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THE NATIONAL UNIVERSITY OF IRELAND MAYNOOTH

Froebel Department of Primary and Early Childhood Education

M.Ed. (Research in Practice)

2018 – 2019

A PRIMARY TEACHER'S EXPLORATION

OF THE EFFECTS OF FORMATIVE ASSESSMENT

ON TEACHING AND LEARNING.

AISLING CLEARY

A Research Dissertation submitted to the Froebel Department of Primary and Early

Childhood Education, Maynooth University in fulfilment of the requirements for the

degree of Master of Education (Research in Practice)

September 2019

Supervised by: Dr. Gearard Ó Floinn

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Abstract

This action research explores the effects of formative assessment on teaching and learning. Prior to embarking on this research, the researcher had relied on summative methods of assessing the attainments of pupils in her class. The values underpinning this research and which have led to this study are: equality, inclusion, perseverance and care. The research question may be framed thus: what impact has the implementation of formative assessment methodologies on children's learning and on a practitioner's efficacy as a teacher? The research was conducted in a co-educational, Catholic Primary School in Co. Kildare. The research participants were the children in the researcher's Third Class. Ten target pupils were selected using a random, stratified sampling method for the duration of the study. The methodology employed was a mixed-methods qualitative and quantitative approach. It consisted of two cycles which lasted six weeks in total. Cycle One explored the introduction of a growth mindset environment into the researcher's classroom, as the literature confirmed that this was a highly advantageous prerequisite to using formative assessment. Various lesson plans and interactive games which helped widen the children's vocabulary and open their minds were used. A classroom display about changing mindsets was co-created. Cycle Two explored the implementing of formative assessment methodologies. These included The Jigsaw Strategy, Determining Success Criteria, Peer Marking and Reflective Journaling. The formative assessment methodologies were introduced throughout the school day during various subjects including English, history, geography and science. Six research instruments were used as a means of collecting data. They included pre- and post-mindset worksheets, a post-research questionnaire, children's work samples, critical friends' contributions, a personal reflective journal and teacher observations. As a result of carrying out this research, seven main findings emerged. These may be subdivided into two categories: learning and teaching. In terms of learning, the first finding was that children's mindsets, their self-esteem and their attitude towards learning, were affected in a positive way. Secondly, children enjoyed and were capable of giving feedback and benefitted from being allowed to reflect upon their work. Thirdly, there was an improvement in the quality of the children's work, particularly when the success criteria was co-created and the learning intention shared. In terms of teaching, the first finding was that it is important to create a learning environment that is collaborative. Secondly, the employment of formative assessment in the classroom had a positive effect on the researcher's feelings of efficacy and integrity as a teacher. Thirdly, the importance of tapping into children's preoccupations and interests and keeping learning fun emerged. Fourthly, a willingness to engage in self-reflection provoked a change in the researcher's personal teaching practice. There are many benefits to complementing teacher assessment with formative assessment as in the case of the four methodologies chosen for this research. This study has highlighted the importance of promoting a growth mindset on the part of both the teacher and the children.

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Thank you to the children in my class for participating in this research and to their parents who granted permission. Thank you to my principal and my school Board of Management for allowing me to complete this research throughout the school year. A special thanks to my critical friends and colleagues who have assisted me throughout this process offering advice and constructive criticism which has helped with this research.

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Table of Contents

List of Appendices

List of Tables

List of Figures

List of Abbreviations

AFL: Assessment *for* Learning

AOF: Assessment *of* Learning

CPD: Continual Professional Development

NCCA: National Council of Curriculum and Assessment

S.E.S.E: Social, Environmental, Scientific Education

UN: United Nations

Chapter One: Introduction

1.1   Focus and Aims of Study

The purpose of this research was to explore the effects of formative assessment on teaching and learning. My rationale for this study stemmed from my personal beliefs and the values I hold as an educator. I believe pupils should receive meaningful feedback from teachers and they should have time to reflect on their work as it is important for future learning. I believe that children should be clearly able to see their learning progression and be enabled to persevere. It is important that teachers demonstrate good practice and in doing so strive to help *all* children reach their full potential – there should be equal opportunity for every child to succeed. Finally, I believe that children can learn from their peers and their voices should be respected and valued with care.

Upon reflection it was evident that I often used a summative approach when assessing pupils' work. I corrected work with a tick, sticker or comment. I rarely used formative assessment strategies, for example self – assessment or peer assessment. By engaging in this research, I wanted to see if pupils' work would improve if they were involved in the creation of the success criteria and participated in formative assessment methodologies. I was also curious to see the effect it had on my teaching.

Following this reflection, the research question evolved - "What impact has the implementation of formative assessment methodologies on children's learning and on a practitioner's efficacy as a teacher?" My personal values include equality, inclusion,

perseverance and care. I value equality of opportunity to succeed. I value inclusion as there are many different types of learners and I believe that we can learn from each other. I value perseverance and having a can-do positive attitude. Finally, I value care, in my role as an educator. By engaging in this research, I hoped to explore mindsets and perseverance by introducing the concept and vocabulary into my daily teaching. I also wished to understand and explore the value of self-assessment, peer assessment and other formative assessment methodologies. I wanted to see what effects, if any, this would have on the pupils' learning and a practitioner's efficacy as a teacher.

1.2   Background to Research

As part of my Froebelian training, I was taught the importance of co-creating the learning environment with the children we teach. This resonates with my personal value of inclusion and is something which I feel holds great importance in teaching. Giving children ample opportunity to be authors of their learning was something I wanted to explore further.

When I was a child, in school, I hated the weekly spelling tests. The pressure of learning twenty spellings on Thursday evening was difficult for me. The disappointment of not getting 20/20 on Friday is still a vivid memory in my mind. As a teacher and because of my personal values of equality and care, I wanted to explore different ways of feeling successful in class, other than summative assessments, which can leave many children disappointed.

Through reading and participating in CPD courses I began to hear more about developing growth mindsets. As I valued perseverance, I decided to explore Carol Dweck's work on growth mindsets in more depth. By reflecting upon my childhood, in relation to the origin of my values I was drawn to how my siblings and I were raised. I now believe that we were raised with growth mindsets and that having a positive attitude towards learning was important in our home.

I began my study my delving into the literature. Shirely Clarke has written a lot about formative assessment. She defines formative assessment as a teaching and learning process which creates independent learners (Clarke, S. 2018). Carol Dweck believes that children with growth mindsets out perform those with fixed mindsets (Dweck, 2015:np). And Paul Black and Dylan Wiliam have researched assessment in depth and have explored how children's self-esteem can be boosted if they see they have fulfilled the success criteria (Black and Wiliam, 1998).

My ontological views are care and equality in assessment, inclusion and perseverance and care. More specifically I value pupils receiving meaningful feedback from teachers. I believe that children should be clearly able to see their learning progression. Children should have time to reflect on their work as it is important for future learning. Teachers should demonstrate good practice and in doing so strive to help the children reach their full potential. I believe that children learn from their peers. I believe that children want to achieve their full potential and that if they become aware of how they can improve, they will strive to achieve this improvement. Providing them with opportunities to participate in their own assessment is a beneficial and necessary tool for any teacher seeking to

cultivate such improvement. I also feel that summative assessment should not be the only way a child can visually see or receive acknowledgment for success on the learning they have achieved or not achieved in a lesson. Fostering a growth mindset within a classroom can promote positivity and a can-do attitude, which can enable children to strive for success when faced with challenging tasks (Dweck, 2015).

From an epistemological view point, it is important as a researcher to recognise that I may be wrong in these beliefs. It is also important not to look for a fixed outcome which can be applied everywhere. Schools are different and we each have different learning styles. Compiling knowledge is a collaborative process which can occur between teacher, pupil and colleague (McNiff and Whitehead, 2011). I do not believe that I am the sole supplier of knowledge in the classroom but that together with the children, we are the co-creators of the learning that occurs. I hope that my research will provide me with a greater insight into the validity or otherwise of my values and beliefs.

I see my values being lived out in my everyday practice when I plan appropriate lessons with good content and when I provide differentiated work to the children in my class. My values are lived out when I correct the children's work with meaningful feedback and when I display examples of their work. I give feedback orally to the children regarding their work. I adhere to best practice by following the Teaching Council's Code of Professional Conduct. I provide an education to the children in my care based on the NCCA's primary school curriculum. I realise that my values have been denied in my practice when I have not explored different avenues of assessment, provided opportunities for co-creating learning or promoted a Growth Mindset learning environment.

1.3 Context and Intervention

I conducted the research in a mixed catholic primary school in Kildare. The research participants were the children in my current 3rd class. After granting all permission and ethical approval, I was able to begin. I had 10 children which I focussed on throughout the study. I chose to use a random, stratified sampling method. My research instruments consisted of pre and post mindset worksheets, a post research questionnaire, teacher observations, children's work samples, my personal reflection journal and my critical friends. The intervention consisted of two cycles over a period of six weeks. Cycle One explored introducing a growth mindset. And Cycle Two explored implementing formative assessment methodologies.

Research Cycle One was about introducing a growth mindset. The children completed pre-study mindset worksheets. This was to ascertain whether they had a fixed or growth mindset. Next, I went on to teach the children about mindsets and the difference between a growth mindset and a fixed mindset and the idea that we can grow our intelligence. I used various lesson plans and interactive games which helped widen the children's vocabulary. Finally, together as a class we co-created a classroom display about changing our mindsets. The children wrote comments which they would like to see displayed on the board to promote a growth mindset, which included quotes from famous people like Michelle Obama and Michael Jordan. The children made connections with these real-life people. At the end of the study I gave the children the worksheet again.

Research Cycle Two delved into implementing the formative assessment methodologies. First, I introduced Peer Marking into the classroom. The children read their peers' work

and wrote two or three comments about their work. The second methodology was called The Jigsaw Strategy. I wanted to see if I could develop the children's project work in a collaborative environment. This entailed dividing the children into mixed ability groups and then having each child in the group look at a different area of the project. The children met in expert groups, researching in depth their areas of the project and then reported their findings back to their main project group. The next methodology I introduced was Co-creating the Success Criteria. I began these lessons by introducing the learning objective (something which I had neglected to do previously). I then showed the class various samples of good practice and the children compared and contrasted them. Then together, based on what we felt was important information to include in completing the tasks, we created the success criteria. The children carried out the tasks and then checked off the criteria list at the end. Finally, I introduced Reflective Journaling. At the end of the school day we had reflection time where the children wrote in their journals about their learning that day, referring to methodologies they liked/disliked, subjects they enjoyed, areas they could improve upon.

1.4   Potential Contribution of Study

The goal of the study is to contribute to my professionalism as a teacher. There is the potential for the study to be explored by the members of my school in order to enhance practice in the area of formative assessment. This would include incorporating formative assessment strategies into daily teaching and introducing the language around mindsets, as well as giving children strategies to assist their learning if they find topics challenging. There is the possibility of disseminating my research to educational journals and magazines as well as providing CPD courses for my colleagues.

1.5 Format of Study

Chapter Two reviews the literature surrounding action research. It explores assessment and in particular formative assessment. It details several formative assessment methodologies in particular. It highlights recent research surrounding assessment in primary education. This chapter gives an insight into the literature on developing a growth mindset in children.

Chapter Three outlines the mixed methods methodology employed. It narrates the research intervention being examined. The research paradigm of action research, which underpins this research, is explored and discussed. The research question is defined. The research site and location is outlined, referring to ethical considerations and data storage. The chapter includes the details of the research intervention Cycle One and Cycle Two. It explores different avenues of formative assessment, co-creating the learning environment and promoting a Growth Mindset within the classroom.

Chapter Four details the findings and analysis of the research. Each of the research cycles are analysed and discussed. This includes a mixed methods approach of quantitative and qualitative data collection. Critical reflections throughout the research are explored. There is an evaluation of the researcher's values in practice.

Chapter Five discusses the researcher's conclusions and details the outcomes of the use of formative assessment as a methodology for teachers, children and schools. An acknowledgment of this research is made, and some limitations discussed. Finally, some recommendations for primary school teachers are outlined.

Chapter Two: Literature Review

2.1   Research Question

The question explored throughout this research is "What impact has the implementation of formative assessment methodologies on children's learning and on a practitioner's efficacy as a teacher?" This is a self-study exploration underpinned by an action research paradigm. I shall explore my own pedagogy and critically reflect on areas where I could improve my teaching and understanding. I shall review my current practice in relation to assessment. I shall seek the help of critical friends and colleagues to critique and observe my current practice in assessment. I hope to gain a better insight into the value and necessity of assessing the pupils' learning in my class in a variety of ways. I want to see if there will be any changes in children's learning as a result of participating in formative assessment methodologies. I want the children to receive feedback which they can use to improve their learning. I am interested to see if children value feedback from their peers. I want to see if children benefit from participating in setting the success criteria of a task. Finally, I want the children in my class to have a positive mindset towards learning.

By the end of my research, I hope to have explored formative assessment methodologies in depth, and to be confident that I am teaching in accordance to my values of perseverance, inclusion, equality and care in education.

2.2   Action Research

'Action research embraces the idea that each researcher is informed by their own values, norms and assumptions' (Sullivan et al., 2016:25). Throughout this research I shall

discuss my values of perseverance, inclusion, equality and care in accordance with my profession as a primary school teacher. I shall be investigating my use of formative assessment methodologies on students' learning and on a practitioner's efficacy as a teacher. Action Research is the best methodology for this study as it is an enquiry conducted by the self into the self (McNiff, 2002). I wanted to gain a deeper understanding of my teaching abilities as a professional because as McNiff (2017) states, "being a professional means explaining that you know why you are doing what you are doing" (McNiff, J.,2017:11). From my perspective, it was a case of what I was *not* doing in the classroom. Through reflecting on my professional efficacy as a teacher, I felt I was not using formative assessment methodologies in my classroom. I wanted to explore this topic in more depth.

Action Research involves evaluating and reflecting upon your own work and practice in order to enhance your work and life (McNiff, 2017). To achieve a level of reflection that will be evidential to validate my research I shall be referring to my "Reflective Journal" as a key source of data. I shall not be just an observer, which a researcher might be referred to as, when using other methodologies such as in a solely quantitative based study. I shall be an active participant in the research.

Action Research embraces the notion of knowledge as socially constructed and, recognises that all research is embedded within a system of values and promotes some model of human interaction (Brydon-Miller et al., 2003). Action research is a suitable form of research for this study as I am reflecting upon my own teaching in accordance with my values of perseverance, inclusion, equality and care. Action research challenges unjust and undemocratic economic, social and political systems and practices (Brydon-

Miller et al., 2003). I want to explore the educational norms of assessment and the various practices that I am neglecting to utilise in my classroom.

A major component of action research is critical reflection. This is the continual and intended process of identifying and checking the assumptions that inform our actions as teachers. This is to help educators take more informed actions, so that when they do implement a strategy that's intended to help students learn, it has that effect (Brookfield, 2017). Brookfield (2017) describes four lenses available to teachers: students' eyes, colleagues' perceptions, personal experience, and theory. What makes reflection critical is its focus on power and hegemony. Informed by the critical theory tradition, critically reflective teachers try to understand the power dynamics of their classrooms and what counts as a justifiable exercise of teacher power (Brookfield, 2017).

The first of Brookfield's (2017) lenses is the student lens. The essence of student learning is the teacher knowing how their students learn. The teacher must provide ample opportunities for students to give feedback on their learning to the teacher. They will be less likely to admit to the whole class that they are not following what is being taught in a lesson (Brookfield, 2017). This resonates with my values of care. I want the children in my class to be able to seek feedback confidently, without shame or embarrassment.

The second of Brookfield's (2017) lenses is Colleagues' Perceptions. A critical friend helps you uncover your assumptions with the possibilities of opening you up to new perspectives. Throughout this action research I shall be actively seeking a critique of my own teaching along with the opportunity to discuss my research. Critical friends help us sort out how we frame a problem and whether the problem we're trying to resolve is the

real problem we need to deal with. They offer multiple perspectives and help us validate our responses or encourage us to re-examine our thinking or teaching (Brookfield, 2017).

The third lens Brookfield (2017) mentions is the personal experience lens. Personal experiences of learning are intertwined with our teaching practice. We naturally gravitate towards a certain way of working based on previous experience (Brookfield, 2017). Part of this action research will be to look at my teaching and why I choose to use or exclude certain assessment methodologies and question whether they are based on past experiences.

The fourth and final lens Brookfield (2017) describes is theory. Teachers should continually be reading throughout their career. Reading can help put something you are feeling into words and help you understand it better (Brookfield, 2017). This action research will provide me with the opportunity to explore literature and up to date research on the area of assessment and growth mindsets.

By participating in action research teachers can develop their teacher identity. This identity of self-knowledge relates to how individuals view themselves as future teachers – the ideal or possible selves they would like to become (Goodnough, 2010). Action research can become a context for teachers to change themselves and allow them to select future behaviours that may affect short-term and long-term change and so it is greatly beneficial for a teacher to engage in self-study action research for the school community (Goodnough, 2010). I am confident that I shall grow personally from engaging in this action research and I hope that my teaching colleagues and students may benefit from any insights gathered.

2.3   Assessment in Primary Education

According to the National Council for Curriculum and Assessment,

> "Assessment is the process of gathering, recording, interpreting, using and
>
> reporting information about a child's progress and achievement in developing
>
> knowledge, skills and attitudes" (NCCA, 2007:20).

The purpose of assessment according to Murchan and Shiel (2017) is that it provides
information which can be used by different people for different purposes. More
specifically in the case of education, a teacher's aim in using assessment is "to promote
student learning" (Murchan, D. & Shiel, G.,2017:2).

The NCCA designed an assessment continuum of support which outlines eight
assessment methodologies from child led assessment to teacher led assessment (NCCA,
2008:12). See **Appendix 1: A Continuum of Assessment Methods**. These assessment
methodologies are to support assessment in the classroom. There are benefits to using a
range of assessment methods as "No one assessment method, of itself, will provide
sufficiently useful information to the teacher" (NCCA, 2008:12). There are various forms
of assessment used within primary education. Four main types of assessment most
commonly used in Ireland are summative assessment, formative assessment, classroom
assessments and diagnostic testing.

Summative assessment encompasses reviewing progress made which takes place after
formal instruction (DES, 2014). The child's learning is evaluated by a grade or mark. It
determines the child's success. A standardised test is a summative form of assessment. In
Ireland they are used to measure a child's reading and mathematical achievement, and to
determine children's progress in those areas. All primary schools are required by

the Department of Education and Skills (Circular 0056/2011) to administer standardised tests to second, fourth and sixth class in the areas of English and mathematics.

Formative assessment is when evidence of learning is gathered during the learning process and used to adjust teaching to suit student needs. The process allows teachers and students to collect information about student progress, and to suggest amendments to the teacher's approach to instruction and the student's approach to learning (NCCA, 2015). Formative assessment will be discussed in more depth later in this chapter.

Diagnostic assessment can help identify specific difficulties which students encounter particularly in relation to language and mathematics. These tests are often performed by a specialist. Diagnostic testing takes place prior to instruction. It may be used to determine the presence of prerequisite skills, to understand the pupil's prior level of mastery of skills or to govern underlying causes of learning difficulties (DES, 2014).

Classroom assessments may include observations, spontaneous questioning, student self-assessment reports, portfolios and tests. "Classroom Assessment enhances teachers' judgements about student competence by providing reasoned evidence in a variety of forms gathered at different times" (McMillan, J.H., 2013:4). Furthermore, McMillian (2013) explains that when classroom assessment is integrated throughout the learning process and linked to learning, motivation and the curriculum, it educates and improves pupils' learning.

Prior to this research, my assessment methodologies were mainly summative in nature. I relied on weekly spelling tests and maths tests as well as termly history and geography

test as a source of assessment. Upon reflection, this was not living in accordance with my values of perseverance, inclusion, equality and care in education. My students were not receiving the best opportunities to engage in learning and reach their full potential. They were being judged merely on set criteria at a specific moment in time. I see the merit in summative assessment methodologies such as having a grade or result to judge learning at this specific time, however perhaps by the time I have the results of the summative assessment test, it may be too late. A new concept or topic may be due to be started and limited time may remain to address any students who have not achieved the objective. This research may give me a new insight and understanding of assessment methods. I find diagnostic testing very useful in terms of identifying learning difficulties within my class. I can plan to cater for these children's specific needs for example, providing worksheets printed on green paper and a writing slant with spelling aids for a child with dyslexia. In relation to classroom assessments, I use teacher observations and questioning the most throughout my weekly teaching. They are useful to see if children have achieved specific skills for example, throwing or catching a ball with one hand in P.E. I believe that each of the different forms of assessment have various benefits and that no one method should be solely relied upon. Reflecting on my use of assessment I recognise that I have been remiss in the area of formative assessment and hence the focus of this study.

2.4   Formative Assessment in Education

There are many terms associated with formative assessment. For example; Assessment *for* Learning, Assessment *is* Learning and Balanced Assessment. As quoted by many authors including Clarke (2014:5) in Outstanding Formative Assessment: Culture and Practice, Dylan Wiliam said in an interview with the Times Educational Journal:

 "The biggest mistake that Paul Black and I made was calling this stuff "assessment". Because when you use the word assessment, people think about tests and exams. For me, AFL is about better teaching", (Wiliam, 2012).

My own misconceptions of the term Assessment *for* Learning and my lack of experience in this subject has led to this research. According to Hargreaves et al. (2014:313) assessment for learning "is seen as an integral part of the learning and teaching process, rather than something being 'added on' for summative purposes". For this formative style of assessment to be a success Hargreaves discusses the pupils' involvement in implementing formative assessment. Sharing the learning objective with the children and allowing them the chance to question and interpret how they will achieve this outcome is beneficial for the pupils. Furthermore, they develop a sense of "self- efficacy" when provided with success criteria and understand how it can be achieved (Tomlinson 2007/8:12).

Darr (2018:2) describes a need to recommit to assessment *for* learning. He describes formative assessment as "using assessment to improve learning and wherever possible co-constructing the assessment process with students". From my perspective it is not a case of recommitting, but more a case of becoming informed. Formative assessment was not a foreign phrase to me prior to this research, however the multiple interpretations of the term had prevented me from researching it. Assessment for learning is an ongoing process where teachers and students can check their interpretations and adjust their thinking and decision making as needed (Darr, 2018:2). This open communication between students and teachers may be a difficult concept to achieve, particularly in primary school where my study is based. Children are vulnerable, and their self-esteem

can be easily damaged. Parents and school management have expectations of regular reporting and summative assessment feeds more readily into this, so utilising formative assessment may prove challenging.

According to Chappuis and Chappuis (2007:15) formative assessment delivers information during the instructional process. The results of formative assessments are used by both the teacher and the student to make decisions about steps to developing further learning (2007:15). "It is an ongoing, dynamic process that involves far more than frequent testing, and measurement of student learning is just one of its components, aligned to what was taught in the classroom" (Chappuis & Chappuis, 2007:15). These assessments can potentially be used to make changes in teaching that will lead to greater student learning (Chappuis & Chappuis ,2007:15). In my opinion, this is a rather ambiguous interpretation of formative assessment and may explain why there can be misconceptions in this field. This ambiguity about what formative assessment entails has prevented me utilising it in any meaningful way up to this point in my teaching career.

Providing feedback to students is a common component in defining formative assessment. There are many factors in providing feedback to students, for example at what stage of the learning is the feedback given? In what form is the feedback given to the student – oral feedback or written feedback? Who gives the student the feedback? What happens after feedback is given to the student. "Feedback becomes formative when students are provided with scaffolded instruction or thoughtful questioning that serve as prompts for sustained and deeper discussion" (Clark, 2011: 162). Involving the children in the process of giving feedback allows for the student to progress their learning by providing ample opportunities to meta-reflect on their own learning. I am very interested in this whole area

of feedback, but I am concerned that children's feedback may not be objective and could in fact be demoralising to other children. I am excited to explore this in my research. Clarke (2018) describes formative assessment in a more simplistic and logical manner. She describes formative assessment as a teaching and learning process which creates independent learners who can self-assess, make improvements and know how to learn. This seems to me to be the ideal scenario. But does it really work like that in practice?

Formative evaluation takes place during instruction. It provides a check for the teacher and the pupil, on progress in relation to what has been taught. It can locate errors in terms of a teaching unit so that alternative helpful instruction can be given. The scoring and interpretation reflect criteria (NCSE, 2014:np).

Taking all these definitions of formative assessment – assessment *for* learning onboard, I have formulated my own description. For me, formative assessment is a continuous progression of learning. It involves the students and the teacher working simultaneously towards a greater opportunity of achieving educational success. A teacher who uses formative assessment methodologies is providing greater opportunities for their students to become better learners. A child that engages in formative assessment methodologies has the opportunity to feel successful without receiving a grade or results on a test, whilst simultaneously becoming an independent learner. In my research I shall explore whether this definition works in the reality of an Irish classroom setting.

2.5   Introducing Formative Assessment into the Classroom

Below are three components needed for successful implementation of formative assessment in the classroom. They include Developing a Learning Culture, Involving

Children in the Process and Introducing Talk Partners. These examples have been taken from Clarke's book "*Outstanding formative assessment: culture and practice*".

2.5.1   Developing A Learning Culture

To successfully incorporate formative assessment in the classroom Clarke, S. (2014) describes the necessity of developing an appropriate learning culture. Clarke outlines three main elements in achieving this ideal culture: **developing a growth mindset, integrating meta-cognition strategies and mixed – ability learning** (Clarke, 2014:10).

Fostering a growth mindset within the classroom creates a can-do attitude and encourages children not to give up when facing challenging tasks. In the classroom there are different ways in which you can foster a growth mindset for example having students concentrate on the process that leads to learning such as trying new strategies (Dweck, 2015).

The second component of creating a successful learning culture is to integrate meta-cognition strategies as suggested by Clarke (2014). This was a new concept for me and so I was curious to discover its worth. "Meta-cognition is the term used to describe learning about learning" (Clarke, 2014:33). Authors, including Clarke (2014) and Hozien (2017), have looked at John Hattie's research on Metacognition. They explain that the student has control over their learning through actively engaging in reflection and higher order thinking. Children in classrooms actively learn when they are critically engaged in what they are learning. When a student is engaged in reflecting on their learning they should be praised to reinforce this behaviour. The language we use is important to promote a growth mindset towards learning, for example using terms such as learning

instead of work. When children have a growth mindset they have the "self -belief" and meta-cognition gives the children the resources to talk and understand their learning.

Clarke (2014) describes the use of learning powers with a "split screen" approach to learning. It involves using characters with an attached story to promote learning powers and on the same screen showing the intended learning objective of the lesson. The learning powers are based on eight elements of being a successful learner. This 'ideal list' was composed by Clarke by drawing on key educationalists' learning dispositions. See **Figure 2.1** below.

We are learning to:	We will use these learning powers:
• Arrange objects • Think about composition • Create 3D patterns	**Like Doris,** • Imagine what it will look like • Use lots of different resources **Like Krishna,** • Make plans • Change plans • Talk about ideas

Figure 2.1: Learning Powers Split Screen Approach (Clarke, S. 2014:37)

The Welsh Assembly Government (2010) states that students and teachers should have a shared vocabulary to enable clear expression of their thinking processes. They suggest vocabulary to include words that indicate sequences and potential progression which could be represented on a word wall See **Figure 2.2** below. These thinking prompts may be useful if they are utilised effectively and regularly throughout teaching. Ultimately it would fall to the teacher to refer to these thinking prompts but also to allow time for this throughout learning. Many teachers like myself ask questions to the children throughout

the learning process, but these questions have the added benefit of reflection which are similar to Bloom's Taxonomy of higher order questioning.
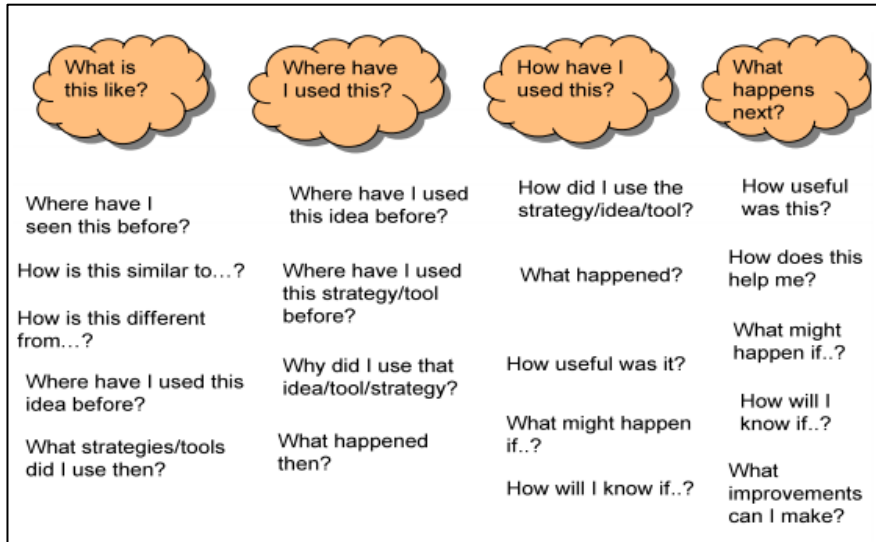
Figure 2.2: Shared Vocabulary for thinking processes (Welsh Assembly Government 2010, 21)

For meta-cognition to be successful learners need to be asked how they have arrived at a particular idea by articulating their thought-out processes (Welsh Government, 2010). According to the Welsh Assembly Government (2010) metacognition (thinking about thinking) is at the centre of all learning. To understand and acknowledge the strategies learners have used to learn and to adapt the learning that has taken place, and to link the learning to a new context, students should examine their thinking process. Below **Figure 2.3** is a cyclical cycle to demonstrate this explanation.
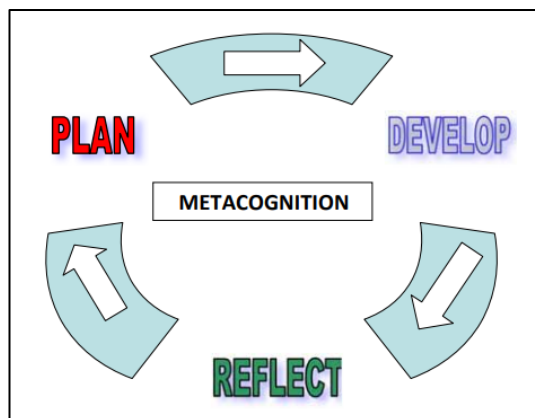
Figure 2.3: Metacognition (Welsh Assembly Government 2010:22)

The third component in setting up your classroom for formative assessment involves organising the classroom so that there are no groups based on children's ability. This may include having tables laid out in in an accessible way for children to talk and communicate with one another. This allows for the children to have "talk/learning partners" (Clarke, 2014: 41).

To conclude, there are three components needed to lay the foundations for formative assessment in a classroom. They include; a growth mindset, integrated meta-cognitive learning and mixed ability learning. A growth mindset appears to be a component that must be fostered over time. I am apprehensive about being able to achieve a growth mindset within the timeframe of this research. I am concerned about introducing learning powers through stories because of the age of the children in my class. Developing characters and using the concept of learning powers may prove difficult so that they will not be perceived as too childish. Finally, I implement mixed ability learning within my classroom, so this will not be new, but I shall continue to do so throughout this study.

2.5.2   *Involving Children in the Process*

According to Clarke (2014) there are five main elements to achieving children's involvement in the classroom. They include; finding out what they already know, immersion in the subject, presenting the skill to be learned, asking for their ideas about how to learn the skill and involving parents.

To ascertain what the pupils know, a great start to generating a discussion is by using their talk partners. From the feedback given, the teacher can decide the level at which to pitch the lesson. Listing the learning objectives at the beginning of the lesson also

provides an opportunity for the teacher to discover if the children have prior knowledge of the skill(s). WALT (We are learning to) is a useful acronym to help organise the learning intention but introducing the learning objective does not have to be at the beginning of the lesson. Listing vocabulary, they know, exploring resources that might be used in the lesson or starting with an object picture or video are all concrete ways of exploring the children's prior knowledge of the subject.

Asking children for their ideas on what to learn often proves to be more interesting and meaningful than the teachers' own ideas. Often, teachers are too concerned with covering the curriculum and the workbooks which parents have bought. It takes a confident teacher to be able to make the decision to defer from completing the books or to explore a topic further or indeed to adopt a topic suggested by a student because of a lesson that was taught. Clarke (2014) also suggests seeking ideas from the students' parents who may be full of expertise and knowledge or contacts.

I would often introduce the learning outcome to a variety of lessons. If I were to critically reflect upon my current practice it would be evident that I do not always explicitly give the learning outcome to the students. For the most part I begin a lesson by recapping the previous learning and then begin introducing the new topic or concept. I do not write WALT or LO followed by the outcome on the board. Taking this research on board I think that knowing the learning intention does not have to be the first piece of information given to the students is a relief. I do see however, the benefit in sharing the outcome with the students for them to receive a full understanding of the learning. It will be interesting to explore this during my research.

2.5.3   Introducing Talk Partners

Giving children the chance to discuss what they are learning about prior to answering questions, improves the quality of their learning Clarke (2014). From reading Clarke's book, randomly selecting talk partners seems to be better than selecting pairings yourself. Regularly changing them is also important. I use lollipop sticks with children's names on them in my class to randomly select children. Therefore, using this as a method of choosing children as talk partners will be a very feasible strategy I could use in my teaching to promote formative assessment. Following Clarke's (2014) advice I shall create success criteria with my students for them to become successful talk partners. At the end of each week we will then evaluate how they got on with their talk partners based on the success criteria our class has made. In order for this strategy to be successful teacher demonstrations of effective talk partners must be carried out.

I have some reservations in terms of the talk partners being effective. I am conscious of quieter children in my class who may find this task difficult. In addition to this I have two children with autism in my class and this task will challenge them both in different ways. One child will be anxious about this task and the other child will need a lot of assistance with vocabulary, providing feedback and listening to another child. I may have to put children in groups of three instead of two in the interest of fairness to all the children in the class.

2.6   Progressing Children's Learning using Formative Assessment

It is possible to progress children's learning using formative assessment by exploring the use of ongoing questioning. There are three elements to ongoing questioning according to Clarke (2014) – talk partner opportunities, table configuration and using Bloom's

Taxonomy to ask higher order questions. Eavesdropping can be used by teachers during partner discussion moments which can provide opportunity for the teacher to clarify any misconceptions about the learning. During one – to one dialogue, where the children take turns explaining their methods of completing the task, the teacher can actively engage with individual learners E.g. "Give me an example of what you mean" (Clarke, 2014: 115). Table configuration should be considered for effective discussion between teacher and student to occur without distracting another child from learning in the process. Referring to Bloom's Taxonomy (**Appendix 3: Blooms Taxonomy Questions**) of effective questioning for higher order thinking and according to the Welsh Assembly Government (2010), effective questioning is the main element of developing thinking and assessment for learning in the classroom. "High quality questions lead to high quality talk" (Welsh Assembly Government, 2010: 15). Open-ended questions should be used wherever possible because they lead to discussion and in turn the possibility of further learning. I shall need to be cognisant of this during my research and aim to expand my student's thinking.

2.6.1   *A Growth Mindset*

There are many benefits to having a growth mindset one being that: "students who believed their intelligence could be developed (a growth mindset) outperformed those who believed their intelligence was fixed (a fixed mindset)" (Dweck, 2015:np).

Fostering a growth mindset within the classroom creates a can-do attitude and encourages children not to give up when facing challenging tasks (Dweck, 2015). In the classroom there are different ways in which you can foster a growth mindset, for example having students concentrate on the process that leads to learning. This could entail trying new

strategies such as asking a friend for help, persevering or trying a different method of answering a question.

Using praise language that focuses on achievement and effort is largely important in developing a growth mindset (Clarke, 2014). Phrases such as "you kept going – well done" and "good – it's making you think – that's how you know your brain is growing" and "Your skills have really improved. Do you remember how much harder this was last week?" are great examples given by Clarke in her book Outstanding Formative Assessment Culture and Practice (2014:22). These phrases are important for showing ongoing learning.

Like Clarke (2014), Robinson (2017) agrees teachers should emphasise the process of learning instead of the correct answers. If teachers focus on the process, "students understand that their abilities can grow with practice and effort" (Robinson, 2017:20). When students monitor their progress over time, they "see their growth and become empowered" (Robinson, 2017:20).

According to the literature, creating a classroom that fosters a growth mindset should have a positive effect on children's perseverance and attitude towards learning. I shall be interested to see if this is the case in reality. Upon reflecting on my own teaching I feel I could explore this topic in greater detail particularly in terms of my own pedagogy. Often, I find that children give up too easily when faced with a challenging task. I am interested to see whether providing my students with growth mindset tools such as those listed in **Appendix 2: Growth Mindset Checklist for Teachers** will impact or change their attitudes towards learning.

2.6.2   *Peer Marking as a Methodology*

"When the classroom culture focuses on rewards, ″gold stars, ″ grades, or class ranking, then pupils look for ways to obtain the best marks rather than to improve their learning" (Black and Wiliam, 1998:6). Feedback to any pupil should be about the qualities of his or her work, with advice on what he or she can do to improve and should avoid comparisons with other pupils. This helps students realise how and why they achieve and gives them an understanding of how they can improve further. Sharing learning outcomes and creating success criteria are ways in which the children can become facilitators of their own learning and become motivated to learn. Peer and self-assessments are also useful practices in the classroom. The children tend to be very honest when given or helped to create a marking rubric. Results have shown that children can be quite harsh on themselves and equally can be easy on themselves when it comes to marking. When the child has criteria to which they can compare their work and/or examine their work however, a child's self-esteem is boosted if they see that they have fulfilled the success criteria (Black and Wiliam, 1998). When students are learning amongst each other an exchange will take place in a language that learners themselves would naturally use between students. Students are more likely to ask questions and interrupt the learning when it is being delivered by a peer. The learner is completing the work when engaging in peer assessment allowing for the teachers to be free to observe and reflect on what is happening. Teachers must assist low attainers to develop the skill of self-assessment, in order, for them to become successful. Modelling helpful questions must be demonstrated by the teacher to show self-evaluation (Welsh Assembly Government, 2010).

Clarke (2014) and The Welsh Assembly Government (2010) encourage the use of a visualiser for mid-lesson reviews. These can provide opportunities for sharing excellence and modelling. Cooperative peer marking allows for the children to make immediate improvements based on the suggestions given by other students. Using colour pens, feedback codes and children's initials enables the invisible feedback to be identified by onlookers.

According to Gielen et al. (2011), five reasons for using peer assessment are as follows: peer assessment for social control (i.e. controlling active involvement by peers), as assessment tool (i.e. partial replacement or triangulation of teacher assessment), for learning (i.e. assessment for learning and peer learning), for learning-how-to assess, and for active participation as a student. In addition to the positive learning effect of receiving peer assessment, providing peer assessment and the peer learning process that takes place during peer assessment are beneficial to students' learning as well (Gielen et al., 2011).

Being involved in peer assessment may raise self-confidence and empathy for others. Also, for students providing and receiving feedback, it may improve a range of social and communication skills such as learning to give and accept criticism, negotiation and verbal communication skills, assessing suggestions objectively, being diplomatic, or justifying one's position (Topping et al. 2000). This aspect of formative assessment is extremely interesting - can peers really be objective about each other's work at primary school level? I am a little sceptical and am concerned that children will be unduly negative towards each other.

An advantage of self-assessment is that it encourages students to evaluate their own work and to improve their critical thinking skills (Thompson, Pilgrim, & Oliver, 2005). The strategies of sharing success criteria, effective questioning and feedback are part of the self-assessment context. Knowing that peers will assess your work may be a motivator to work harder and perform better (Gielen et al., 2011). Research by Meusen-Beekman et al. (2016) has shown that the introduction of peer assessment in primary education (as well as the introduction of self-assessment) results in long-term improvement of students' self-regulation skills. Pupils in primary education should also be taught or prompted to use explanations, examples, and advice when providing peer feedback. Using questions, advice, explanations, and examples during feedback exchange rather than judgemental terms is more effective and less likely to damage self-esteem (Boud, 2000). They give the learner plenty of information about where and how to go about further learning. It will be very important that myself and the children have a clear rubric for providing feedback.

From their study on "Effects of formative assessments to develop self-regulation among sixth grade students" Meusen-Beekman et al., (2016) found that Self-regulation and motivation can be improved through formative assessment. Developing self-regulation through the primary school curriculum might help students to adapt, utilize, and adjust to learning strategies to enhance their motivation and academic achievement at further school levels (Meusen-Beekman et al., 2016).

2.6.3   *The Jigsaw Strategy as a Methodology*

The Jigsaw Classroom was first used in 1971 in Austin, Texas by Elliot Aronson. It is a co-operative learning technique. According to The Jigsaw Classroom (2000-2019) The Jigsaw Strategy encourages multiple skills including listening, engagement, and empathy.

I want to explore this strategy in my classroom as it is in line with my personal values of inclusion and equality. This technique appeals to me as it promotes both self and peer teaching which require students to understand the material at a deeper level and engage in discussion, problem solving, and learning (Welsh Assembly Government, 2010).

There are many benefits to implementing the Jigsaw Strategy into the classroom. As stated by the American Psychological Association (2003), when properly carried out, the Jigsaw Classroom Technique can transform competitive classrooms into cooperative classrooms. A cooperative classroom allows students make academic and social improvements (American Psychological Association, 2003). Referring to my own educational practice, I include cooperative learning in my teaching by having the children engage in pair and group work. I find that the children are more confident in giving answers and completing tasks when they have been working in a collaborative environment. I have found that difficulties can arise when children are working together due to different types of personalities which can dominate a group or a more reserved child who may not want to share or have a chance to share their thoughts. I am intrigued to see if these issues will arise when using the Jigsaw Strategy.

2.6.4   Co-creating Success Criteria as a Methodology

Sharing the learning objective with the students focusses the teacher and focusses the children. They can identify what they will be learning, how they can discuss their learning, suggest good ways of learning the objective and identify what an excellent final product would be (Clarke, 2014).

The rationale behind including success criteria as outlined by Clarke (2014) is that it provides students with a framework for a formative dialogue with peers or adults. Success Criteria are a deconstruction of the learning objective and they provide opportunities for checking progress and self-assessment. Clarke (2014) comments on how the acronyms WALT (We are learning to…), WILF (What I'm looking for…) and TIB (This is because…) whilst having good intentions of getting the learning objective shared with the class, can become repetitive and a distraction. Simply using "L.O" for the learning objective and "Remember to" for the success criteria is more than enough (Clarke, 2014). Highlighting and presenting the skill is vital in writing clear objectives so children can see the skill as transferable. For example: "We are learning to write instructions" as opposed to "We are learning to write instructions for making a jam sandwich" (Clarke, 2014: 82).

Co-constructing success criteria allows pupils to have ownership over their learning and ongoing assessment occurs. Examples of ways to co-construct success criteria are outlined below (Clarke, 2014: 87,88);

- Showing excellence, different examples of the same skill

- Showing a wrong example

- Recounting practical experience

- Incomplete letter or invitation

In the past I have provided my class with a type of success criteria for example; providing a list of what to include when the children are writing in a specific genre. Having read the literature, I am beginning to understand now that by just giving the children the information they need instead of allowing them to discover it for themselves could

potentially cause the children to exclude several of the criteria. Allowing the children to view a good sample and extract criteria involves the children more in the learning which is in line with my values of inclusion. It is also in line with my values of equality in assessment. The children may have a better chance of succeeding because they have had an opportunity to identify how each of the criteria are represented. I am eager to put this into practice.

Providing children with excellent examples to compare with a not so good example allows for peer discussion and opens dialogue around the criteria needed for success. Clarke (2014) suggests keeping three pieces of excellent work from each year group to share with the class. A second option is to compare two equally assessed pieces.

Prior to researching the literature, I thought that using examples was something I already did. Upon further reflection I now realise that most of my examples would come from the children's workbook. I find that too often I fall into the trap of being directed by what is in the work book instead of focussing on the skill that I am intending to develop. Building up a good bank of children's work will allow the children to see additional work than the limited amount displayed in the workbook. There is no doubt in my mind that this has to be more relevant and beneficial.

2.6.5   *Reflective Journaling as a Methodology*

Various strategies have been explored by Clarke (2014) in order to end lessons effectively. Effective conclusions to lessons enable students to reflect upon their learning, give the teacher feedback and provide summative information. Examples include giving students a sticky note at the end of lesson to record their feedback. This resonates with

my value of care for the children and respect of their opinions. Pupil self – reflections are used by students to write about what they are pleased about with their learning. Reflective journaling can be a useful way of metacognition, and in preparation for self and peer assessment and other assessment for learning principles (Welsh Assembly Government, 2010). My reservations around introducing children to journaling are that they will not grasp the concept and that it will take some time to incorporate into their routine along with much practice which may take up a lot of class time.

2.7   Conclusion

Action research is based on a practitioner's practice and the values that they believe in are inherent and evident in this practice (McNiff, 2017). My values are: perseverance – if you try hard enough you will get there; inclusion – no one should be left behind; equality – all children should be treated equally and have an equal opportunity to demonstrate their achievements/learning; care – children should feel that their opinions are valued and respected. My action research is based on ensuring my values are respected and evident in my teaching practice.

There are four main types of assessment in Irish education. They are summative, formative, diagnostic and classroom assessments. I have come to an awareness that I am over-relying on summative assessment of my pupils' learning. From my reading of the literature I feel that the use of formative assessment methodologies will be more in keeping with my values. The literature also suggests that formative assessment helps children learn better and crucially as Wiliam, quoted in Clarke (2014: 5) says "assessment for learning is about better teaching".

My exploration of the literature and reflection on my values has led me to my research question: What impact has the implementation of formative assessment methodologies on children's learning and on a practitioner's efficacy as a teacher? If formative assessment is to be successful, my reading has revealed that it is imperative to introduce a learning culture into the classroom, as well as talk partners and involving children in their learning (Clarke, 2014). Developing a learning culture involves: developing a growth mindset, mixed ability groupings and integrating meta-cognition strategies (Clarke, 2014). My action research shall endeavour to implement such a learning culture in my class as well as enabling talk partners/peer conversations and maintaining a collaborative environment where children are engaged and invested in their own learning. The establishment of a growth mindset will be central to my research.

The literature explored various formative assessment strategies and in particular, peer marking, the jigsaw strategy, co-creating success criteria and reflective journaling. This research will involve exploring these strategies in my practice.

This is a self-study in action research. I shall critically reflect upon my teaching and listen to critiques from critical friends as I attempt the exploration outlined above.

Chapter Three: Methodology

3.1   Introduction

This action research took place over the school year 2018/2019. The paradigms of the research are outlined in this chapter. They include action research and a quantitative/qualitative mixed methodology approach. A narrative of the research intervention describing the research cycles in detail is documented. As the research involved working with children, special considerations which were taken into account when conducting this research are highlighted. Finally, I have discussed the data collection methodologies of pre and post mindset worksheets, children's work samples, a post research questionnaire, critical friends' inputs, personal reflective journal and observational notes. Ethical considerations such as vulnerability, sensitivity, data storage, power dynamics and consent are also discussed.

3.2   Research Paradigms

A paradigm is a view of what counts as accepted or corrected scientific knowledge or way of working; an "accepted model or pattern" (Kuhn 1962: 23). This research consists of an enquiry into the researcher's educational practice, with an emphasis on taking action that could improve that practice. It is conducted within an action research paradigm using a mixed methodology approach. "The action research paradigm is about actors trying to improve the phenomenon of their surroundings" (Bassey, M. 2002, 38). This research aims to improve my pedagogy in the area of formative assessment methodologies and the use of them in the classroom.

3.2.1   Action Research

Jefferson (2014) explains that the main assumptions of action research suggest that "practitioners work best on problems that they have identified themselves" and that they improve their success if they examine and "assess their own work and then consider ways of working differently" (2014:91–2). This research focusses on my teaching and how I am assessing the children. Throughout this research I am continuously reflecting upon my teaching. I wrote in my reflective journal on the 23rd of September 2018: "I want the children to learn from each other." This was my own ontological view i.e. that children can learn from one another. In addition to this I questioned myself in terms of the assessment methodologies I currently used in the classroom and concluded that they were all mostly summative methods. This led me to query whether "my current assessment methodologies (were) actually hindering the true potential of the children in my class?". Furthermore, I pondered the question in my personal reflective journal "(Could) peer assessment and other formative assessment methodologies enhance the children's learning?" (Cleary, 2018/2019).

Action research can be used in a variety of areas. This research uses action research for "evaluative procedures" and "continuing professional development of teachers" (Cohen et al., 2018:441). In terms of evaluative procedures, the researcher aims to improve methods of continuous assessment in terms of formative assessment strategies to enhance learning. Also, the researcher aims to improve teaching skills, develop new learning methodologies and increase self-awareness (Cohen, 2018). Considering this information, I feel I can justify my reasoning for using action research. I want to improve my own teaching methodologies of formative assessment by investigating the question "What

impact has the implementation of formative assessment methodologies on children's learning and on a practitioner's efficacy as a teacher?"

3.2.2   A Mixed-Methodology Approach

The methodology that will be implemented is a mixed methods qualitative and quantitative approach. Dadds and Hart (2001) suggest that classroom action research can usefully employ an eclectic mix of data-gathering methods. According to Cohen et al. (2018) qualitative research regards people as pre-emptive beings, who actively construct their own meanings of situations and make sense of their world and act through their interpretations. This research is a self-study and therefore a qualitative approach is very suitable. The quantitative approach is also relevant to this study because I shall be using worksheets, a questionnaire and evaluating samples of children's work using a rubric, prior to and post the research. However, as my research consisted of an enquiry into my educational practice, with a particular emphasis on taking action that could improve that practice, it was conducted as I have said, within an action research paradigm.

Taking an action research approach enabled me to engage in continuous cycles of planning, acting, observing and reflecting. McNiff (2002) elaborates on these cycles to describe her spontaneous, self-recreating system of enquiry as "a systematic process of observe, describe, plan, act, reflect, evaluate, modify" (McNiff, 2002:56), but stresses that she does not see the process as linear, but rather, as transformational, which allows for greater fluidity in implementing the process. This adaptability has drawn me towards this approach.

3.3   Narrative of the Research

The research was conducted over two research cycles. Cycle One involved developing the learning culture. It took place over three weeks and involved all twenty-two children in my class. I decided to concentrate on introducing a growth mindset to the children. Cycle Two lasted for six weeks. It involved all children in the class, but the data sample focussed on 10 children chosen by random stratified sampling. Formative assessment methodologies were implemented during this period. I collected samples from the children's work, I analysed teacher observations in my reflective journal and I took feedback from critical friends.

3.3.1   Research Site/Location

My research was conducted in an Irish Catholic Primary School. The study was carried out in Third Class in a mainstream setting. This is a co-educational school. The school ethos recognises and respects diversity of culture, race and religion. The school aims to create an inclusive, respectful, safe, caring and stimulating environment where all children are to be educated and encouraged to attain their full potential. The school recognises parents and guardians as the primary educators and values and encourages their support in the education of their children.

3.4   Action Research Cycle One: Introducing a Growth Mindset

Cycle One attempted to develop a learning culture and more specifically, to foster a growth mindset within the classroom. A growth mindset is the belief that human capacities are not fixed but can be developed over time (Dweck, 2015). As discussed in the Literature Review chapter, Clarke (2014), Dweck (2015) and Robinson (2017) outlined the benefits of a growth mindset and offered suggestions on how to develop it.

My research was carried out in my classroom throughout my daily teaching. I referred to Clarke's (2014) Growth Mindset Checklist for teachers. See **Appendix 2: Growth Mindset Checklist for Teachers** to create a worksheet which I could give to the research participants. I began my research by giving the participants this worksheet to complete. See **Appendix 4: Mindset Worksheet**. The aim of the work sheet was to identify the children's opinion of their mindset. In my professional opinion I would argue that the class would have had a fixed mindset at that time when it came to certain subjects, particularly the three core subjects of English, Irish and maths. Over the course of four weeks I then gave three lessons with the learning intention "We are learning about fixed mindsets vs. growth mindsets". These lessons involved matching exercises, power point presentations, and discussion. My aim in exploring this topic with the children was to introduce them to the idea of a growth mindset and provide them with ways of developing a growth mindset. As a class we created a growth mindset display board with positive affirmations/strategies such as "I can't do this…yet" and "keep trying". The growth mindset display board was added to and referred to over the course of the next three weeks until the phrases and ideas became embedded. The reason for introducing the children to a growth mindset was to prepare them for the implementation of new formative assessment methodologies. These methodologies were utilised in Cycle Two.

3.5   *Action Research Cycle Two: Formative Assessment Methodologies*

Cycle Two introduced formative assessment strategies - one per week. They were incorporated into lessons throughout the day. These strategies were taken from the Welsh Assembly Government (2010) *How to develop thinking and assessment for learning in the classroom*. They included the following: The Jigsaw Strategy, Co-creating Success Criteria, Peer Marking and Reflection Journals. This cycle lasted for six weeks. Evidence

was gathered throughout the research. I spoke with my critical friends about the formative assessment methodologies. I explained my plan for the research process and my critical friends offered me advice on lessons to test out the methodologies. Below is an account of each of the formative assessment methodologies.

3.5.1   The Jigsaw Strategy

The class was divided into groups, and each group was presented with a different task. The findings of each of the groups, were required by the whole class to solve a problem. During a set time-limit, the groups had to fully research their task individually, then gather in expert groups to deepen the learning. They then reported back to their original group and devised a way of clearly communicating this information to the whole class. Further discussion at whole class level was facilitated and the learning was consolidated.

The first task required the class to create a project about cyclones. I divided the children into mixed ability groups. Each child gave themselves a number from one to four. I then assigned every number a part to research for the project. Every group was supplied with different information sheets about cyclones. After ten minutes of research and note taking the children were regrouped according to their numbers forming "expert groups". In these newly formed groups the children were all learning about the same part of the project becoming experts in their area. Every child had to share their information and each child had the chance to record any new information gained. After ten minutes the children returned to their original groups and reported back on their area of expertise. The group then compiled their project and presented it to the class. The class completed more projects using the jigsaw strategy over the course of the research including projects about transport and poetry writing.

3.5.2   Developing Success Criteria

This involved the children co-constructing the criteria/rubric required to complete the writing task, having viewed an exemplar. The co-constructed criteria list was displayed for the students to refer to when completing the task. After the task had been completed the students marked their success depending on their inclusion of the criteria.

In the second week of Cycle Two, the lesson was about writing an explanation piece of writing. First, I showed the class an example of an explanation text and then I read it aloud to them. The children responded by answering the question "What is an explanation text?". The responses they gave were of the nature "It tells you about something", "It gives you lots of information". I told the children we were going to write our own explanation texts, but before they did they were to listen and read some more examples of explanation texts. This helped the children to create their success criteria. The children wrote about "How Rainbows are formed". I repeated this exercise for writing a diary entry and for writing a letter. When the children completed the task, they checked off their success criteria marking scheme/rubric. This then gave the children the opportunity to return and edit their work.

3.5.3   Peer Marking

Learners marked or commented on others' work. The children referred to success criteria when marking each other's work. In order for this strategy to be successful in my professional opinion, I felt that I had to put certain pupils together. This was to ensure that all children in the class would have the best opportunity in which they could get the most from the activity. My reasoning was based more on behaviours than with regards to

academics. The children marked each other's work by writing two things the child did well and one thing that they could improve upon. I was very careful to give the children objective sentences to choose from when giving feedback and to remind them to think about the feedback and make it useful for their peer.

3.5.4   Reflection Journals

This methodology encouraged children to look back on their learning and work. It encouraged learners to assess and monitor their individual progress and track types of thinking. At the end of the lesson or throughout the day, the children were encouraged to reflect upon their work. As learners became more confident, the prompt questions were withdrawn to allow learners to describe strategies themselves. The prompt questions included "How you worked?", "What strategies did you use?", "How did you decide to use this strategy?" "If you were to complete the task again would you use a different strategy?". These questions were to guide the children in their writing, but no formal structure was followed by the children.

3.6   Collection of Data

The data was collected from the research participants throughout the research cycles. Several different collection methods were used including, pre and post mindset worksheets, gathering work samples, observations, reflective journal entries, feedback from critical friends and a post-study questionnaire.

3.6.1   Research Participants

My research participants were the children in my Third Class in the Primary School where I am employed. Using random, stratified sampling ten children were chosen for the data

analysis. I gathered work samples from these children. Children answered a worksheet regarding their mindset. Questions were suitable and considerate of the children's age. Pseudonyms were used throughout the research to protect anonymity. I asked colleagues to participate in the research as critical friends based on their availability and willingness to participate. These critical friends observed me teaching and provided me with feedback. The Board of Management and the parents were possible gatekeepers to my research as they had to grant permissions.

3.6.2   Instruments of Research

The research instruments used throughout this study were: pre and post mindset worksheets, a post-study questionnaire, children's work samples, critical friend's conversations/feedback, personal reflective journal and personal teacher observations.

1.   Pre- and Post-Mindset Worksheet

In Cycle One, a mindset worksheet was given to children prior to the introduction of growth mindset lessons. The aim of the pre-mindset worksheet was to ascertain the mindsets of the children. The same mindset worksheet was given to the children after three weeks, to note any changes in their mindsets, see **Appendix 4**.

2.   Children's Work Samples

The children's work samples aimed to answer the research question "What impact has the implementation of formative assessment methodologies on children's learning and on a practitioner's efficacy as a teacher?" The work samples were analysed with marking

rubrics to determine evidence of any improvements. Children's work was coded using key words. The work samples included, projects and written entries into English copies.

3.   Questionnaire

A post study questionnaire, see **Appendix 16** was given to the pupils. This was to ascertain their opinions on the new methodologies implemented in the classroom.

4.   Critical Friend

My critical friends, who were also colleagues, offered constructive criticism regarding my teaching methodologies. I met with them on a regular basis to discuss my findings and data collection. They observed me teaching prior to implementing the new strategies and post implementation, in order to help validate my research.

5.   Reflective Journal

My reflective journal was written in regularly. It provided an opportunity for me to record my personal values and critique my pedagogy. It offered a space for me to re-evaluate my thoughts through meta-reflection.

6.   Teacher Observations

Having a separate observational record allowed me to record any changes that I noticed about the children's learning and attitudes regarding the assessment methodologies. I reflected on these notes and incorporated relevant information into my findings when analysing the data

3.7   Ethical Considerations

There were many ethical matters to be considered when conducting this research. These included vulnerability of participants, power dynamics, gaining consent and assent and sensitivity.

3.7.1   Vulnerability

In accordance with the UN Convention on the Rights of the Child and the Maynooth University Policy for Child Welfare, the best interests of the child were central to the research conducted. The children participating in the research were eight and nine years old and therefore they were vulnerable. In addition to this there were children with special educational needs in the class who were extra vulnerable. I stressed to the children that they had the option to opt out of the research at any stage. The questions asked in the questionnaire and mindset worksheets were considerate of the children's ages. I adhered to the school's Safeguarding Policy at all times.

I felt personally vulnerable and uncomfortable when being critiqued by colleagues and often did not like the feedback given. The aim of the research however, was to improve my practice, and this thought helped minimise my discomfort.

3.7.2   Power Dynamics

There was a power differential between myself and the children in the class as I am their teacher. I have a close relationship with the children and motivate them through specific practice such as reward systems which may impact the research. I use Class Dojo,

whereby the children receive points for good behaviour, doing good work and actively participating in lessons.

There may be a power dynamic between the children in the class themselves particularly during group activities. The children may become competitive in answering questions in order to please me, their teacher. Care was given to ensure all children have an opportunity to contribute to the discussion, sometimes through the use of a "speaking implement".

My teaching colleagues were initially reluctant to critique my teaching and so I aimed to minimise this by assuring them that their honest feedback was required and that this would help me become a more effective teacher.

3.7.3   Consent and Assent

Permission was sought from the Principal and Board of Management of my school. The board of management was provided with a copy of all information letters, consent and assent forms. The children were given an assent form and information letter to discuss with their parents. Information letters were provided to the parents along with consent forms requesting consent for their child to participate in the research. Critical friend colleagues were provided with an information letter and a consent form. All participants had the right to refuse to participate or to discontinue participation at any time throughout the study.

3.7.4   Sensitivity

The research topic of assessment was a sensitive topic and so due care was taken to protect participants. In the event of possible sensitive disclosures made during the research, I would have referred to relevant School policies such as Children First: National Guidance for the Protection and Welfare of Children (DCYA, 2011) and the schools' child safeguarding policy, as well as consulting the designated liaison person. Every effort was made to actively involve children as participants in the research process and care was taken to protect the rights of all children in the research activity. I ensured that the appropriate level of discussion around any new methodologies or data collection methods occurred in order to avoid any potential stressful situations. Opportunities were provided for the children to ask questions or to gain clarification. If a child had decided to withdraw from the research they could have continued with the activities in the study, but I would have ceased to collect data from that child. Thankfully, this did not occur.

3.7.5   Data Storage

All data collected, including journal entries, children's work samples, observations, notes, lesson plans, worksheets, questionnaires and critical feedback are stored according to the Maynooth University Ethics Policy 2016 and the GDPR guidelines 2018. Data is stored in a locked filing cabinet in my school. Research was typed on a password-protected computer. Data will be kept and destroyed after ten years. All data collected in the research will be available to those who read the thesis upon request. All data will be signed and dated, in the interest of credibility and reliability.

3.8   Role of the Researcher

My role as the researcher ensured the research was valid and reliable. I had to confirm that I adhered to all ethical guidelines and considerations. It was important that I stated any limitations of the study. It was of utmost importance that I guaranteed the safety and protection of the research participants because of their vulnerability, particularly in the event of disseminating the research.

3.8.1   Validity & Reliability

It is obligatory that all researchers ensure. in so far as possible, that the research is reliable and valid. I have endeavoured to do this by using multiple sources of evidence. When qualitative data comes from a number of perspectives, its accuracy and validity are enhanced. Cross checking of data to show its credibility is called triangulation. This "triangulation of data" and converging lines of inquiry has provided construct validity to this research (Yin, 2009). Cohen, Manion and Morrison (2007) suggest that we can explain more fully the richness and complexity of the research when it is studied from more than one standpoint. The various forms of data which I collected and triangulated are as follows: Mindset Worksheet – the children were encouraged to answer honestly and assured that there was no right or wrong answer; Reflection journal and personal observations - I kept track of the dates I wrote reflections and observations; Critical Friend and Critical Conversations with Colleagues - my critical friends observed my lessons before, during and after my research. Engaging in critical conversations with my colleagues and critical friend provided validation and were a reliable source of information; Children's Work Samples - I created rubrics when assessing children's work samples in order to minimise bias and ensure validity. I was then able to identify if there was an effect on children's learning through the introduction of new formative assessment

methodologies. Questionnaire - as mentioned in Cohen et al. (2018) a difficulty with questionnaires is that different respondents interpret the same words differently. I was mindful of the questions I included and the wording I used when creating the questionnaire.

3.8.2   Analysis & Dissemination of Data

I used a thematic analysis framework to explore and understand the data collected. I familiarised myself with the data, generated initial codes, and then searched for themes. Following this, I reviewed the themes, defined and named themes and then produced my report. I referred to the theoretical framework of Gibbs' (1988) Reflective Cycle.

As a professional carrying out research, I adhered to the Teaching Council's Code of Professional Conduct. My research may have an educative influence, and I may wish to make my research public in future. I have respected all participants' anonymity. I aim to disseminate my findings at a staff meeting, with the principal's permission and possibly to disseminate to educational publications such as "Intouch" teachers' magazine.

3.8.3   Interpretation, Limitations & Bias

The results of this research may be interpreted in different ways due to the nature of the research being a self-study. To help clarify the results, I relied on the input of my research participants – my critical friends and students. By gaining various "perspectives" this helps us to "challenge assumptions and biases" and to highlight inconsistencies to help triangulate our findings (LaBoskey, 2004:849). I avoided being biased when choosing children's work samples, not to pick samples based on the child's academic ability. I

selected samples using a stratified random sampling method (Cohen et al., 2018). First, I collected and divided the data according to gender. Then I selected five pieces at random from each sample group to analyse. The children's work was completed into their copies and therefore I was able to see their names, however as I have previously mentioned, pseudonyms were used when referring to individual work samples.

3.9   *Conclusions*

The purpose of this action research was to explore the effects of formative assessment on teaching and learning. I hoped that this research would afford me the opportunity and motivation to adopt formative assessment into my pedagogy.

The research site was the Primary School where I work. It is a mixed, Catholic, Primary School. The research participants were a stratified random sample of ten children from my Third Class pupils. My data collection consisted of my reflective journal entries, observations, critical friends' notes of observed lessons and feedback, children's work samples and pre and post questionnaires. This was a mixed methods study using both quantitative and qualitative methods of research, underpinned by an action research paradigm. Data collection began once all permissions were granted. The process of analysis involved a triangulation of the information gathered from the varying sources.

I explored the question "What impact has the implementation of formative assessment methodologies on children's learning and on a practitioner's efficacy as a teacher?" I reviewed my current practice in relation to assessment by critically reflecting upon my teaching. I sought the help of critical friends to critique and observe my current practice

in assessment. I introduced a learning culture into my class specifically in terms of a growth mindset. I gave the children a pre and post research mindset worksheet to ascertain any changes. I researched formative assessment methodologies and incorporated them into my practice, namely peer marking, the jigsaw strategy, co-creating success criteria and reflective journaling. At the end of research Cycle Two, my critical friends observed my teaching for a second time. A post research questionnaire was distributed to gain the children's opinion of the new assessment methodologies.

The data was analysed according to a thematic analysis framework. I reflected upon the data, coded the data and found emerging themes. A report on the analysed data will be given in the following chapter. Reflective practitioners' theories and frameworks, for example, that of Gibbs' (1988) Reflective Cycle was referred to throughout this process.

By the end of the research, I had introduced the concept of a growth mindset into my class and children were actively engaging in formative assessment methodologies throughout lessons during the day. By implementing these methodologies, I hoped to gain an insight into what effect, if any, formative assessment had on children's learning and a practitioner's efficacy as a teacher.

Chapter Four: Findings and Analysis

4.1 Introduction

This action research took place in a mainstream classroom in a Kildare Primary School. Cycle One focussed on promoting a learning culture and specifically on establishing a growth mindset. Cycle Two consisted of introducing the formative assessment methodologies of "Peer Marking", "The Jigsaw Strategy", "Co-creating Success Criteria", and "Reflective Journaling". It set about answering the question: "What impact has the implementation of formative assessment methodologies on children's learning and on a practitioner's efficacy as a teacher?" This research used six research instruments as a means of collecting data on introducing formative assessment methodologies into the classroom. They included pre and post mindset worksheet, a post-study questionnaire, children's work samples, critical friends' contributions, a personal reflective journal and teacher observations.

4.2 Collected Data

I used a pre and post research mindset worksheet to ascertain the type of mindset the children had at the beginning and end of the study. I followed this up with a post research questionnaire to obtain the children's individual view on each of the four formative assessment strategies which had been introduced into the classroom over the period of the research study. The reason for using children's work samples was to demonstrate when learning had occurred. I sought confirmation on the children's learning from my critical friend throughout conversations and through the use of a rubric. My reflective

journal allowed me to connect my personal learning to the ongoing research. My observations were useful when writing my reflections.

4.2.1   Cycle One: Growth Mindset Findings

The bar charts below **(see Figure 4.1 and Figure 4.2)** represent the results from cycle One of the research study. Nineteen children with their parents' permission agreed to participate. The children were given a worksheet with no prior discussion about mindsets. They were asked to select the statements which they believed about themselves. See **Appendix 4: Mindset Worksheet** for worksheet given to children.
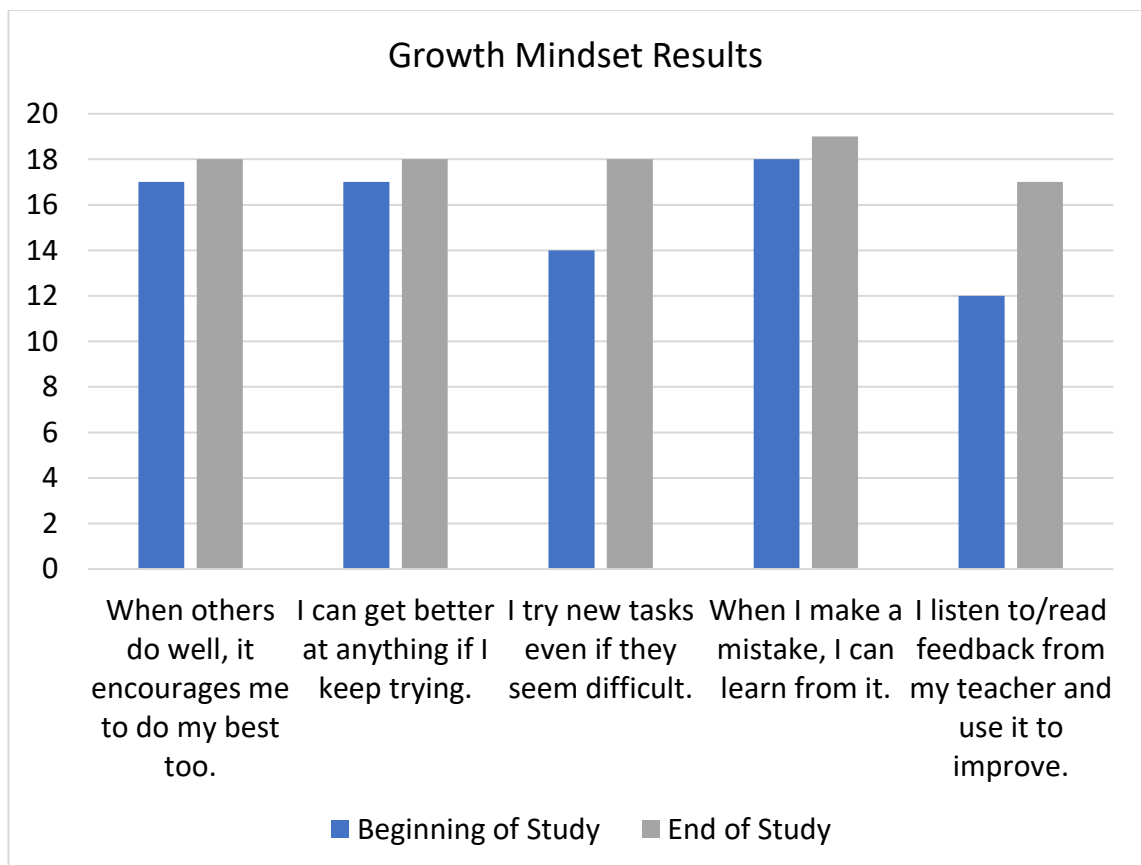
Figure 4.1: Growth Mindset Results
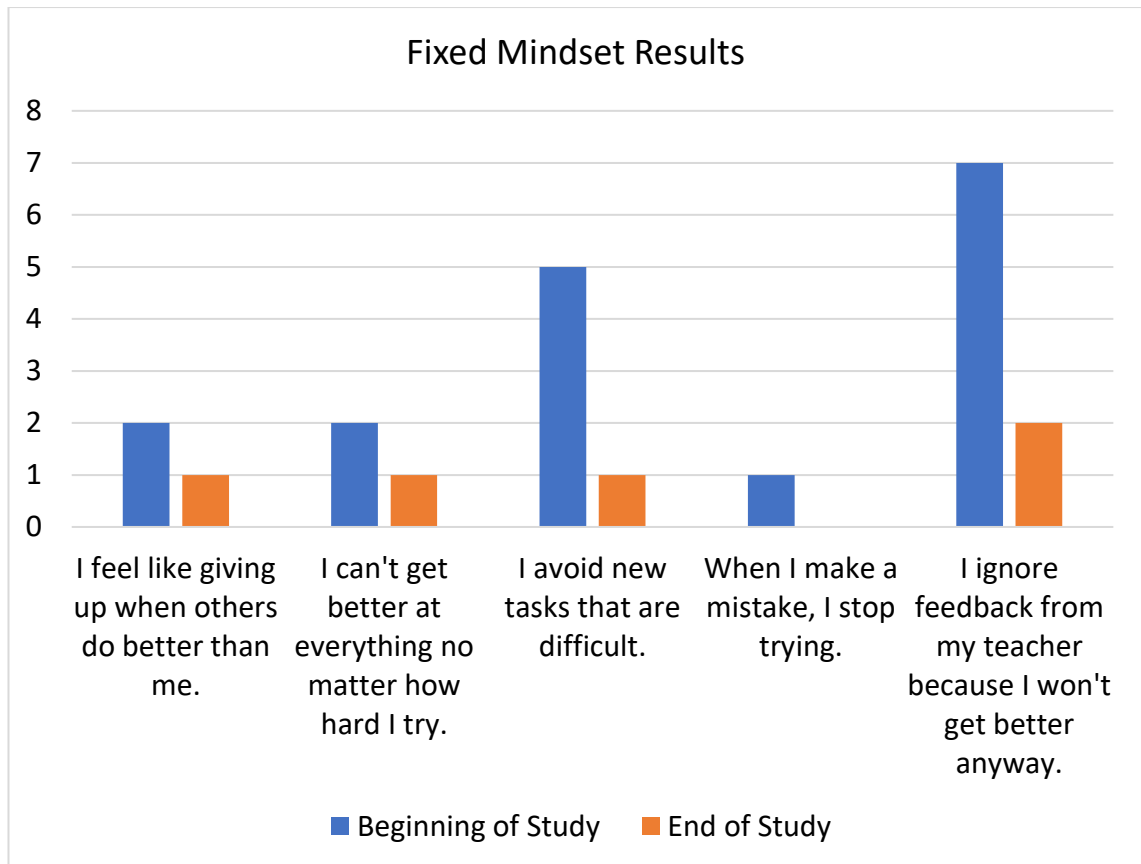
Figure 4.2: Fixed Mindset Results

It is clear from these results that the majority of the children participating in this study (17/19) demonstrated that they had a growth mindset at the beginning of the study, which surprised me. From **Figure 4.2**, we can see that 7 children ignore feedback as they think they won't get better anyway which I found upsetting. By the end of the study, in all statements relating to a growth mindset, the children have increased their positivity, as evidenced by the results in **Figure 4.1**. Similarly, in all statements relating to a fixed mindset, the children have decreased their negativity as evidenced by the results in **Figure 4.2**. These post research figures are very encouraging and an eye-opener for me as a teacher. I now realise that I can help the children adjust their mindsets if they are apprehensive about particular tasks, by engaging in positive dialogue in the classroom. A

sense of community and collaboration can be fostered where no child feels they cannot complete a task.

At the beginning of this study, none of the children in the participating class knew the meanings of the terms "growth mindset" or "fixed mindset". When asked, one child was able to formulate a meaning for the term "mindset". After raising the question with the children, I gave lessons on different mindsets over a period of two weeks. These lessons explored the differences between the two terms, expanding the children's vocabulary and looking at ways to change our mindsets. This was a new concept for the children and throughout mindset lessons I found they participated with enthusiasm. "The children appeared to be actively engaged throughout the power point presentations about mindsets" (Cleary, 2019a). We discovered growth mindset quotes from famous people. The children made numerous comments about the growth mindset quotes from famous people including Michelle Obama, Michael Jordan and Thomas Edison. "I think it's good that there are famous people on the wall in school because we know who they are, and they can help us" (Nontarget pupil, 2019).

We made a class display board (see **Figure 4.3**) showing the quotes from famous people along with superhero characters with speech bubbles with growth mindset reminders written on them for example; "I keep trying even when I find things really difficult". I identified two children in the group who showed clear signs of fixed mindsets and confirmed this through comments they made throughout the day. These comments included "I'm crap at Irish, I hate it" (Aoife, 2019) and "I always give up because some subjects are hard" (John, 2019). "I want the children in my class to have the best chance at succeeding and if they have a fixed mindset towards learning then they are not only

giving up on their learning at an early stage they are putting themselves down and thinking

negative thoughts about themselves (Cleary, 2019a).

Figure 4.3: Mindset Display Board

Over the three-week cycle, I asked the children what their thoughts were on mindsets and

changing our mindsets. The children alluded to mindsets being about your attitude to

different subjects. They mentioned attempting to change their mindset. See **Figure 4.4**

below referring to a change in mindset in English. Other children wrote about developing

perseverance and strategies they would use such as asking for help. See **Figure 4.5** below.

The children also drew images of their own superheroes with phrases such as "You can

have a growth mindset by doing your best" (Nontarget pupil, 2019) see **Figure 4.5** and

Figure 4.6 below.
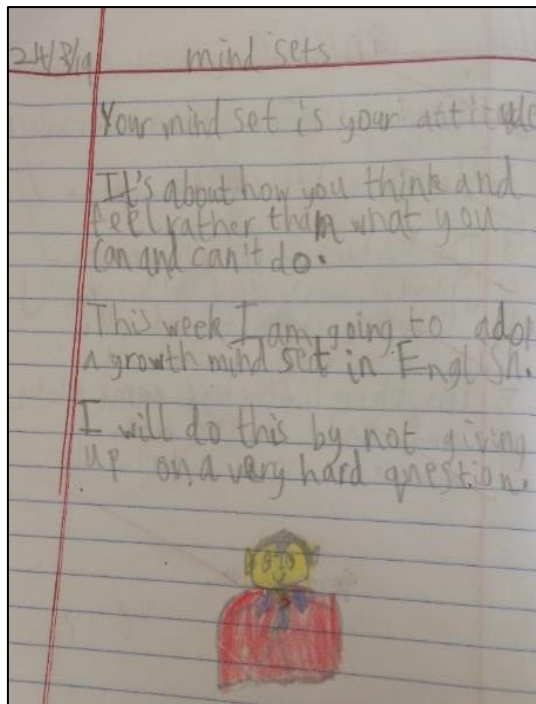
Figure 4.4: Nontarget pupil's thoughts on mindsets.
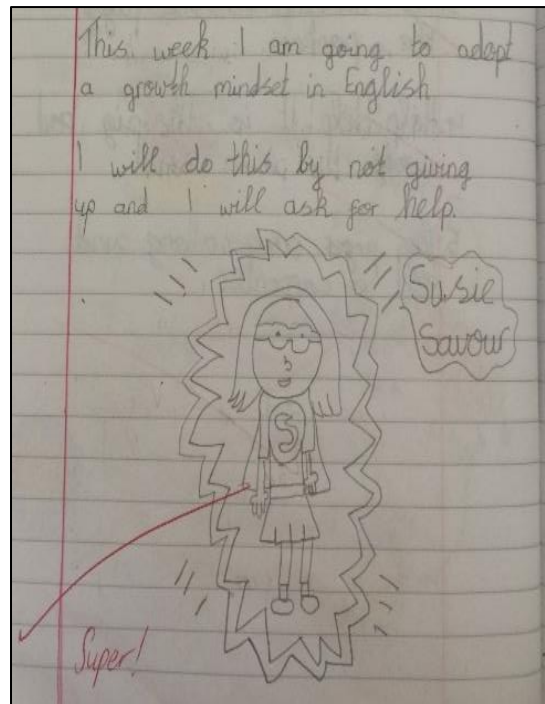
Figure 4.5: Nontarget pupil's thoughts on mindsets.
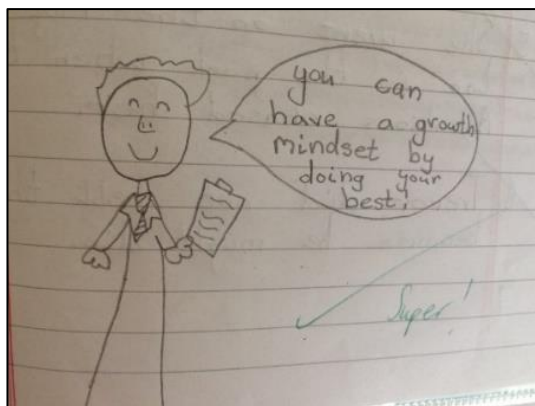
Figure 4.6: Nontarget pupil's superhero character

These results confirm the growth mindset of some of the children in the class. As Clarke (2014) mentions having a growth mindset is an important foundation for creating a learning environment suitable for formative assessment. Children began to take new learning concepts on board and interpret them. They now had the vocabulary to express their mindset and how they were feeling and they had key reminders in the classroom to persevere and enter into new learning with an open mind. It was clear to my critical friends that the children were supporting one another, and it was evident that this was

occurring in the classroom (Critical Friend, 2019). This made for a more interactive and more talkative classroom which was not the norm in my classroom previously during "task time". As I wrote in my journal "I asked the children to be quieter because it was task time, and the second time I asked for quiet, a child responded, 'teacher we cannot help one another with the task if we can't talk'" (Cleary. 2019). When I reflect on this moment, I recall how I felt ashamed. I was encouraging the children to support one another, yet I was a factor in hindering this process. Brookfield states that 'One of the hardest things teachers learn', is that 'the sincerity of their intentions does not guarantee the purity of their practice' (1995:1). I have learnt from this particular moment that if I want change to occur in my classroom that includes a change in my teaching and a change in me too. It was a reminder that I was at the centre of this research too and often teachers can be barriers to the success of learning in the classroom.

4.2.2   The Jigsaw Strategy Findings

The jigsaw strategy was used as a formative assessment strategy mainly during S.E.S.E subjects (History, Geography and Science) for project work but also during English. At the end of the study the children completed a post questionnaire. From this along with the children's project work I was able to ascertain that improvements had been made in the quality of the children's work. 100% of the research participants stated that they believed their work had improved. My own observations of their work confirmed that they produced a better quality of work and a higher standard than previous project work and finally my critical friends reviewed the children's project work pre-study and post study and confirmed my beliefs that there had been an improvement in their work. The children were asked to write down what they thought of the Jigsaw Strategy during its implementation. See **Figure 4.7** below for comments made. In addition to this some of

the comments made by the targeted children in relation to the Jigsaw Strategy in a post

research questionnaire included: "…I could ask them questions and get more help" (Anne,

2019), "My expert group gave me more interesting facts" (Amy, 2019) and "I did a better

project because (of) the information from the expert group". It was evident from the

children, my own observations and my critical friends that the children were more

confident in presenting their findings for the projects and completing the tasks. See

Figure 4.7.
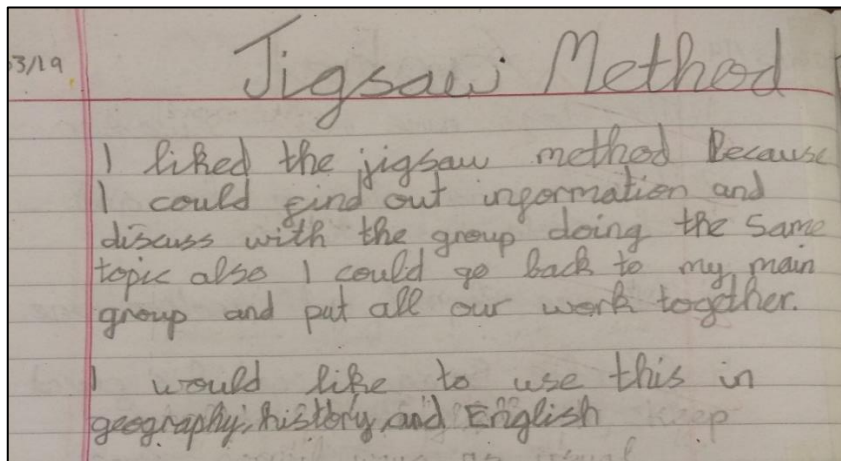
Figure 4.7: Nontarget pupil copy sample writing about the Jigsaw Strategy

My critical friends stated, "The children that previously would have sat back were more

engaged and involved in the projects" (Critical Friend, 2019) and "I felt the children

presented their projects with more enthusiasm and confidence when using the Jigsaw

Strategy" (Critical Friend, 2019). This coincides with the research surrounding the

Jigsaw Strategy that "If each student's part is essential, then each student is essential; and

that is precisely what makes this strategy so effective" (The Jigsaw Classroom, 2019: np).

The learners in my classroom took ownership over their work and the results were a better

quality of learning. The strategy creates a safe environment for children to learn from

each other and then to share their learning with others. All students are required to

communicate with one another but the pressure of being the sole occupier of the knowledge is not dominant throughout the task as it is based on collaboration and sharing. My reflective journal corroborates the level of student engagement. On the 29th of March I wrote:

"one huge thing I took from the jigsaw strategy was that during that one lesson, every child spoke, every child read aloud, and every child wrote. This is rare for every lesson. Sometimes children can go the whole day without fully engaging in a lesson" (Cleary, 2018/2019).

4.2.3   Co-creating Success Criteria Findings

At the beginning of lessons throughout the day, I gave the children the learning objective along with some examples of the tasks. As a class we then co-created success criteria for the tasks I wanted the children to complete.

I wanted to see if having specific criteria to follow would enhance the children's work in any way. I found that on completing their work, the children had independently self-edited using the success criteria. In addition to this, I discovered that the children were producing quality work which achieved the lesson's objective. I alternated between allowing the children to complete their own success criteria check sheet after they completed a task and getting their peer to complete the criteria.

I observed that when the children's work was being checked by their peer, they were more eager to look at their feedback, they showed more of an interest. In turn, they went back to check their work if their peer had written an 'X' in a section. When completing the task on their own, they were not as thorough at checking their work (Cleary, 2019a). See

Figure 4.8 and **Figure 4.9** for samples of children's work. From my observations (Cleary.2019a), I could see and hear the children discussing their work. "I did use capital letters" (nontarget child, 2019), "You forgot to sign your name at the end" (James, 2019). The children were learning from their feedback.
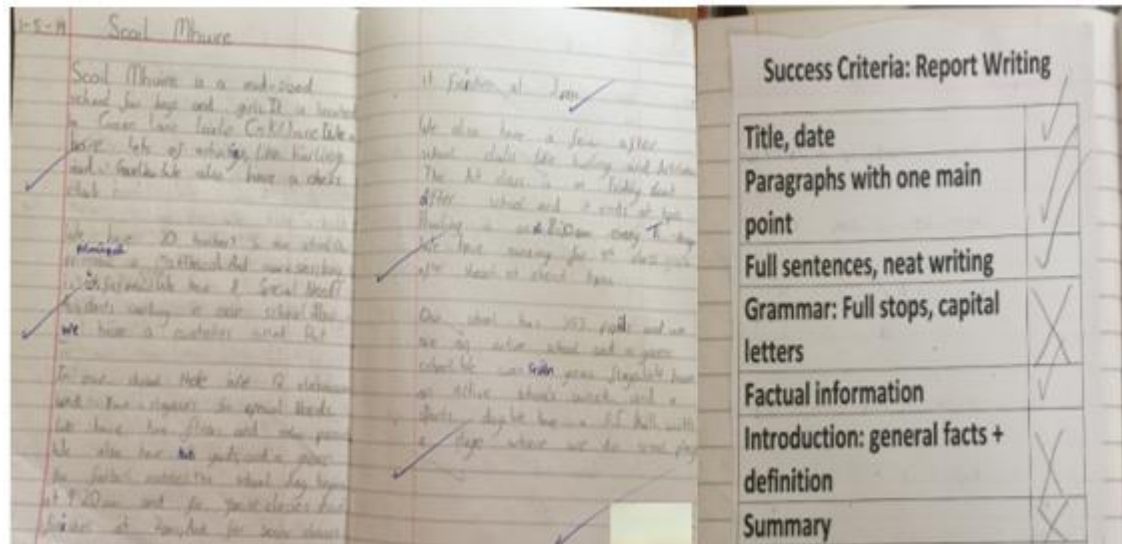

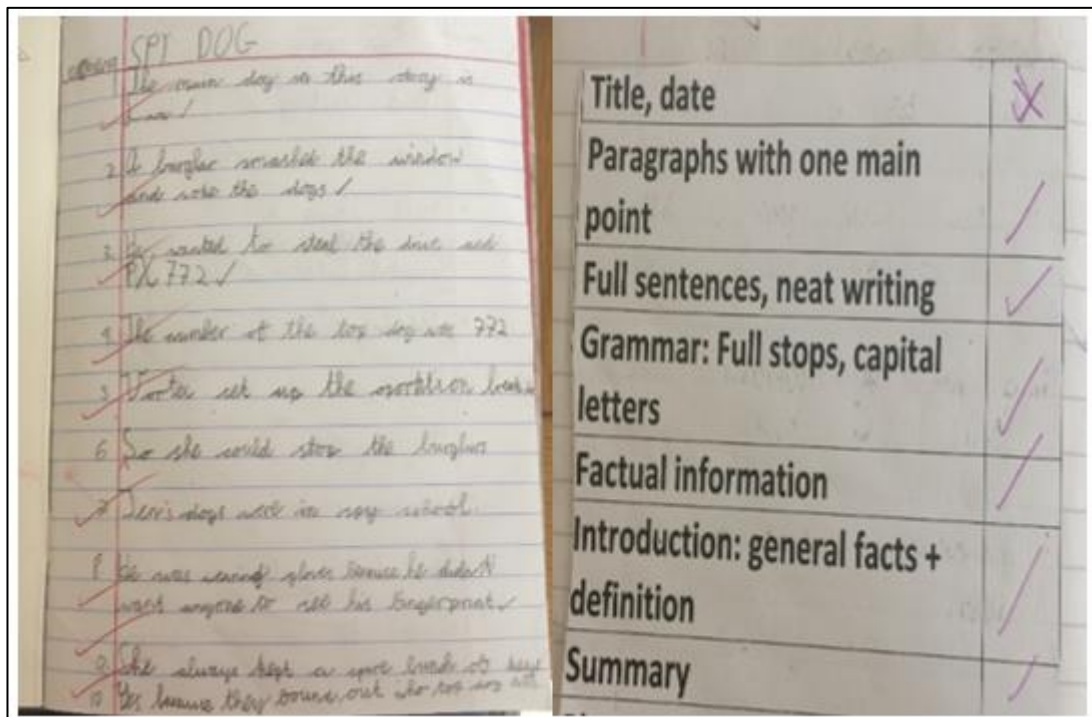Figure 4.8: James' copy samples showing he returned to edit his work

Figure 4.9: Jack's copy sample showing he returned to edit his work

Looking at the results from co-creating the success criteria in the classroom, it was clear that the children were achieving the lesson objectives, see **Figure 4.10** below for an example. There was evidence of the children self-editing their work and the children wrote positive comments about the methodology in the post questionnaire. 80% of the children said that having the success criteria was helpful.
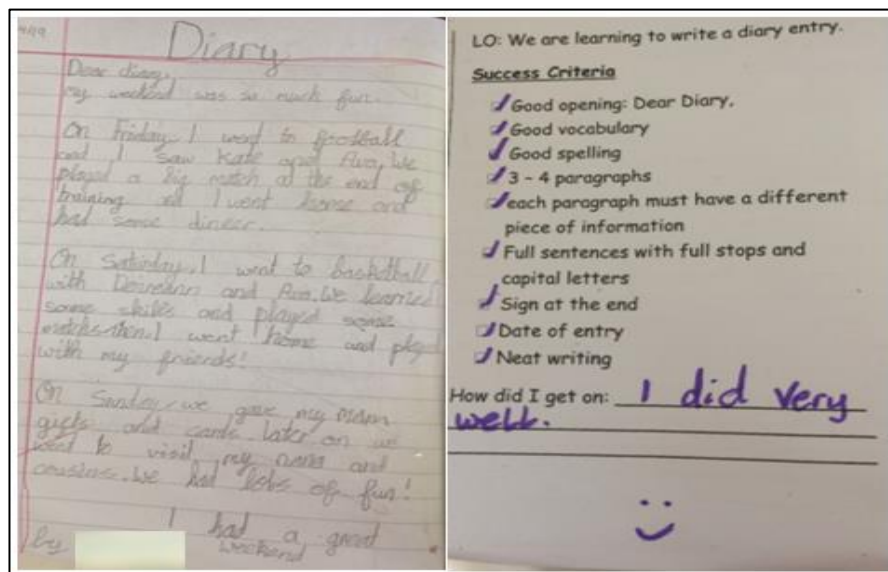
Figure 4.10: Copy sample from Alison showing objective being fulfilled.

4.2.4   Peer Marking Findings

At the end of written lessons throughout the school day, I asked the children to swap copies with another child. As a class we discussed peer marking and gave some examples as to what could be written that would help their peer with their learning. Each child read their peer's work and then wrote down on average, three comments about their work. This exercise has now become a regular part of our classroom practice but for the purposes of the research, ten copies were analysed from the ten targeted children which were chosen earlier in the study.

When I analysed the children's peer marking comments, I used a thematic approach. I gathered the copies from the nineteen research participants. I coded and recorded the amount of times that particular peer marking comments were received over ten lessons (See **Figure 4.11**). The most common themes included handwriting, using full sentences, grammar, vocabulary and spelling. One hundred and eighteen comments were made about handwriting and I decided that it would be appropriate to focus on this aspect.
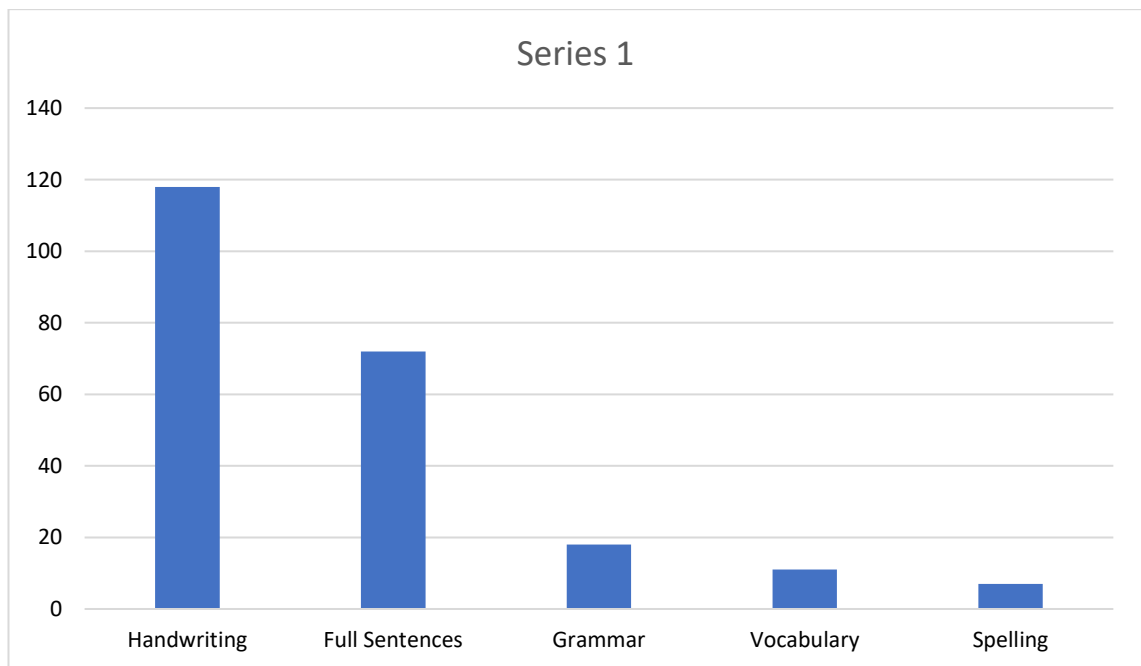

Figure 4.11: Peer Marking Findings: Research Participants

On analysing my research sample, I discovered that handwriting was again the dominant comment made by peers. Ten sample copies had been chosen by stratified, random selection (five male copies and five female copies). All ten copies contained comments relating to their peer's handwriting. See **Figure 4.12** below for all the comments the sample group received.

At first, I was puzzled as to why the children were commenting on handwriting, until I realised that the children had begun learning cursive handwriting that year. As a teacher, it reminded me to tap into the children's interests in order to engage them. I wrote in my reflective diary on March 7th, 2019 "Children learn when they are interested in the topic" (Cleary, 2018/2019).
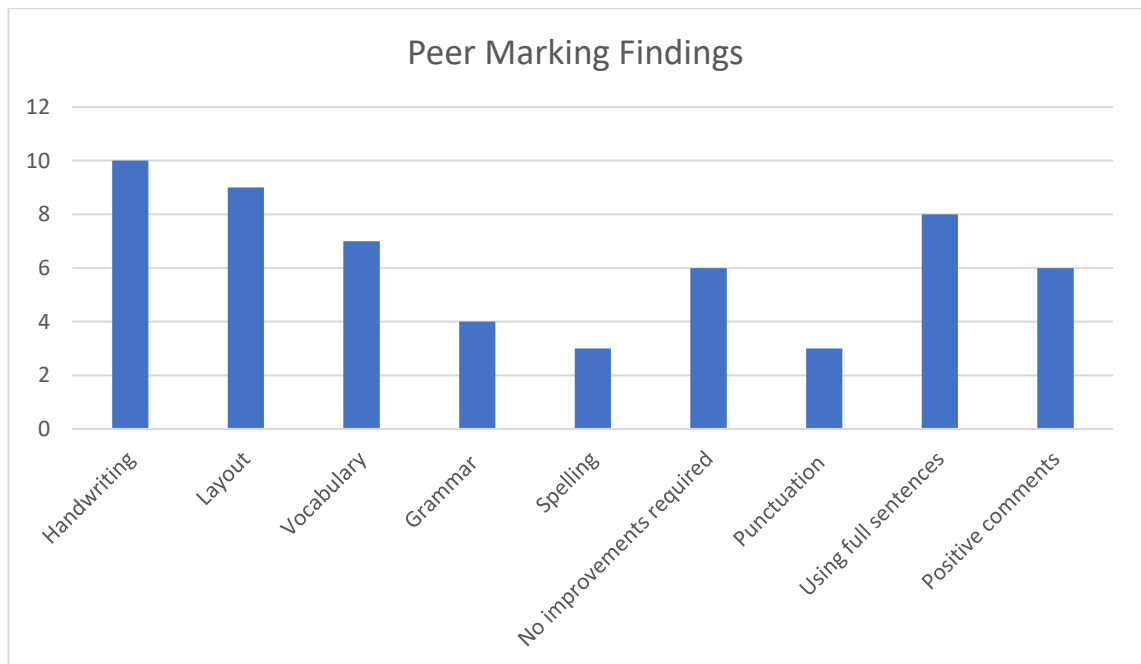

Figure 4.12: Peer Marking Findings: Research Sample

Upon examination of the sample copies I looked at whether the comments relating to handwriting were positive or negative. Seven out of the ten copies selected suggested improvement was required, leaving three copies which contained compliments about the writing. See **Table 4.1** below for results. To maintain anonymity, I gave each of the children a pseudonym.

Table 4.1: Pseudonyms for children's work samples

Pseudonyms			
Child 1	John	**Child 6**	Jerry
Child 2	Jack	**Child 7**	Alison
Child 3	Andrea	**Child 8**	Amy
Child 4	Anne	**Child 9**	James
Child 5	Josh	**Child 10**	Aoife

Comments suggesting improvement included: "I think you should work on handwriting", "make handwriting neater", "you could use a rubber next time and don't scribble" and "You could neaten up your writing" "don't rub out as much".
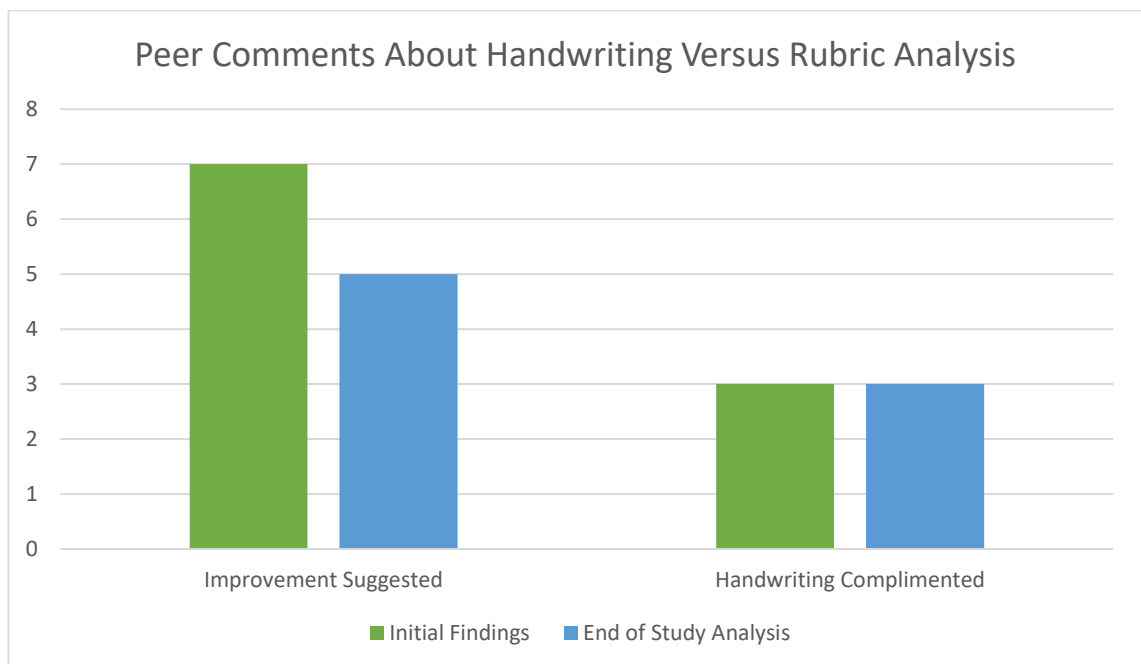
Figure 4.13: Peer Comments about Handwriting

In order to eliminate personal bias and to remain as objective as possible, along with advice from my critical friends, I developed a marking rubric for handwriting improvement. It included areas like letter size and formation. This was so I could be

objective in saying whether the children's handwriting had improved. See **Table 4.2** below for this handwriting improvement rubric. I used this rubric to further examine the copies to investigate whether the children who received suggestions to improve their handwriting had made any effort to so.

Table 4.2: Rubric for Handwriting Improvement

Rubric for Handwriting Improvement	
Letter Formation	Letters are drawn with straight lines/curves, circles are closed fully.
Usage	Lower/uppercase letters used appropriately with correct size proportion.
Size	Consistency in size of letters.
Line awareness	Letters are touching the bottom and top lines appropriately.
Neatness/overall impression	Handwriting shows evidence of care and effort.

According to my analysis and also to the subsequent peer comments which have been written in the children's copies, seven of these target children had peer comments suggesting that they should try to improve their handwriting. Out of these seven children, five of them showed an improvement or progression in handwriting. This improvement was confirmed by my comparison of the children's work samples in line with the rubric, the positive comments those seven children began to receive in their copies and my critical friends' examination of the children's handwriting.

The three children who had received compliments about their handwriting continued to display a high standard of writing based on my rubric analysis and they continued to receive positive peer praise on their handwriting. These comments included "your handwriting is really neat", "Nice handwriting" and "very neat handwriting". See **Figure 4.13** above for the findings and analysis represented on a bar chart. There are also several copy samples showing improvement in **Appendix 15**.

I have included two copy samples of John's work, see **Figure 4.14** below. He received a peer comment which read "I think you should work on handwriting" on the 9th of May. Then on the 16th of May we see another sample of John's writing see **Figure 4.15** below, which shows a great attempt at improvement even though there are clear signs of letter formation difficulty. He has made an effort to write *on* the line.
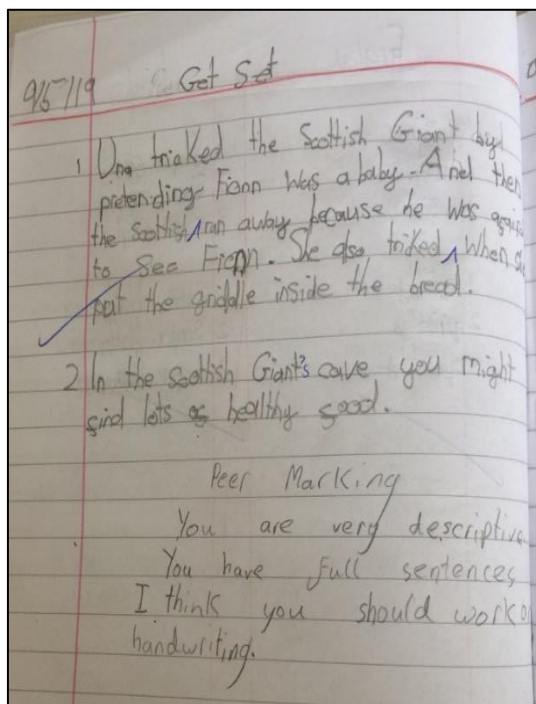
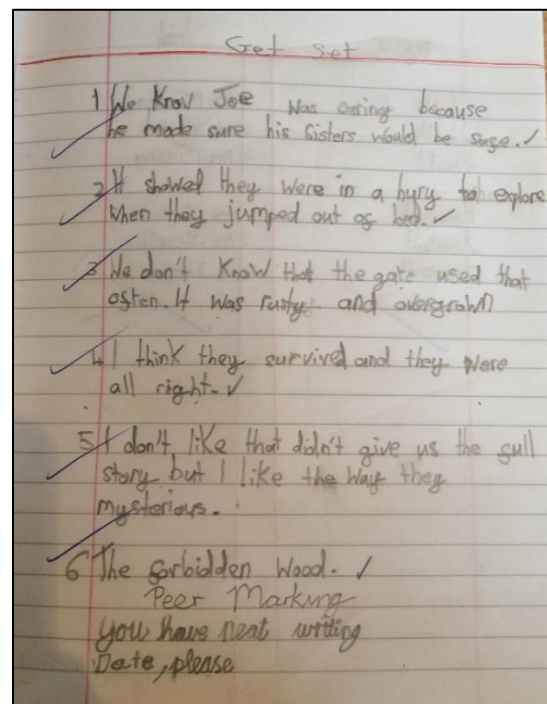Figure 4.14: John's copy sample with a comment suggesting improvement.

Figure 4.15: John's copy sample showing improvement in his handwriting.

I have also included two samples of Anne's work. She received a peer mark suggesting

her writing could be "a little bit neater" on the 1st of May, see **Figure 4.16** below. Looking

through her copy I can see that on the 7th of May see **Figure 4.17** below, she clearly took

more time doing her work and therefore her writing along with overall presentation has

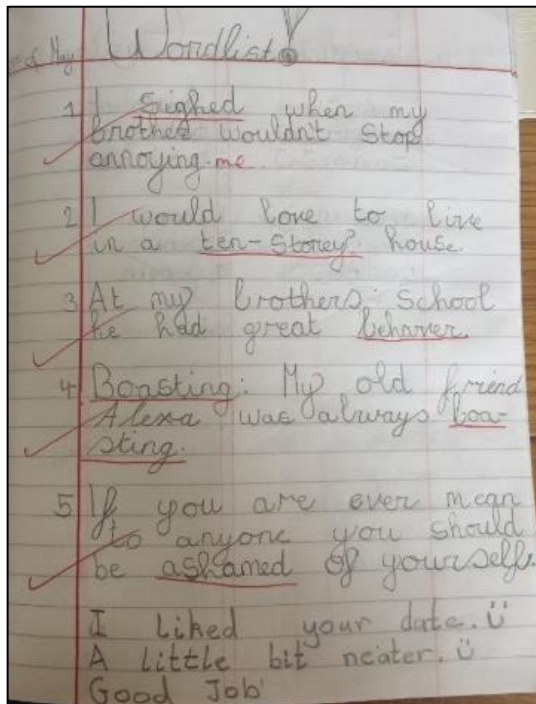slightly improved. Her letters are smaller and proportioned.
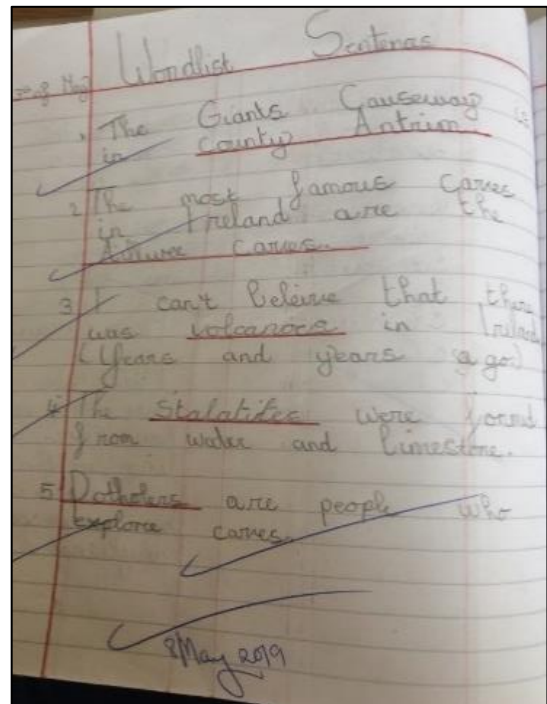

Figure 4.16: Anne's copy sample.

Figure 4.17: Anne's copy sample showing an improvement in her handwriting.

In addition to improvements made in handwriting I also wanted to acknowledge that there

are other benefits to peer marking and as Topping et al. (2000) state, peer marking can

develop self-confidence and empathy. I believe this has been the case in my classroom

since the introduction of the peer marking strategy. **Figure 4.18** below demonstrates a

student's empathy whilst attempting not to discourage their peer by including positive
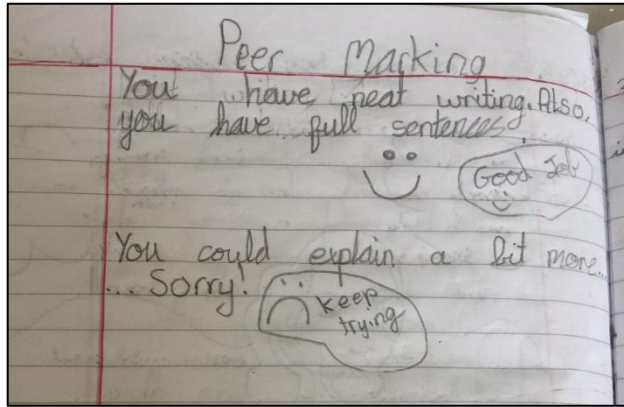
motivating comments.

Figure 4.18: Peer marking showing empathy

I had worried prior to my research, that peer marking would prove problematic and that children might be unduly negative. I am delighted that this has not been the case and the children had displayed great empathy towards each other and a great desire to help each other improve.

4.2.5   Reflection Journal Entry Findings

All nineteen children were given reflective journals to write in at the end of the day. From my sample selection of ten reflective journals, one child had misplaced theirs and another had brought their reflective journal home. As a result, these results are based on eight samples instead of ten.

Three out of the eight children mentioned their mindset throughout their reflections. Seven children referred to peer marking. Four children wrote about the Jigsaw Strategy used during project time. Three of the children raised points about success criteria. See **Figure 4.19** below for findings.
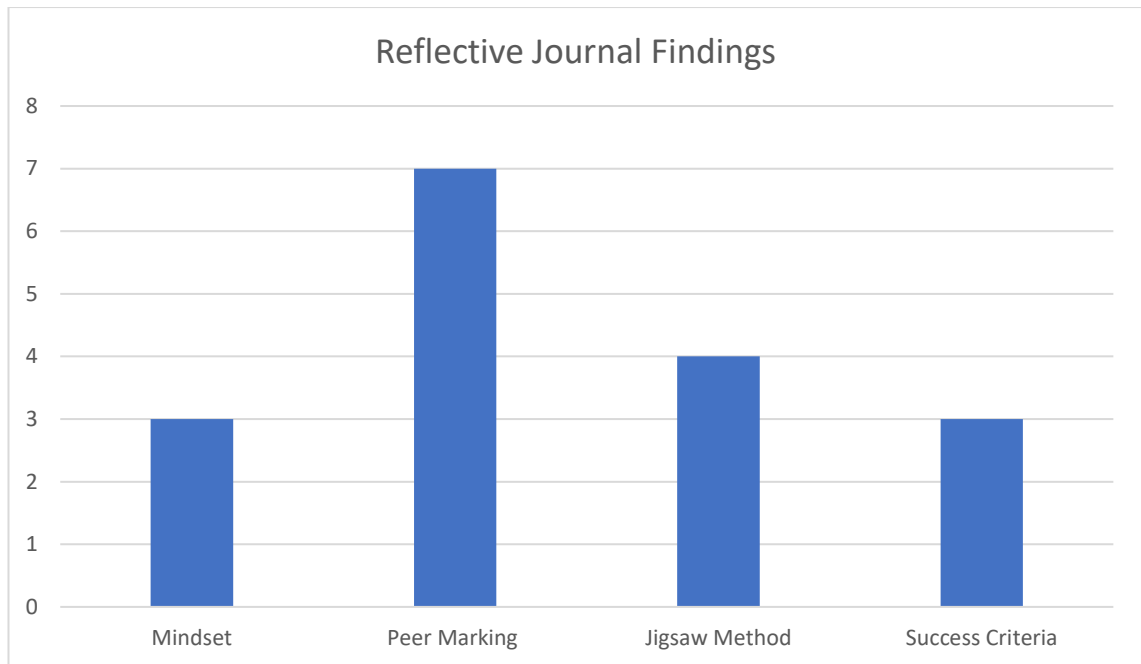
Figure 4.19: Reflective Journal Findings

I found the Reflective Journals insightful when I read through them after the study. Many of the children resorted to a structure of recapping their day, writing a sentence or two about each subject. The journals were utilised more like diaries. As I have learned, reflecting is an ongoing skill. I provided the children with prompt questions to aid as a reflective model. For example: How was your day in school today? Is there anything you did well? Is there anything you could do better? If you enjoyed learning anything today, why was this? From these results, it is evident that peer marking has had a significant impact on the children.

I could clearly see what specific thoughts occupied the children's minds from reading their reflective journals. Topics such as food, maths, yard time, testing/test results, home and the daily schedule were evident throughout all of the journals.

From listening and observing the children's reactions to the announcement of 'reflection time', it was obvious that there was a mixed response to the reflective task. I found that the children who enjoyed the reflection activity were generally the children who enjoyed English and writing stories. The children who moaned and groaned when reflection time was mentioned were the children who find written tasks challenging and tedious. I gave the children the option of drawing as a means of reflection, but none of the children in the sample group or any of the participants in the study chose to avail of this method.

The two reflective journal entries below from Anne (**Figure 4.20**) and John (**Figure 4.21**) show a reference to their mindset for that day, stating that they thought they had growth mindsets. I think it is valuable to note that the children are thinking about their mindset. Throughout my observations and from looking through the rest of the reflective journals from the children not in the sample selection, I can confirm that the children's awareness has grown. The children's vocabulary surrounding the terms mindset has expanded and I now hear the children using words and phrases such as growth mindset, fixed mindset, persevere, determined to succeed, don't give up, I'll help you, try a different way. My classroom has become a more inclusive environment to aid learning. This is evident in Alison's Journal entry, see **Figure 4.22** below.
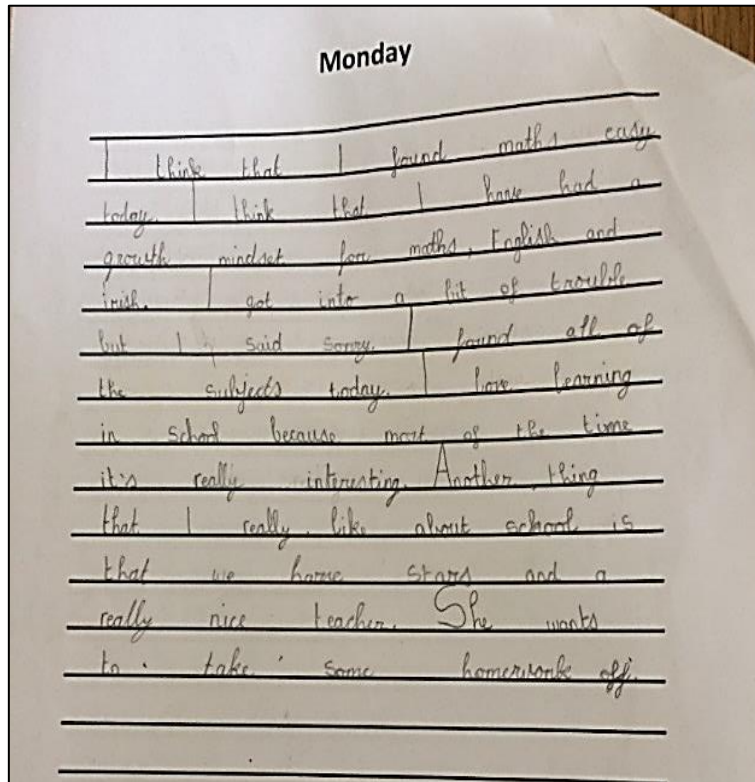
Monday

I think that I found maths easy today. I think that I have had a growth mindset for maths, English and Irish. I got into a bit of trouble but I said sorry. I found all of the subjects today. I love learning in school because most of the time it's really interesting. Another thing that I really like about school is that we have stars and a really nice teacher. She wants to take some homework off.

Figure 4.20: Anne's Journal Entry showing a growth mindset

Thursday

I loved playing the games in English they were very fun.

I could have been a bit easier in Maths but I still did very well in Maths.

Irish wasn't as hard as usally.

In peer marking it was hard because it was just hard to give coments.

Today I think had good Mindset.
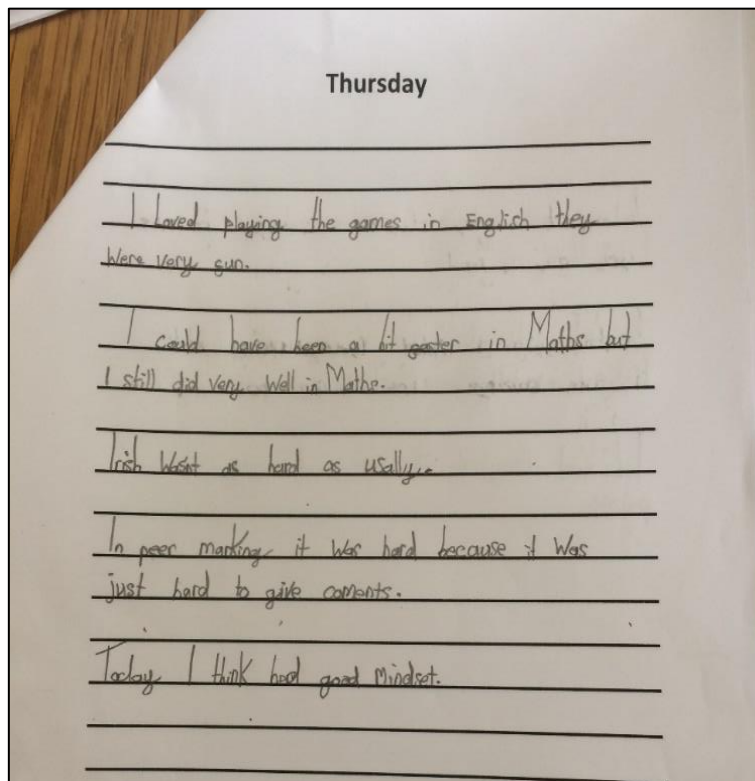
Figure 4.21: John's Journal Entry showing his mindset
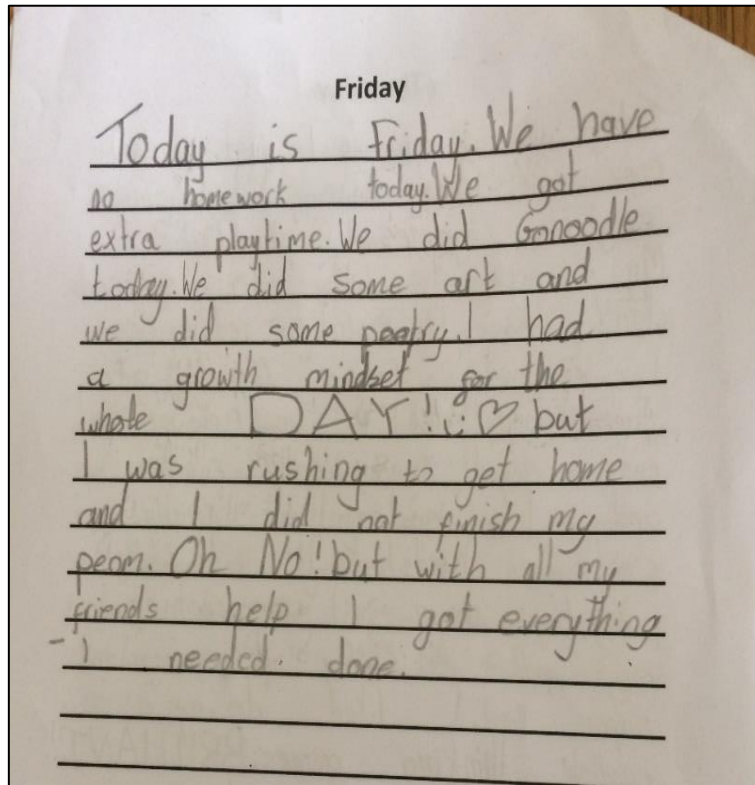
Figure 4.22: Alison's Journal Entry Showing Evidence of an Inclusive Environment

When I was analysing the children's reflective journals, the most commented on formative assessment methodology was peer marking. They enjoyed looking at what their peer had to say about their work. This was a big eye opener for me because I have asked the children before "did you read what I wrote in your copy?" The majority of them answer that they haven't but during this action research, they couldn't wait to read what their friend had said – it was more important to them. The majority of the targeted children did not like writing in their journals. See **Figure 4.23** below for results showing only three out of the ten target children enjoyed the journaling process.
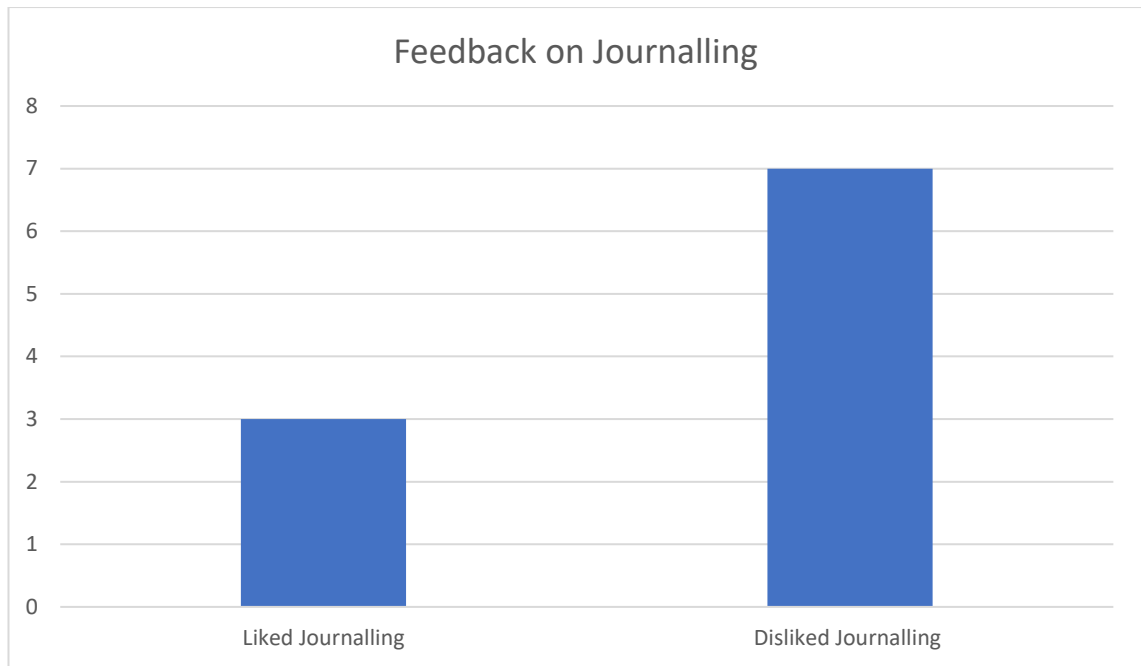
Figure 4.23: Feedback on Journaling Process

However, the questionnaire asked the children how they felt when they re-read their journals, and 60% of the children had a positive reaction to rereading them. 30% had slightly negative reactions and 10% were just unsure about how they felt. See **Figure 4.24** below for results.
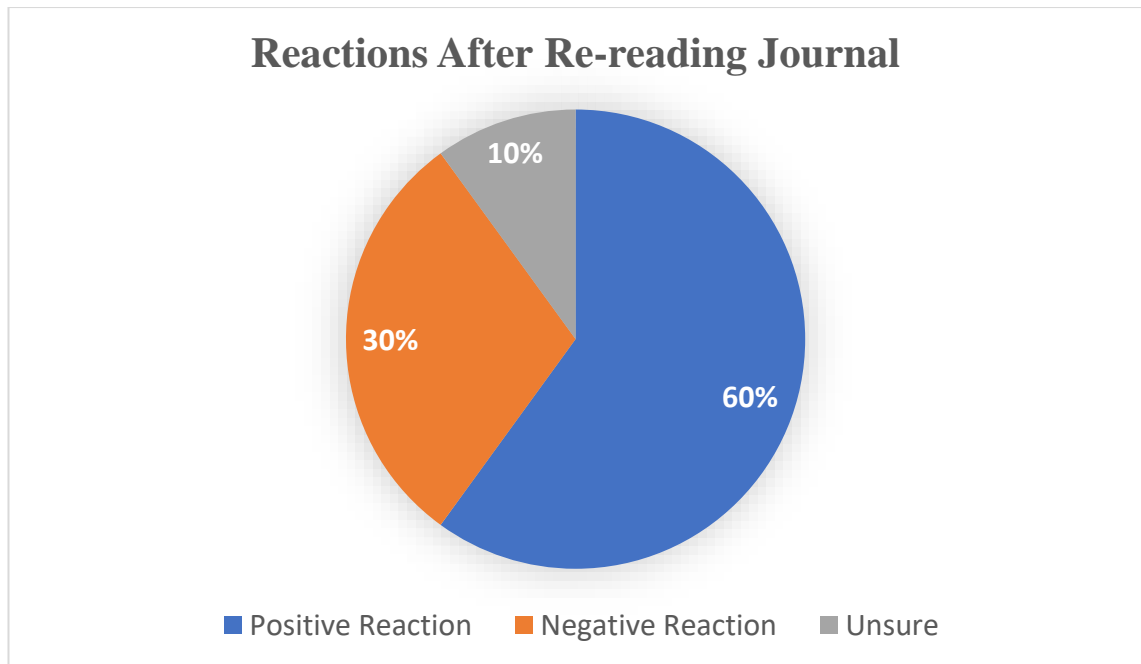
Reactions After Re-reading Journal

Figure 4.24: Children's Reactions After Re-Reading Journal

The children wrote some insightful comments in a post questionaire after re-reading their reflective journals. They included: "I left a lot of words out" (John, 2019), "I feel like a bit more effort would be better" (Aoife, 2019), "I felt good because I have nice handwriting" (Amy, 2019) and "I felt good about myself when I re-read it" (James, 2019). These comments show evidence of the children becoming more self aware as learners.

My own experiences of reflective journaling mirrored closely the feelings of the children. I too found it difficult at the beginning but was interested and engaged when re-reading my journal at the end of the study. I explored Gibbs' (1988) Reflective Cycle which was introduced to us during a lecture. I was so grateful for a framework which I could follow. I was drawn to his method of reflecting because of its organisation and logical flow. Gibbs' (1988) framework gave me the confidence, that I could attempt the reflective process. Perhaps the children would have needed a framework too for journaling.

4.3   Conclusions

In Cycle One, a learning culture was established in my classroom which introduced a growth mindset. The findings show that an increased number of children in my class now have a growth mindset.

The findings of research Cycle Two are generally positive as regards improvements in the children's work. Peer Marking has proven to be informative and a source of growth for children. Interestingly the children showed particular enthusiasm for this method of assessment and fears about them being harsh with each other were unfounded. The Jigsaw Strategy appears to have caused visible improvements in children's confidence and in the quality of their work as evidenced by triangulating the assessments of projects created with my critical friends' observations as well as my own professional opinion. Co-creating the Success Criteria provided evidence of children self – editing their work and of achieving the lesson objectives. Reflective Journaling has proven difficult for many children (as well as myself) and several children dislike this method of assessment, nevertheless it has provided substantial insight into children's understanding and opinions on growth mindsets, formative assessment methodologies and their personal preoccupations.

Chapter Five: Conclusions & Recommendations

5.1   Conclusions

The purpose of this study was to answer the research question "What impact has the implementation of formative assessment methodologies on children's learning and on a practitioner's efficacy as a teacher?" An action research paradigm underpinned the research and the conclusions are both qualitative and quantitative in nature.

5.1.1   Impact of this Research on Children's Learning

The research began in my class during Cycle One with the introduction of a learning culture and more specifically, a Growth Mindset. The majority of children already had a growth mindset which was very encouraging, but the research showed that it was possible to move some children from a fixed mindset to a growth mindset. The children's vocabulary has been expanded to include regular discussion about their mindsets. They have phrases and knowledge of strategies about changing their mindsets, such as persevering, asking a friend or teacher for help and breaking down a task into smaller chunks. This has resulted in an overall improvement in the children's attitude towards learning. They are more open to challenging work, exploring new concepts and engaging in open communication about their learning with their peers and teacher.

During Cycle Two, I found that the impact of implementing formative assessment methodologies on children's learning was also positive. Children saw their work being valued by their peers during Peer Marking which helped increase their self-esteem and encouraged them to take extra care with their work, evidenced by the improvements in

handwriting. I had been worried that children might be unduly negative about each other's work but using a clear rubric as recommended by Boud (2000) in the literature review, proved that these fears were unfounded and in fact the children displayed great empathy. Children began to look at, use and seek feedback from their peers and teacher in order to improve their work and there was evidence of children self-editing their work. Having the children create their own Success Criteria proved very effective. Children began to visually see an improvement in their work by using the criteria and therefore were meeting learning outcomes more regularly. This again gave them confidence to persevere even when tasks were difficult. The Jigsaw Strategy of formative assessment gives a voice to each child and resonates deeply with my value of inclusion and my belief that no child should be left behind. I was surprised by how much the children loved this method and how engaged they became during these lessons and my worries that dominant personalities would take over were not realised as each child was an expert in their own right. The Reflective Journaling proved challenging for some pupils, as I had anticipated, but when they re-read their journal, there was evidence of great interest and of self-growth.

5.1.2   Impact of this Research on a Practitioner's Efficacy as a Teacher

 As a result of carrying out this research, I have learnt that assessing children's ability does not need to be purely summative or diagnostic. There are many beneficial elements to allowing the children to peer mark each other's work, reflect upon their learning, co-create their success criteria and work together. I have created a collaborative learning culture in my classroom as a result of using formative assessment methodologies. I believe that I am a better teacher now as I know that I am living more in accordance with my values. As a teacher, I am encouraged by the positive learning findings of the research

as they show that what we do in classrooms can and does make a difference in the lives of children.   To think that children in my class are now saying "I can't do it ….yet" instead of "I'm crap at maths" is heartening and uplifting for me personally. It resonates with my values of care and perseverance in a very positive way.

Through engaging with the research I have gained a new insight into the importance of tapping in to children's interests. This was revealed through the fact that handwriting was the dominant peer topic because of the introduction of cursive writing this year. Children's journals can be a great source of information regarding children's interests. My fears that time constraints would affect the introduction of the growth mindset were unfounded and I was reminded never to underestimate the ability of children to take on new concepts. I had also worried that the children would find the growth mindset characters babyish but in fact the children were very engaged with this aspect and designed their own characters. This served as a salient reminder of the importance of introducing fun and play into children's learning. Helping children become collaborative co-creators of the learning by sharing the learning intention proved to be an important factor in helping children understand and succeed in their learning, as evidenced by the positive results of using Success Criteria.

Through engaging with this research, I have found it challenging to admit when I have been at fault, or acted as a barrier to children's learning, because of power dynamics. This has been eye-opening and an area of growth for me personally. I am glad I have engaged in this study and I now recognise how valuable personal reflection is, particularly for teachers and other professionals in positions of power. In my opinion, it is the re-reading

of the journal that reveals the greatest insights. My values in education including perseverance, inclusion, equality and care are more evident in my daily teaching. I am teaching with integrity. I shall continue to foster a growth mindset in every class I teach and to use formative assessment methodologies in my teaching practice.

5.3   *Implications*

If exposed to a growth mindset culture, children can adopt it and can change their attitudes positively. The use of formative assessment methodologies can improve children's learning, encourage collaboration and increase a child's desire to improve. With such positive attributes, every teacher should be making use of this methodology.

The implications for this research personally include the fact that I am now teaching in accordance with my personally held values and beliefs. My teaching has more authenticity as a result of this. Formative assessment methodologies are now a daily occurrence in my classroom. I aim to research a wider variety of methodologies in the future which I can incorporate into my teaching. I have realised the value of using a reflective journal and hope to continue using this resource as a learning tool into the future.

5.4   *Limitations*

I cannot say that these results would be conclusive if this study was replicated in another school. The research cycle did not include adaptations of methodologies and a further research cycle with changes to methodologies may have provided greater insights into the effects on children's learning and on a practitioner's efficacy as a teacher. The study was

limited due to the selection of formative assessment methodologies. If using different methodologies, the results may give contrasting evidence.

5.5   *Recommendations*

Based on the research carried out here, it is recommended teachers should discuss mindsets with their class and make connections to real life examples demonstrating when you have a fixed mindset and how to overcome this way of thinking. Teachers should use Peer Marking as a methodology in their classroom to help improve children's learning and motivate them. Using the Jigsaw Strategy is valuable for collaborative work on projects and group work tasks, particularly for children who find these presentation tasks dauting. Co-creating the Success Criteria allows children to be actively involved in their learning. They can achieve learning outcomes faster and they can self-edit their work. If introducing Reflective Journaling to children I would have it as a weekly task instead of a daily task, particularly in the beginning. I would recommend lots of teacher demonstrations using writing, drawing or diagrams to provide the children with a wide variety of options and a framework which they could follow.

In conclusion, this self-study action research project has inspired colleagues of mine to begin their own action research. It has been a journey of personal learning which I plan to share with more of my colleagues and other professionals soon. If we aspire to be better teachers, then formative assessment or assessment for learning must be part of our practice. I now can wholeheartedly agree from personal experience with an earlier quote in the Literature Review, "For me, AFL is about better teaching" (Wiliam, 2012).

Having read the literature around this topic, I had formulated my own definition of Formative Assessment (see Literature Review). As a result of this action research, I feel that this definition encompasses my personal experience of using this form of assessment – "For me, Formative Assessment is a continuous progression of learning. It involves the student and teacher working simultaneously towards a greater opportunity of achieving educational success. A teacher who uses this, is providing greater opportunities for their students to become better learners" (Cleary, 2019). This research required me to reflect upon my educational values and upon completing this study I can say that I am a more effective teacher now as I believe I am living more in accordance with my values of equality, inclusion, perseverance and care. I am teaching with integrity.

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Appendix 1: A Continuum of Assessment Methods

(NCCA 2008,13)
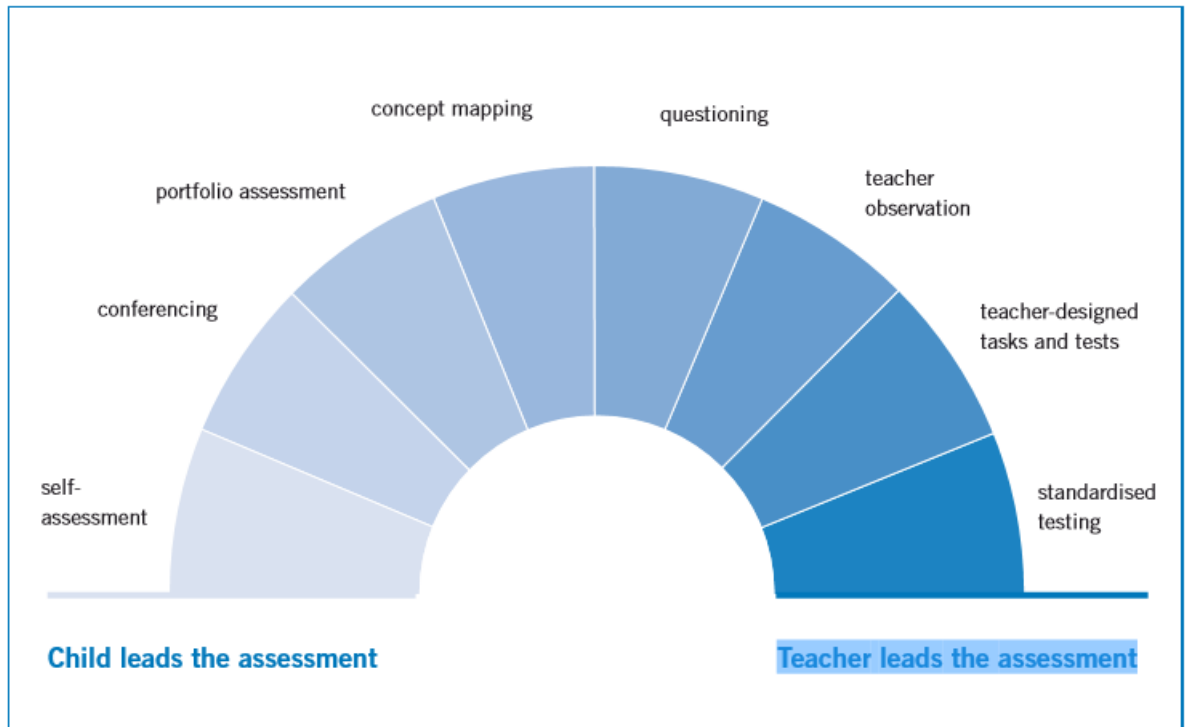
Appendix 2: Growth Mindset Checklist for Teachers

Growth Mindset Checklist for teachers

Classroom:

This year…..

- Have you displayed your Growth Mindset display?
- Have you taught your children what is meant by an 'incremental learner' using Growth Mindset strategies captured on display?
- Do you regularly celebrate:
  - learning
  - challenge
  - brave choices
  - mistakes – and learning from them, e.g. 'Mistake of the week'?
- Do you regularly remind children of their targets or next steps? Do they know where to find them?
- Do you review the children's questions at the end of a topic to check they have covered all the learning (by use of a Question Wall or similar)?

Questions to ask your children:

What does 'learning' mean?

What does your teacher do to help you learn?

What has your teacher told you about incremental learners?

When does your teacher talk about challenge?

When do you work together to solve problems?

What does your teacher do to help you know what your targets/next steps are?

Fig. 2.7 *Some strategies for developing growth mindsets*

(Clarke, S. 2014: 28)

Appendix 3: Blooms Taxonomy Questions
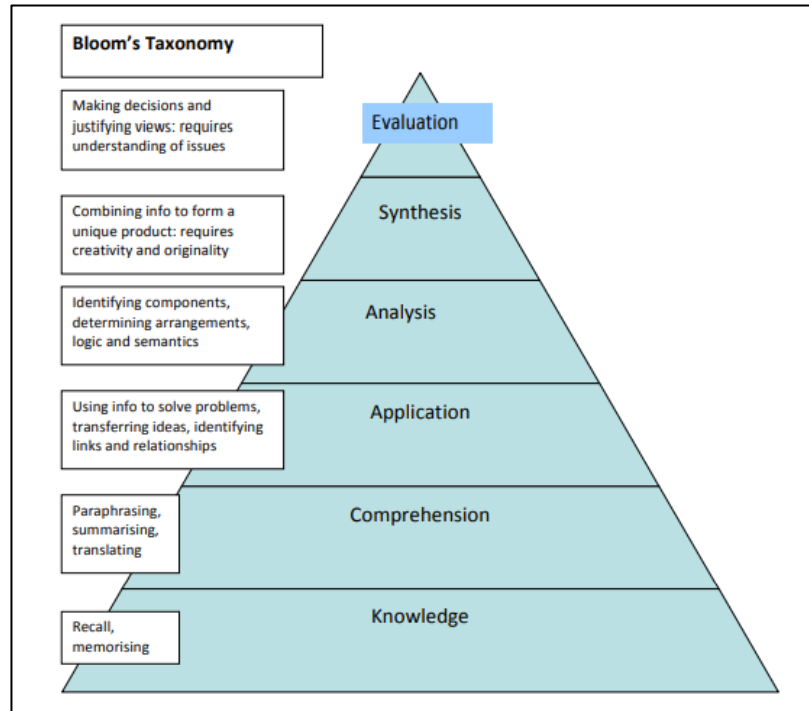
(Welsh Assembly Government 2010, 16)

Appendix 4: Mindset Worksheet

I feel like giving up when others do better than me.	When others do well, it encourages me to do my best too.
I can get better at anything if I keep trying.	I can't get better at everything no matter how hard I try.
I try new tasks, even if they seem difficult.	I avoid new tasks that are difficult.
When I make a mistake, I can learn from it.	When I make a mistake, I stop trying.
I ignore feedback from my teacher because I won't get better anyway.	I listen to/read feedback from my teacher and use it to improve.

Appendix 5: Permission Letter to Chairperson Board of Management

Maynooth University Froebel Department of Primary and Early Childhood Education

Roinn Froebel Don Bhun- agus Luath- Oideachas Ollscoil Mhá Nuad.

Mr. D. Gantly
Chairperson - Board of Management
Scoil Mhuire
Leixlip

March 2019

Dear Mr. Gantly,

I am currently undertaking a part time Master of Education degree at Maynooth University. As part of my degree I am doing a research project. The focus of my research is based on the use of formative assessment methodologies in the classroom and whether they lead to an enhancement in children's learning.

I intend to carry out research in the classroom by using formative assessment methodologies and asking the children questions about the way they are learning. I may include samples of their work within my research, with their permission. The child's name and the name of the school will not be included in the thesis that I shall write at the end of the research. Children will be allowed withdraw from the research process at any stage. Part of the research will involve other teachers observing my practice and critiquing it.

The data will be collected using observations, a daily teacher journal and the pupils' work samples. The children will be asked their opinions through discussing how I assess their work, and how they themselves assess their work.

All information will be confidential, and information will be destroyed in a stated timeframe in accordance with the University guidelines. The research will be supervised by the Froebel Department of Primary and Early Childhood Education.

In order to carry out the research, I need the Board of Management's approval to proceed and I would be very grateful if you could agree to this request.

Yours sincerely,

_____

Aisling Cleary

Appendix 6: Permission Letter to Parents/Guardians

Maynooth University Froebel Department of Primary and Early Childhood Education

Roinn Froebel Don Bhun- agus Luath- Oideachas Ollscoil Mhá Nuad.

Dear Parent(s)/Guardian(s),

I am undertaking a part time Master of Education degree at Maynooth University. As part of my degree I am doing a research project. The focus of my research is based on the use of formative assessment methodologies in the classroom and whether they lead to an enhancement in children's learning.

In order to do this, I intend to carry out research in the classroom by asking children questions about the way they are learning. I may include samples of their work within my research with their permission.

The data will be collected using observations, a daily teacher journal and the pupils' work samples. The children will be asked their opinions through discussing how I assess their work, and how they themselves assess their work.

The child's name and the name of the school will not be included in the thesis that I shall write at the end of the research. Your child will be allowed withdraw from the research process at any stage.

All information will be confidential, and information will be destroyed in a stated timeframe in accordance with the University guidelines.

I would like to invite you and your child to give permission for him/her to take part in this project.

If you have any queries on any part of this research project feel free to contact me by email at aislinghcleary@gmail.com.

Yours faithfully,

_____

Aisling Cleary

Appendix 7: Information Sheet for Parents/Guardians

Maynooth University Froebel Department of Primary and Early Childhood Education

Roinn Froebel Don Bhun- agus Luath- Oideachas Ollscoil Mhá Nuad.

Information Sheet

Parents and Guardians

What is this Action Research Project about?

I am required to conduct an action research project, examining an area of my own practice as a teacher. This is in partial fulfilment of the Master of Education degree from the Froebel Department of Primary and Early Childhood, Maynooth University. Data will be generated using observation, reflective notes and questionnaires. I shall be writing a thesis documenting my action research project on formative assessment methodologies.

What is the research questions?

How can my implementation of formative assessment methodologies enhance children's learning**?**

What sorts of methods will be used?

Observation, Reflective Journal, Work Samples

Who else will be involved?
The study will be carried out by me (Aisling Cleary). The thesis will be submitted for assessment to the module leader Dr. Bernadette Wrynn and will be examined by the Department staff. The external examiners will also assess the final thesis.

What are you being asked to do?

You are being asked for your consent to permit Ms. Aisling Cleary to undertake this study with her class. In all cases the data that is collected will be treated with the utmost confidentiality and the analysis will be reported anonymously. The data captured will only be used for the purpose of the research as part of the Master of Education in the Froebel Department, Maynooth University and will be destroyed in accordance with University guidelines.

Contact

I am available to meet before or after school if you have any queries.

Appendix 8: Parental Consent Form

Maynooth University Froebel Department of
Primary and Early Childhood Education

Roinn Froebel Don Bhun- agus Luath- Oideachas
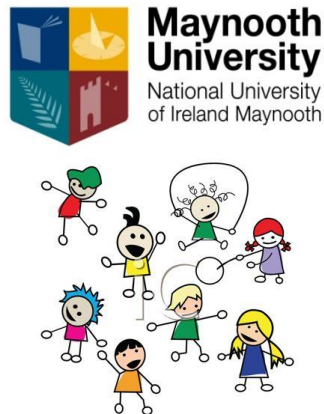**Ollscoil Mhá Nuad.**

PARENTAL CONSENT FORM

I have read the information provided in the attached letter. I voluntarily agree to the participation of my child in this study.

Parent / Guardian Signature_____

Date: _____

Name of Child _____

Appendix 9: Children's Information Letter

Child's name _____

I am trying to find out more about assessment. I may ask to take a copy of your work. I may ask you a few questions about how you like to learn.

Would you be ok with that? Pick a box   **Yes**   **No**

I have asked your Mum or Dad or Guardian to talk to you about this. If you have any questions I would be happy to answer them. If you are happy with that could you sign your name on the form I've sent home?

If you change your mind after we start, that's ok too.

Appendix 10: Children's Assent Form

Maynooth University Froebel Department of Primary and Early Childhood Education

Roinn Froebel Don Bhun- agus Luath- Oideachas Ollscoil Mhá Nuad.

Child's assent to participate

My parent/guardian has read the information sheet with me and I agree to take part in this research.

Name of child (in block capitals):

_____

Signature: _____

Date: _____

Appendix 11: Letter to Critical Friends

 Maynooth University Froebel Department of Primary and Early Childhood Education

Roinn Froebel Don Bhun- agus Luath- Oideachas Ollscoil Mhá Nuad.

Dear Colleague,

I am a student on the Master of Education programme at Maynooth University. As part of my degree I am doing a research project. The focus of my research is based on the use of formative assessment methodologies in the classroom and whether they lead to an enhancement in children's learning.

In order to do this, I intend to carry out research in the classroom by asking children questions about the way they are learning. I may include samples of their work within my research with their permission. I would like you to observe my teaching and critique my use of assessment within the classroom through an interview/discussion.

The data will be collected using observations, a daily teacher journal, interviews and the pupils work samples. The children will be asked their opinions through discussing how I assess their work, and how they themselves assess their work.

Your name and the name of the school will not be included in the thesis that I shall write at the end of the research. You may reserve the right to withdraw from the research process at any stage.

All information will be confidential, and information will be destroyed in a stated timeframe in accordance with the University guidelines. The research will supervised by the Froebel Department of Primary and Early Childhood Education.

I would like to invite you to take part in this project and I would be very grateful if you could oblige.

If you have any queries on any part of this research project, feel free to contact me by email at aislinghcleary@gmail.com .

_____

Yours faithfully,

Aisling Cleary

Appendix 12: Information Sheet for Critical Friend

Maynooth University Froebel Department of Primary and Early Childhood Education

Roinn Froebel Don Bhun- agus Luath- Oideachas Ollscoil Mhá Nuad.

Information Sheet

Critical Friend

Who is this information sheet for?
This information sheet is for the researcher's Critical Friends.

What is this Action Research Project about?
Master of Education candidates in the Froebel Department of Primary and Early Childhood, Maynooth University are required to conduct an action research project, examining an area of their own practice as a teacher. This project will involve an analysis of the teacher's own practice. Data will be generated using observation, reflective notes and questionnaires. The teacher is then required to produce a thesis documenting this action research project.

What are the research questions?
How can my implementation of formative assessment methodologies enhance children's learning**?**

What sorts of methods will be used?
Observation, Reflective Journal, Work Samples, critique from critical friend(s).

Who else will be involved?
The study will be carried out by me (Aisling Cleary) as part of the Master of Education course in the Froebel Department of Primary and Early Childhood Education. The thesis will be submitted for assessment to the module leader Dr. Bernadette Wrynn and will be examined by the Department staff. The external examiners will also assess the final thesis.

What are you being asked to do?
You are being asked for your consent to participate in the research by giving critical feedback to me, the researcher. You will observe me teaching and provide critical feedback through a conversation. The data that is collected will be treated with the utmost confidentiality and the analysis will be reported anonymously. The data captured will only be used for the purpose of the research as part of the Master of Education in the Froebel Department, Maynooth University and will be destroyed in accordance with University guidelines.

Appendix 13: Critical Friend Consent Form

Maynooth University Froebel Department of Primary and Early Childhood Education

Roinn Froebel Don Bhun- agus Luath- Oideachas Ollscoil Mhá Nuad.

CRITICAL FRIEND CONSENT FORM

I have read the information provided in the attached letter. I voluntarily agree to the participate in this study,

Signature_____

Date: _____

Appendix 14: Declaration by Researcher

Maynooth University Froebel Department of Primary and Early Childhood Education

Roinn Froebel Don Bhun- agus Luath- Oideachas Ollscoil Mhá Nuad.

Declaration by Researcher

This declaration must be signed by the applicant(s)

I acknowledge(s) and agree that:

a)   It is my sole responsibility and obligation to comply with all Irish and EU legislation relevant to this project.

b)   I shall comply with Irish and EU legislation relevant to this project.

c)   That the research will be conducted in accordance with the Maynooth University Research Ethics Policy.

d)   That the research will be conducted in accordance with the Maynooth University Research Integrity Policy.

e)   That the research will not commence until ethical approval has been granted by the Research and Ethics committee in the Froebel Department of Primary and Early Childhood Education.

Signature of Student: _____

Date: _____

Appendix 15: Copy Samples Showing Handwriting Findings
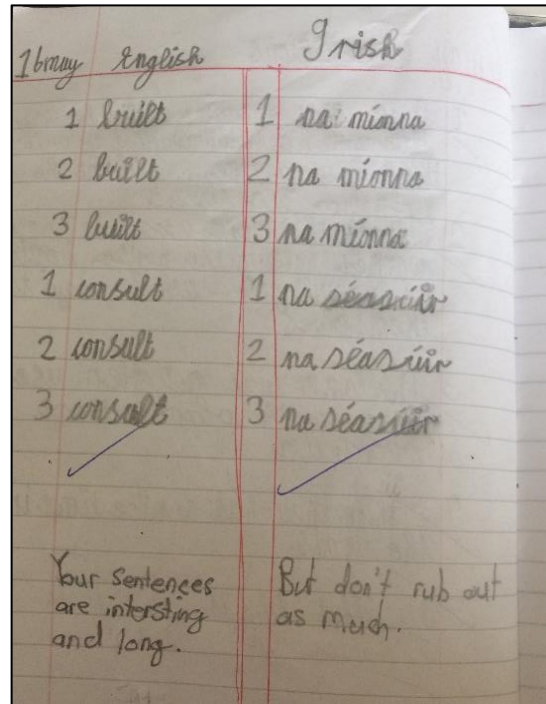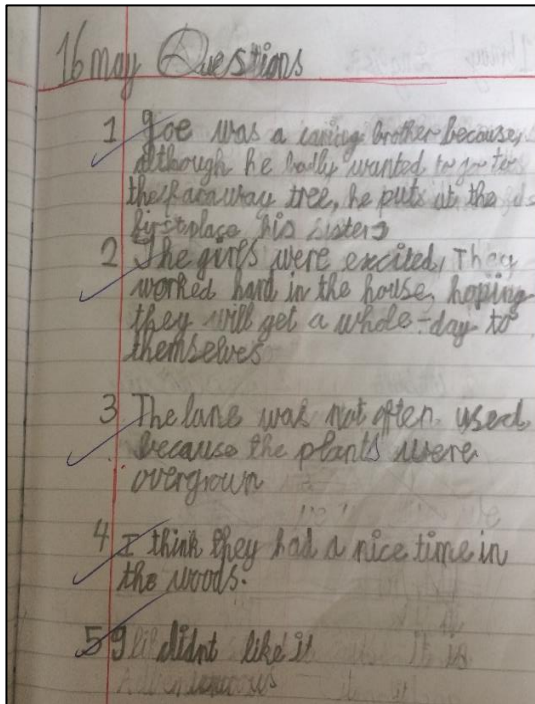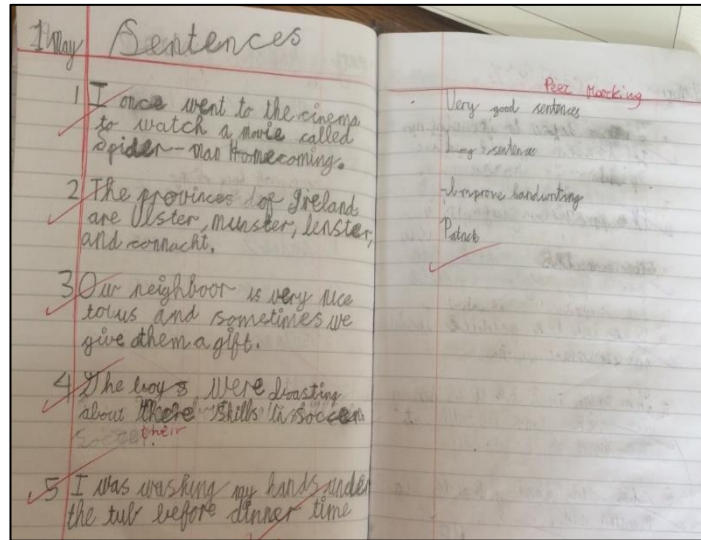
1. **Aoife's copy samples showing improved handwriting**
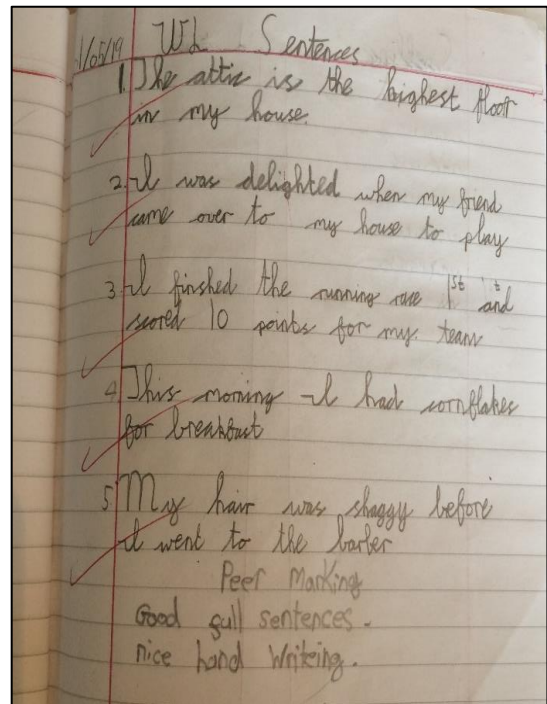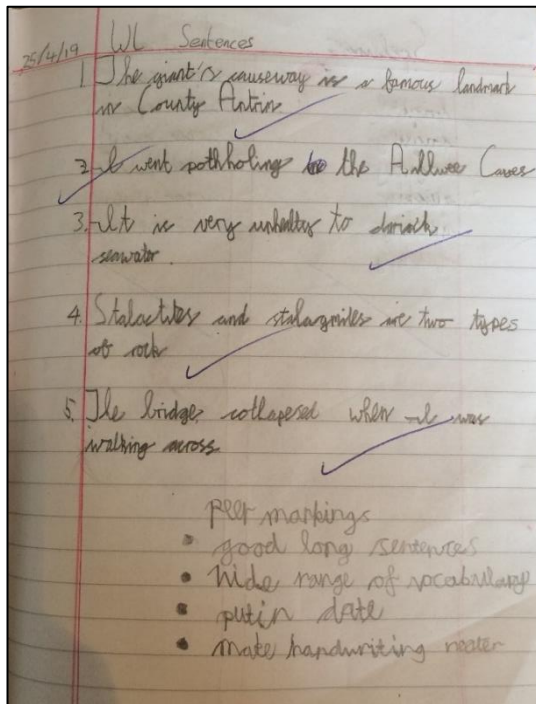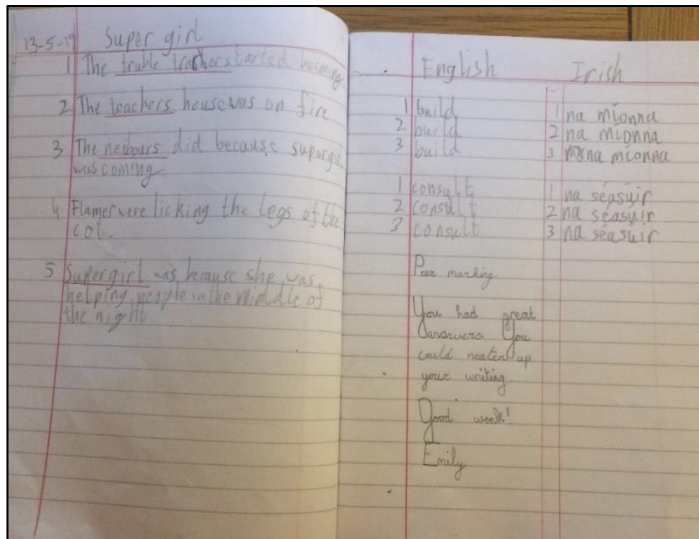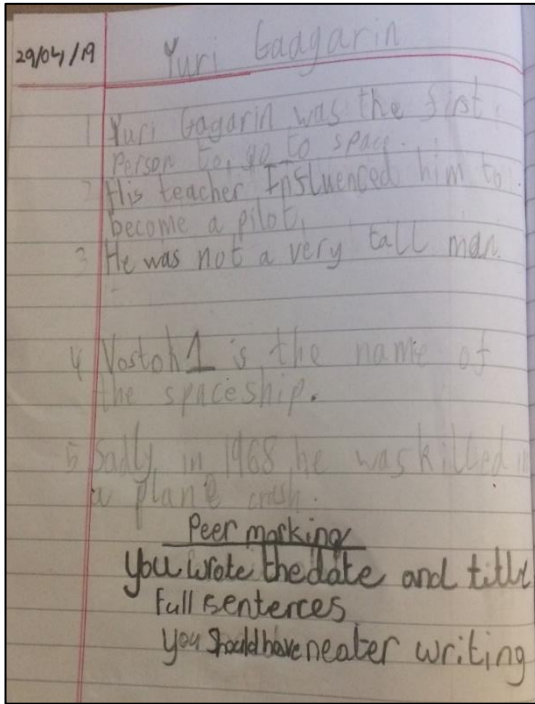
2. Andrea's copy samples showing improved handwriting
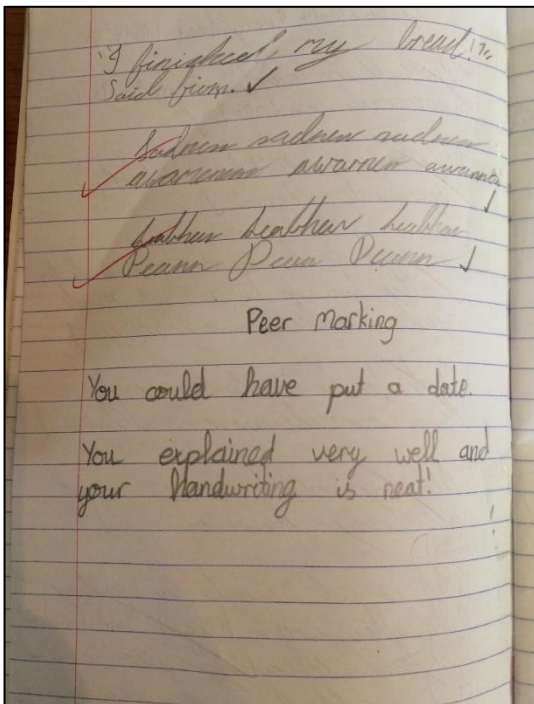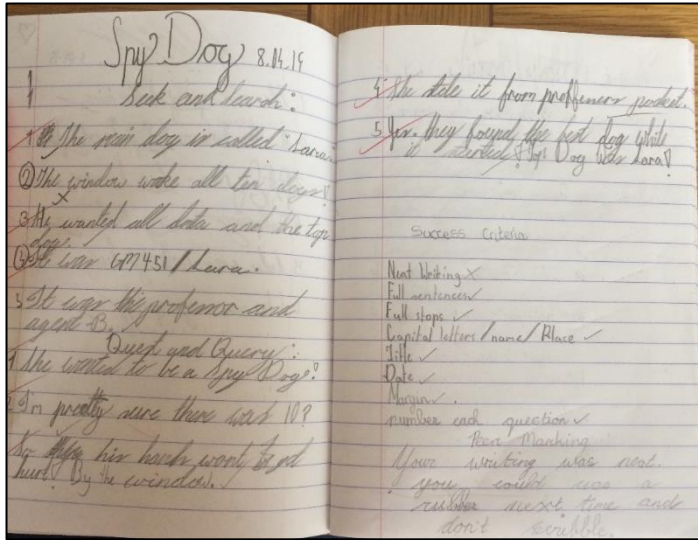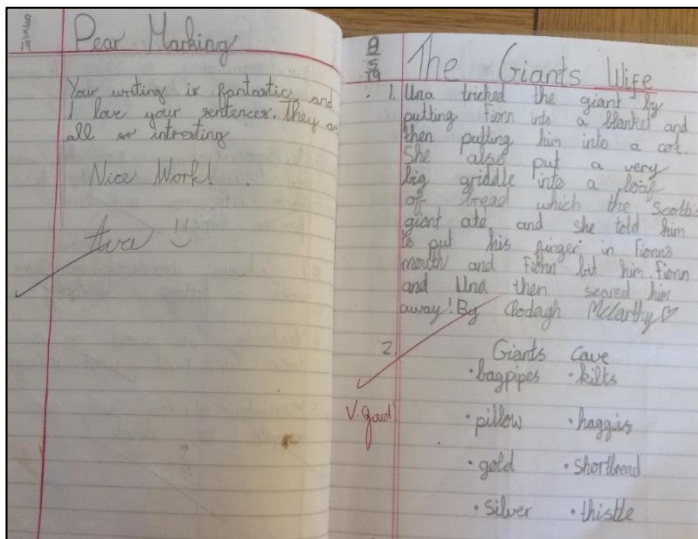
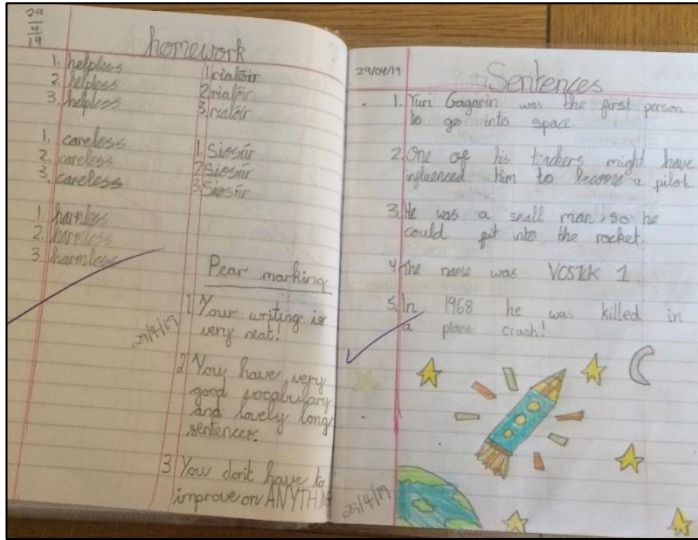### 3. Jack's copy samples showing improved handwriting
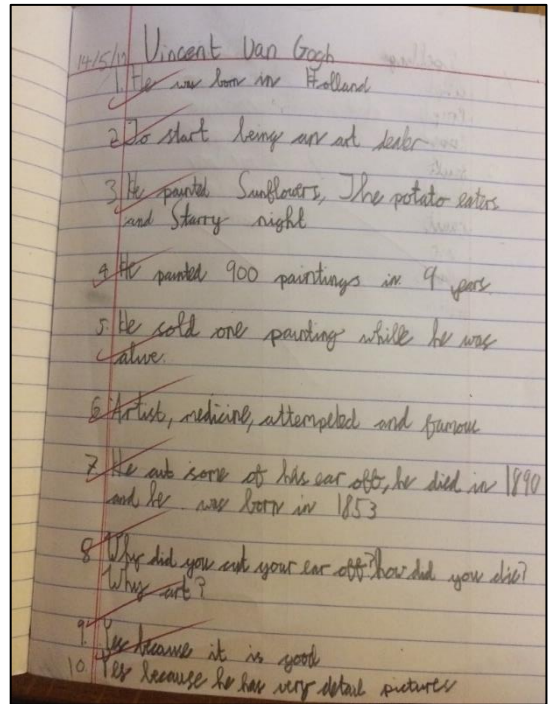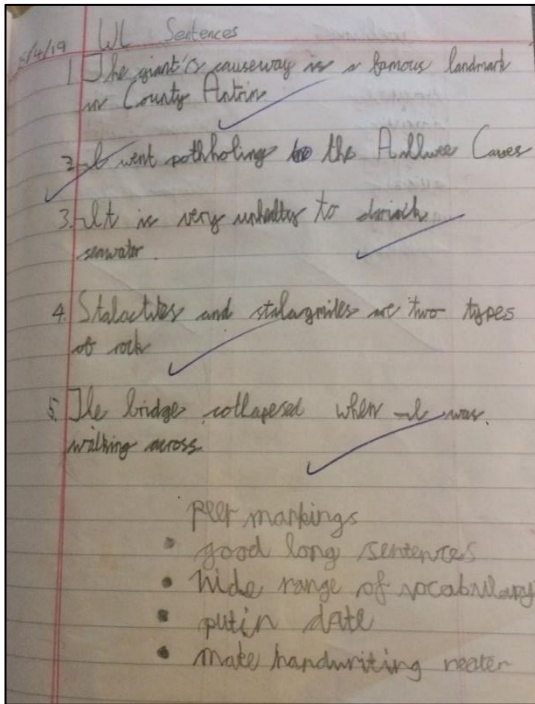
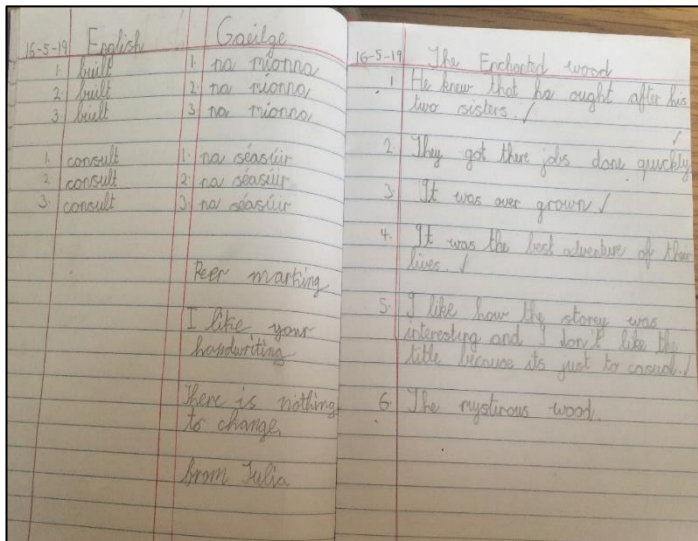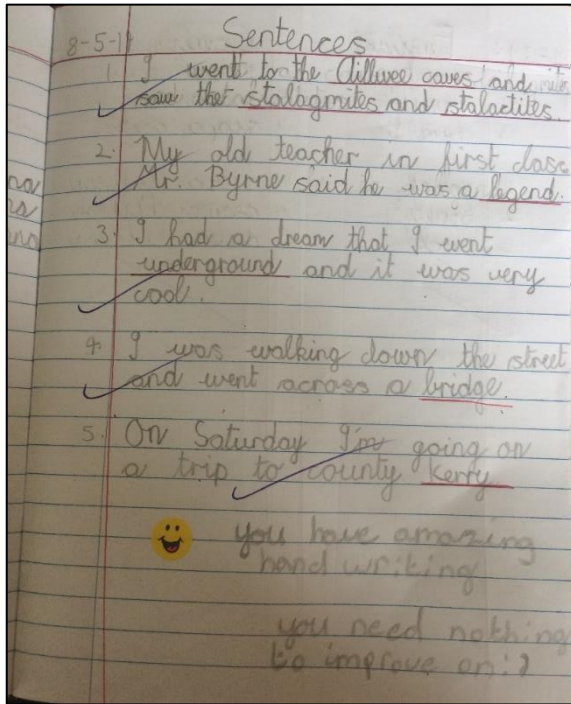## 4. Jerry's work samples showing no improvement in handwriting

5. Josh's work samples showing no improvement in handwriting

6. Alision's copy sample showing handwriting maintaining consistent standard.

7. Amy's copy sample showing handwriting maintaining consistent standard.

Appendix 16: Post Research Questionnaire

Post Questionnaire

1. **What is a Growth Mindset?**

    _____
    _____
    _____
    _____

2. **Does a growth mindset help you to learn? If Yes, why?**

    _____
    _____
    _____
    _____

3. **What did you like/not like about peer marking?**

    _____
    _____
    _____
    _____

4. **Did peer marking affect how you approached your work?**

    _____
    _____
    _____
    _____

5. **What effect did using success criteria have on your work?**

    _____
    _____
    _____
    _____

6. **Did you like/not like when your teacher used Success Criteria? Why?**

_____
_____
_____
_____

7. **What was different about completing projects using the 'jigsaw' method?**

_____
_____
_____
_____

8. **Does using the Jigsaw Strategy help you to produce better work?**

_____
_____
_____

9. **How did you find writing in your 'Reflective Journal'?**

_____
_____
_____

10. **When you re-read your 'Reflective Journal' how did you feel?**

_____
_____
_____