development. Research indicates that teachers who struggle to exhibit confidence, when teaching art lessons, will negatively influence the creative thinking and problem-solving skills of children. Therefore, this study aims to contribute to our knowledge and understanding of the creative thinking and problem-solving skills of young children and how it can be enhanced by using provocations.

This study will involve four teachers, from different schools. Data will be generated through:

- Completing a Google form to gain background information on each teacher and school
- An interview conducted via Zoom with each teacher separately
- An observation of one art lesson presented by each teacher
- And a reflection session with all the teachers from the different schools.

Each participant will be required to choose a pseudonym and the participants will be asked to switch off their videos during the Zoom meetings to further protect their identities.

As the researcher, I will observe the preschool classes while the teachers are presenting an art lesson. The provocations will be supplied by me to assist the teacher in presenting the lesson. I will then assess the impact of the provocations through observation. The artistic creations of the children will be used as part of the data generation. The school will also be requested to provide their daily programme to gain a better understanding of the current status of art education in the school. The participants and the School Management Boards will be granted access to the final results.

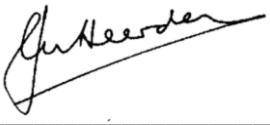
Teachers who participate do so voluntarily and will be allowed to withdraw at any stage if they wish to do so. Issues regarding confidentiality and anonymity will be discussed with the teachers. To ensure the identity of the teachers are protected, their names will not be revealed in the transcripts in the dissemination of the research results and they will use a pseudonym of their choice. The information given will only be used for academic purposes, in my dissertation. However, the data sets will be the intellectual property of the University of Pretoria. I also would like to request your permission to use the data, confidentially and anonymously, for further research purposes. Further research may include secondary data analysis and using the data for teaching purposes. The confidentiality and privacy applicable to this study will be binding on future research studies.

The identities of the children participating in the study will also be kept anonymous. Any photographs taken will exclude the children’s faces or names. The artworks collected will also not indicate the child’s identity. If a parent does not want their child to participate, the child will not be included in the study.

The generated data will be in my or my supervisors’ possession and will be locked away for safety and confidential purposes. After completion of the study, the material will be stored at the University's Department of Early Childhood Education according to the policy requirements.

Your permission to conduct this research at your school will be highly appreciated. Furthermore, the contribution of your teachers and children will be of great value. Please

complete the form below if your permission is granted. Thank you for your consideration of this request.



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Email: judy.vanheerden@up.ac.za

Ms Swanepoel (Co-supervisor)

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UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Education
Fakulteit Opvoedkunde
Lefapha la Thuto

INFORMED CONSENT SCHOOL MANAGEMENT BOARD

Title of research project: *Enhancing creative thinking and problem-solving in young children: using provocations in visual art activities*

I, _____ the undersigned, in my capacity as a representative of the School Management Board at _____ (name of school) hereby grant permission for Monique le Roux to conduct the above-mentioned research.

We also would like to request your 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 **and, where relevant, project funders**. Further research may include secondary data analysis and using the data for teaching purposes. The confidentiality and privacy applicable to this study will be binding on future research studies.

Signed at _____ on _____ 2022.

_____ _____

Representative of School Management Board

Researcher

Appendix B: Informed consent for teachers

REQUEST FOR PARTICIPATION

Dear Sir/Madam

I am registered as a student at the University of Pretoria and I am completing a Master's degree in Early Childhood Education. As part of my degree requirements, I need to conduct research which I choose to conduct at your school. I hereby invite you to participate in this study. The topic I am conducting my research on is:

Enhancing creative thinking and problem-solving in young children: using provocations in visual art activities

The purpose of this research is to explore and describe how the use of provocations when teaching visual art, can enhance creative thinking and problem-solving skills. Teachers play a significant role in the creative thinking and problem-solving skill development of learners. The way teachers present art lessons has a big impact on skill development. Research indicates that teachers who struggle to exhibit confidence when teaching art lessons will negatively influence the creative thinking and problem-solving abilities of children. Therefore, this study aims to contribute to our knowledge and understanding of the creative thinking and problemsolving skills of young children and how it can be enhanced by using provocations.

This study will involve four teachers, from different schools. Data will be generated through:

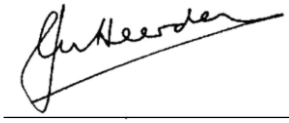
- Completing a Google form to gain background information on each teacher and school
- An interview conducted via Zoom with each teacher separately
- An observation of one art lesson presented by each teacher
- And a reflection session with all the teachers from the different schools.

Each participant will be required to choose a pseudonym and the participants will be asked to switch off their videos during the Zoom meetings to further protect their identities.

Teachers who participate do so voluntarily and will be allowed to withdraw at any stage if they wish to do so. Issues regarding confidentiality and anonymity will be discussed with the teachers. To ensure the identity of the teachers are protected, their names will not be revealed in the transcripts in the dissemination of the research results and they will use a pseudonym of their choice. The information given will only be used for academic purposes, in my dissertation. However, the data sets will be the intellectual property of the University of Pretoria. I also would like to request your permission to use the data, confidentially and anonymously, for further research purposes. Further research may include secondary data analysis and using the data for teaching purposes. The confidentiality and privacy applicable to this study will be binding on future research studies.

If you are willing to participate in this study, please complete the form below. Thank you for your consideration of this request.

Yours sincerely



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INFORMED CONSENT FOR TEACHERS

Title for research project: *Enhancing creative thinking and problem-solving in young children: using provocations in visual art activities*

I, _____ the undersigned, in my capacity as a teacher at _____, (school's name) hereby agree to participate in the above-mentioned research study. I understand that my contribution will be treated as confidential and anonymous within the limitations discussed above. I understand that my participation is voluntary and that I may withdraw from the study at any point should I wish to do so. Should I wish to withdraw from the study I will inform the researcher timeously of this decision.

We also would like to request your 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 **and, where relevant, project funders**. Further research may include secondary data analysis and using the data for teaching purposes. The confidentiality and privacy applicable to this study will be binding on future research studies.

Signed at _____ on _____ 2022.

_____ Nkoux _____

Participant Researcher

Appendix C: Informed consent for parents

REQUEST FOR PARTICIPATION

Dear Sir/Madam

I am registered as a student at the University of Pretoria and I am completing a Master's degree in Early Childhood Education. As part of my degree requirements, I need to conduct research which I choose to conduct at your school. I hereby invite your child to participate in this study. The topic I am conducting my research on is:

Enhancing creative thinking and problem-solving in young children: using provocations in visual art activities

The purpose of this research is to explore and describe how the use of provocations in visual art lessons can enhance or improve the creative thinking and problem-solving skills of young children.

Teachers play a significant role in the creative thinking and problem-solving skill development of learners. The way teachers present art lessons has a big impact on skill development. Research indicates that teachers who struggle to exhibit confidence, when teaching art lessons, will negatively influence the creative thinking and problem-solving skills of children. Therefore, this study aims to contribute to our knowledge and understanding of the creative thinking and problem-solving skills of young children and how it can be enhanced by using provocations.

As the researcher, I will observe the preschool classes while the teacher presents an art lesson. The provocations will be supplied by me to assist the teacher in presenting the lesson. I will then assess the impact of the provocations through observation. The artistic creations of the children will be used as part of the data generation. The school will also be requested to provide their daily programme to gain a better understanding of the current status of art education in the school. The participants and the School Management Boards will be granted access to the final results.

The identities of the children participating in the study will also be kept anonymous. Any photographs taken will exclude the children's faces or names. The artworks collected will also not indicate the child's identity. If a parent does not want their child to participate the child will not be included in the study.

Only my supervisors and I will know your identity and this information will be treated as confidential. The information you give will only be used for academic purposes, in my dissertation, and any other academic communication. The generated data will be in my or my supervisors' possession and will be locked away for safety and confidentiality purposes. After completion of the study, the material will be stored at the University's Early Childhood Education department according to the policy requirements.

Your child's participation in this study is voluntary and you may at any point withdraw your child from the study. Should you decide to withdraw your child, please inform the researcher timeously. Data generated up to the point of withdrawal will be incorporated into the overall findings of the study.

If you are willing to let your child participate in this study, please complete the form below.
Thank you for your consideration of this request.

Monique le Roux (Researcher)

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UNIVERSITEIT VAN PRETORIA
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YUNIBESITHI YA PRETORIA

Faculty of Education
Fakulteit Opvoedkunde
Lefapha la Thuto

INFORMED CONSENT FOR CHILDREN

Title for research project: *Enhancing creative thinking and problem-solving in young children: using provocations in visual art activities*

I, _____ the undersigned, in my capacity as a primary caregiver at _____, (school's name) hereby agree to participate in the above-mentioned research study.

Furthermore, I give my permission for my child's artwork to be used in the study and photographs to be taken. I understand that my child's contribution will be treated as confidential and anonymous within the limitations discussed above. I understand that my child's participation is voluntary and that I may withdraw my child from the study at any point should I wish to do so. Should I wish to withdraw my child from the study I will inform the researcher timeously of this decision.

We also would like to request your 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 **and, where relevant, project funders**. Further research may include secondary data analysis and using the data for teaching purposes. The confidentiality and privacy applicable to this study will be binding on future research studies.

Signed at _____ on _____ 2022.

_____ _____

Participant's Primary Caregiver Researcher

Appendix D: Informed assent for children

Faculty of Education

INFORMED ASSENT FOR CHILDREN

By colouring the smiley faces I give/ do not give my consent to be a part of this study.

By colouring the picture, I give consent to:

1. You can take photos or a video, without showing my face. 
2. You may keep my artwork for the research. 
3. You may write down what I say about my artwork. 
4. You may record what I am saying about my artwork. 

 

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Appendix E: General lesson plan

LESSON PLAN

Resources:

1. Hand puppet
2. Storybooks – *The Book of Mistakes* and *My Book of Beautiful Oops*
3. A4 paper with ‘mistakes’
4. Large paper to paint on
5. Paint
6. Sponges and paintbrushes
7. Glue
8. Scrap paper
9. Crayons/Twisties
10. Coloured pencils
11. Wooden blocks

Figure 1: Wooden blocks

Figure 2: Paint, paintbrushes, sponges, big paper

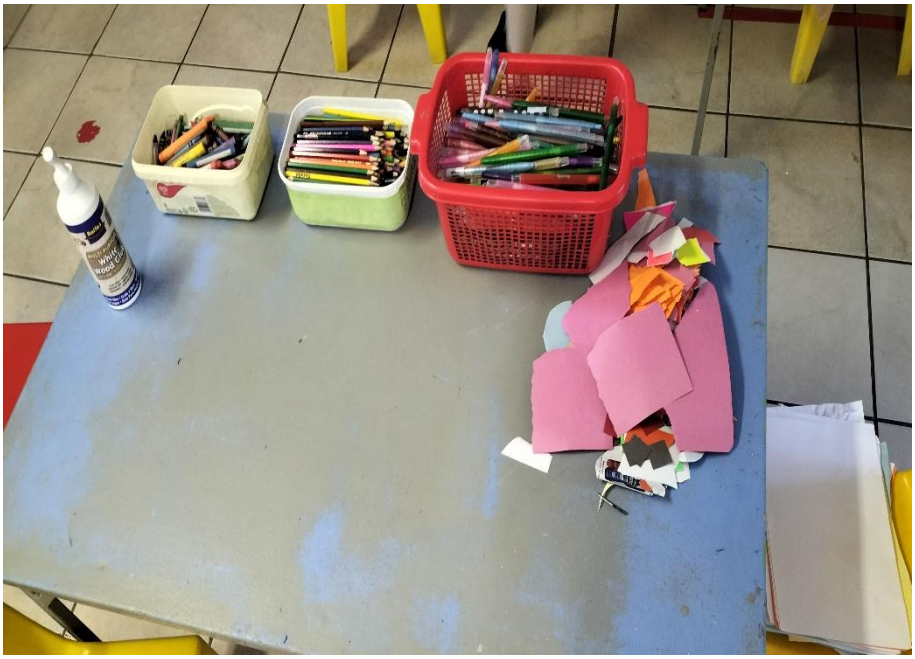


Figure 3: Glue, crayons, twisties, scrap paper, A4 paper with mistakes

The resources chosen for specific reasons. The books were chosen to emphasise to the children that mistakes are not a problem and that mistakes could easily turn into something new and beautiful. The hand puppet was offered as a resource to make the book reading more interesting. The wooden blocks were chosen in order to see the children's problem-solving abilities visually and to be able to observe it. Further, the art supplies were chosen to enhance the children's creative thinking and to provide them with the resources they need to exhibit the creativity.

Lesson development

The section below explains how the lesson can be presented, starting with the introduction, including the middle and the conclusion of the lesson. This serves as a general outline for the teachers. The outline could have been adjusted to fit their personal teaching styles.

Introduction:

The teacher introduces the theme of ‘making mistakes’ and ‘being creative’. The teacher can have a discussion with the class and allow them to share their thoughts on the topic. The teacher can proceed to read one of the books to the children, explaining concepts throughout. The children’s creative thoughts can be awakened by asking them what they would do with the mistakes in the book.

The hand puppet can be introduced as a friend who loves art. The teacher can use the puppet to ask the children to create beautiful artwork for him to hang in his house. The children will be divided into three groups to complete the activities.

Middle:

Main activity:

The children choose an A4 page with a mistake on, and they then create something from the mistakes. They could use glue, scrap paper, crayons and coloured pencils.

Side activity 1:

Playing with blocks as part of problem-solving. The children could design big buildings and find solutions when the buildings fall over. Wooden blocks can be set out by the teacher at the start of the lesson. Children waiting for their turn at the painting station, or the main station can demonstrate their problem-solving skills by finding ways to build high constellations without it toppling over. They could also be asked to build something specific and work together as a team to build it, for example, a house.

Side activity 2:

A large paper will be laid out to cover a table. The children will be given paintbrushes and sponges to use with paint on the paper. They can decide what they want to create; there are no rules for what they can create. The children will work on one paper as a group. The children can also be encouraged to use their fingers and hands to explore and create on paper. During this activity the children’s ability to create from what

someone else created will be observed. If one child starts with a line, for example, another child can build on that line and form a house from it.

Conclusion:

The teacher can call all the children back to the carpet and ask them how they experienced the lesson. They can also be given the opportunity to describe what they made and how they worked with the mistakes.

After each child is done with their artwork, they will explain their artwork to the researcher in order to document their words and thinking.

Appendix F: Electronic qualitative questionnaire

Enhancing creative thinking and problem-solving in young children by using provocations in visual art activities

The questions below are designed to gain background information about the teacher and the school.

Teacher's Profile

1. Please fill in the pseudonym assigned to you.
2. Please fill in your age.
3. Please fill in the gender you associate with.
4. How many years of experience do you have in teaching?
5. How many children are currently in your class?

6. Which curriculum do you follow at your school?

7. How would you describe your teaching style?

Art lessons

8. How many times a week is art included in the curriculum?

9. What is the duration of an average art lesson?

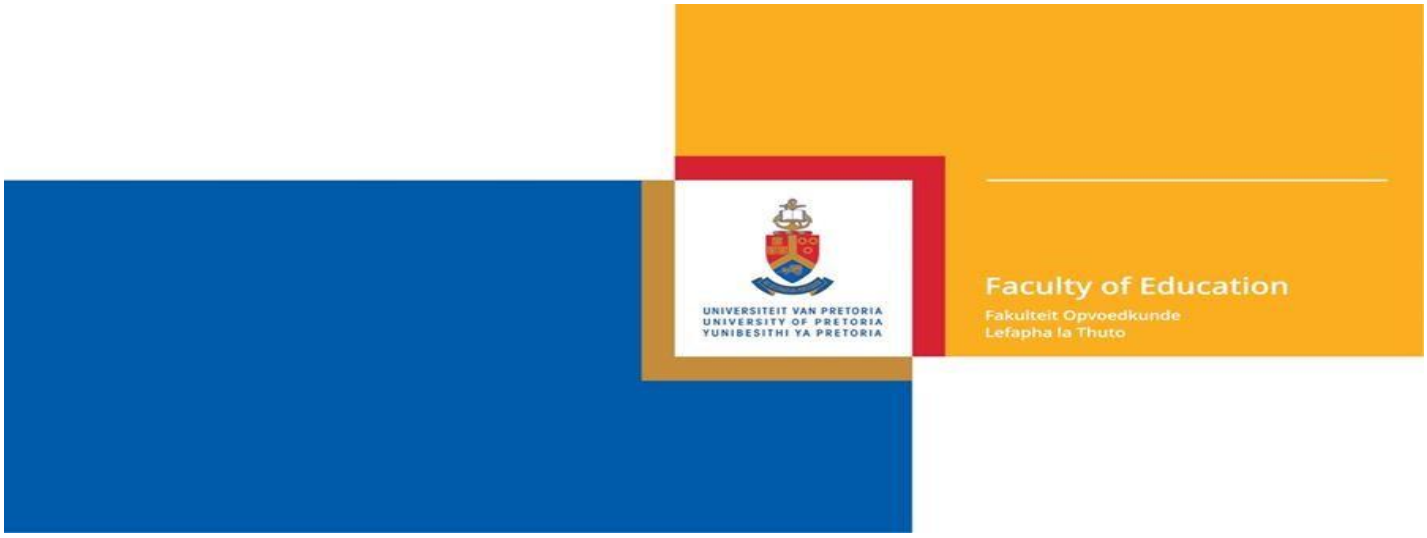
10. When presenting art, do you have one main activity or are there smaller activities combined with the main activity?

11. Are art lessons presented to the class as a whole or in groups?

12. How is the classroom organised during art lessons? Do you move the class around or leave it as is?

Thank you for taking the time to complete the questions. Your response is greatly appreciated!

Appendix G: Interview schedule



Interview Schedule:

Section A: Art lessons

1. When art activities are planned, are they decided on by the school, the teachers, or each class teacher? How do you go about planning art activities for the children in your class?
2. Are you confident teaching art lessons? Motivate your answer.
3. How do you spark the children's interest before and during an art lesson?
4. When teaching an art lesson, do you provide the children with examples? Explain your answer.

5. How would you describe the children's participation during an art lesson?

Section B: Provocations

1. Are you familiar with the term "provocations" when doing art activities? *Provocations refer to items or activities set up to engage the children in a new concept. Provocations are also known as a prompt, invitation or learning trigger. The provocations act as a prompt to provoke a reaction from the children in the form of curiosity, conversation as well as discovery or exploration (McAvan, 2020).*

2. Do you ever use provocations with art activities? Please explain why or why not and provide examples.

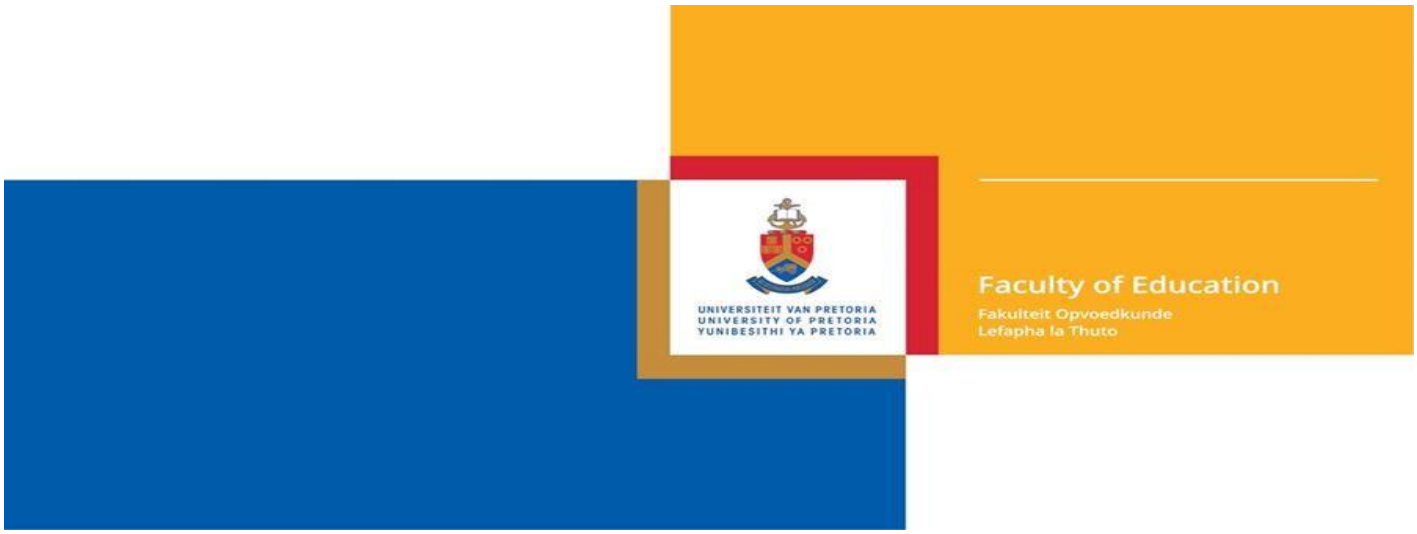
Section C: Creative thinking and problem-solving

1. How would you describe the overall creative thinking and problem-solving skills of the children?
2. Do you think there is a need to improve creative thinking and problem-solving skills in children? Motivate your answer.
3. How would you propose can children's creative thinking and problem-solving skills be improved or enhanced?

Section D: Creative accidents

1. What type of creative accidents happens during your art lessons?
2. How do you handle creative accidents?
3. Do you incorporate the creative accidents in your art lessons or not? Please elaborate on your answer.

Appendix H: Observation schedule



Observation Schedule:

Section A: Teaching Style

Question	Notes
1a. Did the teacher effectively introduce the provocations? Yes No	Details:
1b. Provocations used: 1. 2. 3. 4.	

2. How did the teacher's teaching style influence the creative and problem-solving abilities of the children?	Details:

Section B: Children's interpretations of the provocations

1. How did the children incorporate the provocations?	Details:
2. Did the children show creativity?	Details:
3. Were the children confident in their attempts? Yes No To some extent	Details:

4. Could the children create even after a creative accident occurred? Yes No To some extent	Details:
5. How did the children react to the accident they made? Description:	Details:
6. What was the reasoning behind the art creations of the children?	Details:
7. Were the children working with purpose? Yes No To some extent	Details:
8a. Did the children explain their creations?	Details:

8b. Did the teacher ask the children to elaborate on their creations?	
9. How was the children's reasoning behind their creations documented?	Details:

Section C: Evaluation

1. At the end of the lesson, were the artworks created the same as the originally planned artworks? Yes No To some extent	Details:
2. How did the presentation of the lesson correspond with the lesson planning done by the teacher?	Details:

Appendix I: Collaborative discussion schedule

Collaborative Discussion Schedule:

Section A: Art lessons

1. How did you experience teaching an art lesson using provocations?
2. How was the art lesson different from your normal art lesson?
3. Would you incorporate provocations in your art lessons? Elaborate.

Section B: Creative thinking and problem-solving

4. Did the creative thinking and problem-solving skills of the children improve?
5. How did the children use their creative thinking and problem-solving skills during the lesson?

Section C: Creative accidents

6. How did the children incorporate the creative accidents?
7. How did you incorporate the creative accidents?
8. How did the creative accidents influence the children's creative thinking abilities?

Section D: General

9. General comments from educators.