inm / *Name:* Maria Quinn

Bliain / *Year group*: 2019 - 2020

Uimhir mhic léinn / *Student number*: 19251998

Ábhar / *Subject*: EDF681[A] (19-20:YR)

Léachtóir / Teagascóir:

***Lecturer / Tutor*: Seamie O'Neill**

Sprioclá / *Due date* : 26/10/2020

Teideal an tionscadail / *Assignment title*: Master of Education: Research in Practice

Líon na bhfocal / *Word Count:* 19,474

Líon leathanach / *Number of pages*: 112

Aon ábhar eile sa tionscadal / *Any other material in the assignment*: N/A

Dearbhaím gur mise amháin / mise mar bhall grúpa (cuir ciorcal timpeall na rogha a bhaineann leis an tionscadal thuas) a rinne an saothar seo. Aithním go soiléir aon chabhair a fuair mé ó aon duine eile, baill fhoirne nó gaol clainne san áireamh. Mo chuid scríbhneoireachta féin atá sa tionscadal seo ach amháin nuair a úsáidtear ábhar ar bith as foinsí eile. Tugtar aitheantas do na foinsí seo sna fo-nótaí nó sna tagairtí.

Dearbhaím go bhfuil treoirlínte an choláiste do thionscadail léite agam agus go dtuigim iad. Tá cóip den tionscadal coinnithe agam dom féin.

I confirm that ~~I alone~~ / I as part of a group (please circle whichever applies in the case of the above assignment) produced this project. I clearly acknowledge any help I received from any other person, staff members or relatives included. This project is my own composition except for material of any kind taken from other sources. These sources are acknowledged in the footnotes or references.
I confirm that I have read and understand the Department assignment guidelines. I have also retained a copy of the assignment for myself.

Síniú / *Signature*: Maria Quinn

Dáta / *Date* 23/10/2020

Title Page

OLLSCOIL NA HÉIREANN MÁ NUAD

THE NATIONAL UNIVERSITY OF IRELAND
MAYNOOTH

Froebel Department of Primary and Early Childhood Education

M.Ed. (Research in Practice)
2019 - 2020

HOW CAN I IMPLEMENT GOLD STANDARD PROJECT-BASED LEARNING TO ENGAGE AND MOTIVATE MIXED ABILITY FIRST CLASS CHILDREN IN THE WRITING PROCESS?

MARIA QUINN

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)

Date:
October 2020

Supervised by:
SÉAMIE O'NEILL

Declaration

Declaration of Authenticity

"Plagiarism involves an attempt to use an element of another person's work, without appropriate acknowledgement in order to gain academic credit. It may include the unacknowledged verbatim reproduction of material, unsanctioned collusion, but is not limited to these matters; it may also include the unacknowledged adoption of an argumentative structure, or the unacknowledged use of a source or of research materials, including computer code or elements of mathematical formulae in an inappropriate manner."

Maynooth University Plagiarism Policy

I hereby declare that this project, which I now submit in partial fulfilment of the requirements for the degree of Master of Education (Research in Practice) is entirely my own work; that I have exercised reasonable care to ensure that the work is original and does not to the best of my knowledge breach any law of copyright, and has not been taken from the work of others save to the extent that such work has been cited and acknowledged within the text of my work.

Signed: Maria Quinn

Date: 20 September 2020

Abstract

This research documents the literature and outcomes of implementing Project-Based Learning (PBL) (Larmer et al. 2015; Duke, 2014; Duke et al., 2018; Haney, 2018; Wallace et al., 2016; Kai Wah Chu et al., 2011; Everette, 2015; Boss et al. 2014; Dias et al., 2017; Boss and Larmer, 2018). and Gold Standard Project-Based Learning (PBL), (Larmer et al. 2015) with first class students. PBL is very popular in the United States of America, however it is not as popular in England and Ireland. This study aims to investigate whether PBL can help engage and motivate first class students in the writing process.

An action research (McNiff, 2014; Whitehead, 2010; Sullivan et al., 2016; Glenn et al., 2017) methodology was decided upon as teachers engage in study to implement change to their practice for their benefit and the benefit of their students. This study is based around the values (Mc Niff, 2014; Sullivan, 2016; Glenn, 2017) of justice, inclusion, and active learning.

Both qualitative and quantitative data was collected throughout the implementation of Gold Standard PBL (Larmer et al. 2015) in order to justify findings for this thesis. Ethical consent and assess was obtained for all willing participants, as they are a vulnerable group. Ethical approval was obtained from all other participants involved in this study.

As a result of implementing Gold Standard PBL and following the seven essential elements (Larmer et al. 2015), children showed more engagement and motivation towards the writing process. The student's vocabulary improved greatly as did their knowledge and understanding of procedural writing (Pratama et al., 2020). Children who struggled with reading and writing, excelled during the presentation element of Gold Standard PBL and began to write more freely.

Keywords: action research, self-study, critical reflection, Project-Based Learning, Gold Standard Project-Based Learning, Sustained inquiry, Procedural writing, Group work, Cooperative learning, Methodology, Active learning.

Acknowledgements

This has been a collaborative research study and there are many people I wish to thank.

Firstly, I would like to sincerely thank my research supervisor, Séamie O'Neill, for his guidance and support throughout the process of writing this thesis. His support and encouragement over the past year has been greatly appreciated.

I am also thankful to the parents and children who agreed to take part in this action research study and without their cooperation, this study would not have been possible.
I would like to thank my critical friend and my validation group for their time and support throughout this research. All your feedback was welcomed and very helpful.

Finally, I would like to thank my family and friends for their continued support through many of the ups and downs throughout this study.

Contents

List of Appendices

List of Tables and Figures

List of Abbreviations

EAL	Student with English as an additional language
Gold Standard PBL	Gold Standard Project-Based Learning
LAI	Literacy Association of Ireland
PBL	Project-Based Learning
SET	Special Education Teacher
SDT	Self-Determination Theory
SNA	Special Needs Assistant

Chapter One: Introduction

1.1 Focus and aims of the study

I set out to investigate 'how can the implementation of Gold Standard Project-Based Learning (PBL) (Larmer et al. 2015) help engage and motivate mixed ability first class students in the writing process?' Initially, through reflection, I realised that I was a living contradiction (Whitehead, 2010) as I was not living out my core values of facilitating an active classroom, justice for all learners and inclusion of all learners in my classroom.

There were five EAL (English as an additional language) students in my class, along with many children who struggled with literacy. Due to their age, none of the children had received any formal testing before this research was carried out. I realised that I was doing an injustice to these children as I was not providing adequate time or engaging activities for these children to fully immerse themselves in what they were learning. My classroom was quiet, and the children were working independently for the majority of tasks.

I found that I was prioritising the textbooks in my planning and practice rather than providing my struggling learners with the time necessary and resources required to meet their individual learning needs. I was covering material, whether it was relevant or not to my students, which provided little motivation to engage them in activities. I was rushing certain genres of writing as I felt pressure to complete workbooks. I was not providing real relevant purposes for my students to write for, in my classroom. As a result of this, my question, as mentioned above, came to me. I also aimed to answer the question of "how do I improve what I am doing?" (McNiff and Whitehead, 2010:9) as I wanted to improve my practice from reflecting on areas of concern.

Last November, I attended a conference organised by the Literacy Association of Ireland (LAI). The keynote speaker on the day was Nell Duke and she presented about her research on Project-Based Learning (PBL) (Larmer and Mergendoller, 2010; Larmer et al. 2015; Duke, 2014; Duke et al., 2018; Haney, 2018; Wallace et al., 2016; Kai Wah Chu et al., 2011; Everette, 2015; Boss et al. 2014; Dias et al., 2017; Boss and Larmer., 2018). PBL appeared to be an active and engaging strategy to complete a project with a focus on literacy, as Duke had completed her project. I hoped that learning would be relevant and enjoyable for the children through implementing PBL. I also hoped that I could improve my practice.

1.2 Research background, context and intervention

I am a primary school teacher and qualified 4 years ago. I went back to college in my late twenties to begin my teaching career. I wanted to support children that struggle academically, as I did, in my very early years of education. I was provided learning support for literacy, which helped me catch up with my peers. I wanted to help these children as I found primary school challenging initially. I saw how additional support and guidance helped me on my learning journey and I wish to do the same for my students.

This year, I taught first class for the second year in a row. From very early on in the year, it became clear that many children in the class were struggling with literacy. It was a major area of concern for me. There were five EAL children and many children that struggled greatly with either reading or writing or both. Due to the severity of some children's difficulties, many had little interest or motivation to write. Some children could not complete the task on time and some children struggled with spelling, so much so, that they became disengaged from the task. I wanted to motivate and engage my students with writing in a fun and active way and provide them with a real purpose and audience to write for.

The context for this research study is in an all-girls Catholic primary school in a suburb of Dublin. It is an academic school where there is pressure from parents on students and teachers for favourable results in aptitude tests. Discussions about results would regularly occur during parent teacher meetings and explanations for any drop in grades.

My intervention was driven from my values. I believe in justice, inclusion, and active learning. By justice, I mean that all children are treated fairly and have access to resources relevant for their learning, (Gonzalez-Mena, 2006). Inclusion implies that every child should have a voice and hold a sense of responsibility in their learning, through student voice and choice (Larmer and Mergendoller, 2010; Larmer et al., 2015; Kokotsaki et al., 2016). Active learning refers to physical activity through cross-curricula study (Dorling et al. 2020). The intervention aimed to motivate and engage this particular group of students in the writing process through sustained inquiry of Gold Standard PBL.

1.3 Potential contribution of the study

Larmer et al. (2015:2) state that Project-Based Learning can motivate students, meet standards and increase test score that show in-depth knowledge and thinking skills, help teachers to teach in a satisfying way and provides alternative means for schools to communicate with parents, communities and the wider world. Larmer et al. (2015) set out seven elements to follow in order to implement successful Gold Standard PBL in the classroom. Children are motivated in their study from the beginning by challenging them with an authentic question or problem to solve. They explore their topic in great detail and resolve additional problems they encounter throughout the project. Teachers plan the lessons and support the students; however, student voice and choice instil responsibility to the children in their own learning. Teachers can connect with parents, people in the local community or wider world to come up with ideas for relevant projects for the students to

engage in. The intervention was to immerse the children in a topic in order to become experts on a topic. The children held a real sense of responsibility towards their audience from the beginning of the project which helps to keep their engagement and motivation throughout the project.

1.4 Chapters outline

Chapter One concentrated on the background of my research and my concerns about my current practice were highlighted. Reflection made me look deeper into my values which ultimately resulted in my question. I outlined my values of justice, inclusion, and active learning. I outlined the potential contribution of this study for my pupils.

Chapter Two explored the theory behind Project-Based Learning (PBL) (Larmer and Mergendoller, 2010; Larmer et al. 2015; Duke, 2014; Duke et al., 2018; Haney, 2018; Wallace et al., 2016; Kai Wah Chu et al., 2011; Everette, 2015; Boss et al. 2014; Dias et al., 2017; Boss and Larmer, 2018) and Gold Standard Project-Based Learning (PBL), (Larmer et al. 2015). . I researched how to motivate students in their learning. I learned that there are many steps involved in the process, for relevant learning to take place, when completing a project. Elements from different theorists are compared to conclude the most appropriate to follow for this study.

Chapter Three outlines the rationale for this study and describes the outline of the intervention in detail. I discuss why I chose to complete an action research study (McNiff, 2014; Whitehead, 2010; Sullivan et al., 2016; Glenn et al., 2017) and how working collaboratively with my validation group and critical friend (Sullivan et. al., 2016; Glenn et. al., 2017) helped benefit my development as a teacher. I will discuss my research participants and ethical approval, as I am working with a vulnerable group. I then focus on data collection. Only one cycle was completed as schools were closed in early March due to COVID19.

Chapter Four shares the messiness of data collection. The themes that emerged through following Braun and Clarke's (2013) thematic analysis are explained. Challenges encountered throughout this intervention are shared along with the strengthening of my values as a result of this intervention.

Chapter Five concludes my research. I explore the significance of this study and my findings for my own practice moving forward. I also share recommendations for future studies about Gold Standard Project-based Learning and my learning throughout this process.

Chapter Two: Literature Review

2.1 An Introduction

This chapter explores the literature regarding the background of why we write, suggested guidelines to follow when teaching the skill of writing (procedural writing), the importance of motivation for students in their learning and Project-Based Learning (PBL) (Larmer and Mergendoller, 2010; Larmer et al. 2015; Duke, 2014; Duke et al., 2018; Hanney, 2018; Wallace & Webb, 2016; Kai Wah Chu et al., 2011; Everette, 2015; Boss & Krauss, 2014; Dias & Dias, 2017; Boss and Larmer, 2018). There is a variety of contrasting literature with regards to the implementation of PBL in the classroom and which elements are necessary to include. Larmer et al. (2015) introduced Gold Standard PBL and seven elements to follow when teaching relevant projects to children. These elements will be investigated, alongside other theorists' elements, to learn how they can support teachers with the implementation of PBL into the classroom. Firstly, the background of writing and its origins will be outlined.

2.2 Background of Writing

Writing is a skill that has dated back to 3500 - 3000 BC in Sumer (an ancient civilisation), (Postgate, 2005; Mark, 2011). The main reason we write is to communicate with others and to share knowledge about the world around us as. However, there are deeper motivations to communicate through writing as Graham et al. (2012), explains that people write to tell stories (entertain, narrative), share information (educate, procedure,

explanatory, persuade), explore who they are (reflect, report), combat loneliness (connect) and chronicle their experiences (recount).

It has been stated that children who write about the material they have read improves comprehension skills, especially children who were weaker readers and writers (Graham and Hebert, 2011; Graham et al. 2012). Children should be provided with an opportunity to explore all genres of writing in school and to discover which genre of writing they get the most enjoyment from. They should develop important literacy skills, that is, oral language, listening, reading, and writing through writing about and re-engaging in new knowledge discovered. In education we write "to learn more than we know at the start of a writing project and to share our knowledge" (Geyman, 2013:40). This is what I wanted for my students to achieve at the end of their projects. The reason we write has been discussed, how to teach students a specific writing genre will be explained next.

2.3 A guideline to teach writing genres in the primary school

The six genres of writing explored throughout primary school are narrative, procedural, explanatory, report, recount, and persuasive writing, (PDST, 2014). Both Hiatt and Rooke (2012) and PDST (2014) have similar guidelines to follow to explicitly teach writing skills in the classroom. They are as follows:

1. Familiarisation and talking – During the first step, children observe samples of the genre of writing, reading a variety of examples of the genre, discuss new vocabulary, build knowledge about the genre and discuss who the target audience are and why the text has been written. Through exploration of each writing genre, children learn why they would write using this genre, who they would write for and when best to use this genre. They are talking about the writing process throughout.
2. Analysing and stimulating - Children study one or more texts in detail and list the main features of the texts. They can refer to this list throughout the following steps

as a guide to follow. If more than one text is studied, the children can discuss, compare, and contrast, and share positive and negative components of all texts. Children should be aware of the difference between language they use to communicate orally, and the variety of language used to fit a certain genre of writing.

3. Modelled writing/ showing how – Modelled writing is when the teacher uses 'think aloud' and explicitly teaches the skills required to write a particular genre. The children observe the writing genre in action. The teacher can highlight vocabulary included and the relevance of the vocabulary for the writing genre.

4. Shared writing – The teacher writes again but encourages the children to assist them throughout the writing process. The children become included in the writing process. The teacher still will think aloud and share why they are choosing a particular contribution over another.

5. Guided writing - The children plan in pairs/groups and use steps/ guidelines learned or follow a template during writing.

6. Independent writing – children exploring writing their own text, they proofread their work, decide on changes to improve it and edit a final draft for an audience.

7. Presentation to an audience – The children present their writing to a real audience for a real purpose (PDST, 2014).

This framework can help guide teachers through the planning stage of introducing a new genre of writing to students. However, it is only a guide as different genres of writing may require additional stages in the process.

Oral language is crucial in the classroom as children are provided an opportunity to discuss what genre of writing they are learning about. This is evident in the Primary

Language Curriculum (NCCA, 2019). Oral language can be used in all the steps above. Students can discuss new knowledge with their peers, share their understanding of new information and test out new vocabulary. They can discuss the structure of their writing and share views on other classmates writing through the editing phase.

Talk and discussion is a central learning strategy for language development. "Language helps the child to clarify and interpret experience, to acquire new concepts, and to add depth to concepts already grasped", NCCA (1999:15). Children need to be allowed time to have meaningful discussions and share thoughts and ideas on a topic. This is most successful through pair work, group work and whole class activities. This may occur during steps 1-5 above. The children may have prompt cards with questions or problems to solve to engage participation and to guide the discussion.

It is well known that the more often you practice a skill the more familiar and confident you become and this is especially true for writing as "both writing and reading improve with use", Katz (2017:3). I believe this is the same for writing and is crucial in school as McCutchen express that "writing is the skill which has the highest complexity to master", Pratama et al. (2020:58). For the purpose of this study, the teaching of procedural writing (PDST, 2014) was implemented. According to Gerot & Wignell, procedural writing is a genre of writing that "describes how something is done through a sequence of steps", Pratama et al. (2020:58). The more productive opportunities that arise for children to write and explore procedural writing the more confident they will become in their writing abilities, as Seban and Tavsanli (2015:219) state that "through exploring the process and the practices involved in writing, students develop understanding of themselves as a writer who uses writing for different personal and social purposes". However, in order to facilitate this, the children must be engaged and motivated to write procedural texts, which will be investigated next.

2.4 Motivation - Intrinsic motivation and extrinsic motivation

Motivation means the desire to do something. Ryan and Deci, (2000a), (2010) and Sansone and Harackiewicz, (2000), explore two categories of motivation which are intrinsic motivation and extrinsic motivation. It is challenging to motivate children to write as it is considered as the most difficult skill to teach among reading, speaking, listening, and writing, (Salsabila, 2018; Pratama et al., 2020; Tresna et al., 2020).

Intrinsic motivation involves the inner self desire to do something. This is when someone is self-motivating themselves internally. They want to do it for their own reasons and are not completing a task just because it is set out for them, or for outside accomplishment. Ryan and Deci (2000a) explain that with intrinsic motivation a person feels energised and inspired to do something. We all have many things that we are intrinsically motivated to do. These are the things we enjoy doing and that we want to do internally rather than for a reward or other outer incentive.

Extrinsic motivation is when people are motivated to do something for an external intention or achievement, usually a reward of some kind. 'Rewards' can have a negative impact on intrinsic motivation if a child would have completed that task in the first instance, Sansone and Harackiewicz, (2000). Additionally, they may complete the task with little enthusiasm or enjoyment. Some children complete tasks that are set out by the teacher but do not have any real interest in doing so Ryan and Deci (2000a). If their interest is deficient, will they be truly motivated to solve challenging problems or question that they are researching? Furrer and Skinner (2003:149) aim for engagement, which they describe as "active, goal-directed, flexible, constructive, persistent, focused interactions with the social and physical environments". This 'engagement' may be facilitated through project work as Katz (2017) shares that project work, which interests the child, can engage

children, and thus motivate them within the writing process. Next, orientation of motivation and level of motivation will be examined.

2.4.1 Orientation of motivation and level of motivation

Ryan and Deci (2000a) explain that people have different amounts of, and kinds of motivation which are identified as *orientation of motivation* and *level of motivation*.

The *orientation* refers to the type of enthusiasm someone has towards a desired outcome, for example, they can be motivated by curiosity, learning new information, or approval from others, through accomplishing something like meeting a deadline or being accepted by peers for the work that they do.

The *level* of motivation relates to how motivated a person is in completing a particular task. If children have a high level of motivation, they will spend more time on a task and will be inspired to research the topic further in school or at home. This motivation will drive them to reach their full potential in their project.

Furthermore, De Smedt et al. (2019:153) shares Ryan and Deci's (2000b) explanation of Self-Determination Theory (SDT) as,

"qualitatively different subtypes of motivation: (a) external regulation (e.g., writing because you experience external pressure, such as punishment), (b) introjected regulation (e.g., writing because you experience internal pressure, such as guilt), (c) identified regulation (e.g., writing for personal value), and (d) intrinsic regulation (e.g., writing for inherent fulfilment)".

As teachers, we should strive to facilitate the latter two. For children to fully engage in writing we must explore literacy through thematic cross-curricular activities and active learning. Procedural writing is active and considered one of the easiest text genres

to learn to write (Pratama et al. 2020). Teaching procedural writing through cross-curricular activities allows children time to explore the three elements of "communicating, understanding and exploring and using" which are stated in the Primary Language Curriculum (NCCA, 2019).

The aim is to provide a relevant question or topic that the children are genuinely interested in and something that they will want to learn more about. Now I wish to research how to keep children engaged on their writing through cross-curricular research.

2.5 Thematic approach to writing

The 1999 Irish Curriculum "promotes the active involvement of children in a learning process that is imaginative and stimulating", (NCCA 1999:6). This curriculum was based on scaffolding knowledge throughout students' school life in order to deepen their learning and attainment of knowledge. "It is an underlying principle of the curriculum that the child should be an active agent in his or her own learning", (NCCA 1999:14). Teachers should create situations where children are engaged in their work and desire to explore a topic in order to understand it further. This may be through play, pair work, group work, whole class participation and independent work.

All subjects should be integrated to enhance children's self-discovery of the environment and to scaffold knowledge about a particular topic. Integration is when a particular topic is explored through a variety of subjects, allowing the children ample opportunities to explore new knowledge and observe language through a variety of subjects.

The NCCA (1999:16) state that "integration gives children's learning a broader and richer perspective, emphasises the interconnectedness of knowledge and ideas and reinforces the learning process".

Furthermore it is explained that "having dealt with particular knowledge, ideas and skills at a simple level, the child should have the opportunity to return to them at regular intervals in order to deepen his or her understanding", NCCA (1999:14). This allows the children to engage in a deeper learning and understanding of new knowledge and allows self-discovery to occur throughout the process.

Opportunities should be provided to read about a topic through a variety of resources and discuss this topic using the vocabulary explored in the correct context. This, in turn, will have a positive effect on their writing in order to build comprehension. In order to facilitate motivation to write alongside a thematic approach to learning, I decided to research and implement Project-Based Learning (PBL), (Larmer and Mergendoller, 2010; Larmer et al. 2015; Duke, 2014; Duke et al., 2018; Hanney, 2018; Wallace & Webb, 2016; Kai Wah Chu et al., 2011; Everette, 2015; Boss & Krauss, 2014; Dias & Dias, 2017; Boss and Larmer, 2018), into my classroom as I feel that this facilitates a thematic approach to learning. I will now define PBL as this facilitates integrated learning.

2.6 Definition of Project-Based Learning

Project-Based Learning (PBL), (Larmer and Mergendoller, 2010; Larmer et al. 2015; Duke, 2014; Duke et al., 2018; Hanney, 2018; Wallace & Webb, 2016; Kai Wah Chu et al., 2011; Everette, 2015; Boss & Krauss, 2014; Dias & Dias, 2017; Boss and Larmer, 2018), is a learning strategy implemented to teach children writing skills while providing a real purpose and audience to write for. Duke (2014:13-14) shares that PBL can "improve students' knowledge, skills, and attitudes toward learning" as it makes "teaching and learning more interesting for students".

Project-Based Learning (PBL) is defined on the Buck Institute for Education PBLWorks blog homepage (n.d) as "a teaching method in which students gain knowledge and skills by working for an extended period of time to investigate and respond to an

authentic, engaging, and complex question, problem, or challenge" (PBL Works, Anonymous, N.D). Through working on a problem or question over a period of time, the children are engaged to ask further questions and solve problems, with the help of their peers, through group work. Children are learning how to learn throughout the process.

Krajcik and Blumenfeld (2006:1), define Project-Based Learning as allowing (science) "students to investigate questions, propose hypotheses and explanations, discuss their ideas, challenge the ideas of others and try out new ideas". It is a teaching method in which students research and study real life situations through engaging in a real problem for a real audience (Duke, 2014; Larmer et al. 2015). This makes the project authentic to the students and will hopefully engage the children intrinsically to complete their research and thus gain a deeper level of understanding or knowledge about a certain topic.

Wang et al. (2016:352) states that PBL "can cultivate students' diverse competences and enhance their learning achievement, such as their problem-solving abilities, independent thinking, critical thinking and communication ability, as well as their learning motivation". These are all important qualities that are necessary for all learners.

Duke (2014:13) recommends "using a writing-process approach within project-based learning units". For the purpose of this study, I will follow the PDST (2014) guidelines as listed above in chapter 2.3, a guideline to teach writing genres in the primary school. "Writing for a specific audience beyond members of the classroom" (Duke, 2014:13) helps to engage children and "research suggests that students actually write better under those circumstances" (Duke, 2014:13). Combining both PBL with teaching a writing genre could have added benefits to the students learning as they can understand the reason they are learning a particular genre. It makes their learning relevant as they need to demonstrate their learning, through writing, for their intended audience. Salsabila (2018:8) shares that there was an "improvement of students' ability in writing the information" and

this resulted from "the establishment of gathering information". This sustained inquiry helps students to fully immerse themselves with new knowledge.

There are specific steps or elements that need to be followed in order for relevant PBL to occur. Before delving further into PBL, it is necessary to discuss the differences between Problem-Based Learning and Project-Based Learning as they can be easily confused.

2.7 Problem-Based Learning versus Project-Based Learning

It is easy to confuse Project-Based Learning (Larmer and Mergendoller, 2010; Larmer et al. 2015; Duke, 2014; Duke et al., 2018; Hanney, 2018; Wallace & Webb, 2016; Kai Wah Chu et al., 2011; Everette, 2015; Boss & Krauss, 2014; Dias & Dias, 2017; Boss and Larmer, 2018) with Problem-Based Learning (Campbell, 2014; Anazifa and Djukri, 2017; Malmia et al., 2019) during research as they are both referred to using the same acronym of PBL. For the purpose of this study, the acronym PBL will only be used for Project-Based Learning. PBL and Problem-Based Learning have many similarities, such as working with peers in groups, scaffolding knowledge through discovery learning and aiming to solve a problem or question involving critical thinking. Problem-Based Learning also dates back to the time of John Dewey, where children were provided with a problem that they must investigate, (Malmia et al., 2019).

One of the main differences is that Project-Based Learning is based over an extended time period and across many subjects. Students explore the problem or topic to construct and develop a deeper understanding of what they are learning about. Problem-Based Learning could be over an extended time period, but it may also be completed in a single subject and shorter time frame, for example, solving a maths problem in pairs and groups, Campbell (2014).

Larmer et al. (2015) explains that Project-Based Learning involves real-life problems for a real-life audience compared to Problem-Based learning, which usually provides scenarios that may be less relevant to the real-life situations of the students. It is the real-life problems or questions to research that aim to engage and motivate the children in their project and their study. I believe this to be a fundamental difference between Project-Based Learning and Problem-Based Learning.

The problem or question should be relevant to the children and their life, such as a problem in the locality to be researched. Campbell (2014) states that PBL follows general steps, whereas Problem-Based learning provides specific steps. However, Larmer et al. (2015) sets out specific elements that must be followed in order to facilitate meaningful PBL to take place rather than just providing children with a project to explore independently. The teacher has an important role to play and these elements help throughout the planning and teaching of PBL.

Kokotsaki et al. (2016) suggest that the main difference between the two pedagogies is that Problem-Based Learning focuses on the process of learning and PBL focuses on an end product. However, I do not agree with this statement as this product is for a real audience that the students must be aware of from the beginning of the project. It is the end product that helps to focus students on the task and encourages them to solve additional problems or questions they come across during their project. The students must scaffold knowledge, in order to demonstrate and share new knowledge explored, through display of their project, to their intended audience. I will discuss this in greater detail in the following sections, however it is important to look at the different learning needs of children and if PBL incorporates learning for individual children.

2.8 Different Learning Needs

We should be aware of the different learning techniques that should be explored in the classroom. Not every child learns the same way and some children are visual, kinaesthetic, auditory learners, (Kirschner, 2016; Xhomara and Shkembi, 2020). Visual learners need to look at and observe facts or new information. Kinaesthetic learners need to be active and have concrete materials to explore the topic. Auditory learners may learn from listening to information being read out or shared, (Gilakjani, 2012). This could be from the teacher or peers, particularly during group work. All learning methods need to be included in lessons "in order to achieve the ultimate goal of student learning" (Gilakjani, 2012:105). Teachers need to be aware of their students learning styles in order to plan activities relevant to their students, PBL includes and facilitates all learning styles throughout the process and the benefits of PBL will now be explained.

2.9 Benefits of Project-Based Learning

According to Lamer et al. (2015:2), "Project-Based Learning (PBL) is a teaching method that:

- Motivates Students
- Prepares students for college, careers, and citizenship
- Helps students meet standards and do well on tests that ask students to demonstrate in-depth knowledge and thinking skills
- Allows teachers to teach in a more satisfying way
- Provides schools and districts with new ways to communicate and to connect with parents, communities, and the wider world."

PBL teaches children how to research and explore real topics or questions in order to gain a deeper understanding of new learning through discovery and active learning,

Krajcik and Blumenfeld (2006). The children explore, research, and study a real problem or question that is relevant to the students, through cross-curricular activities in order to engage them in a deeper level of understanding through a thematic approach to learning. Children study a topic over an extended amount of time which provides the students time to fully immerse themselves in a certain topic or problem, repeatedly observe and read relevant vocabulary on the theme and become well informed on the matter. Group work facilitates further learning from sharing of knowledge to build new knowledge.

Kokotsaki et al. (2016:269) argues that "primary age pupils can develop content knowledge and group work skills in addition to motivation and positive attitudes towards peers from a different ethnic background through PBL." This is relevant for all pupils as schools are inclusive and growing in diversity, more so now than when their parents were in school, (Darmody, 2011). Group work "involves students not just working in groups, but workings as groups" (Kirk, 2005:6). Each child has role to play during group work and every child is included. Group work can greatly benefit children with English as an additional language or children who struggle to read and/ or write as Kirk (2005:10) shares that students have "the opportunity to explain material to their classmates in a simple manner". Now I will explore the background of Project-Based Learning and its origins.

2.10 Origins of Project-Based Learning

Krajcik and Blumenfeld (2006), Duke, (2014) and Larmer et al., (2015) date Project-Based Learning back to the work of John Dewey. Dimova and Kamarska (2015:30) discuss Dewey's two elements for inquiry learning, please see figure 1.1 and figure 1.2 below.

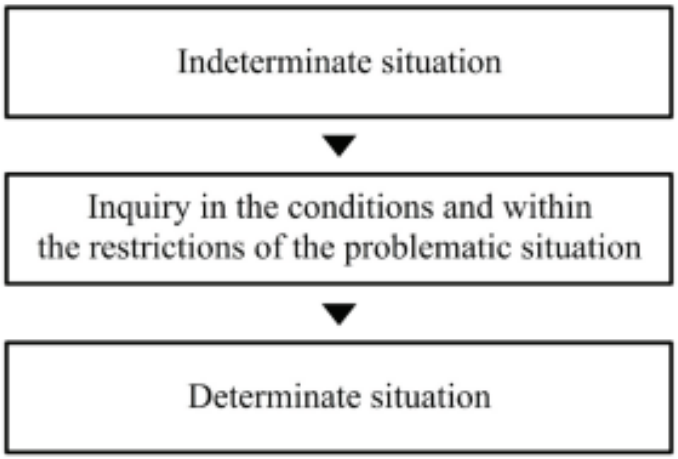


Figure 1.1: Dewey's definition of inquiry (Dimova and Kamarska, 2015:30).

The "situation", or "problem" for the purpose of this study, is present throughout the whole investigation. The indeterminate situation is when the problem or question is recognised, and engagement is first fostered. The problematic situation occurs as the students begin the process of investigation to resolve the original problem in order to find a solution, leading to the determinate situation. The second element may be seen in figure 2.2 below.

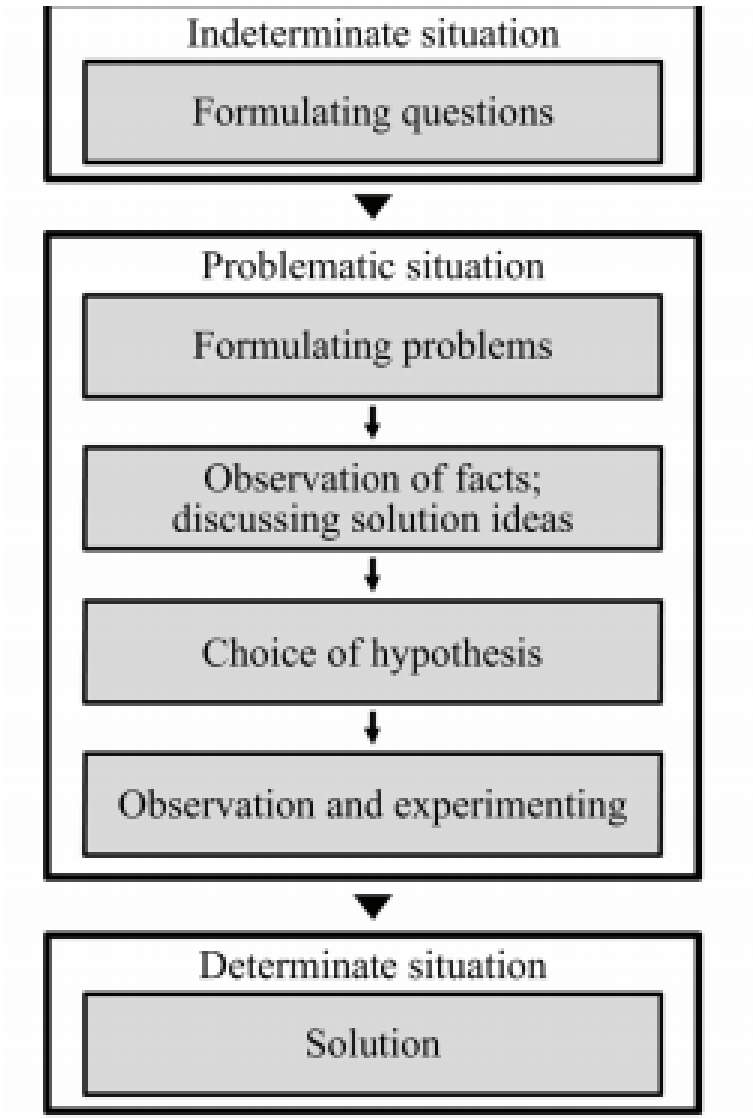


Figure 1.2 The structure of inquiry (according to Dewey), (Dimova and Kamarska, 2015:31).

This element "is the emphasis on thinking during inquiry" (Dimova and Kamarska, 2015:31). The final product is a is a judgement acquired after the investigation.

I have combined Dimova and Kamarska's (2015) two tables in order to simplify Dewey's model, please see table 1.3 below.

Indeterminate situation	Formulating questions
Inquiry in the conditions and within the restrictions of the **problematic situation**	Formulating problems Observing facts and discuss ideas Choice of hypothesis Observation and experimentation
Determinate situation	Solution

Table 1.3: Dewey's model for inquiry adapted from Dimova and Kamarska (2015:30)

These elements are similar to the elements of Larmer et al. (2015), see Table 2: Elements stated for PBL. Providing a problem or question in not enough to engage students within the task. Dewey believed that students will become intrinsically motivated in the problem or question if they engage with real-life questions and problems that emulate what people do in real-life situations, as this leads to deeper understanding of the topic, (Krajcik and Blumenfeld, 2006).

A Froebelian approach to teaching may also present in Project-Based Learning, as Smedley and Hoskins (2018:2) states that Froebel believed in "the importance of children's self-directed activity and play, respecting children, the centrality of nature and the community." Froebel's beliefs are essential elements that can contribute to successful implementation of PBL. The Froebelian approach to teaching is particularly relevant during PBL as children may use play as a form of self-discovery and engagement in their project. Just as Deci and Ryan (2010) state that children love to play and to learn as they are active, curious, and eager to engage their environments, and when they do, they learn. A Froebelian approach will help all learners to explore and understand new knowledge.

In recent years, John Larmer has written many books about PBL alongside writing for and editing the Buck Institute for Education PBLWorks blog online. He has dated Project-Based Learning back as far as the 16th century in Rome, where architects and sculptors had to complete scale models of buildings. These assignments were called "progetti (projects)", Larmer et al. (2015:25). John Larmer, John Mergendoller and Suzie Boss have helped to develop Gold Standard PBL which has developed on from PBL. Gold Standard PBL is more closely linked to the progetti of the 16th century. Larmer et al. (2015) state that many of the characteristics of the 16th century progetti exist in modern day PBL which include a challenging problem, authenticity, voice and choice, and create a public product through reflection, assessment, critique and revision. Now Gold Standard PBL will be discussed.

2.10.1 Gold Standard PBL

Larmer, Mergendoller and Boss, have utilised the 16th century 'progetti', William Kirkpatrick and John Dewey along with features of PBL to develop Gold Standard PBL, (Larmer et al. 2015). Gold Standard PBL (Larmer et al., 2015) is relevant and necessary in classrooms as Larmer (2020) explains in a blog post that "in good projects, students learn how to apply knowledge to the real world, and use it to solve problems, answer complex questions, and create high-quality products". Gold Standard PBL is something that educators should aim for and it is considered by the authors to be the best form of Project-Based Learning and something to aim to achieve over time. This does not necessarily need to be achieved the first time implementing PBL but may strive for this once the educator is comfortable with PBL. Gold Standard PBL has two separate components of the model, namely Essential Project Design Elements and Project Based Teaching Practices, (Larmer et al., 2015). The importance of structured PBL lessons will be discussed in the next section.

2.10.2 Essential Project Design Elements for Gold Standard PBL

In this section I will outline, compare, and contrast various taxonomies of Project-Based Learning (PBL) that have been developed in recent years. Krajcik and Blumenfeld (2006) have constructed five key features that they believe are an essential part of PBL, in relation to teaching science.

In 2010, Larmer and Mergendoller identified 7 essential elements for PBL. Soon after these seven elements were decided upon, they added an additional element, named significant content. The eighth element was added "to counter stereotypes that PBL was not an effective method for teaching standards-based knowledge, understanding, and skills – and to remind teachers to design projects with a clear focus on content standards", Larmer and Mergendoller (2015:1). However, in 2015, John Larmer and John Mergendoller adapted seven new, but related, elements in order to differentiate PBL from regular project work. Some elements remain from the original list and others have been removed. This was part of Gold Standard PBL.

Kokotsaki et al. (2016:274), have suggested six key recommendations that they consider to be essential for the successful implementation of PBL. Duke et al. (2018: 8) discloses three additional elements which have not been prioritised throughout PBL literature and they are, explicit instruction from teachers, explicit instruction in vocabulary and specific strategies for planning writing. However, I believe these are prevalent in Larmer et al.'s (2015) Project Based Teaching Practices. Below is a table outlining the elements outlined by above theorists.

Krajcik and Blumenfeld (2006)	Larmer and Mergendoller (2010)	Larmer et al. (2015)	Kokotsaki et al. (2016)	Duke et al. (2018)
Driving Questions	A driving question	A challenging problem or question	Balancing didactic instruction	Provide a problem
Situated inquiry	Inquiry and innovation	Sustained inquiry	Student support	Sustained Inquiry
Learning technologies	Student voice and choice	Student voice and choice	Student choice	Writing strategies
Collaboration	21st century skills	Authenticity	Effective Group Work	Teacher instruction
Artefacts	A need to know	Reflection	Teacher Support	Vocabulary
	Feedback and revision	Critique and revision	Assessment emphasis on reflection	
	A publicly presented product	A public product		Product
	significant content			

Table 2: Elements stated for PBL.

If we look at the above table, we can see that many elements overlap in the suggested elements that should be included for PBL by Duke et al. (2018), Krajcik and Blumenfeld (2006), Larmer and Mergendoller (2010), and Larmer et al. (2015). Both Kokotsaki et al. (2016) and Krajcik and Blumenfeld (2006) record collaboration and group work as an essential part of PBL. Krajcik and Blumenfeld (2006) and Larmer et al. (2015) prioritises critique and revision/ assessment emphasis on reflection and student voice and choice. Using the above table, for the purpose of this study, the above elements have been distilled in order to create a new list of 6 key elements for the implementation of PBL:

1. Provide a problem or question
2. Sustained Inquiry
3. Student voice and choice

4. Collaborative work
5. Reflection and revision
6. Public product

Throughout PBL, the students must be provided with a problem or question in order to stimulate their learning and set them on their path of discovery. I believe this is a crucial and main element of PBL as it ignites interest within the children from the beginning, once the question is relevant to their life. Inquiry based learning is also essential for children to research deeper about a topic or problem and scaffold their learning to construct new knowledge and, thus a better understanding about the topic they are researching. Student voice and choice is necessary so that the students develop a sense of ownership and control over their learning, Kokotsaki et al. (2016). Collaborative work allows children to learn from their peers so that the classroom can become a 'community of learners' (Krajcik and Blumenfeld, 2006). Reflection and revision help children to explore what they have learned and to solve any further questions or problems they come across. The end product aims to keep the students motivated and to keep their intended audience in mind throughout their research.

From the list above, the only element from Larmer et al. (2015) that did not overlap with the other theorists was 'authenticity'. I believe this is an important element and should not be excluded during the implementation of PBL. Children require authentic tasks which are student-centred, interactive, intriguing and include daily life-based tasks, (Boyaci et al. 2018). Tasks and problem solving should be linked to real life situations so the children can have a better understanding and opportunity for engagement and success. This 'real purpose' to write, creates motivation and engagement from the beginning. Project Based Teaching Practices will now be examined.

2.10.3 Project Based Teaching Practices

Teachers may implement PBL for a variety of curriculum outcomes and the teaching practices may be adapted to suit educators' and students' individual goals and assessments. Dewey's thoughts and beliefs have also had an impact on Gold Standard PBL as "he drew our (Larmer et al., 2015) attention to the importance of the teacher as an indispensable mentor and senior partner in PBL design, planning, management, coaching, assessment and reflection", (Larmer et al., 2015:28). Larmer et al. (2015) constructed a diagram to share the Project Based Teaching Practices. Educators must include the below, please see Figure 3, teaching practices in order to encourage and support their students throughout PBL.

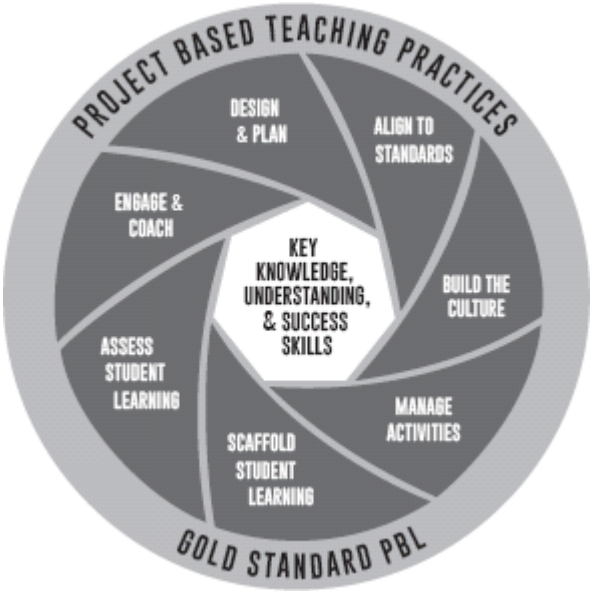


Figure 3: Project-Based Teaching Practices (Larmer et al., 2015)

The stages of Gold Standard Project-Based Teaching Practices are:

1. Design and plan – create a project relevant to the students and allow for student voice and choice.

2. Align to standards – adhere to appropriate curriculum and make sure the problem addresses key knowledge and understanding from subject areas included.

3. Build the culture – promote student independence and growth.
4. Manage the activities – work with students to organise and find appropriate and relevant resources.
5. Scaffold student learning – find what they already know and build knowledge from there.
6. Assess student learning – assess learning throughout and include individual and peer assessment.
7. Engage and coach – guide and support children throughout the process. (Larmer et al. 2015).

It may be confusing at first when researching PBL as all researchers have contrasting beliefs as to what is essential for the implementation of Project-Based Learning in the classroom. However, there are many similarities and the more recent the research the more elements that are added on. The Buck Institute for Education PBLWorks blog is a great online resource for publications and support is easily accessible to all teachers. There are examples of projects to complete with your students and regular posts to keep teachers up to date. As a result, I decided to follow these essential elements to implement Gold Standard Project-Based Learning within my class.

2.11 Conclusion

The literature has shown that there are many benefits for implementing Gold Standard Project-Based Learning within the classroom, especially with the growing diversity in our schools. The problem or question should incite their interest and motivation from the beginning of the project as it should be relevant to them and their life. Children will explore the problem or question through literature – that is reading a variety of texts, discussing it in pairs, groups and through whole class discussion and writing about

what has been learned or a problem that has been solved. Through a thematic approach and PBL approach to learning, children are provided with time to practice writing through cross-curricular activities and are provided with a real-life problem to research for a real audience to enhance their focus and motivation.

All sessions involved in PBL are helping and guiding children to research for a purpose. It is important to remember that Gold Standard PBL (Larmer et al., 2015) is a goal for educators to aim to reach once familiar with the implementation of project-based learning. For this reason, I will follow the seven elements of Gold Standard PBL for this action research project (McNiff, 2014; Whitehead, 2010; Sullivan et al., 2016; Glenn et al., 2017). The next chapter outlines the methodologies implemented throughout this action research project.

Chapter Three: Methodology

3.1 Introduction

This chapter outlines my research rationale. Research paradigms will be discussed followed by my reasons for selecting a qualitative research (Cohen et al., 2018). Action research (McNiff, 2014; Ham & Kane, 2004; Vanassche and Kelchtermans, 2015; Sullivan et. al., 2016; Glenn et. al., 2017; Efron and Ravid, 2020) and why I chose this as a methodology will be explained. My data collection methods and ethical guidelines will be outlined. This chapter will conclude with a detailed description of my intervention and the motivations behind it.

3.1.1 Research Rationale

I completed an action research project (McNiff, 2014; Ham & Kane, 2004; Vanassche and Kelchtermans, 2015; Sullivan et. al., 2016; Glenn et. al., 2017; Efron and Ravid, 2020) in order to research a particular area of my teaching practice in depth, in order to develop and improve my teaching practice. I wished to explore how children could become more intrinsically motivated (Ryan and Deci, 2000a) within the writing process, especially children who struggled to write.

3.2 Research paradigms

This chapter outlines my research paradigms. Positivism, as first expressed by Auguste Comte, turns to observation and reason in order to understand behaviour, which is used in the study of natural sciences. Cohen et al. (2018), explain that positivism is not as effective when researching human behaviour, as it challenges the researcher of a teacher. It ignores “intention, individualism and freedom” (Cohen et al. 2018:18) and therefore is not appropriate for this research as it is undertaken by a teacher. I want the freedom to

implement a new teaching strategy, for myself and my students, in order to improve my individual practice. Therefore, positivism would not work for this research.

A paradigm is a way of looking at and understanding theories and concepts, (Cohen et al., 2018). Cohen et al. (2018) give the example of the worldwide belief that the world was situated in the centre of universe. Through research it is now accepted that this is not the case. However, this took many years to be accepted. The same can be said for research. Many educators can try to introduce a new paradigm and demonstrate its significance in the classroom through writing about them. However, this may take a variety of publishing's from a variety of educators before it is fully accepted by other educators. I am attempting to try a paradigm through this research. This is one of the reasons I chose action research as I want to investigate and share my opinions and findings about Gold Standard PBL (Larmer et al., 2015).

3.2.1 Mixed-methods research

I had used both qualitative and quantitative data collection instruments. Both forms of data were collected at the same time but analysed separately to facilitate the triangulation mixed-methods approach, (Efron and Ravid, 2020:215). Qualitative data was used to answer *how* and *what* questions, while quantitative data was used to answer *how many* questions as explained by Efron and Ravid (2020:37-38). Qualitative data is defined by Sullivan et al. (2016: 85) as "information that can't actually be measured and is about qualities". It is crucial to be aware that with qualitative research, the researcher is researching themselves which and can lead to a cause for concern. The "issue here is that the researcher brings to the data his or her own preconceptions, interests, biases, preferences, biography, background and agenda" (Cohen et al. 2018:469). It is necessary for the researcher to be critical and self-critical throughout the process, (Bassey, 1990). Through reflection you can gain a deeper understanding of yourself as you had not seen previously.

Quantitative data is used to collect numerical data from individuals in order to analyse the data, (Efron and Ravid,2020). Quantitative data was used to record children's learning and progression, or regression. Both qualitative and quantitative forms of data were collected and analysed in order to disclose my findings.

3.2.2 The nature of action research

Sullivan et al. (2016:25) states that "action research embraces the idea that each researcher is informed by their own values, norms and assumptions". McNiff (2014:14) defines action research as a practice, by stating that it is what people do, individually and collectively, in particular social situations when they inquire into how they can find ways to improve what they are doing. I conducted an evidence-based self-study action research methodology (McNiff ,2014; Ham & Kane, 2004; Vanassche and Kelchtermans, 2015; Sullivan et. al., 2016; Glenn et. al., 2017; Efron and Ravid, 2020) as I aimed to enhance my teaching practice through change, rather than reverting back to teaching in the way I was taught during school. My memories from school consist of me sitting and working independently. However, I wanted my students to remember school as a fun, active and engaging place.

Action research (McNiff, 2014; Ham & Kane, 2004; Vanassche and Kelchtermans, 2015; Sullivan et. al., 2016; Glenn et. al., 2017; Efron and Ravid, 2020) is "constructivist, situational, practical, systematic and cyclical", as described by Efron and Ravid (2020:7). Educators research their own practice to make appropriate changes to enhance their practice. Teachers understand the context of pupils and their specific learning environment is taken into consideration throughout. The practical characteristic relates to the educator choosing their own particular area of practice and personal question(s) to research. Action research is cyclical and relies on validity and rigour with a critical friend and validation

group, (Efron and Ravid, 2020; Sullivan et al. 2016). Action research informs individual researchers by their "own values, norms and assumptions", (Sullivan et al. 2016:25).

Critical reflection provides a deeper insight to who we really are as teachers, (Brookfield, 2017). Reflection on practice considers "the thoughts, emotions, reactions and questions the practitioner has", (Sullivan et al. 2016:51). I used Brookfield's (2017) four lenses of critical reflection. These lenses include the students' eyes (of how they perceive learning), colleagues' perceptions (critical friend and a validation group), theory (which I reverted back to throughout this process) and personal experience (one's own experience), (Brookfield, 2017). The four lenses provide a deeper understanding of how we really teach and how we can improve our practice.

I wished to research and implement Gold Standard PBL (Larmer et al., 2015) in order to evolve as a teacher throughout this process. Teaching is a career that continually changes and adapts with the updating and introduction of new curriculums, and I hoped to change and adapt with new knowledge, through continual development of practice, to improve my practice, (Sullivan et al. 2016). Reflection upon my own practice was a crucial aspect of this. I strived to be the best teacher that I could be and in order to succeed, a step back was needed to reflect critically upon my practice as there was room for improvement. Due to reflection, it became clear that I was a living contradiction (Whitehead, 2010), which I will explain in the following section. Teaching the writing process was my main area of concern at the time. This area of the curriculum was crucial, as many students struggled greatly with writing and I aimed to help them through implementing a new strategy in order to help them engage in writing through positivity and intrinsic motivation (Ryan and Deci, 2000a).

Action research is a collaborative process. It is important to confer with a critical friend and a validation group in order to critically reflect and discuss data to enable

triangulation, (Sullivan et al. 2016). Through "cross-checking your work from different perspectives is triangulation, which can show the accuracy and validity of information" gathered, (Sullivan et al. 2016:82). Working openly and honestly with peers can help to clarify, organise and support findings. Colleagues may provide alternative perspectives and opinions as they share their own interpretations, which can be reflected upon to bring about new ways of thinking, (Brookfield, 2017:68).

3.2.3 My value systems

My values (Sullivan et al. 2016) are justice, inclusion, and active learning. **"**Values refers to what we value, what we hold as good", (McNiff, 2014:34). I believe that each child is unique and requires engaging stimulus and lessons in order to reach their individual potential. I consider that children learn through dialogue and play in order to process new vocabulary and information in a fun and safe environment. However, I realised that I was a living contradiction (McNiff, 2014; Whitehead, 2010) as I was not living out my values in my everyday practice. Having reflected upon my values and teaching practice, I realised that my values were being denied in my practice as I did not provide students' choice in many activities, especially within writing.

During English lessons, each of the four English skills of speaking, listening, reading, and writing, (Tresna et al., 2020) were not been provided equal importance in the classroom. I was not providing the children with opportunities to explore language through a variety of learning styles. Many of the children that I was teaching required active engagement in tasks and time to explore a particular topic in detail. The students were working independently for the majority of lessons, which did not facilitate any peer discussion or peer learning. Throughout this research, I understood, personally, the importance of peer dialogue on a much deeper level. This opened my eyes to how my values were denied but also how I was denying my pupils the opportunity for dialogue.

Epistemological values are how we view knowledge (Sullivan et al. 2016:31). In the abstract of Whitehead's (2018) notes to support his keynote presentation to the 10th World Congress of the Action Learning Action Research Association, he explains that "epistemology is being created in the explanations of practitioner-researchers of their educational influences in their own learning, in the learning of others and in the learning of the social formations in which the explanations are located." Knowledge is continuously created and adapted due to continued research and dialogue. I hoped that, through introducing Gold Standard Project-Based Learning (Larmer et al., 2015) within my classroom, the children would become engaged and motivated in their learning of the writing process. They would learn to solve problems with peers through open discussion and active learning.

3.3 Data Collection

3.3.1 Research Participants

For the duration of this study, I was teaching first class in an all-girls primary school. The children were aged between 6 and 8 years of age. My critical friend, colleagues, and validation group (Sullivan et al., 2016) of other educators were also participants of this research. Through working with my critical friend and validation group, I hoped to "learn both *in* collaboration, developing new co-productive approaches to practice, and *for* collaboration, developing capacities for engaging with diverse and even conflicting professional traditions" (Fenwick, 2012:141-142). I collected data from all the individuals involved in this research in order to draw conclusions from and validate my action research (McNiff ,2014; Ham & Kane, 2004; Vanassche and Kelchtermans, 2015; Sullivan et. al., 2016; Glenn et. al., 2017; Efron and Ravid, 2020) in practice. My principal, Board of Management and parents were the gatekeepers in this research (Cohen

et al., 2018) as they could put a halt to my research in the school if they wished. The research findings were based on this individual class.

3.3.2 Research site

For the duration of this research study, I was teaching in an all-girls Catholic primary school in a suburb of Dublin. Many students came from middle-class backgrounds. It is an inclusive and academic school, welcoming children of all nationalities and religious backgrounds. I was teaching First class pupils. I had a class of 25 students (19 of which participated in this research study), and a full-time SNA in the classroom.

3.3.3 Data collection instruments

I reverted back to reading my question 'How Can Gold Standard Project-Based Learning (Larmer et al. 2015) help engage and motivate mixed ability first class students in the writing process?' in order to decide upon my data collection tools. A mixed-methods (Efron and Ravid, 2020) approach was decided upon. Qualitative data collection instruments will be discussed first. The research instruments that were used to collect qualitative data (Mc Niff, 2014, Sullivan et at. 2016; Efron and Ravid, 2020) include my reflection journal, meetings with my validation group and critical friend, and my observation notes.

Reflection Journal – I reflected upon my practice I looked back on my practice and learned from it in order to change my practice going forward (Ghaye, 2010). I recorded events that occurred throughout the day and would read over these critically. I would "meta-reflect (to reflect on our reflections)", (Glenn et al., 2017:33) to reshape my learning and thus implement change. I wrote in my Reflective Journal twice to three times weekly. Please see Appendix 1.1.

Critical friend/ validation group – I asked my critical friend and validation group (Sullivan et al., 2016) to provide critical feedback throughout our meetings. No names were shared of members of this group with others. Their critical comments were used to see information from another perspective and to help validate findings (Mc Niff, 2014; Sullivan et al., 2016). Please see appendix 3.2 for a sample of minutes of meetings.

Observation notes- I will write down observation notes during the lessons and record children's comments throughout the process. No names were written on these observation notes and children's anonymity was primary concern. I systematically observed the activities, people, and physical aspects of my educational setting, (Efron and Ravid, 2020:92). Please see 'Appendix 3.3: Observation Notes' for a sample of my observation notes template.

The forms of quantitative data (Mc Niff, 2014, Sullivan et at. 2016; Efron and Ravid, 2020) that I collected included examples of children's work samples and checklists.

Work samples/ Teacher designed tasks – I collected samples of children's writing, notes, photos of their work and their final projects. These were personal artifacts, which were practical for action research, (Efron and Ravid, 2020:130). No child's names were shared with others and their identity remained private.

Checklists – I had a list to check for children's individual attainment of new knowledge. Checklists allowed me to record and assess the progression of students' attainment of knowledge throughout the first cycle, (Efron and Ravid, 2020). The children were protected as their names were not disclosed on the checklists. Please see Appendix 3.4: Checklist.

This was an "overt research" (Cohen et al. 2018:408) as the participants were aware that I was observing their work. It was crucial to follow all ethical guidelines, both school and college. The participants were "subjects not objects of this research", (Cohen et al.,

2018:317). The children were not forced or encouraged to complete any task and were aware that they may have withdrawn at time. Only relevant information or artifacts were collected for data purposes. Each of the participants work was protected and confidential with no names written on their work or shared with other parties. Ethical considerations will be discussed in chapter 3.5. These forms of data were used to support the validity of any claims (Mc Niff, 2014) I made about whether Gold Standard PBL improved my teaching and the student's motivation of the writing process in my classroom. This will be discussed further in the next chapter. Thematic analysis will be explained next.

3.4 Data analysis

3.4.1 Thematic Analysis

This section discusses the analytical procedures applied to the data collected. Data was collected and organised in order to show if a Gold Standard Project-Based Learning (PBL) approach to teaching helped the students in my class with the writing process. Data was used to observe whether I was living out my values throughout my teaching. I used the Clarke and Braun (2013) thematic analysis approach to identify and analyse my data. I followed the six phases of thematic analysis (Braun and Clarke, 2006) as explained by Clarke and Braun (2013:3). They are as follows: familiarisation of data, coding data, searching for themes, reviewing themes, defining, and naming themes and writing up any findings.

Firstly, I familiarised myself with the data collected. Next I created codes in order to record common identifiers that appeared throughout my data. This permitted me to locate themes that emerged from my codes. I discussed these themes with my critical friend and validation group to compile a list of final themes that were: motivation, vocabulary development, engagement with writing, presentation skills, and knowledge and understanding.

3.4.2 Validity and credibility

Credibility of data was created through triangulation. Data was dated where required. I used "methodological triangulation" (Sullivan et al., 2016:107) by comparing both qualitative and quantitative forms of data. My reflection journal and observation notes provided my opinions showed my understanding from my viewpoint. Examples of the children's work and recordings of their opinions were used to provide the children's perspective. Meetings and discussions with my critical friend and validation group challenged my reflections and provided an outside perspective to challenge validity of my research.

Once data was collected, I discussed original findings with my validation group. They challenged me to delve deeper to support some of my findings. This was beneficial as it was important for me to provide relevant evidence to support my claim to knowledge and to show that I was living out my values. It was important to me to remain truthful throughout this process as McNiff (2014:114) states that claims to knowledge are also called 'truth claims'.

My validation group consisted of a Special Education Teacher (SET), who did in-class support during English lessons, a teacher who had taught my class previously, another first class teacher and the junior infant teacher who my class presented their project to. I met with my validation groups towards the end of cycle 1 to listen to their opinions. We had organised to meet up more frequently for cycle 2. However, this did not come about due to the closure of schools in March as a result of COVID19.

3.5 Ethical considerations

3.5.1 Principle of informed consent

After receiving ethical approval of my research proposal from the University, I sent a letter to my principal and Board of Management to request permission to conduct my

action research in the school, see Appendix 3.5 and Appendix 3.6. I sent letters to the parents and children, see Appendix 3.7. I explained that I was taking part in an action research project and asked permission for their child to participate in my research. Informed consent is crucial to protect the participants right to freedom and self-determination, (Cohen et al. 2018:52). A total of 19 participants returned informed written consent and only data was collected from these children. Parents did not disclose why they did not want their children to partake in this research nor did I put pressure on children or parents to partake in this research. I explained to the parents they may withdraw from the process at any stage.

3.5.2 Child Assent

The Department of Children and Youth Affairs (2012), suggest that assent of participants (children) may be obtained once the research is explained in a child friendly manner and that they must be aware of why the data will be collected and for what reason. I discussed my research with the children orally, in school, and used vocabulary that they understood. I asked the children to explain the process back to me in order to gain their comprehension of the process. Participants understood that they could take part in this study voluntarily and may withdraw at any time throughout the process. My participants were a vulnerable group so it was crucial that the children agreed to take part if they wished and that they understood there would be no repercussions if they did not want to be included, they would still complete the work but no data would be collected from them, (Rossi et al., 2003). A separate letter, see Appendix 3.8, was completed by the children who wished to participate.

3.5.3 Data storage

All original data collected has been stored in a locked cabinet in my home for security purposes. All hard copy files, such as my reflections, have been password

encrypted on my laptop. All information will be kept safe for a minimum of 10 years (following University guidelines) and following that, it will be disposed of safely and securely in order to protect the identity of all participants. My findings may be published to my peers, participants of the research, parents, my school, the college and to other educators for learning and educational purposes only.

3.5.4 Confidentiality and anonymity

I intended to avoid harm to any of the participants and their identity will be kept confidential and pseudonyms will be used. No characterises of the children were shared to protect their identity, (Cohen et al. 2018:130). Anonymity was secured as pseudonyms were used in the case of each participant, see Appendix 4.1, (Cohen et at. 2018). Any work with a child one-to-one was completed in the classroom with other students present to minimise risk to myself and the child. All participants were respected and treated equally. The name of the school is withheld to protect the identity of the participants. I decided to use 'Total Population Sampling' (Etikan et al, 2015) as not all students signed consent forms and I had a small group taking part in my research.

3.5.5 Principled sensitivity

I was aware that my research may cause stress to participants and I was conscious of ethical considerations throughout this process. I spoke with my validation group and I adhered to the Children First Guidelines (DCYA, 2017) and was prepared to report any disclosures to the Designated Liaison Person in my school. I made sure to avoid leading questions that the students may feel that there was only one intended answer, (Cohen, 2018:334). I remained aware of the power dynamics between researcher and students and the interests of the child was my primary concern throughout my research. (Sullivan et al., 2016:9) All opinions were heard equally (Glenn et al., 2017; McNiff, 2014).

3.6 Research design

3.6.1 Description of intervention

I had aimed to conduct two cycles of research, however only one cycle was completed due to COVID19. The first cycle ran from the 13th January through to the 14th February. The second cycle was to begin on March 2nd through until May 1st. The first cycle comprised of 3 sessions a week exploring procedural writing (Duke, 2014; Pratama et al., 2020; Salsabila, 2018) and bee-bots, please see *appendix 4.1*, throughout a variety of subjects across the curriculum. A Bee-Bot is a robot which can introduce young children to programming skills and computational thinking in the classroom (Caballero-González et al. 2019) and can be integrated with all areas of the curriculum. The TTS International Schools website (2018) describe a bee-bot as a programming resource that introduces children to directional language, control, and programming. I intended to implement two English sessions, two PBL sessions and one session on either subject, wherever the children required further support. However, each week one session was required to teach group work skills, as the children had difficulty learning to work in groups. This will be explained in greater detail in chapter 4. For an overview of my intervention, *see appendix 4.3*.

The children explored procedural writing, describe how something is accomplished through a sequence of steps, (Pratama et al. 2020) throughout this cycle. The children explored procedures through following the PDST (2014) guidelines, as clarified in chapter 2.3. We also followed the Larmer et al. (2015) essential elements of PBL, as shown in table 2, chapter 2.10.2 . The children were provided with their problem of teaching junior infants how to use a bee-bot. They knew their authentic problem and audience from the outset.

Firstly, the children familiarised themselves with procedures, through reading, observing, and following a variety of procedures in real life situations. These included recipes, instructions (both written and pictorial), experiments, directions, game rules and so on.

Next the children studied a procedure in more detail (analysing and stimulating). This was instructions to turn on and off a bee-bot, as the children had not used one before. The children discussed the headings and the layout of the procedure. During modelled writing, we used the similar headings to explain how to move the bee-bot on a mat. This taught the children how to write a procedure as I thought out loud while I wrote on the board.

After that, we created a similar procedure altogether. During this time, the children were provided time to experiment with the bee-bots and learn how to use them through sustained inquiry. The children used the worksheet 'Ordering Instructions'(Twinkl, 2020), *see appendix 4.4*. The children observed an image and read steps to build a tower. They used the image to help them number the steps appropriately.

During guided writing, in pairs, the children used worksheets, *see appendix 4.5*. The children used pictures to complete the worksheet. After this, in groups, the children wrote instructions to turn on and direct the bee-bot on a mat, *please see appendix 4.6 and 4.7*. The children were also provided a selection of worksheets that I created to explore procedural writing. In the early stages of the project, headings were included to assist the children. By the end of the project these worksheets were blank, *see appendix 4.8- 4.11*.

After investigating what bee-bots could be used for and how they could use them in lessons, each group was provided with choice, (Larmer and Mergendoller, 2010; Larmer et al., 2015; Kokotsaki et al., 2016). They had to choose what they would like to teach the junior infants to do with the bee-bots through writing and presenting a procedure in groups.

They wrote the instructions independently and worked co-operatively with others, group work, in order to explore and research this further.

During reflection, the children read their procedures and edited their writing. They had to critique their work and the work of others by suggesting what they could do to improve their work. The children then wrote up their final procedures and presented these to their intended audience.

3.7 Limitations

I conducted one cycle of this study due to COVID 19. This meant that my data collection time was limited to five weeks, which was a short time. This limited the customary and predicted amount of the data collected. I had two English lessons, two SESE/STEM and one or two SPHE lesson per week. The total was twenty-five lessons in total.

All participants in this research were female, similar age, came from a similar socio-economic background and were taught by the same teacher. Therefore, the results are contextualised and may have been subjective to this particular class of students, (Cohen et al. 2018:162). This impedes the generalisability of this research; however, this is not considered a criterion for teacher action research on practice, (Sullivan et al. 2016:102). Only one class were observed during this study, so the results may not be similar if the same procedures were followed with a different group of students or with a different age group.

I had a small group of 19 students participating in my research. This limited my data collection and thus my findings to these particular students.

Due to COVID 19 and the school closures, I was unable to physically meet with my critical friend or validation group. Virtual meetings or phone calls had to be organised to further discuss results or questions.

Chapter Four: Findings and Discussion of Data

4.1 Introduction

This research set out to investigate the following question, 'How Can Gold Standard Project-Based Learning (Larmer et al. 2015) help engage and motivate mixed ability first class students in the writing process?'. For the purpose of this study, I explored procedural writing (PDST, 2014). Procedural writing was decided upon as there are ample opportunities to bring this writing genre to life through active discovery learning (Pratama et al. (2020). This chapter discusses the themes that emerged through thematic analysis Clarke and Braun (2013), the challenges encountered throughout this action research and the strengthening of my values. Firstly, I would like to discuss the messiness of data collection throughout research.

4.2 The messiness of data collection method during research work

Collecting data and disclosing findings is not as simple as one might think. Collecting data is a lot messier than the linear descriptions we have of the process (Whitehead, 2010; Efron and Ravid, 2020). While going through my data, I realised that I was focusing on writing as assessment and not looking for other forms of information to assess children's understanding of what they were learning. I found it difficult to sift through all of my data and to come to one conclusion. It is messy and time consuming. At times I felt I did not have enough relevant data or that I did not have enough variety of data. However, I had plenty of data to read through and was 'tormented' researching my own researching (Mellor, 2001:466).

I followed Clarke and Braun (2013) six phases of analysis which is explained in chapter 3.4.1. Time was spent observing all data collected and re-reading over it many times to familiarise myself with it. Next, I began to separate my data in groups (codes).

Continuous notes were recorded of what was interesting or standing out to me about from these codes. This step was challenging, however, after observing, coding, and completing a detailed study of all above data collected, clear themes emerged.

4.3 Themes

4.3.1 Introduction

The themes that emerged through coding were motivation, vocabulary development, engagement with writing, knowledge and understanding and presentation skills. These themes emerged through Clarke and Braun's (2013) thematic analysis, as explained in chapter 3.4.1. I discussed these themes with my critical friend to make sure they were relevant, and that enough data was present to support these themes. These will be discussed and linked back to the literature that was explored in chapter two of this study, to establish if Gold Standard PBL can enhance children's learning and motivation in the writing process (procedural writing for this cycle).

4.3.2 Motivation

From reading over my observation notes, it appeared that children were further engaged and motivated within the writing process than they had been previously. Recording students' comments are "effective indicators of successful students learning", (Kurada, 2019:1) especially in younger classes. Student comments were noted throughout this project and will be used to support my findings.

The target audience helped to retain the student's focus and motivation from the very beginning and throughout this project. They held a real sense of responsibility to teach the junior infants correctly.

"I think we should teach them (junior infants) to do maths as they (bee-bots) make it fun", Mona.

"We should do the alphabet (mat) as they are only learning", Margaret.

"The infants need us to help them as they haven't seen a bee-bot before", Sarah.

These are some comments made by the children. It shows that they were thinking of their audience when choosing which mat to write a procedure about. They were focused on their target audience throughout this process. Furthermore, I observed the impact the audience had on the student's motivation with the project as can be seen from my reflection below.

"*At the beginning of this project the class appeared to be very excited and interested in learning that they would be presenting their procedures to junior infants, in order to teach them how to use bee-bots. As the project has continued to progress and develop, the children continue to mention their audience throughout the sessions. It is clear that they think of them as they write their procedures and the audience impact on their decisions"* (Quinn, 2020, Reflective Journal).

Ryan and Deci (2000a) explain that with intrinsic motivation, a person feels energised and inspired to do something. Both an external reason, their audience, and internal reason, desire to learn something new, helped to ignite the students' intrinsic motivation. The children had a real purpose to write for. Additionally, the following is taken from my reflective journal.

"*Lara and Ciara were working well within their groups and I could hear them sharing their thoughts and ideas. This is a far contrast to how they would both normally react to a writing lesson, as they both struggle to write. Once the pen was in someone else's hand they had the freedom to explore the topic orally. It was great to see them enjoy a writing task*." (Quinn, 2020, Reflective Journal).

In addition, the following day,

"*I observed Lara and Ciara write in their free writing copy. Normally when they complete a task, they will colour or finish off some maths questions. I was very happily surprised today to see that both students were writing willingly. As I walked around the class, I observed that both students were writing a procedure*" (Quinn, 2020, Reflective Journal).

As explained in chapter 2.4.1 of this study, the children showed a high *level of motivation*, (Ryan and Deci, 2000a), as the two students would not normally choose to write, especially when provided a choice. The children chose to write and were imitating what was written the previous day. I feel this is a result of peer learning and having an authentic audience.

Larmer et al, (2015:2) suggest that young children arrive to school with a "natural desire to learn" and may complete tasks as they "want to please their teachers", however they also recognise that "even young students may grow tired" of work. This is especially true for children who struggle with certain skills or tasks. The elements of peer learning and having an authentic audience helped maintain the children's motivation throughout this project. Another theme that emerged was improvement in children's vocabulary, which will be examined in the next section.

4.3.3 Vocabulary development

There were five EAL children and many children who greatly struggled with reading and writing participating in this study. Through observations and teacher-designed tasks, the children were enabled to use appropriate and necessary vocabulary required throughout the project. In one teacher designed task, *see appendix 4.5*, the children completed an activity sheet to explore and discuss directions. This is similar vocabulary appropriate for procedural writing. For example, they were using words such as first, then, next etc. After completion of this task, group discussion and further active learning with

the bee-bots, pupils were enabled to answer questions and provide codes (directions) to put into the bee-bot. My values of justice for students learning and active learning was evident here as the children explored relevant vocabulary that was necessary for writing a procedure and for their presentation. They explored this vocabulary through practical tasks. This helped the children that struggled with vocabulary.

The children learned to put in all codes (directions) necessary for the bee-bot to move to their desired destination. At the beginning, group three and four were putting in a code e.g. forward and pressing 'Go', then they would put in the second code and so on. They did not discuss the directions, or where the bee-bot was to begin or end. They were completing the task visually. However, after using this worksheet the children were enabled to discuss where the bee-bot was going and discuss the language necessary to put into the bee-bot. This showed how they had progressed and were enabled to use the vocabulary to solve problems and give directions. I observed group discussions throughout this task, where the children had to solve the problem of figuring out the complete code. One child shared:

'Let's use a pencil. We will put in the code as we move the pencil (on the mat). Go forward, forward, right….' Alva.

I was impressed by this as the children were thinking for themselves. This was showing that the children were utilising the appropriate vocabulary. I recorded the following in my journal.

"This showed their understanding of putting in the full code at the beginning and their comprehension of directions. This child has English as an additional language (EAL) and not only did she solve the problem, she used new vocabulary learned throughout the week to call out the code for her partner to put into the bee-bot." (Quinn, 2020, Reflective Journal) .

During the reflection element of this project, children read out their procedures. Our Special Needs Assistant (SNA) would act out each step using the bee-bot and appropriate equipment required (included in the procedure). The children were enabled to visually see which steps they omitted. They were then enabled to reflect and revise appropriate vocabulary and amend any mistakes. Bringing the editing process to life really supported the children's understanding of appropriate vocabulary required.

'We left out (the step to turn) right towards the heart shape', Lara

'We didn't say where to start at', Maura (where to place the Bee-Bot on the mat)

'We need to say (write), press 'Go'', Bella

'We have to get it right, the infants are smaller than us', Ciara

These were some of the comments made by pupils during this task.

"*Lara, Maura, Bella and Ciara really enjoyed the lesson today and were motivated throughout the lesson. They seemed to really enjoy finding out where they went wrong in order to try and fix the problem in order to write the procedure clearly for the junior infants. It is clear from their comments that their audience was very important to them*." (Quinn, 2020, Reflective Journal).

The children understood the importance of using accurate vocabulary so that the junior infants would understand and be able to follow the steps of the procedures. I could see how the children were progressing throughout the project, but, more importantly, how EAL children and children who struggled to write were enabled to use the vocabulary learned and put it into practice. This instilled a sense of accomplishment for children with their language skills.

All children, especially children who struggle, require a real purpose to learn, use and explore new vocabulary, (NCCA, 2019). This is highlighted throughout the Primary

Language Curriculum as they explain that oral language is required to assist children in the development of reading, writing, and learning across the curriculum. (NCCA, 2019:15). I believe this was supported throughout this project as the children were provided with a real purpose to learn, use, and explore new vocabulary and the results were favourable.

Group work aided exploration of vocabulary, particularly directions and language necessary for procedural writing, in this case. Burke (2011) states that one of the six advantages of group work is that students retain information for longer when it is discussed in a group. The children began to use vocabulary relevant to the bee-bots and procedural writing such as step, first, next, turn, left, right, then, stop, press etc. Group work supported comprehension of new knowledge and vocabulary as children listen to peers using new language and they are provided opportunities to engage with language during specific tasks. The active nature of these lessons aided EAL and struggling children further as they could observe the other children acting out what they were saying.

"Write 'put the bee-bot on the mat', then write 'press X', then write 'press forward two times' and then write 'press left one time'" Louise vocalised as she completed the necessary steps. This was during the writing up of their final projects. The completed projects show how far the children progressed in their learning from the beginning of their project. Some students left out numbers for each step or provided very little information in their procedures. Students that included the steps also progressed by writing more concise vocabulary in their procedures. At the end, it was evident that the children understood the guideline to follow when writing a procedure and understood the vocabulary required.

This supports Kokotsaki et al. (2016:269) opinion that content knowledge was gained through group work skills as the children worked together as a group and not just working independently in a group. In addition to children expanding their vocabulary,

children who struggled with writing became more open and engaged with the writing process which I will discuss next.

4.3.4 Engagement with writing

Some children struggled with writing and did not enjoy writing tasks prior to this study. Some of these children struggled with spelling or timing or both. However, some became particularly engaged in the writing process and practiced throughout this project and completed writing tasks independently. These children would usually shy away from completing a written piece or allow another member of the group to complete the task.

During a paired writing task during week 3 of the project, the children were placed in similar ability pairs to encourage discussion and to assist one another during paired writing (Topping, 2005). This reduced pressure and prevented higher ability students from completing the task independently. I did not focus on spelling throughout this task as my focus was on encouraging children with difficulties to attempt to write and use appropriate vocabulary. Certain helpful/ commonly used words were on the board for support. As a result, many children who struggled, attempted to write more freely, and without pressure. The children followed the steps required to write a procedure and thought about their audience throughout.

I believe that having the bee-bots to hand, for the children to work with during this process, supported their writing as this added an active component to the writing process, which is one of my values. This was especially beneficial to kinaesthetic and visual learners. The children would write a step or two and attempt to follow their own steps with the bee-bots. If they skipped a step it was easy for them to figure out and they could add in the step to their writing. They were able to see the need to read over and edit their writing.

"*Audrey read her first step while her partner placed the bee-bot on the mat. When she read her second step, both Audrey and her partner realised that she had forgotten the*

next code which is to 'press X'. She went back to edit her work and add this step in. This showed she was learning from her own mistakes….. she is learning and growing in independence with writing…….I saw my values of active learning and being inclusive of all learners lived out here as the children were enabled to learn through active engagement with the resources. " (Quinn, 2020 Reflective Journal)

This child required concrete materials in Maths, and I realised that I was not providing concrete materials for this child to explore in English. I realised how important active learning is in English lessons as a result of this task. This is something very simple, but I had not thought about this prior to this study. If a child requires concrete materials in one subject, they may need them for other subjects too. I would always provide this child with concrete materials when teaching maths. She likes to see the sums visually in front of her and manipulate the concrete materials to understand now skill before she can complete the questions. Having observed her do the same practice in English and have a positive outcome, was a big realisation for me and something I will definitely be considerate of in the future. This was the step of shared writing, (PDST, 2014) and the children benefitted from working together and learning from one another (Krajcik and Blumenfeld, 2006). This also relates to my core values of active learning, justice, and inclusion of all learners. I must be aware of learning styles preferred by children and adapt lessons to facilitate their learning (Gilakjani, 2012).

Sustained inquiry helped to engage children within the writing process as they revisited knowledge throughout the process to scaffold new knowledge from learning from mistakes (NCCA, 1999). As the children followed the PDST (2014) guidelines to teaching a writing genre, the children became familiar with the writing genre before completing a writing task independently.

In addition to this, the following is a snippet from my reflective journal during school closure. I rang Bella's mom, during lockdown, to provide work that could be done at home. She was finding it difficult to engage Bella in the written tasks that I was providing the students with that week.

"*When I had rang Bella's mom, she stated that she was finding it difficult to engage her to write. She said that Bella never chooses to write …… I suggested a list of alternative ideas to write……The following day Bella's mom messaged me sharing that they had made cupcakes. I messaged Bella back and said the cupcakes looked lovely and I would love the recipe… I was delighted to hear that Bella prioritised this writing and it was the first task she completed in the day……Thinking about this situation deeper, I feel that it was the real audience (me) and a real purpose (I wanted to make the cupcakes) that ignited the motivation in Bella*" (Quinn, 2020, Reflective Journal).

I believe that motivation, vocabulary development and engagement with writing greatly contributed to the children's knowledge and understanding of procedural writing, which will be discussed next.

4.3.5 Knowledge and Understanding

Through engaging in this project over a sustained period of time (Larmer et al, 2015; Duke, 2014), five weeks for this project, I feel that the children became confident in writing procedures as they became experts using bee-bots and understood the vocabulary associated with procedures. Larmer et al (2015) stated the importance of a structured nature to lessons and the teacher's role it to constantly support learning throughout. I feel that this greatly aided my students in their knowledge and understanding of procedural writing. Following the seven steps of Gold Standard PBL (Larmer et al., 2015), greatly assisted the children's learning throughout the project alongside the PDST (2014) guidelines. These elements and guidelines helped greatly during the planning aspect, as a

teacher. They also benefitted the children's learning as they explored new knowledge and scaffolded their learning to create new knowledge.

Laura, Maura, Bella, and Ciara's quotes, as mentioned above, showed that their vocabulary had developed which helped them with their writing of procedures. However, this is also as a result of their expanded knowledge and understanding of the topic. As a result of using the bee-bots regularly, the children became experts on how to use them. This new knowledge and understanding enabled them to teach others though writing procedures. In addition to this, Bella writing procedures, chapter 4.3.4, also demonstrated her growth in knowledge and understanding as she knew the guideline to follow when writing a procedure and chose to write one.

The children gained an in-depth knowledge and understanding of what they had explored over the five-week period and I believe that they would be enabled to explore a different topic and write a procedure. Sustained inquiry allowed students to take responsibility of their learning and contribute their own knowledge gained in their group project (Larmer et al, 2015). I believe sustained inquiry helped the students with their presentation skills, which I will discuss next.

4.3.6 Presentation skills

Throughout analysing the data, I realised that children who demonstrated most difficulties with reading and writing excelled during the presentation element of this project. Bella, Ciara, Sarah, Lara, Rebecca, and Paula took the leadership roles during the presentation. They mentioned and showed their poster and explained each step to the children. They did not rely on reading the procedure as they knew the steps thoroughly, due to the practical nature of Gold Standard PBL (Larmer et al., 2015) and the element of 'sustained inquiry' (Krajcik and Blumenfeld, 2006; Larmer et al. 2015). The students had explored the Bee-Bots and the equipment they had chosen to teach, in great detail. The

same students along with Zara and Maura asked engaging questions to keep the infant's attention.

"Ask them to move the Bee-Bot to number 5 (numeral) and then to the picture of 5 (picture of 5 umbrellas)", Bella

This was in relation to a maths mat where they had a selection of images. They had a picture of the numeral '5' and the child wanted to challenge the student to move the Bee-Bot to show the story picture of five.

"Who can tell me the first step?", Laura

"What step will I put in next?", Paula

These children were asking the junior infants questions after their presentation. This was showing them how much the junior infants had learned from the presentation and my class could help them further if there were areas of confusion. This also created further problems for my class to solve on the spot.

"*After speaking with the class teacher, she shared that Bella, Ciara, Sarah, Laura, Rebecca, and Paula really thought about their audience and were extremely knowledgeable and personable with the younger children. I was also surprised by this as I thought that these children may shy away from the presentation aspect of this project but this where they appeared to be at their most confident, which I was delighted to see. I saw my value of justice for all learners here, as the children who struggled to write found their voice and excelled in this task.*" (Quinn, 2020, Reflective Journal).

I believe the students achieved presentation skill through being provided with a problem, sustained inquiry and having a real audience in mind. This Gold Standard project provided EAL students and students who struggled with literacy skills a chance to share their new knowledge orally through the presentation of this project. They could do this

without the restraint or difficulties with handwriting. This was an unexpected finding as I did not expect these children to take a leadership role during the presentation.

I have shared my findings; however, I did come across challenges during this cycle, which I will discuss next.

4.4 Challenges Encountered Throughout Cycle 1

One of the main challenges that I encountered during cycle one was the group sizes. The students were separated into four groups of six. There were some children in these groups whom data was not collected from as I did not have ethical approval. Once the children were set up into groups, I set each group a task. I cut an A2 page into six sections and gave each child their own section. I asked them to work together to draw a bee-bot and that I would stick all the pieces together at the end. This was a very insightful task as I realised that many of my students struggled to work in a group capacity. Only one group were enabled to work together in order to complete the task, *see appendix 5.1* (some squares have been blocked due to no consent).

Two of the four disadvantages of group work, listed by Beebe and Masterson (2003), were evident during cycle 1 of this research, namely:

- Accept majority opinion (Beebe and Masterson 2003) is an example that occurred during cycle 1. Some children went along with the majority of their group's decision to teach the infants how to turn on and off a Bee-Bot. However, some of the members of this group later shared that they wanted to teach the target audience to draw letters using the Bee-Bots with the pen holders, *please see appendix 4.2*. It was too late at this stage to split the group, but it was an area of concern, for me, moving forward to cycle 2.

"*Today I realised that my group size was far too large for first class work. The dominant children are making the decisions on behalf of their group. Amy and Naomi*

were excluded from their group today as they had stated that they wanted to teach the junior infants how to use the pen holders. This would have been far more interesting and challenging for the group to explore, however they were overtaken by other four members of their group. This is an area of major concern for me and I will pay close attention to this group moving forward." (Quinn, 2020, Reflection Journal).

- Most dominant voice heard (Beebe and Masterson 2003). Some children sat back and let the most dominant student share their views and opinions. This resulted in insufficient learning for the quieter students as they became lost during discussions and written tasks.

"Oh, I know what to write" Mona (taking a pencil and beginning to write, while Audrey let Mona take over her role in the task)

"*I observed that some children who are confident and able to complete a task can become dominant during group work. Mona did not share her knowledge or thinking, she took over the task from Audrey. This did not benefit Audrey's learning in any way*." (Quinn, 2020, reflective journal)

After discussing this situation with my validation group, one member suggested that I should "position all the scribes to go to a separate table to write as no one can take over their role". I liked this idea; however, I feel this would take the peer learning away as the scribes would be working independently. From further reflection, I feel that modelling and acting out different group-work situations during drama would be beneficial to the students. I would plan to teach the children explicitly how to work in groups before introducing them to project work in the future.

4.4.1 Gold Standard Project-Based Learning

Before undertaking Gold Standard PBL in future, it is essential to teach the children how to work together in order for meaningful group work to take place. I believe this should be another element of Gold Standard PBL (Larmer et al., 2015). We should not assume that children know how to work together in a meaningful way. The element of 'authenticity' could be combined with 'a challenging problem or question'. This would result with 'an authentic and challenging problem or question' and 'collaborative work' could be another element. I will follow these elements in the future as I believe this is relevant for all students.

Overall, I was satisfied with my implementation of Gold Standard PBL as the children were engaged and motived to write. Gold Standard PBL worked well while teaching procedural writing, however, I do not know how it will work when teaching other genres of writing. I will explore this in my classroom in the future.

I will implement Gold Standard PBL in my classroom in future as I saw the benefits in my students work. However, I will implement Gold Standard PBL using the six elements I came up with from other theorists, see chapter 2.10.2. However, I would change the first element to 'Provide an authentic problem or question', as I believe this step is crucial to engaging the children in the project. I do not deem it relevant to have a separate element for 'authenticity' as Larmer et al. (2015) had. I believe the 'authenticity' to be intwined with the problem and question. It is the authentic problem and authentic audience that ignite motivation within the children from the beginning. This motivation is sustained throughout the project due to the authentic audience that the children will present to at the end of the project.

"*Looking back over the project, I can see how beneficial the elements are in the teaching of projects. They helped to focus my planning and implementation of Gold*

Standard PBL. However, I would like to plan my second cycle using the 6 elements that I concluded from the research (see chapter 2.10.2). *There are many projects completed at home independently by students, however, I have witnessed the importance of projects completed in school. I was aware of any areas the children were struggling and they knew what they were learning to do and why they were learning this. I realised that in the past* (before completing this study) *I was not structuring project lessons well and I was not providing the children with enough support."* (Quinn, 2020, My Reflective Journal).

I followed the Project-Based Teaching Practices (Larmer et al., 2015) during my implementation of Gold Standard PBL, see chapter 2.10.3. The first teaching practice of 'design and plan' (Larmer et al., 2015) took a lot of time. There is extensive planning involved in implementing Gold Standard PBL, but I believe this is crucial to the success of the project. However, as discussed in my challenges, I found it difficult to 'build the culture'(Larmer et al., 2015). I believe this was due to my group sizes. Collaborative work is essential in Gold Standard PBL. However, smaller group sizes and explicitly teaching the children how to work together in a group would be my primary focus when implementing Gold Standard PBL in future. The large groups prevented individual independence and growth during writing tasks, as explained in chapter 4.4 above. This was an area that I was hoping to explore during cycle 2. I will explore this in future. This leads me to discuss my values and how this project has strengthened the values that I held at the beginning.

4.5 My Values

After completing my research, I learned that I had not been living up to my values of justice, inclusion, and active learning.

"*From observing the children today and being mindful to note when the children were actively learning, I realised that the children were sitting and working independently*

for the majority of the day. This was worrying as I realised that I was not living up my values and I was not putting them into practice. I was also worried about justice for all learners, as every class has children with a variety of learning needs and my class is no exception. I am not providing an inclusive class where all learners are welcome. This was hugely disappointing for me to learn about myself, but I am also delighted that I came to this realisation now as I can change in order to benefit my students learning. I will prioritise this throughout the study." (Quinn, 2019, Reflective Journal).

This is from my reflective journal from November 2019. I realised that I had not been living out my true values in my teaching practice. This was a huge area of concern for me. This is the reason I designed an intervention that I knew the children would be actively engaged, all learning styles would be explored (justice) and that all children would have a voice (inclusion) throughout the project.

Having observed the benefits of active learning, justice, and inclusion of all learners within my class (mentioned above in this chapter), it has strengthened my belief in my core values even deeper. If a child struggled with writing and I gave them a different role that day, they were not under any pressure and became more engaged and invested in helping the scribe. Children learned through peer discussion and through the practical element of this project. This also strengthened my desire to remain in education and continual professional development in order to research and learn new methods to help engage demotivated or struggling learners.

I feel that my values have developed further throughout this research project. I still believe in active learning, justice, and inclusion of all children. I feel that I did not live to my true value of justice for all learners when I put the children into groups of six and as discussed, this was something that I wished to change for cycle 2. I learned that this is a prominent value of mine and that I have to take time planning in future to think about

individual learners in my class. My value of engaging lessons for all was brought to life during the implementation of Gold Standard PBL. These lessons were engaging for all children involved.

I feel that implementing Gold Standard PBL helped me to live out my values of justice, inclusion and active learning as these lessons were active, engaging and fun. Concrete materials also helped to include children of all learning styles" (Quinn, 2020, Reflective Journal).

4.6 Conclusion

This research set out to investigate whether Gold Standard Project-Based Learning can help engage and motivate mixed ability first class students in the writing process. Gold Standard PBL is authentic, motivating and provides a real purpose for learning (Larmer et al. 2015). Data collection can be a messy and an extensive process, however after spending time with my data, I was enabled to separate it into themes, which greatly helped to write about it. My data collection tools helped to show the children's engagement in the task and their learning throughout. Through analysing my data, the themes helped me to show my findings and share the success of applying Gold Standard PBL. I felt that I had learned from challenges encountered during cycle 1. It was very disheartening and unfortunate that I was unable to implement my second cycle. My core values were strengthened throughout this process and I have a stronger belief in active learning, justice, and inclusion of all learners within my class. I hope to continue to develop my values through planning for all learners within my class and have necessary resources appropriate to the students I teach. I feel that Gold Standard PBL (Larmer et al. 2015) succeeded in engaging and motivating my mixed ability first class students in the writing process, through engaging in a topic and following the 7 essential elements alongside guidelines to teaching a writing genre (PDST 2014).

I hope that through continuing to engage with and implement Gold Standard PBL, I will perfect Gold Standard PBL in the future. I see a real benefit for all learners as students increased their motivation, vocabulary development, engagement in writing, knowledge and understanding and presentation skills. The children enjoyed completing the project, while learning at the same time.

Chapter Five Conclusions and Recommendations

5.1 Summary of main findings

The findings from my research study showed that implementing Larmer et al. (2015) seven elements for Gold Standard Project-Based Learning and following the PDST (2014) writing guidelines helped to motivate and engage mixed ability first class children in the writing process. The seven elements helped to motivate and inspire the children to learn about bee-bots and explain how to use these through writing a procedure to present to junior infant pupils.

5.2 Context of the results

As evident from my findings, the children were motivated and engaged in the project from the beginning as a result of the problem provided to them. Their challenge was to teach junior infant pupils how to use bee-bots through procedural writing. This was an authentic problem as my students had never used a bee-bot before and neither had the junior infants or their teacher. This was a real problem to solve for a real audience. Sustained inquiry helped to retain focus in the children throughout their research. Initially, they had to learn to use a bee-bot and to write a procedure. The practical nature of this project alongside group work helped to engage the pupils in their learning. Providing opportunities for student voice and choice encouraged a sense of responsibility from the students which further motivated and engaged them in this project. As stated in the previous chapter, reflecting on their work and the work of others naturally led to critique and revision. As this was a practical topic the children were enabled to see their mistakes which led them to fully understand the necessity to revise over their work and to correct their work.

5.3 Developing Theory

I make no claim that my findings would be suitable for all class groupings of the same age. However, although my research is based on individualities, Bassey (2001:6) expresses that "fuzzy generalisations" from this research may inform the other practitioners' practice. Following the seven essential elements for PBL may help to guide teachers in their planning, as it helped me. Following the PDST (2014) guidelines for teaching a writing genre, alongside the seven essential elements could heighten engagement and motivation to write in other students. My learning will help me in my future practice, and I can make a claim that I know how to implement Gold Standard PBL effectively in my classroom, regardless of the class level I teach. I have generated this knowledge through reviewing the literature, analysis of data collected and working together with my critical friend and validation group. I am now living more closely to my values as described in my findings.

5.4 Further recommendations

Before implementing Gold Standard Project-Based Learning (Larmer et al. 2015), I would suggest visiting the PBLWorks blog page. There is a vast number of blogs and support for educators who wish to implement Gold Standard PBL in the classroom. There are examples from previous projects completed to set you on your way. The blogs are informative and helpful. They also have access to a new 'Project Designer' to help adapt and implement projects tailored to your class.

I think it is essential to explicitly teach the students how to work together in a meaningful way. Providing the correct answer or completing another child's role for them, is not good group work. The children must be aware of this from the beginning. My class are young and had not worked in such a large group previously. For the first time implementing Gold Standard PBL, I think groups of 3 or 4 would work well.

Gold Standard PBL adheres to all learning styles and I found it supported children with English as an additional language and children that struggled with literacy. Introducing real life practical concrete materials help them in the editing phase. This could be listening back to their own reading or using concrete materials as I have explained above. Showing a real purpose for writing is essential to engage and motivate children who are disengaged with writing.

Introduce the real audience from the very beginning of the project. During observations, I constantly heard the children talking about their audience (junior infant class). They felt responsibility to teach the junior infants how to use the Bee-Bots. This was a real problem as the students had not used these before. The audience held their attention from the start as they wanted to succeed in helping the infant students.

Finally, I would combine Gold Standard PBL with the writing process, by following guidelines to explicitly teach a writing genre (PDST, 2014). I found this hugely beneficial to my students and their final project. The children were learning the steps required to write procedural text, while they were writing their own procedure for a real audience, and thus a real meaning.

5.5 Future directions

I have learned from this first implementation of Gold Standard PBL, as discussed in chapter 4.4. In future, I aim to have groups of three students in order to prevent majority opinion and the most dominant voice being shared Beebe and Masterson (2003). I hope that in smaller groups, the children would feel free and comfortable to express individual opinions. Gold Standard PBL was beneficial for EAL (English as an additional language) students and students who struggle with literacy. Through cross curricular study, the children had ample opportunities to learn and use new vocabulary within a safe environment. "Collaborative work involves sharing ideas, knowledge, competencies, and

information to accomplish a task or goal" (Lowry et. al., 2006:632). I felt that my groups were too large for everyone to share their ideas and information in order for all members to agree on a combined goal. Furthermore, Lowry, et. al (2006) explains that smaller groups result in worthy and valuable discussion and greater over all attainment of the learning goals. We must teach children how to share their opinions, knowledge, skills, and other useful and relevant information by working cooperatively with peers for a common outcome/ result. Collaborative work is an essential component of Gold Standard PBL, just as each of the 7 elements (Larmer et al. 2015).

I will also implement Gold Standard PBL using the 6 elements that I concluded from the research. These elements help to focus the teacher during planning, and thus focus the children and engage them in the project from the beginning. I aim to implement my second cycle of Gold Standard PBL this year with my new class, as I was unable to complete my second cycle due to school closures.

I am sure I will come across further challenges, in the future with different class groupings, but I aim to improve with practice and will keep learning throughout my career. Communication between my critical friend and validation group supported my learning. I will continue to open dialogue between peers in order to support my practice and students.

This year a main concern for me is COVID19. The children are unable to mix with other class groupings and we cannot bring external people into the school. This may be completed virtually with their intended audience. This will be further learning for me this year when implementing Gold Standard PBL.

5.5 Sharing my research

I have shared my learning with my peers and some teachers in my school appear eager to learn more. I hope to sit down with these teachers and share how I implemented Gold Standard PBL within my class. I hope that a few classes in the school could

implement Gold Standard PBL in their class this year. We can all share our learning, and I will offer any assistance I can to others.

I would like to involve the wider community when implementing Gold Standard PBL in the future. Exploring a topic, such as litter, in the local community could help to do this. The children could create posters to display in local shop windows. Members of the community could come in to discuss issues with the children. This would be difficult to implement this year due to COVID19. However, it is something that I hope to implement in the future.

5.6 Final Conclusion

Through implementing Gold Standard PBL I saw an improvement of my teaching practice and the children's motivation and engagement with areas of the curriculum which they struggled with most. This has made me eager to continue to implement Gold Standard PBL in the future and also to research additional strategies. This research is the beginning of my research journey and I am far more welcoming and open to changing my practice than I had been prior to this research.

I still hold close in the Froebelian approach to teaching as my value of active learning has been strengthened throughout this process. I deem it essential for children to learn through active learning and that learning is based around the child and their environment.

I have benefitted from this research as I can implement Gold Standard PBL in order to engage and motivate my students in the writing process. I have a new outlook on continued professional development, and I can see the improvements to my teaching practice as a result of implementing a new strategy. This process has been very insightful, and I have gained the tools to continue on my educational journey.

Reference List

Anazifa, R.D and Djukri (2017) Project-Based Learning and Problem-Based Learning: *Are they Effective to Improve Student's Thinking Skills?*, Jurnal Pendidikan IPA Indonesia, 6(2), 346-355.

Bassey, M. (1990) Three Paradigms of Education Research In: Pollard, A. (2011) Readings for Reflective Teaching, London: Continuum, 37-39

Bassey, M. (2001) A solution to the problem of generalisation in education. *Oxford Review of Education*, 27(1), 5-22.

Beebe, S. A., and Masterson, J. T. (2003) Communicating in small groups. Pearson Education Inc. Boston: Massachusetts.

Boss, S. & Krauss, J, (2014) Reinventing Project Based Learning*: Your Field Guide to Real-World Projects in the Digital Age*, 2nd ed. International Society for Technology in Education.

Boss, S. and Larmer, J. (2018) Project Based Teaching: *How to Create Rigorous and Engaging Learning Experiences*, ASCD and Buck Institute for Education (BIE).

Boyaci, S. D. B., & Güner, M. (2018) The Impact of Authentic Material Use on Development of the Reading Comprehension, Writing Skills and Motivation in Language Course, *International Journal of Instruction*, 11(2), 351-368.

Braun, V. and Clarke, V. (2006) Using thematic analysis in psychology*: Qualitative Research in Psychology*, 3(2), 77-101.

Brookfield, S. (2017) *Becoming a Critically Reflective Teacher* 2nd edition, John Wiley & Sons, Incorporated.

Burke, A. (2011) Group Work: How to use Groups Effectively. *The Journal of Effective Teaching*, 11(2), 87-95.

Caballero-González, Y., Muñoz, L., Muñoz-Repiso A. G (2019) Pilot Experience: Play and Program with Bee-Bot to Foster Computational Thinking Learning in Young Children, *7th International Engineering, Sciences and Technology Conference (IESTEC)*, Panama, 2019, 601-666.

Campbell, C. (2014) Problem-based Learning and Project-Based Learning. Teacher Magazine [Online] 16 September 2014. Available at: https://www.teachermagazine.com.au/articles/problem-based-learning-and-project-based-learning (accessed 12 August 2020).

Clarke, V. and Braun, V. (2013) Teaching thematic analysis: Overcoming challenges and developing strategies for effective learning. *The Psychologist*, 26(2), 120-123.

Cohen, L., Manion, L. and Morrison, K. (2018) *Research Methods in Education. 8th Ed.* London: Routledge.

Darmody, M (2011) The Changing Faces of Ireland, Economic and Social Research Institute, [Online] 7 April 2011. Available at: https://www.esri.ie/publications/the-changing-faces-of-ireland-exploring-the-lives-of-immigrant-and-ethnic-minority (accessed 28/09/2020).

De Smedt, F, Graham, S., Van Keer, H. (2019) *The bright and dark side of writing motivation: Effects of explicit instruction and peer assistance*, The Journal of Educational Research, 11(2), 152-167.

Department of Children and Youth Affairs. (2012) *Guidance for developing ethical research projects involving children*. Government Publications: Dublin.

Department of Children and Youth Affairs.(2017) Children First: *National Guidelines for the Protection and Welfare of Children*. Government Publications: Dublin.

Dias, M. and Brantley-Dias, L. (2017) Setting the Standard for Project-Based Learning: *A Proven Approach to Rigorous Classroom Instruction*. Interdisciplinary Journal of Problem-Based Learning, 11(2).

Dimova, Y. and Kamarska, K. (2015) *Rediscovering John Dewey's Model of Learning Through Reflective Inquiry*. Problems of Education in the 21st Century, 63(1), 29-39.

Dorling, H., Mwaanga, O. and Jones, M.A (2020) *Implementing Physically Active Teaching and Learning in Primary School Curricula in the United Kingdom*. International Journal of Primary, Elementary and Early Years Education, [Online] 14 August 2020. Available at: https://www.tandfonline.com/doi/full/10.1080/03004279.2020.1817968 (accessed 11/09/2020)

Duke, N.K. (2014) Inside Information: *Developing Powerful Readers and Writers of Informational Text Through Project-Based Instruction, K-5.* New York, Toronto, London, Auckland, Sydney, Mexico City, New Delhi, Hong Kong, Buenos Aires: Scholastic.

Duke, N.K., Halvorsen, A., Strachan, S.L, Kim, J., Konstantopoulos, S. (2018) *Putting PBL to the Test: The Impact of Project-Based Learning on Second-Grade Students' Social Studies and Literacy Learning and Motivation*, University of Michigan, Michigan State University, Western Washington University.

Efron, S. E. and Ravid, R. (2020) *Action Research in Education: A Practical Guide.* 2nd Edition. New York and London: The Guilford Press.

Etikan, I., Musa, S. A., Alkassim, R. S. (2016) Comparison of Convenience Sampling and Purposive Sampling. *American Journal of Theoretical and Applied Statistics*, 5(1), 1-4. [Online] January 2016. Available at: http://article.sciencepublishinggroup.com/html/10.11648.j.ajtas.20160501.11.html (accessed 11 August 2020).

Everette, M. (2015) *8 Essential Elements of Project Based Learning* [online] 11 March 2015. Available at: https://www.scholastic.com/teachers/blog-posts/meghan-everette/8-essential-elements-project-based-learning/ (accessed 16 April 2020).

Fenwick, T. (2011) Complexity Science and Professional learning for collaboration: A Critical Reconsideration of Possibilities and Limitations. *Journal of Education and Work*. 25(1), 141-162.

Furrer, C. and Skinner, E. (2003) Sense of Relatedness as a Factor in Children's Academic Engagement and Performance. *Journal of educational psychology*, *95*(1), 148.

Geyman, J.P. (2013) Why Do We Write?, *University of Washington School of Medicine*, 45(1), 40-41.

Ghaye, T. (2010) *Teaching and Learning Through Reflective Practice*: *A Practical Guide for Positive Action.* 2nd Edition. London, UK and New York, NY, USA: Routledge.

Glenn, M. Roche, M. McDonagh, C. Sullivan, B. (2017) *Learning Communities in Educational Partnerships: Action Research as Transformation*, London, UK and New York, NY, USA: Bloomsbury Publishing Plc.

Graham, S. and Herbert, M. (2011) Writing to Read: *A Meta-Analysis of the Impact of Writing and Writing Instruction on Reading.* 81(4), 710-745.

Gilakjani, A. P. (2012) Journal of Studies in Education: *Visual, Auditory, Kinaesthetic Learning Styles and Their Impacts on English Language Teaching.* 2(1), 104-113.

Graham, S., Gillespie, A., McKeown, D. (2012) Writing: Importance, Development, and Instruction. *Reading and Writing,* 26:1, 1-15.

Ham, V. and Kane, R. (2004) Finding a Way Through the Swamp: *A Case for Self-Study As Research.* 12(1) , 103-150.

Hanney, R. (2018) Doing, Being, Becoming: A Historical Appraisal of the Modalities of Project-Based Learning, *Teaching in Higher Education*, 23(6), 769-783.

Hiatt, K., Rooke, J. (2012) *Creativity and Writing Skills: Finding a Balance in the Primary Classroom.* 2nd ed. Routledge.

Kai Wah Chu, S., Kam Tse, S., Ka Yee Loh, E., Chow, K. (2011) Collaborative Inquiry Project-Based Learning: Effects on Reading Ability and Interests. *Library and Information Science Research,* 33(3) 236-243.

Katz, L. G. (2017) The Dispositions to Write and Read, *Early Childhood and Parenting (ECAP) Collaborative.*[Online] N.D. available at: http://ecap.crc.illinois.edu/pubs/projcat4/section1.html (accessed 28 September 2020).

Kirk, T. (2005) Enhancing Teaching and Learning Through Co-operative Learning, *Oideas 51*, spring.

Kirschner, P. A. (2017) Stop Propagating the Learning Styles Myth, *Journal of Computers and Education,* 106(1), 166-171.

Kokotsaki, D., Menzies, V. and Wiggns, A. (2016) Project-Based Learning: *A Review of the Literature.* 19(3), 267-277.

Krajcik, J.S. and Blumenfeld, P.C., (2006) *Project-Based Learning* In: The Cambridge Handbook of the Learning Sciences. (2006). R. Keith Sawyer (ed). Cambridge University Press Chapter 19.

Kurada, R. (2019) *A "Gold Standard" for Early Childhood PBL? A Town in Northern Italy Has It!*. [Online] 1 November 2019. Available at: https://www.pblworks.org/blog/gold-standard-early-childhood-pbl-town-northern-italy-has-it (accessed 8 July 2020).

Larmer, J. (2020) Gold Standard PBL: *Essential Project Design Elements* [Online] 23 July 2020. Available at: https://www.pblworks.org/blog/gold-standard-pbl-essential-project-design-elements (accessed 11 August 2020).

Larmer, J. and Mergendoller, J. (2010) Giving Students Meaningful Work: *Seven Essentials for Project-Based Learning.* 68(1), 34-37.[Online] 22 July 2020. Available at: http://www.ascd.org/publications/educational_leadership/sept10/vol68/num01/Seven_Essentials_for_Project-Based_Learning.aspx (accessed 11 August 2020).

Larmer, J. and Mergendoller, J. (2015) Why we changed our Model of the '8 Essential Elements of PBL, *Buck Institute for Education*. [Online] (N.D). Available at: https://my.pblworks.org/resource/blog/why_we_changed_our_model_of_the_8_essential_elements_of_pbl (accessed 11 August 2020).

Larmer, J., Mergendoller, J., Boss, S. (2015) *Setting the standard for project-based learning: A proven approach to rigorous classroom instruction.* Alexandria, VA: ASCD.

Lowry, P. B., Roberts, T. L., Romano, Jr. N. C., Cheney, P.D. (2006) The Impact of Group Size and Social Presence on Small-Group Communication, *Does Computer-Mediated Communication Make a Difference?.* Sage Publications. 37(6), 631-661.

Malmia, W, Makatita, S. H., Lisaholit, S., Azwan, A., Magfirah, I., Tinggapi, H., Umanailo, M. C. B. (2019) International Journal of Scientific and Technology*: Problem-Based Learning As An Effort To Improve Student Learning Outcomes*. 8(9), 1140-1143.

Mark, J.J, (2011) *Writing* [online] 28 April 2011.Available at: https://www.ancient.eu/writing/ (accessed on 25/11/2019).

Mellor, N. (2001) Messy Method: The Unfolding Story. *Educational Action Research.* 9(3), 465-484.

Mc Niff, J. (2014) *Writing and Doing Action Research.* London-UK, California-USA, New Delhi-India and Singapore: SAGE publications Ltd.

NCCA (1999) Primary School Curriculum: Introduction. Published by the stationary office. Department of Education and Science

NCCA, (2019) *Primary Language Curriculum: Curaclam Teanga na Bunsccoile* Department of Education and Skills

PDST (2014) The Writing Genre, *A Structured Approach to the Teaching and Learning of the Writing Genre* [e-book] Available at: https://www.pdst.ie/sites/default/files/PDST%20WRITING%20PROCESS.pdf (accessed 24 November 2019).

Postgate, N. (2005) New Angles on Early Writing: *The Invention of Cuneiform: Writing in Sumer,* by Jean-Jacques Glassner. Translated and edited by Zainab Bahrano and Marc van de Mieroop, 2003. Baltimore (MD). The John Hopkins University Press. The First Writing *Script Invention as History and Process.* Edited by Houston,S. D. (2004) Cambridge, Cambridge University Press.

PBLWorks Blog, What is PBL*?, Buck Institute for Education,* [online] (N.D). Available at: https://www.pblworks.org/what-is-pbl (accessed 25 November 2019).

Pratama, M.R.A, Dewi, M.K., Yuniawan, T. (2020) Teaching Procedural Texts: An Eco-Linguistics Perspective. *RETORIKA: Jurnal Ilmu Bahasa*, 6(1), 57-62.

Rossi, W. C., Reynolds, W. and Nelson, R. M. (2003) Child Assent and Parental Permission in Paediatric Research. *Theoretical Medicine Bioethics*, 24(1), 131-148.

Ryan, R. M. & Deci, E. L. (2000a) Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions, *Contemporary Educational Psychology*, 25(1), 54-67.

Ryan, R. M. & Deci, E. L. (2000b) Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being, *American Psychologist Association Inc.*, 55(1), 68-78.

Ryan, R. M. & Deci, E. L. (2010) Intrinsic Motivation, *The Corsini encyclopaedia of psychology, Wiley Online Library*. [Online] 30 January 2010. Available at: https://onlinelibrary.wiley.com/doi/abs/10.1002/9780470479216.corpsy0467 (accessed 30 November 2019).

Salsabila, V. A. (2018) The Implementation of Project-Based Learning in Teaching Writing of Procedural Text. *Journal of English Pedagogy, Linguistics, Literature and Teaching*, 6(1). [Online] July 2018. Available at: https://jurnal.unsur.ac.id/jeopallt/article/view/384/0 (accessed 28 November 2019).

Sansone, C. and Harackiewicz, J.M. (2000) *Intrinsic and Extrinsic Motivation: The Search for Optimal Motivation and Performance*, Academic Press.

Seban, D and Tavsanli, O.F. (2015) Children's Sense of Being a Writer: Identity Construction in Second Grade Writers Workshop. *International Electronic Journal of Elementary Education*, 7(2), 217-234.

Sullivan, B., Glenn, M., Roche, M. and McDonagh, C. (2016) Introduction to Critical Reflection and Action for Teacher Researchers. London: Routledge.

Smedley, S. & Hoskins, K. (2018) Finding a place for Froebel's theories: Early Years Practitioners' Understanding and Enactment of Learning Through Play, *Early Child Development and Care.* [Online] 27 September 2018. Available at: https://www.tandfonline.com/doi/abs/10.1080/03004430.2018.1525706?journalCode=gecd20 (accessed 14 November 2019).

Topping, K. (2005). Trends in Peer Learning. *Educational Psychology*, 25(6), 631-645.

Tresna, N., Rahmawati, E., Evenddy, S. S. (2020) The Influence of Genre Based Approach on Students' Procedural Writing Text Skills, *MAKNA: Journal Kajian Komunikasi dan Budaya*, 7(2).

Twinkl (2020). *Computing: Programming Toys Year 1 Home Learning Task*. [Online] (N.D). Available at: https://www.twinkl.ie/resource/tp-i-167-computing-programming-toys-year-1-home-learning-task (accessed 8 July 2020).

Vanassche, E. and Kelchtermans, G. (2015) The State of the Art in Self-Study of Teacher Education Practices*:* A Systematic Literature Review *Journal of Curriculum Studies.* Volume 47(4), 508-528.

Wallace, M.F.G. and Webb, A.W. (2016) In the Midst of a Shift: Undergraduate STEM Education and 'PBL' Enhancement. *Journal of College Science Teaching*. 46 (2), 47-55.

Wang, H.J., Huang, I.. and Hwang, G.T. (2016) Effects of a Question Prompt-based Concept Mapping Approach on Students' Learning Achievements, Attitudes and 5C Competences in Project-based Computer Course Activities *JSTOR*, 19(3), 351-364. [Online] Available at: https://www.jstor.org/stable/pdf/jeductechsoci.19.3.351.pdf (accessed 25 November 2019).

Whitehead, J. (2010) As an Educator and Educational Researcher, How Do I Improve What I Am Doing and Contribute to Educational Theories That Carry Hope for the Future of Humanity? i.e.: Inquiry in Education. *Liverpool Hope University.* 1(2), 1-15. [Online] (N.D). Available at: https://files.eric.ed.gov/fulltext/EJ1171792.pdf (accessed 14 July 2020).

Whitehead, J. (2018) Notes to support the keynote presentation to the 10th World Congress of the Action Learning Action Research Association on 'The Action Learning and Action Research Legacy for Transforming Social Change: Individuals, Professionals, and

Communities' Developments, Organizational Advancements, and Global Initiatives', 18 June 2018 in *Norwich University, Vermont, USA*. [Online] 18 June 2018. Available at: http://www.actionresearch.net/writings/jack/jwalarakeynote160618.pdf. (accessed 20 July 2020).

Xhomara, N. and Shkembi, F. (2020) Journal of Applied Technical and Educational Sciences jATES: *The influence of multiple intelligences on learning styles in teaching and learning.* 10(1), 19-48.

Appendices

Appendix 1: Data Templates

Appendix 1.1 My Reflection Journal

My Reflection Journal	
Date:	Lesson:
Reflections:	
Date: After discussion with whom? (if relevant) _____	
Further Reflection:	

Appendix 1.2 Observation Notes

Observation Notes		
Date:	Lesson:	Time:
Observation notes:		
Recommendations for future:		

Appendix 1.3 Checklist

Checklist			
Date: Lesson:			
Learning objectives: 1: 2: 3.			
Children's names:	Obj. 1	Obj. 2	Obj. 3
A			
B			
C			
Teachers notes/ reflections:			

Appendix 2: Letters of Consent

Appendix 2.1 Letter to principal

Maynooth University Froebel Department of Primary and Early Childhood Education

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

Dear Principal,

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 on me and whether implementing Project-Based Learning leads to an improved engagement in the writing process.

In order to do this, I intend to carry out research in the classroom by exploring writing for a real audience and for a real purpose. I hope that this will engage the children in the writing process and encourage intrinsic motivation.

The data will be collected using observations, minutes of meetings, surveys, questionnaires, feedback forms, student grades, photocopies of their work, a daily teacher journal and the pupils test scores. The children will be asked their opinions through discussing how they engaged with the writing process and choosing what they would like to write in detail about. They will be asked how these lessons were different to what they usually do and what they would change.

The child's name and the name of the school will not be included in the thesis that I will write at the end of the research. All children 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. The correct guidelines will be complied with when carrying out this research. The research will not be carried out until approval is granted by the Froebel Department of Primary and Early Childhood Education.

If you have any queries on any part of this research project, feel free to contact me by email at MARIA.QUINN.2020@mumail.ie

Yours faithfully,

Maria Quinn

_____

……..……

CONSENT FORM

I have read the information provided in the attached letter and all of my questions have been answered. I agree for Maria Quinn to complete her action research study within the school.

Signature_____

Date: _____

Appendix 2.2 Letter to Board of Management

Maynooth University Froebel Department of Primary and Early Childhood Education

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

Dear Board of Management,

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 on me and whether implementing Project-Based Learning leads to an improved engagement in the writing process.

In order to do this, I intend to carry out research in the classroom by exploring writing for a real audience and for a real purpose. I hope that this will engage the children in the writing process and encourage intrinsic motivation.

The data will be collected using observations, minutes of meetings, surveys, questionnaires, feedback forms, student grades, photocopies of their work, a daily teacher journal and the pupils test scores. The children will be asked their opinions through discussing how they engaged with the writing process and choosing what they would like to write in detail about. They will be asked how these lessons were different to what they usually do and what they would change.

The child's name and the name of the school will not be included in the thesis that I will write at the end of the research. All children 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. The correct guidelines will be complied with when carrying out this research. The research will not be carried out until approval is granted by the Froebel Department of Primary and Early Childhood Education.

If you have any queries on any part of this research project, feel free to contact me by email at MARIA.QUINN.2020@mumail.ie

Yours faithfully,

Maria Quinn

_____

……..……

CONSENT FORM

I have read the information provided in the attached letter and all of my questions have been answered. I agree for Maria Quinn to complete her action research study within the school.

Signature_____

Date: _____

Appendix 2.3 Letters seeking consent from 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 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 implementing Gold Standard Project-Based Learning to improve vocabulary and engagement in the writing process. The focus of this study is myself and my own practice as a teacher.

In order to do this, I intend to carry out research in the classroom by exploring writing for a real audience and for a real purpose. I hope that this will engage the children in the writing process and encourage intrinsic motivation.

The data will be collected using observations, minutes of meetings, surveys, questionnaires, feedback forms, student grades, photocopies of their work, a daily teacher journal and the pupils test scores. The children will be asked their opinions through discussing how they engaged with the writing process and choosing what they would like to write in detail about. They will be asked how these lessons were different to what they usually do and what they would change.

The child's name and the name of the school will not be included in the thesis that I will 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. The correct guidelines will be complied with when carrying out this research. The research will not be carried out until approval is granted by the Froebel Department of Primary and Early Childhood Education.

I would like to invite you and your child to give permission for 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 MARIA.QUINN.2020@mumail.ie

Yours faithfully,

Maria Quinn

……

Maria Quinn 19251998

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 and all of my questions have been answered. I voluntarily agree to the participation of my child in this study. I am aware that I will receive a copy of this consent form for my information.

Parent / Guardian Signature_____

Parent / Guardian Signature_____

Date: _____

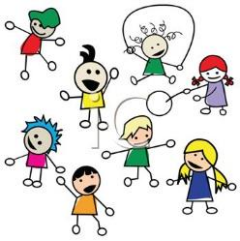
Name of Child _____

Child's signature: _____

Date: _____

Appendix 2.4 Letter seeking Child's assent

Maynooth University
National University of Ireland Maynooth



Child's name …….

I am trying to find out what children like to write about and how they like to do this in primary school. I would like to find out more about this. I would like to watch you and listen to you when you are in school and to write down some notes about you. I would like to look at your writing and keep some of your work.

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 the form that I have sent home?

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

Thank you

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: _____

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 will 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: Maria Quinn

Date: 21/11/2019

Appendix 2.5 Letter to critical friend and validation group

Maynooth University Froebel Department of Primary and Early Childhood Education

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

Dear critical friend/ validation group,

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 Project-Based Learning and whether this leads to an improved engagement in the writing process.

In order to do this, I intend to carry out research in the classroom by exploring Gold Standard Project-Based Learning and writing for a real audience and for a real purpose. I hope that this will engage the children in the writing process and encourage intrinsic motivation.

The data collected during our meeting minutes will be strictly confidential and will only be used for the purpose of this action research study and for educational purposes only.

Your name and the name of the school will not be included in the thesis that I will write at the end of the research. All participants are 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. The correct guidelines will be complied with when carrying out this research. The research will not be carried out until approval is granted by the Froebel Department of Primary and Early Childhood Education.

If you have any queries on any part of this research project, feel free to contact me by email at MARIA.QUINN.2020@mumail.ie

Yours faithfully,

Maria Quinn

_____

……..……

CONSENT FORM

I have read the information provided in the attached letter and all of my questions have been answered. I agree for Maria Quinn to complete her action research study within the school.

Signature_____

Date: _____

Appendix Three: List of Pseudo Names

1. Rachael
2. Alva
3. Anna
4. Louise
5. Leah
6. Bella
7. Ciara
8. Audrey
9. Mona
10. Sarah
11. Naomi
12. Lara
13. Margaret
14. Maura
15. Amy
16. Zara
17. Rebecca
18. Paula
19. Fiona

Appendix Four: Intervention Samples

Appendix 4.1: A bee-bot

Plate 1: A Bee-Bot

Source: Quinn, M (2020)

Appendix 4.2: A bee-bot with a pencil holder

Plate 2: A Bee-Bot

Source: Quinn, M (2020)

Appendix 4.3 Overview of intervention

Week 1	Week 2	Week 3	Week 4	Week 5
English: English – familiarisation of procedures	English – Analysing of procedures	English – Modelled & shared writing	English – Guided writing in pairs & groups	English – Writing up presentation Independently
English: English – familiarisation of procedures	English – Analysing of procedures	English – Modelled & shared writing	English – Guided writing in pairs & groups	English – Writing up presentation Independently
SPHE – Group work (Rules)	SPHE – Group work (Games)	SPHE – Group work (Art)	SPHE – Group work (Express opinions, Emotions & resolve Conflict)	SPHE – Group work (Roles)
STEM/ SESE/ Maths Familiarisation of Bee-Bots – sustained inquiry	Maths Authenticity – thinking of audience and problem	STEM/ SESE/ Maths Student voice & choice - Choosing their mat	STEM/ SESE/ Maths Reflection – reflect on group procedures	STEM/ SESE Final critique & revision – final write up for presentation
STEM/ SESE/ Maths Familiarisation of Bee-Bots – sustained inquiry	Maths Authenticity – thinking of audience and problem	STEM/ SESE/ Maths Student voice & choice - Choosing their mat	STEM/ SESE/ Maths Reflection – reflect on group procedures	Presentation to a real audience

	English lessons following PDST (2014) guidelines
	SPHE lessons exploring group work and co-operation skills
	Gold Standard PBL elements (Larmer et al., 2015)

Appendix 4.4 Ordering Instructions (Twinkl, 2020).

Ordering Instructions

You have been learning about algorithms. They are a set of instructions used to tell a computer program what to do.

Can you order the instructions for building this tower to show which order they should go in? If you have bricks at home, you could try it.

	Stick a yellow brick on top of the red brick.
	Stick a toy man on top.
	Start with a red brick.
	Repeat the pattern again and stick it on top.
	Stick a blue brick on top.
	Stick on another brick of the same colour.

What happens if you change the order? Do you think you would still be able to build the tower? Can you explain why you think this?

Challenge

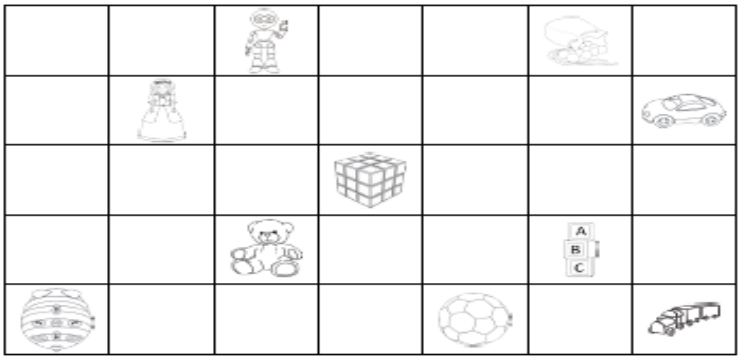
Can you think of a way to make these instructions clearer? What else could you include?

Appendix 4.5 Using Symbols in Algorithms (Twinkl, 2020)

Using Symbols in Algorithms

Your Bee-Bot wants to play with its favourite toy. Can you choose which toy it will play with then draw arrow symbols to show how it could get there?

You are not allowed to go over any other toys!



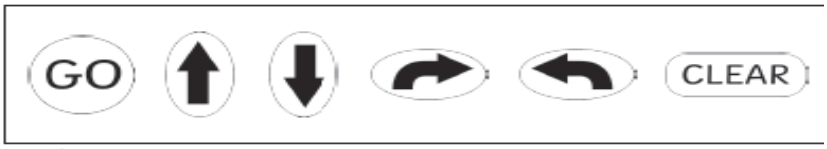
My Bee-Bot is going to play with the_____.

These are the instructions I would use:

_____

_____

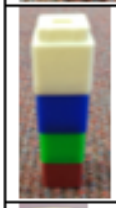
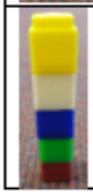
_____



Appendix 4.6 A bee-bot farm mat

Appendix 4.7 A bee-bot alphabet mat

Appendix 4.8 – Modelled writing procedure template

Appendix 4.9 Group procedure template with headings

Title: _____	
Equipment: _____ _____ _____ _____ _____ _____	
Steps:	
1. _____ _____ _____ _____	
2._____ _____ _____ _____	
3._____ _____ _____ _____	
4._____ _____ _____ _____	
5._____ _____ _____ _____	
6._____ _____ _____ _____	
7._____ _____ _____ _____	

Appendix 4.10 Procedure template without numbers

Bee-Bot Directions:	
Written Instructions:	Picture Instructions:

Appendix 4.11 Procedure template without headings