LITERACY FOR LEARNING AND LIFE:

An evaluation of the potential of the reading management programme AcceleratedReader to improve the literacy standards of Irish post-primary students

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Thesis submitted for the Degree of Doctor of Philosophy

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DECLARATION

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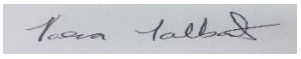
Signed:  ID No: 55651859

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List of Abbreviations

AR	Accelerated Reader
BRELED	Bachelor of Religious Education
DES	Department of Education and Skills
SSE	School Self-Evaluation
PISA	Programme for International Student Assessment
UNESCO	United Nations Educational Scientific and Cultural Organisation
PDST	Professional Development Service for Teachers
DEIS	Delivering Equality of Opportunity in Schools
NCCA	National Council for Curriculum and Assessment
IALS	International Adult Literacy Survey
NAMER	National Assessment of English Reading and Mathematics
PIAAC	Programme for the International Assessment of Adult Competencies
CSO	Central Statistics Office
PIRLS	Progress in International Reading Literacy
OECD	Organisation for Economic Co-operation and Development
ERC	Educational Research Centre
NDP	National Development Plan
ZPD	Zone of Proximal Development
STAR	Standardized Testing and Reporting
TOPS	The Opportunity to Praise Report
QUAN	Quantitative
QUAL	Qualitative
IRA	International Reading Association

ABSTRACT

Tara Talbot

Literacy for Learning and Life:

An evaluation of the potential of one online reading management programme to improve the literacy standards of Irish Post-Primary students

Improving the literacy standards of Irish post-primary students has been at the forefront of educational discourse in Ireland over the past decade. This research argues that educators must evaluate and assess the programmes and methods that they use to improve literacy standards. Educators must also evaluate and assess learner experience. Student voice is at the centre of this research, it is the voice of students that informs this research

This research provides an evaluation of the reading management programme Accelerated Reader (AR). AR claims to improve students' reading ages and motivate students to read. A Mixed Methods design was employed to answer the research question, Is AR an effective means of improving the literacy standards of Irish post-primary students? This research was populated by two co- educational post-primary schools. One school, (Experiment Group) engaged fully with the AR program. The second school, (Control Group) did not engage with AR. Both groups took part in a 35 mins supervised reading class each week. This resulted in AR being the variable in the research. Pre and post surveys determined the students' attitude towards reading and their reading habits. Pre and post reading-age tests determined if there was any fluctuation in students' reading ages. Some students from the research population were also interviewed to analyse whether AR motivated students to read.

In conclusion, this research makes a clear distinction between reading ages and literacy standards. This research acknowledges AR's ability to increase a student's reading age and function as a reading management tool. However, the research concludes that reading ages alone are not the summation of a student's literacy standards and that a teacher is the best equipped to engage students in meaningful literacy instruction that motivates and encourages reading for pleasure with the intention of encouraging lifelong readers. The conclusion of this thesis draws together the themes of this research namely, readings gains, assessment, lifelong reading, motivation and gender to provide insight into pragmatic approaches thatcan be implemented by Irish post-primary schools to support literacy instruction.

Conference Presentations

Talbot, T. 2018. LITERACY FOR LEARNING AND LIFE: An evaluation of the potential of one online reading management programme to improve the literacy standards of Irish Post-Primary students and create lifelong learners. *Values and Purpose in Education,* ESAI 41st Annual Conference, University College Dublin, Ireland 6th April

Talbot, T. 2018. A Pragmatic Approach to Improving the Literacy Standards of Irish Post-Primary Students: An evaluation of the reading management programme Accelerated Reader and its potential to improve the literacy standards of Irish Post-Primary students. *Research Contributing To Society,* Irish Postgraduate Research Conference, DCU, Dublin, Ireland 8th November.

INTRODUCTION

Introduction

This research is a pragmatic evaluation of Accelerated Reader (AR) as a reading management programme. It seeks to evaluate the effectiveness of AR as a means of improving the literacy standards of Irish post-primary students. This chapter introduces the research topic. It provides the professional context for the researcher. It presents a justification for the current study, describes the aim and objectives of the researchand sets out the plan for the thesis.

Overview of Research Topic

The overall aim of this research is to evaluate the effectiveness of AR as a means of improving the literacy standards of Irish post-primary students. Embedded in this aim are two research questions. Firstly, does AR increase student reading ages? Secondly, does AR increase students' motivation to read or cause a change in attitude towards reading?

In recent years, there has been renewed interest in literacy education. Further to the review of the literature, the Department of Education and Skills (DES) in the report *The National Strategy to Improve Literacy and Numeracy Among Children and Young People 2011- 2020* identified literacy development as an immediate and urgent matter for the Irisheducation system. "Developing good literacy and numeracy skills among all young people is fundamental to the life chances of each individual and essential to the quality and equity of Irish society" (Department of Education and Skills 2011, p.9). Given the immediacy of this issue substantial research needs to be conducted to determine the best possible way of tackling the growing concerns regarding literacy levels in the Irish context.

The uniqueness of this research is three-fold. Firstly, it is a scholarly critique of the reading management programme AR and its ability to improve reading standards. Secondly, grounded in the Irish context, the research aims to evaluate the effectiveness of AR with the purpose of discovering pragmatic ways of improving the literacy standards of Irish post-primary students. Thirdly, as a student-centred piece of research it is unique. This study seeks out the voice of students to gain insight into their experience of literacy instruction inIrish post-primary schools. In the approach taken, this research seeks to give voice to the opinions of Irish post-primary students about their literacy development journey and experiences in the Irish context.

Professional Context

The researcher is a post-primary English and Religious Education teacher in full time employment since 2009. This role as a post-primary English teacher has provided the researcher with first-hand experience and anecdotal evidence of the literacy difficulties that first year students experience. Through informal conversations with students over the years the researcher noted the decline in her students' interest in reading as they progressed through school. The researcher's teaching career began at a time when literacy was at the forefront of educational conversation, practice and policy with the release of *The National Strategy to Improve Literacy and Numeracy among Children and Young People 2011- 2020*. The researcher is also an Assistant Principal II post holder in her school since 2018 with the duty of co-ordinating and managing School Self-Evaluation (SSE). The researcher'srole as SSE co-ordinator has provided data that supports her anecdotal experiences and observations about students' literacy developments and reading motivation. It has also afforded the researcher the opportunity to use her research skills in a practical way to bring about real change in her place of work. It is important to note that the data used in this studyis independent from the SSE work that the researcher carries out in her employment. The data collected for SSE purposes by the researcher within her school context was not analysedor used to inform his research. Similarly, the data obtained and analysed during this research process was not used to inform SSE initiatives in the researcher's workplace. The work of the researcher within her SSE context simply confirmed her anecdotal observations about student's decline in reading motivation.

In one school in which the researcher worked, she encountered the reading management programme, AR. This school will be referred to in this thesis as the Experiment Group. First year students from this school form part of the research population of this research. In this co-educational school, AR was the chosen method of literacy instruction used by theschool to improve the reading levels of the students that attended. Through her use of the programme over a four year period as an English teacher in the school, the researcher began to reflect and ask questions about the effectiveness of this programme to deliver a quality literacy education to Irish post-primary students. The researcher became more and more interested in the impact and effect this reading management programme was having on the students' literacy standards.

Researcher's Philosophy of Education

The researcher's approach to education is practical and pragmatic. For a strategy or programme to be deemed effective by the researcher it must enhance teaching and learning. The researcher is a teacher first and foremost and for this reason has a strong student-centred approach to education. This student-centred, practical approach to teaching is informed by educational theory. This student-centred approach to teaching was first embraced by the researcher in her Masters' thesis when she used empirical research to explore the work of Maria Harris. The researcher used Maria Harris' theories on the role of the teacher in the classroom to create practical lessons that had students at the centre. The researcher has a keen interest in identifying practical measures that can make a change and improve literacy instruction for all students. From observations of literacy instruction, the researcher feels that the most effective place to begin to bring about change for students is during their first year in post-primary school. The researcher is interested in practical strategies that can maintain a student's interest in reading and build on the lived experience of literacy from primary school. In keeping with the facilitation theory of Carl Rogers and educational theorist Maria Harris, the researcher strongly supports the notion that the teacher is a facilitator in the classroom. The teacher's role is to guide and facilitate the learning process. In keeping with Rogers' theory, the researcher sees the teacher as the key role in the process of learning. The teacher does not, however, hold all the answers or act as a textbook transmitting content. The facilitative teacher creates the environment that brings the individual student and groups of students to learning moments. In other words, the teacher facilitates the interaction between the learner and the content. This theory is best explained in the words of Carl Rogers, "We cannot teach another person directly; we can only facilitate his learning" (Rogers 1961).

Facilitative theory acknowledges and embraces the dual aspect of the teacher-student relationship involved in the process of learning. The teacher is not solely responsible for learning to occur. The student has a pivotal role. The teacher can facilitate the learning and create a suitable environment for learning together with accessible material to learn from, but the student must be willing and have the motivation to engage in the facilitated process, in order for learning to occur. This brings to the fore another key and related element of the researcher's philosophy of education. The researcher believes that students must be listened to in order for a teacher to successfully facilitate learning. For successful facilitation of the learning process, students must have a voice and an opinion on the activities, pace and content of the learning process. In light of the researcher's philosophy of education any

strategy or programme used by a school or a teacher to aid literacy instruction must facilitate students to learn by listening tothem. It must also make practical contributions to their literacy development.

Aim and Objectives of Research Study

Aim

The overall aim of this research is to evaluate the effectiveness of AcceleratedReader (AR) as a means of improving the literacy standards of Irish post-primary schools.

Objectives

1. To examine the extent to which the implementation of AR can increase the reading-ageof a student.
2. To examine AR's ability to motivate students to read.

Methodology and Data Collection

This research adopts a Mixed Methods methodology along with a pragmatic philosophy to evaluate the effectiveness of AR as a means of improving the literacy standards of Irish post-primary students. The student centred multi-phased mixed methods design employed in this research enabled the researcher to combine the quantitative reading-age data with the qualitative voice of the student to better understand the lived experience of literacy education in Ireland for first year students.

Chapter Organisation

This thesis is divided into six chapters, Context, Literature Review, Methodology, Findings, Discussion, and Conclusion and Recommendations. Each chapter has its own uniquepurpose as outlined below.

Chapter 1 Context

This chapter firstly, contextualises the research study and defines the term literacy while exploring what it means to have reading fluency. Secondly, the chapter focuses on how ICT has impacted the evolving definition of literacy in the twenty-first century. Thirdly, the chapter provides an overview of the position of Irish literacy policy and practice in the broader context of European and international developments. Fourthly, this chapter introduces AR as a reading management programme. It goes on to provide an overview of how teachers and students use the programme. Finally, the chapter, positions the research problem within its practical and theoretical contexts, offers a justification for the research

and describes the aim and objectives of the study.

Chapter 2 Literature Review

This chapter reviews the extant literature around literacy, digital literacy and technology aimed at enhancing literacy education. This Literature Review chapter provides an academic context for the research. In providing this academic context, it focuses on the literature relevant to the effectiveness of AR as a reading management programme. Firstly, it explores the developer-sponsored research conducted on AR. Secondly, this chapter focuses on the key themes that emerged from the literature review conducted with the use of NVivo. The review of the literature also identifies gaps in the scholarship and identifies the need for this research.

Chapter 3 Methodology

This chapter deals specifically with the Mixed Methods methodological framework that underpins the research design. This chapter outlines and justifies the use of Mixed Methods methodology. It describes the methods of data collection and analysis used in the research design together with a presentation of the researcher's pragmatic philosophical, epistemological, and ontological underpinnings of this research. This Methodology chapter also considers the limitations of a Mixed Methods approach. This chapter also addresses the methodological and ethical challenges of the research regarding the work of an insider researcher.

Chapter 4 Findings

This chapter provides a detailed presentation of the findings of this research. Firstly, it outlines the findings from the quantitative reading-age data. Secondly, the chapter presents the findings from the student surveys. Thirdly, the chapter presents the findings from the qualitative student interviews. Finally, it concludes by putting forward the integrated qualitative and quantitative data sets to present the overall findings on the effectiveness of AR as a means of improving the literacy standards of Irish post-primary students.

Chapter 5 Discussion

This chapter presents a thematic discussion of the themes, Reading Gains, Assessment, Motivation, Lifelong Reading, and Gender that emerged from the review of the literature and the analysis of the data. This chapter connects the findings of this research with previous

research that was presented in the literature review to outline how this research contributes to knowledge in the field of literacy instruction. This thematic discussion provides insight into how the findings of this research advance the dialogue about literacy instruction in Ireland with a particular focus on the role of AR. This chapter discusses the positives and negatives associated with using AR as found in this research.

Chapter 6 Conclusion and Recommendation

This Conclusion and Recommendation chapter presents the researcher's contribution to new knowledge. This chapter draws together the themes of the study to provide insight into pragmatic approaches that can be implemented to support literacy instruction in Irish post-primary schools. This chapter provides the overall summary of the research with the implications of the findings for future literacy instruction in Irish post-primary schools. This chapter acknowledges the strengths and limitations of the research and concludes by making recommendations for future research.

Summary

This introductory chapter has presented the researcher and the research problem by providing an overview of the topic within a practical and theoretical context. It has offered a justification for the research, described the research aim and objectives, and provided a plan of the thesis. The next chapter, 'Context' provides a more in-depth, contextual background of literacy, reading fluency and the impact of ICT developments on the evolving definition of literacy. The following chapter provides an overview of the position of Irish literacy policy and practice in the broader context of European and international developments. The Context chapter also introduces and outlines the workings and practicalities of the reading management programme AR

Chapter 1

Context

Introduction

This chapter contextualises the research study. It defines literacy and explores what it means to have reading fluency. It seeks to give an overview of the impact that ICT developments have had on literacy and the definition of being literate in the twenty-first century. This chapter also provides an overview of the position of Irish literacy policy and practice in the broader context of European and international developments. It describes the location and background of the research topic and contextualises Accelerated Reader as a reading management program. This chapter also identifies the procedure for the implementation of AR and its use to date in the Irish post-primary context including the financial impact of the program on a school.

Definition of Literacy

There are many definitions of literacy and being literate. How literacy is defined affects classroom instruction, policy making and government resourcing. Definitions of literacy are constantly evolving as is the case with most terms in the English language. This section attempts to map the changing landscape of the definition of literacy and establish what being literate means in the Irish context for twenty-first century teachers and learners.

In 1957 the United Nations Educational Scientific and Cultural Organisation (UNESCO) defined a literate person as someone "… who can with understanding both read and write a short simple statement on his (her) everyday life" (*International Literacy Statistics: A Review Of Concepts, Methodology And Current Data.* 2008). This definition of literacy puts the individual at the centre. In this context being literate means being able to communicate a simple statement about the individual's own life. Over sixty years on, this definition of being literate is far too narrow for the twenty-first century individual. The *Programme for International Student Assessment* (PISA) provides an innovative concept of "literacy", which refers to students' capacity to apply knowledge and skills in key subjects and to analyse, reason and communicate effectively as they identify, interpret and solve problems in a variety of situations (*PISA 2012 Results: What Students Know and Can Do Student Performance in Mathematics, Reading and Science Volume I,* 2014). This definition moves literacy away from the idea of being able to communicate about one's self and towards the skills of being able to problem solve through analysis and reasoning. PISA also defines

reading literacy as understanding, using, reflecting on and engaging with written texts in order to achieve one's goals to develop one's knowledge and potential, and to participate in society (*PISA 2012 Results: What Students Know and Can Do Student Performance in Mathematics, Reading and Science Volume I,* 2014). This definition of literacy highlights that being literate is the key to being able to participate in society. Therefore, if a person is not literate then it follows that their ability to participate in society is limited. As Kieran Egan (2006) advocates when he likens literacy to a work horse. He states, "literacy and its associated cognitive tools, is one of the great workhorses of our culture, and it can greatly enrich the lives of those who learn to use it well" (Egan 2006). In a similar vein the key policy document on tackling educational disadvantage in schools, *Delivering Equality of Opportunity in Schools* (DEIS) defines literacy as "integration of reading and writing, listening, speaking and mathematics for everyday life, for communication and learning to learn" (*DEIS An Action Plan for Educational Inclusion,* 2005). Eithne Kennedy (2015) in her article 'Literacy Policy in Ireland' expands on this understanding and proposes that a broad societal view of literacy is necessary. She along with others in an NCCA research report recognise the need to identify literacy definitions across the life span of an individual and argues that "research highlights the importance of espousing a broad vision of literacy including print, multimodal and digital and one which encompasses the cognitive, affective, socio-cultural, cultural-historical, creative and aesthetic dimensions of literacy which develop across the lifespan of the individual" (Kennedy, Dunphy, Dwyer, Hayes, McPhilips, Marsh, O'Connor, Shiel 2012, p.44). In the words of Alexander (1997), literacy definitions should be considered from "womb to tomb". "A lifespan developmental perspective would not stop in the early years or attend only to those who have yet to acquire the most basic skills or processes. Rather, it would consider reading from womb to tomb; that is, for all populations and for all phases of reading growth" (Alexander 1997, p.5).

In keeping with this broad societal view of literacy that spans the lifetime of an individual, in, 2010 the Department of Education and Skills issued a report that combines the key factors of the above-mentioned definitions of literacy. The report views literacy as affecting the individual and society as a whole. According to the Department of Education and Skills in *Literacy and Numeracy For Learning and Life, The National Strategy to Improve Literacy and Numeracy among Children and Young People 2011-2020,* literacy is defined as "the capacity to read, understand and critically appreciate various forms of communication including spoken language, printed text, broadcast media, and digital media" (Department of Education and Skills 2011). This modern definition of literacy inclusive of digital literacy has

a much greater impact on teaching instruction than merely teaching a student to read and write or indeed teaching them to be able to make a simple statement about themselves and their everyday life. According to the definition outlined bythe DES in the 2010 report and in keeping with the societal view of literacy as defined by DEIS, literacy is the key to the success of a society. The strategy underscores the importanceof a quality literacy education when it states, "world class literacy and numeracy skills willbe essential for the rebuilding of our economic prosperity and ensuring the wellbeing of our society" (*Literacy and Numeracy for Learning and Life: The National Strategy to Improve Literacy and Numeracy Among Children and Young People 2011-2020,* 2011). (Department of Education and Skills 2011).

Following on from the *National Strategy to Improve Literacy and Numeracy Among Children and Young People*, the most up-to-date definition of literacy is provided by the *National Framework of Junior Cycle* as outlined by the National Council for Curriculum and Assessment (NCCA). The *National Framework for Junior Cycle* identifies eight key skills for post-primary Junior Cycle students. Being literate is at the core of this framework and is identified as one of the key skills. According to the framework being literate includes:

- Developing understanding and enjoyment of words and language
- Reading for enjoyment and with critical understanding
- Writing for different purposes
- Expressing ideas clearly and accurately
- Developing spoken language
- Exploring and creating a variety of texts, including multimodal texts (National Council for Curriculum and Assessment, 2019)

This definition of literacy clarifies the meaning of being literate in modern Ireland. It makes explicit the need for literate individuals to be critical, to have understanding, to be creative, to be able to express ideas and to enjoy language and literature in all its forms. In light of this definition, it is vital that the literacy instruction and experiences of Irish students is of the highest quality, the wellbeing and prosperity of society depends on it. From this evolving definition of literacy, it is clear that in recent times as a result of technological developments and the demands in education, literacy is a much more encompassing term.

The Impact of ICT on the Definition of Literacy

ICT has had a major impact on the definition of literacy and what it means to be literate in the twenty-first century. In today's world it is almost impossible to avoid interaction with technology. With the increased use of computers and the internet through laptops, tablets, smart phones and devices, the way in which people read and comprehend has changed. "Digital interactions can potentially redefine the nature of literacy and what constitutes being literate in an ever-changing world" Leu, Kinzer, Coiro, C, & Henry (2013 cited in Dwyer & Larson, 2015.) Being digitally literate has added a new dimension to what it means to be literate. Twenty-first century students need to be equipped with the literacy skills to read and comprehend online and digital texts as well as print texts. Given the prevalence of digital media, including the internet, in our daily lives, it is essential that our definition of literacy encompasses ICT. "The increasing prevalence of digital media in our daily lives has led to calls in the literature for a re-conceptualisation and expansion not only of a definition of literacy but also of what it means to be literate in the twenty-first century" (Flood and Lapp, 1995; Reinking, 1998) cited in (Kennedy, Dunphy *et al.* 2012, p.40).

The DES acknowledge the impact of ICT on literacy development and outlines the positive impact that the integration of ICT can have on the literacy and numeracy developments of a student. The DES states that ICT can "enable students to learn in new and exciting ways, encouraging their engagement and making communication easier" (Department of Education and Science,2005). Not only does ICT, according to the DES, improve the communication skills of students and increase their engagement, it also in turn reduces the risk of students leaving education at an early age. "ICT in education can allow students at risk of early school leaving to connect with learning in new ways, resulting in improved motivation, attendance and application across subject areas" (Department of Education and Science, 2005).

There are a wide variety of tools, apps and digital supports available for students and teachers aimed at increasing student motivation to read and navigate digital texts. Dwyer and Larson observe that there are a wide variety of multimodal supports available to students, from note taking tools to digital dictionaries, ebooks and more. All of these supports for readers are available to students as Dwyer and Larson state "at the click of a button". These multimodal tools allow the reader to "annotate, modify and respond to the text in new and creative ways" (Dwyer, Larson 2014). However, despite the wide variety of digital tools and apps available to enhance literacy education, the DES states that there is "…a limited integration of ICT in

classrooms" (Department of Education and Science, 2008). According to the DES, only 18% of the 311 lessons observed by inspectors involved an ICT-related activity at post-primary level. The majority of these ICT-related activities involved the teacher using a computer and data projector to present content to the students. The document goes on to say that students themselves had very limited interaction with technology. "Students interaction with the technology was observed in only about a quarter of these instances" (Department of Education and Science 2008). The DES recommends that teachers need to use ICT to its full potential to fully develop a wide range of skills in their students. These skills according to the DES should include, research, investigation, writing, presentation, communication, team and collaborative, problem solving, analysis and evaluation skills (Department of Education and Science 2008). The need to maximise the use of ICT and to develop new skills in students is also voiced by Leu *et al*., 2004 cited in (Dwyer 2010, p.18), when they state that "newskills, strategies and dispositions are required to fully exploit the internet's potential for reading, writing and communication". According to the research explored so far, ICT certainly has the potential to positively impact the literacy development of twenty-first century students. It is also clear that there is a need to implement ICT in the twenty-first century classroom in order to actualise its full potential as a means of enhancing the literacy instruction and experience of students.

Every school has developed and progressed their engagement with technology at a different pace. In some schools each student has their own device that they use to access textbooks, ebooks and educational apps on a daily basis, while in other schools students have access to computer rooms when they are scheduled to use them by their class teacher for specific purposes. The advance in technology and use of ICT in schools has brought about a change in other school resources such as textbooks. Textbooks have also changed drastically over the last twenty years. "Twenty years ago, every school textbook went through a dozen stages of editing and adoption before it came into the classroom" (Harrison, Dwyer *et al*. 2014, p.12) Nowadays, in some schools, textbooks are becoming obsolete and teachers are creating digital content themselves for students or encouraging students to use the internet to research and discover content. This type of learning and use of ICT requires a student to have the necessary literacy skills to navigate the vast amounts of information available to them. (Harrison, Dwyer *et al*. 2014) identify and draw attention to the new reality of literacy education using online material. They state that students are relying more on internet sources than textbooks for information in many economically advantaged nations. They warn that this type of learning can cause problems for students if they do not have the skills necessary

to navigate electronic reading material. As Harrison, Dwyer *et al*. (2014) state, "textbooks have the authority of established authors and publishers behind them, anyone can publish on the Internet. In this brave new postmodern world, students, and especially younger learners, can be at serious risk [...]". In light of this, it is clear that the definition of literacy and the literacy skill set that is needed by a twenty-first century student has evolved since the 1957 UNESCO definition of literacy as being able to read and write a short simple sentence about oneself and everyday life. This advancement of ICT in education calls for a redefining of what it means to be literate. A literate student in the twenty-first century needs to be able to read for content and be able to discern the author's motivation for writing and publishing a text. The modern student needs to be able to evaluate the accuracy and reliability of their sources as well as comprehend the material within the source itself. In light of these technological advancements, it is clear that, a twenty-first century definition of literacy needs to encompassa broad, societal view of literacy that develops and grows with the individual enabling the individual to engage with, have comprehension of and compose texts for a variety of purposes using both digital and print formats.

The Researcher's Definition of Literacy

The researcher's definition of literacy has been informed by, *The National Strategy to Improve Literacy and Numeracy for Learning and Life* and the *National Framework for Junior Cycle,* the increased use and need for students to engage with digital texts and indeed the researchers own classroom observations as a teacher of English. The researcher defines literacy as an essential life skill that when nurtured evolves and grows with the individual to meet their needs at each stage of their life. According to the researcher, and in keeping with the understandings of literacy as outlined above by Kennedy, Dunphy, Dwyer, Hayes, McPhilips, Marsh, O'Connor, Shiel (2012) and Alexander (1997) literacy is a skill that when nurtured grows with the individual and enables that individual to interact and engage with the ever-changing society and world around them. ICT is the latest change in twenty- first century society that our literacy skills need to evolve and develop with. We do not knowwhat the next change will be. We do know, however, that if literacy skills are nurtured, encouraged and fostered then individuals will be able to encounter and progress with whatever changes come their way. A twenty-first century literate individual must be able tonavigate, comprehend and create both print and digital texts across a variety of platforms.

The National Strategy to Improve Literacy and Numeracy for Learning and Life together with the *National Framework for Junior Cycle* best defines what it means to be literate in

the twenty-first century. For the society we live in and the pace at which it moves, it is not enough for literate individuals to be only able to make a simple statement about their own context and daily lives as was deemed sufficient in 1957 by the UNESCO. With the surge in digital media and the vast amounts of information available, individuals need to be literate. Egan and Gajdamaschko (2003) articulate the benefits of encouraging a student to develop the cognitive tools of literacy regardless of the platform. “The complex nature of the cognitive tools of literacy, if introduced properly in teaching, encourages not only development of logical operations but development of imaginations, self-regulation emotions and an awareness of the child’s own thinking.” (Egan & Gajdamaschko 2003, p.9). Students need to be able to read, write and speak in a creative way with a critical and analytical lens across a variety of platforms. It is only when an individual achieves this that they can be deemed as being literate. Only then will an individual be able to participate fully and embrace a twenty first century society. It is widely accepted since the establishment of the Experimental World Literacy Program 1966 that literacy is a fundamental human right (*International Literacy Statistics: A Review of Concepts, Methodology and Current Data,* 2008). With this in mind, the development ofliteracy among the Irish population has been at the forefront of educational research. In order to ascertain the needs of literacy education in Ireland at present and to determine whether AR has the ability to improve the literacy standards of Irish post-primary students, it is necessary to understand the developments that have occurred in literacy education in Ireland.Just as it is important for educators to have a definition of literacy, it is also important that educators know and understand the evolution of that definition. The definition of literacy as understood by educators drives the methodologies, pedagogies, assessment practices and social experiences around text and approaches to literacy instruction in the classroom. The following is an outline of the documents, policies and reports that have been issued about literacy in Ireland in recent times. Each of these documents and policies have impacted on the definition of literacy and in turn impacted on the methodologies, pedagogies and assessment practices involved in literacy education. These documents and policies have, therefore, shaped and defined what it means to be literate in Ireland.

Development of Literacy Education in Ireland

The following section builds upon the previous definition of literacy by providing an understanding of the development of literacy policy in Ireland. This thesis is not an international study and for that reason is concerned with the issues related to literacy instruction in Ireland. This section maps the evolution of literacy and provides an analysis

of that evolution within the Irish context.

1997	IALS - The International Adult Literacy Survey (OECD)
1998	Green Paper on Adult Education (First since the foundation of the Irish State in 1921)
1999	National Development Plan 2000-2006
2000	White Paper on Adult Education (DES) **PISA** - The Programme for International Student Assessment
2003	**PISA**
2004	**NAMER** – National Assessment of English Reading and Mathematics
2006	ALL - Report on Adult Literacy in Ireland (DES) **PISA**
2007	National Action Plan on Social Inclusion
2009	**PISA** **NAMER** - National Assessment of English Reading and Mathematics
2010	Better Literacy and Numeracy for Children and Young People, A Draft Plan to ImproveLiteracy and Numeracy in Schools (DES)
2011	**PIAAC** – Programme for the International Assessment of Adult Competencies (CSO onbehalf of DES) Literacy and Numeracy for Learning in Life: The National Strategy to Improve Literacyand Numeracy Among Children and Young People…(DES) **PIRLS** – Progress in International Reading Literacy Study
2012	**PISA** **SSE –** School Self-Evaluation
2014	**NAMER** - National Assessment of English Reading and Mathematics

2015	**PISA**
	NCCA The National Framework for Junior Cycle – 8 Key Skills
2018	**PISA**
2021	**PISA**

Table 1: Development of Literacy Education in Ireland

The International Adult Literacy Survey 1997 (IALS)

Free primary and post-primary education were introduced to allow all children access to school and to support the development of literacyand numeracy. However, the importance and role of literacy in the Irish Education system appears to have only come to the fore in Irish Educational policy since 1997. The International Adult Literacy Survey (IALS) was the first national policy or position on literacy in Ireland. This was the first time that the Irish government and policymakers created policy documents that focused on the literacy standards and literacy developments of the Irish population. The survey indicated that one in every four Irish adults lacked the minimumliteracy skills needed for coping with everyday life and work in a complex, information dependent society. The survey ranked Ireland sixteenth out of twenty-two with regard to the country's overall mean score for prose, document and quantitative literacy domains. Early school leaving was the reason for the poor performance of Irish adults in the literacy survey.The survey reported that "it seems that Ireland has a particular problem with early drop outof school that is not found elsewhere. Once pupils stay on in school they perform as well asanywhere" *(Literacy Levels in Ireland, 1998).* This was a major worry for the Irish people andthe DES. It noted that, "it is worrying that even among those who are only recently left education there are acute literacy problems" *(Literacy Levels in Ireland, 1998).*

Following this survey, the DES published a report in 1997 called the 'IALS – Results for Ireland'. The report analysed and tried to interpret the results of the survey. The report clearly states that "a very significant percentage [of Irish people] have problems with all but the very simplest literacy tasks" (*OECD International Adult Literacy Survey: Results forIreland.* 1997). The report also states that the literacy problems of the Irish people as identified in the IALS is "… a matter of concern that only a small percentage of the population score at the highest level of literacy given that the tasks at these levels were designed to be of a kind that might be encountered in everyday life and work" (*OECD International Adult Literacy*

Survey: Results for Ireland. 1997). The DES report goes on to say that "a comprehensive approach will need to tackle a range of matters including the highpercentage of reading problems among boys, the age of beginning formal reading and the availability of suitable resources in schools" (*OECD International Adult Literacy Survey: Results for Ireland.* 1997). The results and findings of the IALS led to the formation of the first Green Paper on Adult Education since the foundation of the Irish State in 1921 (*Green Paper: Adult Education in an Era of Learning,*1998).

DES Green Paper: Adult Education in an Era of Learning

The 1998 DES *Green Paper: Adult Education in an Era of Learning* identified the need for a national response to the literacy problem highlighted by the IALS survey. The paper emphasised the need not only to redress deficiencies in reading, writing and numeracy skills, but also to promote self-esteem, social confidence and positive self-image among learners. (*Green Paper: Adult Education in an Era of Learning*. 1998). It called for a multifaceted national adult literacy programme in Ireland. The paper identifies literacy and literacy development as the most urgent and pressing task for adult education in Ireland. The paper states "the most urgent Adult Education task is that of confronting the literacy problem in Ireland. The Green Paper proposes a National Adult Literacy Programme targeted at redressing the major literacy problem as identified in the recent International Adult Literacy Survey" (*Green Paper: Adult Education in an Era of Learning*.). The paper focuses on the need to view the learner as a lifelong learner and to move the Irish education system towards the idea of lifelong learning. In relation to the development of literacy among young adults and teens the paper warns, "low literacy levels are the most persuasive indicator of negative early school experience. It is unlikely that any other aspect of educational under-achievement can have more profound or long-term implications for a person's life chances than literacy problems" (*Green Paper: Adult Education in an Era of Learning*. 1998). For this reason, it is essential that a literacy plan and resources are implemented with each learner as early as possible in their educational path. This plan and resources ought to be engaging, fun, positive and above all motivate the learner to become a self-directed lifelong learner. The paper's conclusion resonates with the struggles of literacy development in the education system today as it states, "…it is incumbent on Irish society to embark with vigour, imagination and resources on tackling this last remaining educational frontier" (*Green Paper: Adult Education in an Era of Learning*. 1998). Indeed, the Irish DES have continued with vigour to tackle the literacy problems of the Irish society. Again, this DES Green Paper like the IALS Survey before it seeks to find the best resources to improve the literacy standards of

Irish students.

The National Development Plan 2000-2006

On the foot of the DES Green Paper, The National Development Plan was introduced in 1999. This plan outlined a vision of the future that provides for greater economic and social development. Adult literacy is part of the NDP as a clear contributing factor to up-skilling the workforce (*Ireland National Development Plan 2000-2006.* 1999). In respect of education and training, the National Development Plan sets out a clear objective to advance the literacy achievements of every individual. The NPD clearly sets out the objective to provide "… opportunities so that every individual can attain an adequate level of literacy and numeracy skills (*Ireland National Development Plan 2000-2006.* 1999). According to the National Development Plan and building on the DES Green Paper and the IALS, the means to improving the literacy standards of students is to increase the number of students completing second-level education. The plan clearly states the need to increase the retention rate at second-level and decrease the level of early school leavers. The NDP follows the logic that if an individual is in school and completes their second-level education, they will have a quality literacy education and be literate. For the researcher this furthers the need and urgency to evaluate the strategies and programmes used in schools to help students become literate. It is essential that the strategies and programmes used in schools ensure that students who attend school and complete their second-level education leave as literate individuals as defined earlier in this chapter. This research aims to evaluate AR, a widely used program, to determine whether or not it is capable of increasing the literacy standards of Irish post-primary students and equipping them with the skill of literacy as defined earlier in this chapter. The successes of the NDP 2000-2006 was followed by a new plan, the NDP 2007-2013.

The National Development Plan 2007-2013

The NDP 2007-2013, in keeping with previous documents and policies ascertains the need for the retention of early school leavers. The NDP 2007-2013 takes this one step further and aims to build on the success of the NDP 2000-2006 as it states that there is a need to provide students with the skills necessary to become global citizens or "Citizens of the World" (Ireland, *National Development Plan 2007-2013: Transforming Ireland, A Better Quality of Life ForAll.* 2007). The Minister for Finance at the time Mr. Brian Cowen TD states in his forewordfor the National Development Plan 2007-2013 that the NDP 2000-2006 was

broadly speaking, a success. He noted, “in overall terms the NDP 2000-2006 has been successful in fulfilling the overriding objective of economic growth within a broadly sustainable framework” (*National Development Plan 2007-2013: Transforming Ireland, A Better Quality of Life For All.* 2007). Cowen also makes a particular statement in relation to youngpeople and their evolution during the timeframe of the NDP pointing out that “our young people are now, more than any previous generation, ‘‘Citizens of the World’’, connected by the internet, travel, music and education to a wider world of ideas and influences as part of their normal daily existence” (*National Development Plan 2007-2013: Transforming Ireland, A Better Quality of Life For All.* 2007). This statement makes it clear that these “Citizens of the World” need a literacy education that is of a high quality if they are to flourish in this new global society.

In order to improve the standard of literacy in Ireland the NDP 2007-2013 had a very specific objective. As part of the social inclusion plan, *The National Development Plan 2007 – 2013* aimed to “reduce the proportion of pupils with serious literacy difficulties in primary schools serving disadvantaged communities” (*National Development Plan 2007-2013: Transforming Ireland, A Better Quality of Life For All.* 2007). According to the NDP the target was to “halve the proportion from the current 27%-30% to less than 15% by 2016” (*National Development Plan 2007-2013: Transforming Ireland, A Better Quality of Life For All.* 2007). The NDP does not, however, specifically state how it plans to make this change. In keeping with the NDP 2000-2006, the NDP 2007-2013 also focused on the retention of early school leavers. In the section ‘High Level Goals for Social Inclusion’ the NDP sets the target, “work to ensure that the proportion of the population aged 20-24 completing upper Second-Level education or equivalent will exceed 90% by 2013” (*National Development Plan 2007-2013: Transforming Ireland, A Better Quality of Life For All.* 2007). Again, from this target it is clear that the objective of attending school is to increase social inclusion for people. The NDP aligns school retention with an increase in literacy standards and an increase in an individual’s ability to integrate and be included in society. The theory of thought behind this document is that if a student is attending school then their literacy skills will develop and progress. Again, the NDP 2007-2013 like its predecessor the NDP 2000-2006 identifies the need to ensure that strategies and resources used in schools actually help people to achieve social inclusion and be literate. The NDP vows to make monetary investments in resources that enhance both literacy and numeracy levels as it states, “increased investment in measures aimed at enhancing literacy and numeracy attainment levels for schools in the programme …” (*National Development Plan 2007-2013:*

Transforming Ireland, A Better Quality of Life For All. 2007). The success of literacy instruction at this time meant that an individual had the skills necessary to enable them to interact with society. Considering this it is clear that an evaluation of the strategies and programmes used in schools to develop literacy skills is essential. Educators must ensure that the literacy strategies and programmes used in schools with students that attend are evaluated. The programmes and strategies must be evaluated to ensure that they are having a positive impact on the literacy standards of students. Throughout the years of the NDPs, *The Programme for International Student Assessment* better known as PISA was being conducted.

The Programme for International Student Assessment (PISA)

PISA reviews the extent to which students near the end of compulsory education have acquired some of the knowledge and skills that are essential for full participation in modern society particularly in mathematics, reading and science. PISA conducted their research across a number of years. Each year has a major domain focus and a number of minor domain focuses. The following table provides a summary of the major and minor domain focus for PISA over the years.

Year	**Major Focus**	**Minor Focus**
2000	Reading Literacy	Mathematics, Science
2003	Mathematics	Reading Literacy, Science, Cross Curricular Problem Solving
2006	Science	Reading Literacy, Mathematics/
2009	Reading Literacy	Mathematics, Science
2012	Maths	Reading Literacy, Science, Creative Problem Solving
2015	Science	Mathematics, Reading Literacy, Collaborative Problem Solving

2018	Reading Literacy	Mathematics, Science,Global Competence
2021	Mathematics	Reading Literacy, Science, Creative Thinking

Table 2: PISA Major and Minor Domains 2000-2021

Students were assessed with a major domain focus of reading literacy in 2000, 2009 and 2018. However, each year of PISA includes reading literacy as a minor domain. One of the main aims of PISA is to provide governments with data to help shape their policymaking (Perkins, Shiel *et al*. 2013). Results have varied throughout all cycles of PISA for Ireland. From PISA 2009 to PISA 2012 according to the Educational Research Centre, Ireland's overall performance increased significantly from 495.6 to 523.2 on the print reading scale. However, performance in 2012 is not significantly different to the performance in 2000. The performance of lower achieving students on the print reading assessment is higher in 2012 with a score of 410.2 than in 2009 with a score of 373.4. However, the score in 2000 was closer to the 2012 increase. Similarly, the performance of higher achieving students in 2012 is lower than in 2000, with a score of 631.5 compared to 641.1. But this 2012 scoreis higher than in 2009 with a score of 610.5 (Perkins *et al*. 2013). In all cycles of PISA females have significantly outperformed males in print reading assessments. There has been much discussion in the media regarding 2009 PISA results and the reasons for the fluctuatingresults of the PISA cycles. The Educational Research Centre suggests that "greater awareness may have led to an increasing effort in the survey in 2012" (Perkins *et al*. 2013).The Educational Research Centre suggests that the widespread attention of the 2009 resultsmay have led schools and students to be more engaged with the 2012 assessment (Perkins *etal*. 2013). This in some way explains Ireland's improved results from PISA 2009 and returnto the previous 2000 results.

PISA 2012 Findings

PISA's 2012 main findings for Ireland include:

- The mean score for Ireland on the print reading scale is 523.2 which is above the OECD average of 496.5.
- Fewer than 10% of students in Ireland perform below level 2 compared to 18% across OECD countries.
- Female students significantly outperformed male students. In Ireland girls scored 537.7 on the print reading scale, while boys scored 509.2 on the print reading scale.

- In Ireland almost 13% of males compared to 6% of female students obtained a print reading score that was below level 2.
- 14.4% of females have a print reading score at or above level 5 whereas only 8.6% of male students have a print reading score above level 5.

The findings of PISA 2012 showed that Ireland had made some very significant advances towards improving the literacy standards of the Irish population. The findings, however, showed a clear gender divide. Females outperformed males in every aspect of PISA in relation to literacy attainment and success. These findings suggest that males and females do not reach the same level of literacy success from engaging with the same literacy practices and resources. It appears from these findings that males and females require different or varied literacy instruction to reach their full literacy potential.

PISA 2015 Findings

PISA 2015 with reading literacy as the minor domain illustrates progress for Ireland in terms of reading literacy. In 2012, Ireland was ranked thirteenth according to PISA in relation to reading literacy, in 2015 PISA ranked Ireland's reading literacy in fifth place. PISA 2015 also reported that the "gender difference in Ireland has changed in substantive ways" (Shiel, Kelleher *et al*. 2016). the report goes on to say "the gender difference on reading literacy is now among the smallest among participating countries and is well below the OECD average of 26.9" (Shiel, Kelleher *et al*. 2016). However, the ERC warns, "the narrower gender gap in Ireland in PISA 2015 reflects a stronger performance among Irish male students, as well as a lower score among female students" (Shiel, Kelleher *et al*. 2016). This is a worrying finding for literacy education, it is not the aim of a quality literacy education to bridge the gender gap by decreasing the reading literacy success of female students. A quality literacy education aimed to create literate students must have a positive impact on both male and female students' literacy standards. A quality literacy education must not increase the standards of one gender to the detriment of the other gender's literacy standards. The gender divide continued to be in existence in PISA 2018.

PISA 2018 Findings

PISA 2018 took place in Ireland with reading literacy as the main domain in March and April of 2018. A total of 157 post-primary schools and over 5,000 students took part. The ERC reports that according to the results of PISA 2018, "students in Ireland are significantlyabove the OECD average in all three domains with performance in reading literacy among the highest across OECD and EU countries" (McKeown, Denner *et al.* 2019). Unlike the

controversy and discrepancies of PISA 2000 – 2012, the ERC reports "there are no significant changes in student performance in Ireland in reading literacy, science and mathematics, 2015 – 2018" (McKeown, Denner *et al*. 2019). Also, in keeping with previous cycles of PISA, the PISA 2018 results illustrate that the gender gap in relation to reading literacy is still very much in existence. "Female students outperform their male counterparts in reading literacy as in previous cycles" (McKeown, Denner *et al*. 2019). As mentioned earlier, it is essential that a quality literacy education seeks to enhance the literacy standards of both male and female students. Both male and female students should be equally motivated and benefit from literacy successes within the Irish educational system.

PISA Summary

As seen from the above overview of each PISA cycle it is clear to see that each cycle of PISA brought with it a new issue or concern for Irish educationalists, Irish educational policymakers, teachers and indeed parents. Each cycle of PISA brought with it concerns regarding literacy attainment in comparison to other EU countries. PISA cycles also drew attention to a fluctuating gender gap in relation to literacy attainment. While keeping in mind the concerns raised by PISA cycles, it is important to note that PISA cycles are not without flaw.

Comparing students' academic abilities in cross national surveys and tests such as PISA has been met with considerable criticism. Smyth and McCoy warn about the difficulty in achieving true comparability between countries because of fundamental language and cultural differences (Smyth & McCoy 2011). Expressions and terms in one country may not necessarily translate or be comprehensible for another country. Similarly reading comprehension pieces may not be as relevant or relatable to student experience in one country as another. Not only do cross national surveys and tests not take into account language and culture differences in countries, they also do not test or consider the wide variety of learning and skills taking place in classrooms around the world. The tests are limited to assess and measure a very specific skillset between countries. The test design does not allow for variation as the researchers need to be able to quantify data and rank countries in order of merit. As Smyth and McCoy state, there is a danger with cross national surveys and tests, that the conceptions of quality are driven by what is easily measurable (Smyth & McCoy 2011). Just because something can be measured and compared does not mean that it is the best measure of excellence or representative of a country's academic skillset. The cross national surveys and tests "…focus only on a subset of the skills and competencies developed in the schooling system" Clifton (2011 cited in Smyth and McCoy 2011). PISA

expresses a definition of literacy that is broad. PISA defines reading literacy as "the ability to engage with texts" (OECD 2019). This definition of reading literacy together with the need to be able to measure and compare results across countries means that PISA tests baseline reading skills. PISA despite not changing the definition of literacy over the last decade has adapted its testing to incorporate the changing nature of reading. PISA 2018 uses a variety of sources to test reading comprehension using a digital platform. "The PISA 2018 reading assessment was updated to reflect the evolving nature or how students read, primarily through greater emphasis on using multiple sources to arrive at the same solution" (OECD 2019). Despite the concerns regarding PISA as outlined above, PISA has two very clear findings that are relevant to Irish educators and policymakers.

Firstly, according to the results of PISA 2000 – 2018 it appears that Ireland has performed above the OECD average in each year with the exception of 2009. "The trajectory of reading performance can be described as U-shaped this is entirely the result of PISA 2009 results, which were significantly below the historic average." (OECD 2019, p.3) In light of these PISA results, literacy is not identified as an area of concern for Ireland. However, some PISA findings in relation to literacy are concerning for Ireland. Reading for enjoyment or reading for pleasure is a literacy concern for Ireland. The percentage of students who never read for enjoyment increased from 33.4% in 2000, to 41.9% in 2009 to 44.7% in 2018." (Mckeown, Denner et al. 2019, p.XXVI). This trajectory is concerning for Ireland and Irish literacy standards especially when one takes into the consideration the observation of the OECD. According to the OECD "reading for enjoyment everyday is associated with better performance in PISA." (OECD 2011)

Secondly, it is very clear from PISA 2000 - 2015 that a gender gap exists in terms of literacy development within the Irish context. Girls predominantly outperformed boys. Measures need to be put in place to narrow the divide in literacy attainment between the genders. PISA 2018 furthered this concern as the decline in female scores narrowed the gender divide. Also in relation to reading for enjoyment more males than females reported that they did not read for pleasure. "Significantly more males (56.1%) than females (39.4) in Ireland reported that they did not read for pleasure." (Mckeown, Denner et al. 2019, p.XXVI). With the desire to further literacy standards and narrow the gender gap a priority for Irish educationalists, the Irish results from PISA were used to inform *The National Strategy to Improve Literacy and Numeracy Among Children and Young People 2011 -2020*. After its release, this National Strategy formed the daily practices in classrooms across Ireland and put literacy and

numeracy at the forefront of Irish educational discussion.

Literacy and Numeracy for Learning and Life: The National Strategy in Improve Literacy and Numeracy among Children and Young People 2011 -2020.

TD Ruairi Quinn's foreword to the strategy sets the tone clearly when he states that literacy and numeracy are "among the most important life skills that our schools teach" (Department of Education and Skills 2011). Quinn underscores the importance of these skills when he says that "no child should leave school without having mastered these skills to the best of their ability" (Department of Education and Skills 2011). In keeping with the National Development Plan of 1999, Quinn equates the acquiring of these skills as being essential to "achieving social justice and equityin our country" (*Literacy and Numeracy for Learning and Life: The National Strategy to Improve Literacy and Numeracy Among Children and Young People 2011-2020.* 2011). Quinn acknowledges the shortcomings of the Irish educational system, as brought to light by PISA and other international studies as an effort to take the initial steps towards helpingall students achieve in developing their literacy and numeracy skills. He makes it clear that "we cannot afford to allow this to continue" (Department of Education and Skills 2011). *The National Strategy to Improve Literacy and Numeracy AmongChildren and Young People 2011-2020* is a very pragmatic document as it sets out the meansby which literacy and numeracy can be developed and improved. The commitment is made to "find the resources to implement the strategy by re-prioritising spending and ensuring thatwe get the very best outcomes from existing financial and human resources" (Department of Education and Skills 2011).

The document sets out clear aims to improve literacy and numeracy. The following are the aims laid out in the document to improve literacy.

1. Promote better understanding of the critical importance of supporting the development of children's ability to become effective communicators from their earliest years and the key role played by parents, families and communities in this regard.
2. Raise public awareness of the importance of oral and written language in all its forms.
3. Foster an enjoyment of reading among children and young people (Department of Education and Skills 2011).

The document also identifies the dimensions of a literacy education that are specific to post-primary education. The document states that all DES will;

1. Ensure that each post-primary school sets goals and monitors progress in achieving demands by realistic targets for the improvement of the literacy and numeracy skills

of its students in a school improvement plan.

2. Extend the National Assessment of Mathematics and English Reading to assess the performance of students at the end of second year in post-primary education; use data from these assessments to establish the existing levels of achievement and to set realistic targets for improvement, similar to those adopted at primary level.
3. Awareness of the importance of digital literacy and include assessments of post-primary students' ability to read digital material as part of the national assessments of English reading.
4. Increase the percentage of fifteen year-old students performing at or above level 4 inPISA reading literacy and numeracy tests by at least five percentage points by 2020.
5. Half the percentage of fifteen year-old students performing at or below level 1 in PISA reading literacy and numeracy tests by 2020 (Department of Education and Skills 2011).

This document has shaped and informed literacy instruction in Irish post-primary schools since 2011. This document was the corner stone in the formation and introduction of School Self-Evaluation. From this document, literacy became the first domain to be analysed and monitored by each individual school using the SSE process.

SSE - School Self-Evaluation

School Self-Evaluation known commonly as SSE was the springboard by which schools focused on and evaluated literacy and numeracy practices within their own context. School Self-Evaluation is defined as "a collaborative, reflective process of internal school review. During school self-evaluation the principal, deputy principal and teacher, under the direction of the board of management and patron, and in consultation with parents and students, engage in reflective enquiry on the work of the school" (School Self-Evaluation 2019). SSE was designed to support the implementation of the National Literacy and Numeracy Strategy as outlined earlier in this chapter. Schools were asked to start the SSE process in the four year period from 2012/2013 – 2015/2016 by evaluating "the quality of teaching and learning in literacy, numeracy and one aspect of teaching and learning across all programmes and subjects" (School Self-Evaluation 2019). SSE provided schools with a procedure for evaluating the needs of their school, implementing a change and then reviewing and evaluating the success of that change. SSE clearly outlines a six step evaluation process that schools should use to evaluate their effectiveness. The six steps cycle is best illustrated by the diagram below.

Figure 1: The Six Step School Self-Evaluation Process

Source: http://schoolself-evaluation.ie/primary/sse-2016-2020/six-step-process/

SSE was designed to increase the awareness of individual schools' need to evaluate their own effectiveness in certain areas. The ownership of evaluation was placed on each individual school. Literacy and numeracy were the first areas of focus during the implementation of the SSE process. This was the first step in providing each school with a process by which they could evaluate and review their resources, strategies, initiatives and methods within their own school context with a view to improving the literacy standards of the Irish population.

The Need for This Research:

This section aimed to provide an overview of the position of Irish literacy policy and practice in the broader context of European and international developments. It is clear from this brief overview that the need for a quality literacy education is at the forefront of educational policy and conversation. From this overview of Irish literacy policy, the following five areas have been brought to the forefront of literacy education discussions:

1. Early School Leavers: the need for school retention to the completion of second-level education.
2. Global Society: enable students to become "Citizens of the World" and be active participants in a global society brought about through the advances in ICT.
3. The Gender Gap: a need to narrow the literacy divide that exists between males and females.
4. Individual potential: strive for every individual engaged in education to reach their full

potential and highest possible individual literacy attainment.

5. Evaluation: each policy highlights the need for schools to evaluate and assess the effectiveness of resources in improving the literacy standards of students.

The IALS and the DES Green Paper opened the discussion in 1997 as they identified the need to improve the literacy standards of Irish citizens. The NDPs 2000-2006 and 2007-2013 reiterated this need and further claimed that an individual's literacy standard determined their ability to be socially included. As a means of increasing the literacy standards the NDPs sought to decrease the percentage of early school leavers and work towards second-level school retention. PISA 2000, 2009 and 2012 highlights Ireland's urgent need to improve the literacy standards of students. It echoes the concerns of the IALS and the DES Green Paper about the worrying low literacy standards of Irish people. The PISA reports also identify a further concern; they identify a gender gap in relation to literacy success. Girls outperformed boys in the PISA assessments. PISA only assesses the reading literacy of students, therefore, other elements of being literate as defined earlier in this chapter are not examined by PISA. PISA 2018 shows that some progress has been made towards improving the literacy standards of Irish post-primary students. However, as outlined earlier when discussing the evolution of the definition of literacy, there is more to being literate than being able to read. Furthermore, it is evident from the documents and policies outlined in this chapter that the policies and documents concerning literacy are driven and informed by economics. Often in the documents and policies it is the Minister for Finance that addresses the people of Ireland in the foreword. This gives a clear message that the documents and policies have economics at their centre. The documents and policies are driven by market forces and external evaluations. Literacy came to the fore as a need to increase the economic capacity of the country and increase Ireland's worth in the marketplace on an international level. These policies and documents have brought about change from the top-down. The government decided what needed to be changed to improve the literacy skills of the Irish population based on external evaluations of literacy standards, namely PISA and the needs of the Irish economy. Students and teachers were not part of the conversation regarding literacy standards. Students and teachers' voices were not used to inform literacy policy. Based on these government decisions, schools introduced initiatives, resources and strategies to meet the standards and guidelines set out in the policies. In contrast to this top-down approach, this research seeks to provide a ground up perspective on the approach needed to improve the literacy standards of Irish post-primary students. Students are at the centre of this thesis. Student voice is central to discovering what is needed to improve the literacy standards of

Irish post-primary students.

This thesis in line with The National Strategy 2011-2020 is aware and conscious of the broad all-encompassing term literacy. The National Strategy 2011-2020 sets clear aims and objectives in relation to the literacy achievements that Ireland would like to achieve. The National Strategy sets out what needs to be achieved. The strategy however does not determine how these aims and objectives are to be achieved. This study is concerned with how the aims and objectives of the National Strategy are realised and actualised in classrooms across the country. If Ireland has any hope of fulfilling the aims and objectives as laid down in the National Strategy 2011-2020 it is vital that the resources used in schools are evaluated to determine whether or not they are an effective means of improving literacy standards. As the SSE process has taught us, the continued use of initiatives, methods, strategies and resources year after year with each new group of students without evaluation is detrimental to the success of literacy education. The continued use of unevaluated resources in classrooms across the country will not bring about new results and will certainly not develop the literacy standards of the Irish people. Several literacy initiatives have been introduced into Irish post-primary schools in recent years.

Current Literacy Practices in Irish Post-Primary Schools

This research is concerned with practices relating to literacy instruction within the post-primary context. This section outlines some of the literacy initiatives in place in Irish post-primary schools. The researcher has observed in her own professional practice several initiatives designed to improve the literacy standards of Irish post-primary students. Literacy policy namely, The National Strategy 2011-2020 made it clear to schools that each teacher had a responsibility towards improving the literacy standards of students. This view of literacy was supported and promoted by the PDST "Literacy is the business of all teachers (irrespective of subject) and all students (irrespective of ability)." (PDST 2011, p.3). The PDST produced a booklet of resources that sought "to support post-primary teachers in all subject areas by sharing best practice in the development of students' literacy skills." (PDST 2011, p.3). A primary focus of schools was to change the view of literacy as being the sole responsibility of the English teacher. Schools began to view literacy as the role and responsibility of every teacher and every subject area. For this reason, strategies and initiatives that could be incorporated into any subject area or lesson were introduced in post-primary schools. The following initiatives supported by the PDST were introduced in schools to improve literacy standards.

Book in a Bag/Drop Everything and Read: Students are encouraged to have a book with them at all times in their school bags. Then at suitable moments in the school day, the subject teacher will instruct students to take out their books and read them in class. In other instances, a general school announcement is made to instruct all students and teachers to take out their books and read. The initiative encourages students to read for pleasure and also allows teachers to model good reading for pleasure practice by reading their own novel alongside the class.

Keyword Strategies: Each subject is encouraged to pre-teach the key words for a topic before commencing the topic. This allows students to become familiar with new vocabulary before engaging with new content. Subject teachers are also advised to display the key words in the classroom for students to see them and refer to them as needed throughout the study of the topic.

Placemat Exercises: There are a variety of different placemats and they vary visually depending on the task the teacher is doing, some involve graphs others Venn diagrams or thought boxes and bubbles. The class is divided into groups, each group is given one large page with a diagram on it. Students are encouraged to communicate with each other and to complete their placemat exercise as a group. This task is aims to help students to improve their oral communication skills as they negotiate with their group and voice their opinions on the set task.

Print Rich Environment: Each subject teacher is encouraged to display student work in classrooms to encourage students to produce their best work. Classrooms displaying keywords, quotes, words of the week/day, diagrams etc that aid students learning and keep students visually stimulated is desirable and seen as having a positive impact on student's literacy.

This is just a brief overview of some of the larger and most common initiatives undertaken by post-primary schools to improve students' literacy standards. Many schools have a number of individual initiatives that they run on a local level to aide literacy development. AR is a program used by some Irish post-primary schools with an aim to encourage students to read and enhance their literacy standards.

In keeping with the mindset of evaluation, this research seeks to evaluate the widely used reading management program Accelerated Reader. This thesis asks whether AR is an

effective means of achieving the engaging, fun, positive and motivated lifelong learner that was sought in the DES Green Paper. This research in its evaluation of AR as a means of improving the literacy standards of Irish post-primary students seeks to analyse the impact the program has on male and female students both separately and collectively to determine whether it is capable of narrowing the gender gap that exists in Irish literacy education and help each individual to reach their full literacy potential. To bring about change, this study sets about evaluating the effectiveness of AR as a means of improving the literacy standards of Irish post-primary students.

What is Accelerated Reader?

Accelerated Reader (AR) is an American-designed reading management software programme that was introduced to the market in 1986. It is the most widely used reading management software in the world today and boasts of being purchased by more than 70,000 schools worldwide. The tagline of the AR website states, "Engage Students, Motivate Reading Practice, Improve Reading Progress" (Renaissance Learning 2019). According to the Renaissance Learning website, AR aims to "make essential reading practice more effective for every student, personalise reading practice to each student's current level, manage all reading activities including read to, read with, and read independently, assess students' reading with four types of quizzes: Reading Practice, Vocabulary Practice, Literacy Skills, and Textbook Quizzes [and] build a lifelong love of reading and learning" (Renaissance 2019). It is important to note that AR is not designed to replace standard forms of reading instruction. Instead, its purpose is to support literacy structures and standard readinginstruction. This fact is clearly stated in the AR manual, "Accelerated Reader is designed tobe part of a comprehensive reading program. It does not replace basal-reader series or other instructional materials; rather, it supports and enhances them" (Renaissance Learning. 2015). The AR programme does not provide the student with reading material, a student or school purchases reading material independently of the programme.

How Does Accelerated Reader Work?

The AR website highlights the simplicity of the AR concept. As stated on the AR website "At its heart, Renaissance Accelerated Reader is simple. A student reads a book, takes an online quiz, and gets immediate feedback" (Renaissance Learning, 2019).

According to the AR manual there are three core steps involved in the AR programme.

1. AR recommends that students should be allocated twenty minutes of guided independent reading time during each school day to utilise the reading management software effectively and achieve the best results.

2. Upon completion of a book, students take a Reading Practice quiz.
3. AR scores the quiz and keeps a record of the results in an online student profile. The AR programme has three distinct interfaces. Each one c aters for a different user. ARhas one interface for the student, one for the teacher and one for the parent. AR caters forthe needs of the student, the teacher and the parent by providing different digital dashboards and platforms. This gives each user a slightly different AR experience.

The Student Experience

Students begin using the AR programme by signing into their personalised Reading Dashboard. (Figure 2) The log in details are generated by AR and given to students by the schools AR administrator or the class teacher.

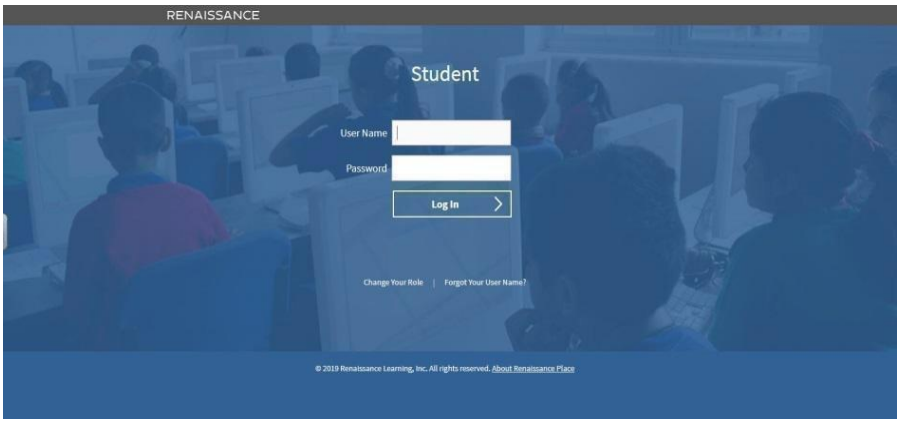


Figure 2: Student Log in Screen

Source:https://ukhosted11.renlearn.co.uk/2935049/Public/RPM/Login/Login.aspx?srcID=s

When using the programme for the first-time students take what is referred to by AR as a STAR test (Standardised Testing and Reporting). A STAR test consists of thirty-four questions. There are three practice questions and thirty-one test questions. The three practice questions are designed to give students time to become familiar with the mechanics and the format of the test. The first ten STAR test questions ask the student to choose the word that best fills a gap in a sentence. (Figure 3) The other twenty-four questions give the student a few sentences to read. It then asks the student what the sentences/passages mean. (Figure 4) There is a time limit to each question.

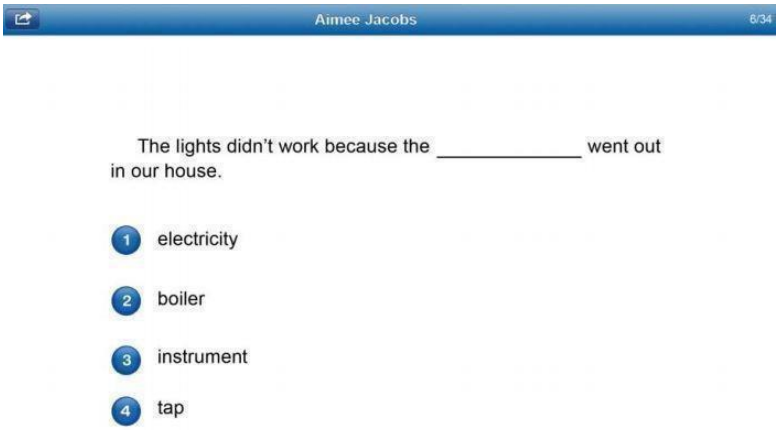


Figure 3: Questions 1-10

Source:http://www.renlearn.co.uk/wp-content/uploads/2014/07/star-reading-introduction-primary.pdf

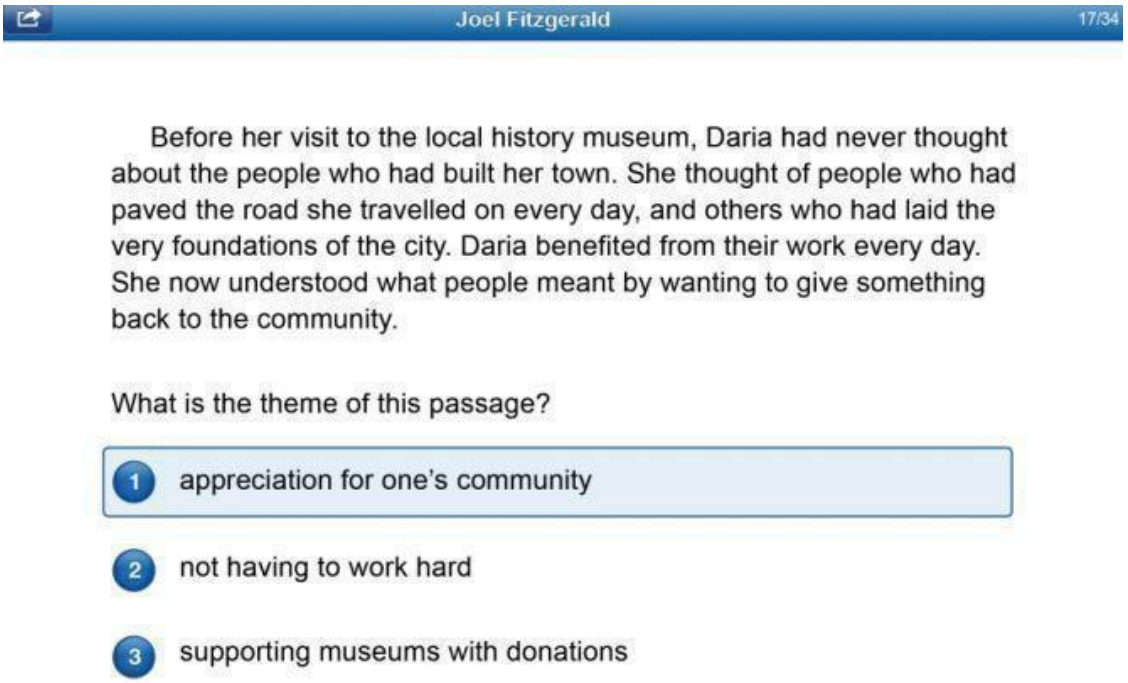


Figure 4: Question 11-34

Source:http://www.renlearn.co.uk/wp-content/uploads/2014/07/star-reading-introduction-primary.pdf

AR translates STAR test scores into a ZPD number (Zone of Proximal Development). The ZPD indicates the range of books suitable for that particular student. All AR books are

categorised according to their ZPD level. This level is clearly displayed on the front of the book by the school librarian or AR administrator. Students choose a suitable ZPD determined book from the school's book collection and read it. AR's database has an extensive list of books available for a school to choose from for all ZPD levels. Students read at their own pace and upon completion of their book, they log on to their AR Reading Dashboard and take a quiz. The AR programme contains a large variety of quizzes. The quizzes vary in length depending on the ZPD of the chosen book. Quizzes vary between five and twenty multiple-choice questions. (Figure 5)

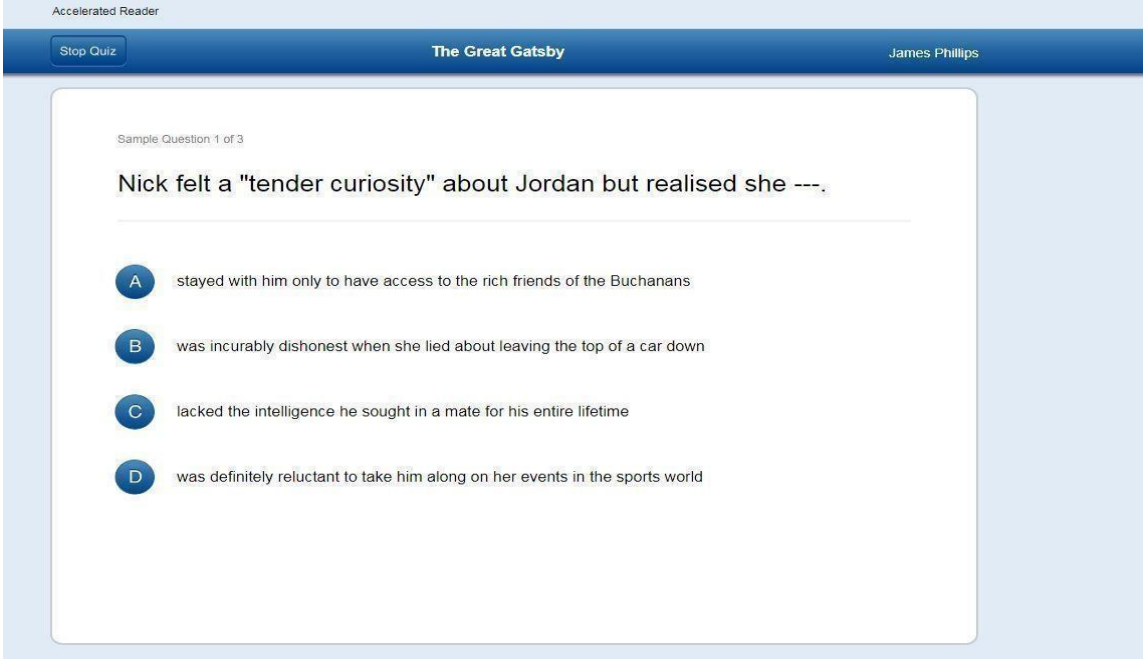
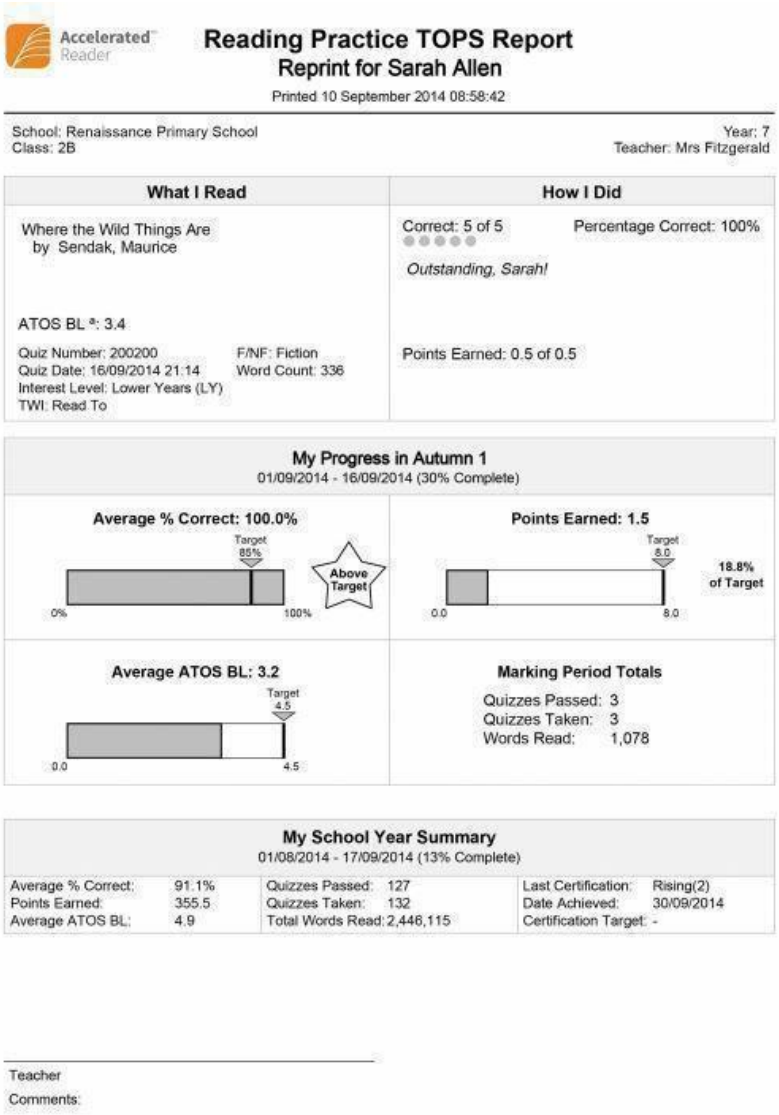


Figure 5: Quiz

Source: http://www.renlearn.co.uk/quizzes/quizzes/200123.html

Upon completion of a quiz the student is provided with immediate feedback on their quiz score and points earned. The student must score at least sixty percent to earn any points and, therefore, pass the quiz. After the completion of a quiz the programme generates *The Opportunity to Praise Students Report*, better known as a TOPS Report. (Figure 6) The TOPS report gives the student the results of the quiz. Students working towards individual goals will also see their progress towards these goals displayed on the TOPS Report.



Accelerated Reader

Reading Practice TOPS Report
Reprint for Sarah Allen
Printed 10 September 2014 08:58:42

School: Renaissance Primary School
Class: 2B
Year: 7
Teacher: Mrs Fitzgerald

What I Read	How I Did
Where the Wild Things Are by Sendak, Maurice	Correct: 5 of 5 Percentage Correct: 100%
	Outstanding, Sarah!
ATOS BL [a]: 3.4	
Quiz Number: 200200 F/NF: Fiction Quiz Date: 16/09/2014 21:14 Word Count: 336 Interest Level: Lower Years (LY) TWI: Read To	Points Earned: 0.5 of 0.5

My Progress in Autumn 1
01/09/2014 - 16/09/2014 (30% Complete)

Average % Correct: 100.0%
Target 85%
Above Target
0% 100%

Points Earned: 1.5
Target 8.0
18.8% of Target
0.0 8.0

Average ATOS BL: 3.2
Target 4.5
0.0 4.5

Marking Period Totals
Quizzes Passed: 3
Quizzes Taken: 3
Words Read: 1,078

My School Year Summary
01/08/2014 - 17/09/2014 (13% Complete)

Average % Correct:	91.1%	Quizzes Passed:	127	Last Certification:	Rising(2)
Points Earned:	355.5	Quizzes Taken:	132	Date Achieved:	30/09/2014
Average ATOS BL:	4.9	Total Words Read:	2,446,115	Certification Target:	-

Teacher
Comments:

Figure 6: TOPS Report

Source: http://www.renlearn.co.uk/accelerated-reader/reports-and-data/

Students continue to read books and quiz on them to build up their AR Profile. Each time a student takes a quiz on a book it is added to their AR Bookshelf. (Figure 7) The Bookshelf is a digital shelf that shows the student the front cover of each book that they have read. The more books they read and quizzes they take, the fuller their shelf becomes.

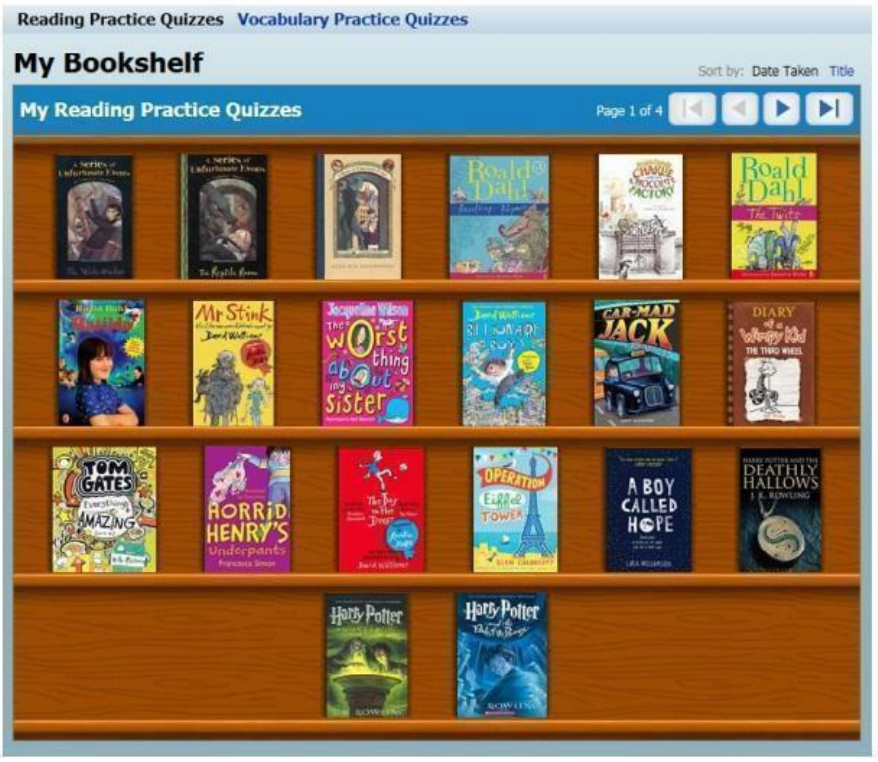


Figure 7: Bookshelf

Source: http://www.portfield-tkat.org/95/what-is-accelerated-reader

Continued reading and quizzing also builds up a drawing of a sunflower that is intended to be motivational for the student. The more a student reads and collects points, the bigger the sunflower gets. (Figure 8) The programme records all data in a personalised online folder for each student. This data can be accessed by the administrator or the class teacher through a variety of pdf reports available in the admin/teacher section of the programme. Parents also have access to some of these reports through the AR programme using personalised logins.

Figure 8: Sunflower

Source: http://www.renlearn.co.uk/accelerated-reader/primary/

The Teacher Experience

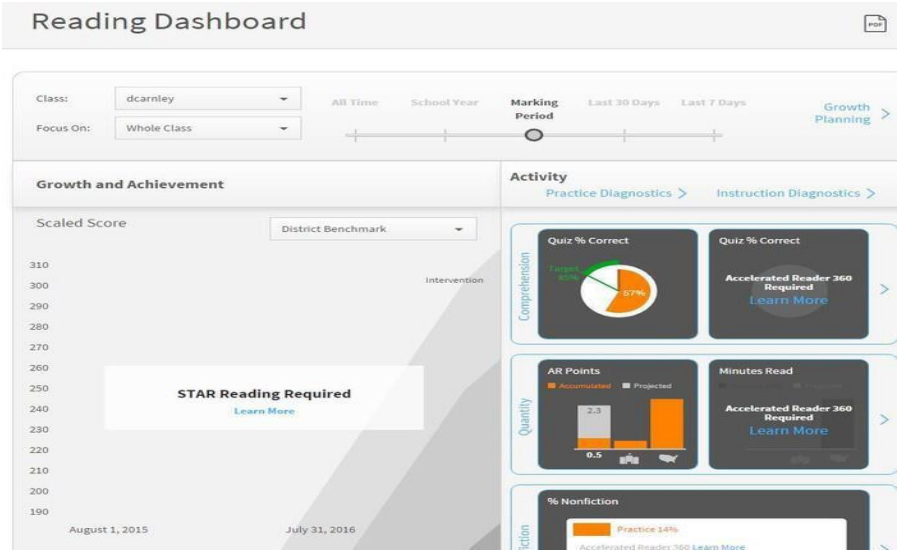


Figure 9: Teacher Reading Dashboard

Source: https://www.smore.com/uxx3p-accelerated-reader

The relevant teacher has access to the data for each student in their class. The teacher logs into AR in the same manner as a student by using a username and password that has been generated by AR. This gives the teacher access to their Reading Dashboard. (Figure 9) The interactive Reading Dashboard allows the educator to see at a glance how well students are performing at class, group and individual level. (Figure 10, Figure 11, Figure 12)

Figure 10: Comparative Class Report

Source:http://www.renlearn.co.uk/wp-content/uploads/2014/03/renaissance-place-dashboard-screens.pdf

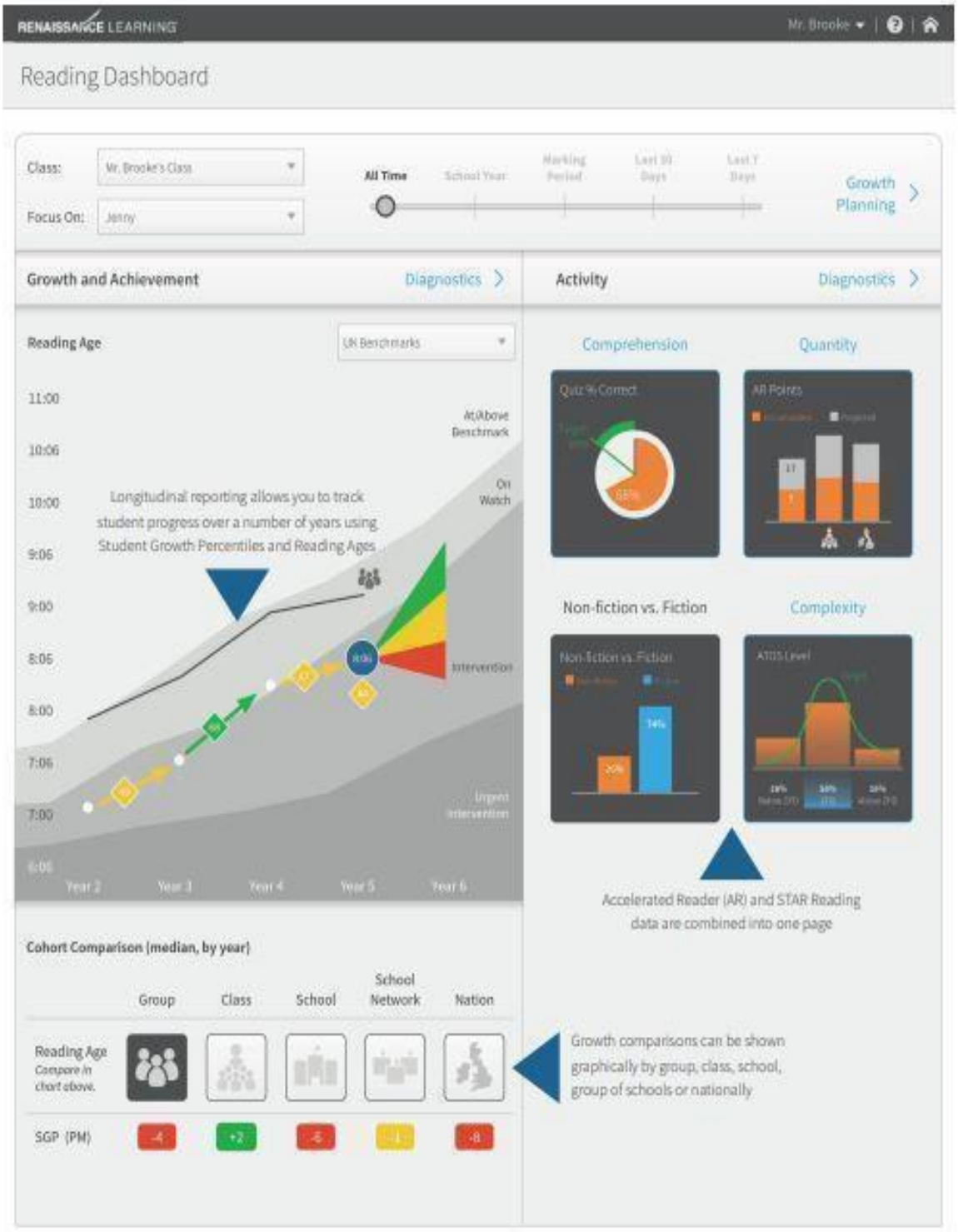


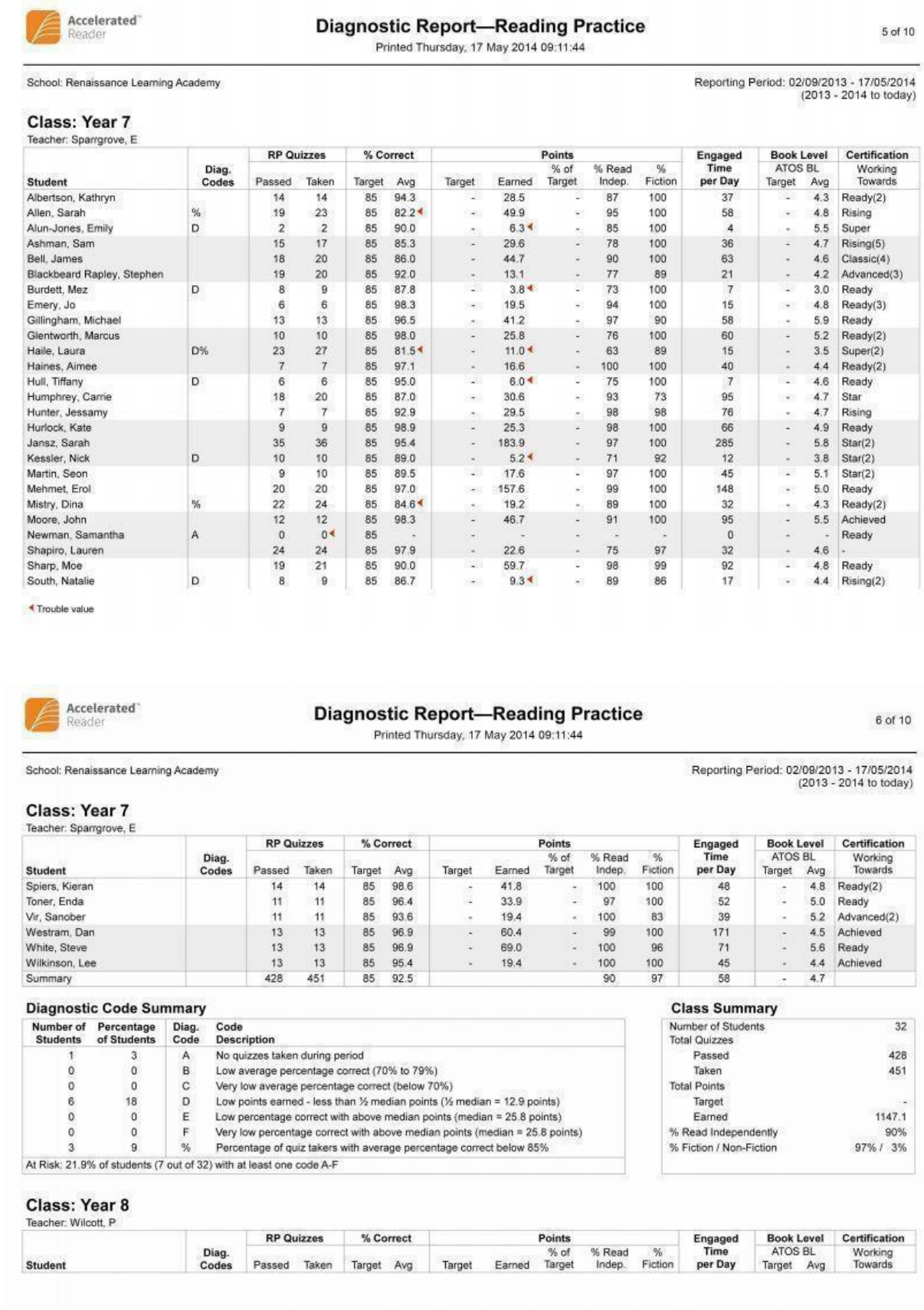
Figure 11: Comparative Group Report

Source:http://www.renlearn.co.uk/wp-content/uploads/2014/03/renaissance-place-dashboard-screens.pdf

Figure 12: Individual Report

Source:http://www.renlearn.co.uk/wp-content/uploads/2014/03/renaissance-place-dashboard-screens.pdf

The teacher interface of AR also enables the teacher to create a number of reports. One of the most used reports is the Diagnostic Report. The Diagnostic Report summarises the performance of a class and shows the level towards which each student is working. (Figure 13)



Accelerated Reader

Diagnostic Report—Reading Practice

Printed Thursday, 17 May 2014 09:11:44

5 of 10

School: Renaissance Learning Academy

Reporting Period: 02/09/2013 - 17/05/2014 (2013 - 2014 to today)

Class: Year 7

Teacher: Sparrgrove, E

Student	Diag. Codes	RP Quizzes Passed	RP Quizzes Taken	% Correct Target	% Correct Avg	Points Target	Points Earned	Points % of Target	Points % Read Indep.	Points % Fiction	Engaged Time per Day	Book Level ATOS BL Target	Book Level ATOS BL Avg	Certification Working Towards
Albertson, Kathryn		14	14	85	94.3	-	28.5	-	87	100	37	-	4.3	Ready(2)
Allen, Sarah	%	19	23	85	82.2	-	49.9	-	95	100	58	-	4.8	Rising
Alun-Jones, Emily	D	2	2	85	90.0	-	6.3	-	85	100	4	-	5.5	Super
Ashman, Sam		15	17	85	85.3	-	29.6	-	78	100	36	-	4.7	Rising(5)
Bell, James		18	20	85	86.0	-	44.7	-	90	100	63	-	4.6	Classic(4)
Blackbeard Rapley, Stephen		19	20	85	92.0	-	13.1	-	77	89	21	-	4.2	Advanced(3)
Burdett, Mez	D	8	9	85	87.8	-	3.8	-	73	100	7	-	3.0	Ready
Emery, Jo		6	6	85	98.3	-	19.5	-	94	100	15	-	4.8	Ready(3)
Gillingham, Michael		13	13	85	96.5	-	41.2	-	97	90	58	-	5.9	Ready
Glentworth, Marcus		10	10	85	98.0	-	25.8	-	76	100	60	-	5.2	Ready(2)
Haile, Laura	D%	23	27	85	81.5	-	11.0	-	63	89	15	-	3.5	Super(2)
Haines, Aimee		7	7	85	97.1	-	16.6	-	100	100	40	-	4.4	Ready(2)
Hull, Tiffany	D	6	6	85	95.0	-	6.0	-	75	100	7	-	4.6	Ready
Humphrey, Carrie		18	20	85	87.0	-	30.6	-	93	73	95	-	4.7	Star
Hunter, Jessamy		7	7	85	92.9	-	29.5	-	98	98	76	-	4.7	Rising
Hurlock, Kate		9	9	85	98.9	-	25.3	-	98	100	66	-	4.9	Ready
Jansz, Sarah		35	36	85	95.4	-	183.9	-	97	100	285	-	5.8	Star(2)
Kessler, Nick	D	10	10	85	89.0	-	5.2	-	71	92	12	-	3.8	Star(2)
Martin, Seon		9	10	85	89.5	-	17.6	-	97	100	45	-	5.1	Star(2)
Mehmet, Erol		20	20	85	97.0	-	157.6	-	99	100	148	-	5.0	Ready
Mistry, Dina	%	22	24	85	84.6	-	19.2	-	89	100	32	-	4.3	Ready(2)
Moore, John		12	12	85	98.3	-	46.7	-	91	100	95	-	5.5	Achieved
Newman, Samantha	A	0	0	85	-	-	-	-	-	-	0	-	-	Ready
Shapiro, Lauren		24	24	85	97.9	-	22.6	-	75	97	32	-	4.6	-
Sharp, Moe		19	21	85	90.0	-	59.7	-	98	99	92	-	4.8	Ready
South, Natalie	D	8	9	85	86.7	-	9.3	-	89	86	17	-	4.4	Rising(2)

Trouble value

Accelerated Reader

Diagnostic Report—Reading Practice

Printed Thursday, 17 May 2014 09:11:44

6 of 10

School: Renaissance Learning Academy

Reporting Period: 02/09/2013 - 17/05/2014 (2013 - 2014 to today)

Class: Year 7

Teacher: Sparrgrove, E

Student	Diag. Codes	RP Quizzes Passed	RP Quizzes Taken	% Correct Target	% Correct Avg	Points Target	Points Earned	Points % of Target	Points % Read Indep.	Points % Fiction	Engaged Time per Day	Book Level ATOS BL Target	Book Level ATOS BL Avg	Certification Working Towards
Spiers, Kieran		14	14	85	98.6	-	41.8	-	100	100	48	-	4.8	Ready(2)
Toner, Enda		11	11	85	96.4	-	33.9	-	97	100	52	-	5.0	Ready
Vir, Sanober		11	11	85	93.6	-	19.4	-	100	83	39	-	5.2	Advanced(2)
Westram, Dan		13	13	85	96.9	-	60.4	-	99	100	171	-	4.5	Achieved
White, Steve		13	13	85	96.9	-	69.0	-	100	96	71	-	5.6	Ready
Wilkinson, Lee		13	13	85	95.4	-	19.4	-	100	100	45	-	4.4	Achieved
Summary		428	451	85	92.5				90	97	58	-	4.7	

Diagnostic Code Summary

Number of Students	Percentage of Students	Diag. Code	Code Description
1	3	A	No quizzes taken during period
0	0	B	Low average percentage correct (70% to 79%)
0	0	C	Very low average percentage correct (below 70%)
6	18	D	Low points earned - less than ½ median points (½ median = 12.9 points)
0	0	E	Low percentage correct with above median points (median = 25.8 points)
0	0	F	Very low percentage correct with above median points (median = 25.8 points)
3	9	%	Percentage of quiz takers with average percentage correct below 85%

At Risk: 21.9% of students (7 out of 32) with at least one code A-F

Class Summary

Number of Students	32
Total Quizzes	
Passed	428
Taken	451
Total Points	
Target	-
Earned	1147.1
% Read Independently	90%
% Fiction / Non-Fiction	97% / 3%

Class: Year 8

Teacher: Wilcott, P

Student	Diag. Codes	RP Quizzes Passed	RP Quizzes Taken	% Correct Target	% Correct Avg	Points Target	Points Earned	Points % of Target	Points % Read Indep.	Points % Fiction	Engaged Time per Day	Book Level ATOS BL Target	Book Level ATOS BL Avg	Certification Working Towards

Figure 13: Diagnostic Report

Source: http://www.renlearn.co.uk/wp-content/uploads/2014/07/ar_diagnosticreport.pdf

Another report generated by AR for the educator is the Student Record Report. (Figure 14) This report shows the results of all the quizzes the student has taken during a specified time period. It shows the educator which quizzes the student has been successful with and those ones that have been too challenging.

Camilla, Williams

Year: 2 Class: Year 2
Teacher: J Bell

Reading Practice

Date	Quiz Information				Questions			Points		ATOS BL
	No.	Title	F/NF	TWI	Corr.	Poss.	%	Earned	Poss.	
28/09/2013	204497	My Dad	F	I	2	5	40.0	0.0	0.5	1.4
16/09/2013	205620	Dear Mum, I Miss You!	F	I	2	10	20.0	0.0	1.0	5.0
08/09/2013	207989	Hamish Finds Himself	F	I	4	5	80.0	0.4	0.5	1.1
07/09/2013	203381	You and Me, Little Bear	F	I	5	5	100.0	0.5	0.5	2.0
28/08/2013	200435	Fox on Stage	F	I	5	5	100.0	0.5	0.5	2.1
23/08/2013	206487	Goldilocks and the Three Bears	F	I	5	5	100.0	0.5	0.5	2.2
08/08/2013	208000	Cat in the Coat, The	F	I	5	5	100.0	0.5	0.5	1.0
02/08/2013	200879	Please, Do Not Drop Your Jelly Beans	F	I	5	5	100.0	0.5	0.5	2.0
Quizzes Passed/Taken: 6/8							80.0	2.9	4.5	2.0[a]

Vocabulary Practice

There are no quizzes for this student during this reporting period.

Literacy Skills

There are no quizzes for this student during this reporting period.

Figure 14: Student Record Report

Source: http://www.renlearn.co.uk/accelerated-reader/reports-and-data/

The Parent Experience

AR also has a login for parents. This allows a parent to view the progress that their child is making with the programme. School A, The Experiment Group, did not use this feature of the programme, therefore, it was not considered as part of this evaluation of AR. Despite this feature not being used by the Experiment Group it is worth noting that this feature existsand is used in some schools that utilise the AR program.

How Are AR Books Categorised?

The AR available books are organised according to book level and interest level. The book level identifies the difficulty of the text whereas the interest level identifies the grade or age for which a book's themes and ideas are deemed appropriate. It is important, therefore, for teachers to be conscious of these categories when assisting students to choose a book to ensure that students are not reading material beyond their years. Just because a student is capable of reading a particular book does not mean that the content and theme of the book

is age appropriate. The interest level and book level also determines the point value for each book.

How Are the Points Calculated?

Points are awarded to each book depending on the number of words contained in it and its reading level. The AR manual clearly outlines how AR points are calculated, explaining that "Points are assigned to each book based on its length and difficulty. For example, the Berenstain Bears books, which are about 8,000 words long, are 1-point books. *Hank the Cowdog*, which is about 23,000 words long, is a 3-point book. *The Sun Also Rises*, about 70,000 words long, is a 10-point book. The formula for calculating points is: AR points = [(10 + book level)/10] x (words in book/10,000)" (Renaissance Learning 2019). The AR programme uses the points system to keep track of how much reading a student has done.

Key Principles of Accelerated Reader

1. Independent guided reading.
2. Instant feedback on reading recall.
3. Monitoring of students reading and performance – motivational as students see their ZPD rise and receive TOPS reports.
4. Clear accessible contact between school and home.

Cost of Accelerated Reader

The researcher contacted the AR office in England to get a breakdown in cost for the AR programme. The AR website does not provide a breakdown in cost. The reason for the lack of details regarding cost became clear when the researcher made contact with the AR office in England. According to the representative on the phone, AR is priced on a school-by-school basis. AR provides tailored costing to suit the needs and demographic of the school that wishes to purchase the programme. The following elements determine the price:

The number of pupils – there is an initial set-up fee and a subsequent annual licence fee

Training cost – first year only

Access to the digital library of quizzes

DEIS status of a school also affects the price of the programme.

The following is a breakdown in cost for the Experiment School that used AR and was part of the population of this research.

Cost of AR for the Experiment School

The researcher asked the principal of the Experiment School for a breakdown of the cost of AR for the Experiment School. The principal informed the researcher of the cost of AR for the subscription period 1 June, 2018 to 31 May 2019. When purchasing AR a school must purchase a licence for each student. This allows the school to register a student with AR and provide each student with their own log in details. A licence gives a student access to their AR Dashboard, STAR tests, quizzes, their bookshelf and sunflower. The literacy licence fee including AR access for twenty-five pupils costs €860. The licences for the Experiments School's remaining 225 pupils cost €5.45 per student totalling €1,226.25. For the Experiment School the cost of using AR for one academic year totalled €2,086.25. This is the cost of the AR online platform. This price does not include purchasing reading material to stock an AR suitable school library. All reading material whether in the form of digital or otherwise is purchased by the school or student independently of the AR programme and the cost varies depending on the price of books chosen by the school. The cost of stocking an AR school library is the same as stocking any other school library. It is important to note the Experiment School also paid initial start-up costs in their first year of using AR for which the researcher does not have the details of. As outlined in the previous section, these initial start-up costs are quoted on a school-by-school basis.

Implementation and use of AR in Ireland's Post-Primary Schools

Despite being an American-designed reading management programme Accelerated Reader is used in Ireland. At present according to a representative in the AR office in England, contacted by the researcher by phone there are between 250 and 270 schools in Ireland currently using AR. Of those 250+ schools sixty of them of them are post-primary schools. The representative stated on the phone that use and interest in AR has mainly spread by word-of-mouth from one school to another. The Junior Certificate School Programme (JCSP) has also according to the AR representative been in part responsible for the introduction of AR to the post-primary school sector in Ireland.

Summary

This chapter has contextualised the research in terms of literacy educational policy in Ireland while outlining broader European influences on literacy policies. It has also defined literacy and illustrated the evolution of the term 'literacy' within the Irish context. Literacy in the twenty-first century is no longer confined to print media and literacy instruction needs to reflect this change. According to the external evaluations and comparative studies outlined

in this chapter, Ireland needs to improve the literacy standards of students to enable each person to engage with society and to be socially included. Without adequate standards of literacy, individuals cannot excel and thrive in society. Economic standards and the success of a society depends on the literacy standards of the nation's people. If the people of Ireland are to compete and be heard as global citizens, then their literacy standards need to improve. This chapter has shown that a strong top-down approach to literacy driven by external agencies has been in place in Irish literacy policy. This research advocates for a ground up approach to literacy improvement, an approach that puts students at the centre of their learning.

It is also clear from a review of policy documents that simply having literacy policies alone is not sufficient. The review of policy documents illustrates the need to evaluate literacy strategies and resources. This research seeks to evaluate one resource, a reading management program, AR to determine its effectiveness as a means of improving the literacy standards of Irish post-primary students. The study aims to evaluate the effectiveness of AR as a means of improving the literacy standards of Irish post-primary students. The following chapter, Chapter 3, Literature Review will provide a more focused examination on the evaluation of AR.

Chapter Two Literature Review

Introduction

This chapter reviews the extant scholarship around literacy, digital literacy and technology aimed at enhancing literacy education. The previous Context Chapter brought four key areas to the fore. Firstly, the previous chapter provided a definition for the term literacy. Literacy is an essential life skill that when nurtured, evolves and grows with the individual to meet their needs at each stage in life. Literacy skills, when nurtured grow with the individual and enable them to integrate and engage with the ever-changing society and world around them. As discussed already, ICT is the most recent change in society to impact the definition of literacy. A quality literacy education must include ICT to enable twenty-first century learners to engage with society. This definition of literacy as defined in the previous chapter is maintained throughout this research.

Secondly, the Context Chapter outlined the policies and external evaluations that have shaped literacy education in the Irish post-primary context. The review of these policies identified the need to improve and develop the literacy skills of the Irish population. This review also pointed to the need to narrow the gender gap in terms of literacy performance between male and female students. Thirdly, the previous chapter calls for a ground up approach to improve the literacy standards of Irish post-primary students. Currently in Ireland there is a strong top-down approach to literacy education. The Context chapter seeks a literacy education with a student-centred approach that aims to improve the literacy standards of Irish post-primary students. Finally, the Context Chapter identified the need for evaluation. It stresses the importance of evaluating the resources used in classrooms to determine the impact they are making on the literacy standards of the students that use them. This chapter aims to review the available literature on AR to determine its effectiveness as a means of improving the literacy standards of Irish post-primary students. The aim of this review is to explore current literature about Accelerated Reader and its use in schools as a means of improving students' literacy standards. Before focusing on AR, it is important to determine what is known about digital technology and its impact on literacy education, particularly in the Irish context.

Technology and Literacy

The Context Chapter identified that ICT has had an impact on the definition of literacy for a twenty-first century learner. Societal advances in technology have meant that students have

had to learn to read and be literate in a new way. Bernadette Dwyer is a key voice in the area of ICT and its impact on literacy. Dwyer states, "There is no single unifying theoretical perspective in the literature to explain the changes brought about to literacy by the advent of the internet and other ICTs" (Dwyer 2010). Each school has their own story to tell with regard to their digital journey. To help with the integration of ICT into teaching and learning and to enable all schools to incorporate ICT into daily practice, *The Digital Strategy for Schools 2015-2020* was introduced. *The Digital Strategy for Schools 2015-2020: Enhancing Teaching, Learning and Assessment* provides a rationale and a government action plan for the integration of ICT into teaching, learning and assessment practices. The strategy claims that "ICT can help transform all aspects of education, particularly at primary and post-primary level" (Department of Education and Skills 2015).

The Context Chapter of this study identified early school leavers as one of the concerns noted by the Department of Education and Skills for the need to increase the literacy standards of Irish people. School retention was the main aim of many of the early policies that sought to increase Irish literacy standards. *The Digital Strategy for Schools* outlines that there is evidence to suggest that if ICT is integrated into the classroom in a creative way it can "allow students at risk of early school leaving to connect with learning in new ways, resulting in improved motivation, attendance and completion across subject areas" (Department of Education and Skills 2015). This increased motivation and application in turn would result in improved literacy standards. Not only does the strategy claim that the integration of ICT can help with school retention, it also claims that it "is a principal enabler of children at risk of educational disadvantage, with low levels of achievement in the formal education system" (Department of Education and Skills 2015). The strategy claims that when ICT is appropriately embedded into an educational setting it can enable students to learn in new and exciting ways. The strategy also claims that the incorporation of ICT can make communication easier and more effective for students at risk of educational disadvantage. Despite the guidelines provided for schools, each one has adapted to and utilised the advent of the internet and other ICTS in different ways and at varying pace. The integration of ICT into classroom is a journey for each school and at times may seem uncertain. One thing, however, is for certain, ICT is here to stay and a twenty-first century student needs to be equipped with the literacy skills that enable them to read and comprehend online and digital texts as well as print texts. ICT has affected the act of reading.

The Act of Reading

The availability of online information and reading material has greatly affected the skills that

students need to be literate. While successful online and offline reading share several key skills, such as decoding and word recognition, reading online introduces new challengesfor the reader. Reading online requires a deeper level of higher-order processing skills, strategies, practices and dispositions (Dwyer 2016). This new way of reading requires teachers to teach students the skills necessary to navigate online reading material and become a new type of reader.

Dwyer (2016) describes this new reader as assembler, fixer, builder and responder. Print texts are linear, meaning they have a clear beginning middle and end that is constructed by the author and easy for the reader to follow. Online material is nonlinear, and the reader must assemble their own pathway as they navigate the text. The online reader according to Dwyer must also be a fixer. Online reading requires the reader to navigate "multiple websites and multiple modes of representation" (Dwyer 2016). The reader must navigate the variety of information types available including video, audio, image and text. The reader must fix the material accordingly into pockets of information that they can comprehend, understand and retain. Thirdly, Dwyer describes this new online reader as a builder. The online reader builds upon their own prior knowledge by activating it and fusing it with the new knowledge gained from the online platform. Finally, the online reader must be a responder. Being a responder is one of the most significant and challenging of changes for readers. Previously print texts and books went through vigorous proofing to check the reliability of context. Students and teachers were safe in the knowledge that the material printed was accurate, unbiased and without alternative motive. However, in today's society anyone can be the author of online content and publish it. For this reason, students need to be able to discern the accuracy of the material that they read online. Students need to be taught not only to read for comprehension but also to read for purpose, ie. what is the author's purpose when writing this text? What message is the author trying to convey or persuade the reader of? The onlinereader must be able to respond to the material they read, they must "act as a gatekeeper, online curator and editor of online information" (Dwyer 2016). It is not only online readingmaterial that has changed in the last decade. Textbooks in many schools have been replacedby eBooks or teacher-created online content. Dwyer (2014) draws attention to the changing nature of educational material when she discusses the reduction in the use of textbooks in schools in economically advantaged nations. These schools rely on the internet more for information and, therefore, students areexposed to material that may or may not be accurate or written with good intention. Not onlyare students using the internet more for information they are also using and being encouraged in some schools to use ebooks. They bridge the gap between

reader and author as they allowthe reader to make notes, highlight, view video content and even have links to further online content to support the learning. This new way of reading has been referred to as digital literacy. The NCCA's short course on Digital Media Literacy explains digital literacy on thewebsite as follows:

"In studying digital media, students learn to use digital technology, communication tools and the internet to engage in self-directed enquiry. As students develop their digital literacy skills, they improve their capacity to know what they are looking for, what information to ignore or discard, andhow to identify what can be useful or significant. They learn to discriminate between the multiple sources of information available online and to challenge the views they find there. They learn how to create, collaborate and communicate effectively and ethically" (National Council for Curriculum and Assessment 2013).

This new way of reading brings with it many challenges for students especially reluctant learners and reluctant readers. That being said, this new way of reading brings about many opportunities for students too. Larson & Dwyer (2015) while acknowledging the challenges that this new way of reading has claimed that combining e-book reading with other collaborative online learning environments "offers promising opportunities for supporting and deepeningstudents' individual meaning making while appreciating and learning from multiple perspective and peers". The International Reading Association (IRA) urges educators to integrate digital technologies into the classroom to prepare students for learning in the twenty-first century (International Reading Association 2009). A wide variety of resources are available online to help teachers and students develop the skills necessary to be literate in the twenty-first century. AR is one ICT resource that is available to help students improvetheir reading ability and literacy standards.

Rationale for Inclusion in Literature Review

In order to conduct this review on AR, a number of data sources were used. This literature was analysed in NVivo using coding to identify key themes and to identify a gap in the literature. The following are the key resources that were used to establish the current literature available on AR.

- The Accelerated Reader Website has a database of research that has beenconducted on AR. Each of these studies were included in the literature review.
- The Library at Dublin City University and the online database available from the Dublin City University website was used to source books and journal articles on Accelerated Reader.
- Scopus, the world's largest database of peer-reviewed research was used to source

research that was conducted on Accelerated Reader.

- The Education Resources Information Center (ERIC), an online digital library of education research and information was used to search for research relating to AR.
- National Reports and publications from governmental bodies and organisations such as the Department of Education and Skills, NCCA and The NationalLiteracy Trust were sourced from the relevant websites.

The analysis and evaluation of the researched literature facilitated an in-depth understanding of the theory and practice associated with literacy education. It also provided a greater understanding of the existing research conducted on the effectiveness of AR as a reading management programme. The literature review process enabled the researcher to identify the possibilities and limitations associated with using AR as a means of improving literacy standards. The abundance of developer-sponsored reviews and the lack of independent research conducted on the effectiveness of AR was a primary challenge during the literature review stage.

Research Cited on the AR Enterprise Website

The Accelerated Reader Enterprise website contains a substantial list of research and evaluation reports, most of which are developer sponsored on all Renaissance Learning programmes such as Accelerated Maths, Fluent Reader and Power Up, as well as Accelerated Reader. For the purpose of this research the focus is on the 173 research reports that investigate Accelerated Reader. Of the 173 research reports cited thirty-two are experimental or quasi-experimental, 105 are correlation research and case studies, eleven are product foundation white papers, two are reliability and validity assessment research reports and twenty-three have been led independently. Of the twenty-three independent research investigations only eleven have been peer-reviewed (Renaissance Learning).

Normally a literature review would consist of peer-reviewed literature that is independently researched. In the case of this research there is very little peer-reviewed independent research available on AR. The majority of the work on the effectiveness of AR as cited on the AR website is developer-sponsored research. In many cases those evaluating and conducting research on AR as a reading management programme are connected to the developer of the programme. Developer-sponsored reviews pertains to research and reviews that were conducted by the creators of AR. The company itself reviewed the success of the product. As expected by developer-sponsored reviews, all the reports promote AR and ultimately

support the effectiveness of AR. Of the twenty-three independent research reports, only one outlines the advantages and disadvantages of AR as a reading management programme. The remaining twenty-two outline the advantages only.

The independent research report which outlines the advantages and disadvantages of AR is *Formative Assessment of Reading Comprehension by Computer: Advantages and Disadvantages of the Accelerated Reader Software* by Keith Topping. This research is a summary report of various research that Topping conducted on his own or with others on AR. Topping outlines in table format, the advantages and disadvantages of AR under various headings. Each disadvantage is preceded by a positive statement that dilutes the impact of the original disadvantage. For example, according to Topping, one disadvantage of AR is "Cost in terms of teacher time" (Topping 1999). He explains that "AR has to be managed effectively by professional teachers and thus it incurs time costs" (Topping 1999). Topping immediately puts a positive spin on this otherwise significant disadvantage by stating, "[it is] realistic to expect that good implementation of the programme might not save teacher time, but it should enable more effective use of that time" (Topping 1999). In another instance, Topping identifies "student preoccupation with AR books" (Topping 1999) as a disadvantage. He explains that some teachers were worried about limiting student reading to books which had AR quizzes available and thus, excluding other books that the individual reader may have been more interested and eager to read. Similarly, Topping precedes this concern with a positive and motivational statement, "after the school has audited its book stocks and ordered a large customised AR test collection to fit, such concerns usually dissipate" (Topping 1999). In light of this very brief overview, it could be argued that the objective of this report is to present AR as an effective reading management programme.

Another of these high school independent studies listed on the AR Enterprise website is, *Informed Choices for Struggling Adolescent Readers: A Research-Based Guide to Instructional Programs andPractices* by Donald D. Deschler, Annemarie Sullivan Palincsar and Gina Biancarosa. The Accelerated Reader Enterprise site only contains an abstract of the report. It does not providethe full text, claiming that the report is available upon request. However, when emailed requesting the report it was deemed to be unavailable. The study aimed to evaluate the effectiveness of reading programmes when used with struggling adolescent readers. The authors identified forty-eight available programmes and assessed them using the following criteria: availability of professional development, use of data driven tools and assessment, ability to motivate and engage reluctant adolescent readers and

the number and type of evaluations and research (Deshler, Palincsar *et al*. 2007). The abstract only boasts of AR's research and evaluation achievement. "Of the 48 programs, [AR] was one of only three thathad more than 10 evaluations and 10 peer-reviewed studies" (Deshler *et al*. 2007). The abstract fails to mention AR's results regarding the other three more substantial criteria of assessment as employed by the report" (Deshler *et al*. 2007).

Considering the above developer-sponsored and independent research as cited on the AR website, it is clear that the AR website only cites studies that confirm the effectiveness of AR. The AR Enterprise website is biased in its representation of the research conducted on AR and only references and makes available the research that voices the success of AR. Many of the reports are ambiguous as only an abstract of the research is available. Some Ambiguity also exists among the research studies that have full text available. As identified by Kulik, rarely if ever do any of the reports use a control group to determine the success of AR. Success is determined through an increase in pre-test to post-test scores. Kulik states, "instead of comparing scores from AR and control schools, the studies compare pre-test and post-test scores in schools that use AR, or they compare scores of AR students to national or statenorms" (Kulik 2003). Furthermore, none of the research available on the Accelerated ReaderEnterprise website identifies the number of books read or quizzes taken by each student in the experiment, nor do they outline the implementation of other reading strategies employed by the research school. It is unlikely that a school would be using AR as the sole means of encouraging and promoting literacy and reading among their students. Similarly, implementation and organisation of AR in the research schools is not outlined in the reports.

Deriving from this analysis of the research listed on the AR Enterprise website it has become clear that further independent research on the effectiveness of AR is necessary. There is not any practitioner-based research conducted on the effectiveness of AR. There is also a distinct lack of research conducted in the Irish context. Also, it is evident that a limited number of the reported research investigations are longitudinal. Much of the research is compiled within the time frame of one or two years. Research does not exist, therefore withregard to the long-term effectiveness of AR as a successful reading management programme. Furthermore, a review of the literature available on Scopus and Eric revealed that studies resulting in negative views of AR are not listed on the AR website.

With these gaps in the literature in mind, the remainder of this Literature Review chapter

aims to compare and contrast the available literature from a variety of sources including research cited on the AR Enterprise Website and outlined above to determine the effectiveness of AR as a means of improving literacy standards.

Literature Review Method

Thematic analysis was employed for reviewing the relevant independent and non-developer-sponsored research and reports on AR as a reading management program. Thematic analysis is described as "… a method for identifying, analyzing, organizing, describing, and reporting themes found within a data set" (Braun & Clarke 2006). The researcher chose this method of literature analysis for a number of reasons. Firstly, thematic analysis of the literature allowed for patterns in the literature to emerge naturally without the researcher imposing preconceived ideas on the literature. Secondly, thematic analysis of the literature provided the researcher with a lens to analyse the data gathered for this research project. The emerging themes from the analysed literature reviewinformed and guided the analysis of the new data gathered during the data collection stage of this research. As Robson correctly states, "…there is nothing to stop you starting the analysis [of gathered data] with predetermined codes or themes, perhaps arising from your reading of the research literature" (Robson 2011). Tuckett also promotes prior engagement with themes during the literature review stage as he claims that it can "enhance your analysisby sensitizing you to features of the data that might otherwise be missed" (Tuckett, 2005 as cited in Robson 2011). The themes that emerged in the literature review also had the addedadvantage of helping the researcher to formulate informed questions for survey and interview purposes.

NVivio was used by the researcher to bring together what has been said about AR to date. NVivo was also used in an effort to be streamlined about what is known about AR and to avoid repetition for the reader. NVivo was employed to support the coding of the literature and to conduct a thematic analysis of the literature. "Coding is the process of breaking down segments of text data into smaller units (based on whatever criteria are relevant), and then examining, comparing, conceptualizing, and categorizing the data" (Strauss & Corbin1990). The researcher input the literature into NVivo in the form of a source. The researcherthen read each piece of literature and coded it using the following two-step process.

1. Open Coding: The researcher used open coding to begin an analysis of the literature collectively. "An open code is simply a new label that the researcher attaches to a piece of text to describe and categorise that piece of text" (Strauss & Corbin 1990). Each of these codes formed a node in NVivo. These nodes contained references from

the literature on broad topics such as, AR Quiz, STAR Tests, reading ages, intrinsic reward, extrinsic rewards, book choice, reading gains, etc.

2. Analytical Coding: The researcher used analytical coding to analyse each of the nodes and to create sub-nodes. “As its name suggests, an analytic code is more than a descriptive code. It becomes more interpretive” (Cohen, Mannion & Morrison. 2011). This process of coding allowed the researcher to see emerging patterns within the nodes and therefore identify the emerging themes within the literature. These themes included Reading Gains, Motivation, Lifelong Learning etc.

To comprehend and evaluate the available literature on AR it is best analysed using the themes that emerged during the literature review stage. The following is a thematic discussion on the findings from the literature review. The thematic analysis during the literature review as outlined above identified the following key themes: Reading Gains, Motivation, Lifelong Reading, Assessment and Gender.

Reading Gains

Reading Gains was a theme that emerged during the literature review process. When coding the literature in NVivo the researcher used the code ‘Reading Gains’ to encompass any node that made reference to AR improving the reading level of a student. The fundamental purpose of AR according to the AR manual is to “enable powerful [reading] practice” (Renaissance 2014). The AR manual defines effective reading practice as reading that is at the correct level of difficulty, has a sufficient amount of time, is guided by the instructor and enjoyable enough to sustain. (Renaissance 2014). If reading practice iseffective, AR claims that it can increase and monitor student’s reading ages. A number of researchers have attempted to prove or disprove AR’s ability to increase reading-age.

Terrance Paul, the creator of AR aimed to “demonstrate the positive impact of school ownership of AR on attendance and standardised test scores” in his study *Impact of the Accelerated Reader Technology- Based Literacy Program on Overall Academic and School Attendance* (Paul, VanderZee *et al*. 1996). This large scale longitudinal, experimental study carried out and documented by Paul in 1996 compared 2,500 elementary, middle and high schools using AR to 3,500 schools not owning the programme, from similar geographic and demographic characteristics. The research concluded that schools owning AR outperformed schools that did not own AR. The research also concludes that AR owning school have greater levels of attendance than their non-AR peers. Finally, Paul claims that the longer a school owns AR the greater positive effect it has on attendance and subject standards (Paul

et al. 1996). In 1997, Paul repeated this study with replicated results.

To reiterate and prove his findings further, Paul collaborated with Topping in 1999 to conduct a similar study, *Computer Assisted Assessment of Practice at Reading: A Large Scale Survey Using Accelerated Reader Data.* Their research analysed data from 659,000, k12 students over a one-year period. The study explored the relationship between reading practice, student reading performance and the organisational features of the school system. The data reiterated the results from the previous 1996 and 1997 investigations, demonstrating that AR ownership increased students' academic achievement. The research also concluded that a student's reading ability was directly related to the amount of school allocated reading practice (J Topping, Terry D Paul, Keith 1999). This research was peer-reviewed and published on Scopus in '*Reading and Writing Quarterly*'.

While these research investigations are valuable and give huge insights into the potential success of AR, the results need to be contextualised. Other components not outlined in the research could be responsible for the increase in attendance rates and success of students in various subjects. As Kulik argues, "other factors can also explain the correlation. For xample, schools with strong administrative leadership or active parent groups or more resources may be more likely to buy AR software and also to have students who do well on achievement tests" (Kulik 2003). It is also important to note that all three of the research experiments were conducted by the creator of AR who, as expected, has a monetary investment in the programme and is, therefore, dependent upon the success of AR in the reading management market. For this reason, independent research is vital to prove the success of AR as a reading management programme and to establish whether or not it is a suitable method of combatting the literacy problems that currently exist within the education system.

In 2000, for the purpose of completing the requirements of an MA, Nancy E. Facemire conducted an independent nine-week investigation entitled, *The effect of the Accelerated Reader on the Reading Comprehension of Third Graders.* The research aimed to examine the effect of Accelerated Reader on the reading comprehension scores of third grade students in a socio-economically disadvantaged area of West Virginia (Facemire 2000). The study examined the pre-test and post-test results of forty students from two separate third grade classes with different teachers within the same school. STAR reading was used to pre-test and post-test students. Sixty percent of the students were from socio- economically disadvantaged backgrounds. None of the members were from ethnic minorities (Facemire

2000). One of the third grade groups were employed as a control group. The control group had no engagement with the Accelerated Reader programme, withthe exception of using the STAR reading assessment at the beginning and end of the nine- week period. All students in both groups had access to the library for eighty minutes per week. Students were also given twenty minutes of silent reading class time per day. Studentsin the control group experienced a 9% increase between pre-test and post-test scores, whilestudents in the Experiment Group experienced a 17% increase. Facemire concluded that ARimproves reading comprehension among third grade students. However, she is aware that inorder to increase the validity of this research it needs to be, "replicated with a much larger student sample … for a longer period of time…" (Facemire 2000). It is worth noting that this research does not indicate the number of books read by each participant, nor does it indicate the number of quizzes taken by the experimental group. This information isnecessary if the hypothesis is to be proven beyond doubt.

A much larger independent study was carried out by The National Dropout Prevention Center/Network in America, entitled Accelerated Reader Rated as 'Strong Evidence of Effectiveness'. This research review was compiled using a much larger student sample than Facemire's research. Data was collected from 344 students and nineteen teachers in three elementary schools in America. The review states that a control group was employed in the research process. The exact methodology of the research process, however, is not outlined in the review. The research concludes that all AR students demonstrated improvement and therefore the review deduced that AR is effective. The review claims, "Accelerated Reader has been proven effective with a variety of students in K-12 classrooms…" (National Dropout Prevention Centre).

Similarly, Vollands, Topping and Evans in 1999 conducted a "quasi-experimental action research evaluation" (Vollands, Topping & Evans 1999). Computerised Self –Assessment of Reading Comprehension with the Accelerated Reader: Action Research in two schools from severely socio-economically disadvantaged areas in Aberdeen and North East Scotland. This study was peer-reviewed and published on Scopus. The aim of the research was three-fold. Firstly, the study aimed to investigate whether the AR software would prove effective in a different culture setting with at risk readers. Secondly, the research aimed to carry out a more rigorous quasi-experimental evaluation as it tried to control for more of the potential confounding variables than previous studies. Finally, the evaluation tried to determine the extent to which the implementation of the AR programme affected the effectiveness of the programme (Vollands, Topping & Evans 1999). The study included

pupils with reading delay, children with special educational needs and those learning English as a second language (Vollands, Topping & Evans 1999). Students from two schools were involved in the study and a control for each school was employed. The study concluded that AR even when less than fully implemented, yielded gains in reading achievement.

Cassidy, Styers, Wilkerson and Peery (2015) in their twenty-four-week research report *Computer Assisted Learning in Elementary Reading: A Randomised Control Trial*, also found that the AR "program had a statisticallysignificant positive impact on student reading gains when compared with traditional readinginstruction" (Cassidy, Styers *et al*. 2015). They clearly state, "students who engaged with the computer-assisted learning programme at an appropriate level had greater learning gains in reading than students who were taught using traditional approacheswithout a related computer-assisted component. The study's findings suggest that when students engage in computer-assisted learning that incorporates progress monitoring, continuous feedback, and independent reading practice aligned with their interests and ability levels, their reading outcomes will increase significantly" (Cassidy Styers *et al*. 2015).

Likewise, Siddiqui, Gorard *et al.* (2016) in their peer-reviewed paper, *Accelerated Reader As A Literacy Catch Up Intervention During Primary To Secondary School Transition Phase f*ound that AR had a positive impact on the reading ages of AR. The research evaluated 349 pupils in year seven who had not achieved Secure National Curriculum level four in their key stage two results for English. The research found that theAR programme increased a student's reading-age by "around an extra three months…" (Siddiqui *et al.* 2016). The research concludes by stating "that this implies that AR has had a modest impact on the treatment group" (Siddiqui *et al.* 2016).

Similarly, research funded by the Education Endowment Foundation (EEF) an independent charity dedicated to breaking the link between family income and educational achievement found that AR when implemented correctly improved students reading ages by three months. The summary of the research states, "the study found that Year 7 pupils who were offered Accelerated Reader made 3 months additional progress in reading compared to other similar pupils" (EEF 2019). The study goes further to say that ARwhen used with students that are eligible for free school meals and are, therefore, from low income families it had a greater impact on their reading-age and increased their reading-ageby five months. The research summary states, "for pupils eligible for free school meals the figure was 5 months' additional progress" (EEF 2019).

Catherine Moran, an Irish researcher also advocates the effectiveness of AR as a means of improving students' reading scores. Like Vollands, Topping and Evans, Moran researched the effect of implementation on the achievement of AR. Moran carried out a one-year case study in a disadvantaged school in Ireland with thirty-five, first year, JCSP (Junior Certificate Schools Program) students. One of the aims of Moran's case study was to "determine whether a specific computer-based reading development programme, i.e. the Accelerated Reader Programme, when implemented through a professionally staffed school library, actually impacts on the reading comprehension and literacy development" (Moran 2009). Similar to previous developer-sponsored research Moran's findings illustrated that AR has a positive impact on students' literacy development. Moran discloses that all the adults interviewed by her stated "that, in their view, the literacy skills of the students had improved through use of the [AR] Program" (Moran 2009).

Reading Gain Summary

It would appear from this literature review of reading gains, that AR has a positive impact on the reading ages of students. However, it is unclear from the literature whether it is the AR programme that has the impact on student reading ages or is it the fact that AR students are spending more time engaged in reading activities that has improved their readingages. As Foster and Foster highlight in their research *Estimating Reading Growth Attributable to AR at one American School in the Caribbean,* that a student using AR must read for 800 hours in order to increase their reading-age by one year. "800 hours of time each year for students grade 3 through grade 12 to achieve a year of growth" (Foster & Foster 2014). It is also important to note that the majority of the studies used to determine the affect AR has on reading ages did not use a control. The research compared pre-STAR test results to post-STAR test results in schools that usedAR. A majority of the research did not use a control group. The absence of a control group could be considered a limitation to the studies. A more balanced approach might have involved the use of a control group, populated with students not using AR. This type of control group would enable the researcher to verify that the element making the impact on the reading ages of the participants was AR and not some other variable. The control groupwould have enabled the researchers to determine if it was in fact the AR program that increased a student's reading-age by three months or some other factor. It is plausible that the reading ages of the students would have increased by three months even if AR was not being used. If the researchers used a control group this variable and possibility would have been removed. The literature review of reading gains also shows that each of the above studies use reading ages alone to measure a student's

reading gain. This poses the question,is the improvement of reading ages alone a sufficient measure of a student's readingsuccess?

Within the Irish context, The National Framework for Junior Cycle as outlined by the NCCA identifies eight key skills that are central to the learning of post-primary Junior Cycle students. Being literate is one of these key skills. According to the framework being literate includes:

- Developing understanding and enjoyment of words and language
- Reading for enjoyment and with critical understanding
- Writing for different purposes
- Expressing ideas clearly and accurately
- Developing spoken language
- Exploring and creating a variety of texts, including multimodal texts (National Council for Curriculum and Assessment 2019).

In light of this outline of literacy, it is clear that reading-age tests alone are not capable of capturing the full picture of a student's reading ability as it is defined above by the NCCA. There is more to an individual's reading ability than a reading-age determined by a result from a standardised test. A student's reading-age is a very limited view of their reading ability. Sainsbury outlines four key stages in the development of the act of reading. She refers to this as "The Construct of Reading". The first stage of the construct is decoding. The learner "recognises that the ability to translate all written words into their spoken form underlies all other reading processes" (Sainsbury, Harrison *et al*. 2008). This is usually assessed using word reading tests or phonological assessments just like those used byAR's STAR test. This is the base line information that reading-age tests provide. The secondstage of the construct of reading is comprehension. Here the learner combines grammatical knowledge with recognising the written form of the word. In this stage the reader attaches meaning to the word, sentence or passage. This is usually assessed with sentence completion tests or literal comprehension exercises. These tasks are also part of AR's STAR Test as outlined in the Context Chapter. The third stage is known as responding. The learner engages purposefully with the text to make meaning. During this stage, the teacher would usually model the process of making sense of ideas, themes, plot and character. This is most commonly known as the study of literature. Assessment models for this stage tend to ask thought-provoking questions where more than one answer is acceptable. PIRLS and PISA are examples of this approach. "Reading by an experienced adult is an activity that is normally characterised by the 'responding' category. Word recognition and understanding

of vocabulary and grammar are taken for granted, as the experienced reader reads for purpose. This may be practical as in following a recipe, for interest and enjoyment, or in engaging in any number of professional and social functions (Sainsbury *et al*. 2008). The fourth and final stage of the construct of reading is referred to as analysing. Here, "the reader steps back from the meaning of the text and considers in relation to authorial techniques adopted and the literary traditions within which it was produced" (Sainsbury *et al.* 2008).

In keeping with Sainsbury's understanding of reading as a process that leads to an individual deriving meaning from text, Biggers also reported and criticises AR claiming that, "AR, like its counterparts, restricts students to demonstrating their comprehension solely by completing a computer-generated multiple-choice test" (Biggers 2001). Reading-age tests such as those used by AR measure stage one and stage two only of Sainsbury's four stage reading construct. As criticised by Biggers, "the program does not allow for or even suggest written responses, extension activities, or repeated interaction with the text. The only thing a child must do to demonstrate comprehension andreadiness to progress to the next level of books is score highly on the AR tests" (Biggers 2001). That been said Ernest Balajthy argues that there is some value to standardised tests, Balajthy sees these tests as a means of holding students accountable for their reading while at the same time freeing up teachers to focus on other aspects of teaching. He notes "the major advantage of these systems is their ease of management, freeing teachers to spend more time on other aspects of teaching and simultaneously holding students accountable forreading" (Balajthy 2007). Programmes such as AR provide teachers with base line data to aid the literacy education of a school. As Balajthy says, "the management systems provide teachers with a clear picture of how many books each student is reading, the difficulty levelof the books, and the quality of student performance on the quizzes." (Balajthy 2007). However, it is important to keep in mind the narrow view of literacy and reading thatthis information captures. There is much more to a reading programme and literacy education than reading ages and standardised scores as the NCCA clearly outlines inthe aforementioned Framework for Junior Cycle. Similarly, Kennedy (2014) warns that "what gets prioritized in classrooms sends out very powerful messages to children about what it means to be literate". If educators narrow literacy to answering lower order questionsimmediately after reading a text then they in turn narrow the definition of literacy to the ability to answer lower order questions.

Considering this, it is logical to accept that a successful reading management programme should capture all of a student's reading gains and illustrate the fullest, broadest definition

of literacy. Kennedy makes this point more explicit when she states, "…if we allow basic skills to dominate what counts for literacy in our classrooms, we deny children the opportunity to develop higher-order skills writhing authentic literacy experiences which promote literacy as a useful and desirable activity that can enrich our lives" (Kennedy, 2014). It is also reasonable to conclude that an effective reading management programme should help a student to progress and achieve each of the four reading stages as outlined by Sainsbury. From this review of reading gains, it is clear that the way in which reading and literacy is assessed has a major impact on the message sent to students about what it means to be literate and the definition of literacy.

Assessment

Assessment emerged as a theme during the literature review process. The researcher included any node from the literature that made reference to assessing the literacy standards of students. This was inclusive of methods and practices used by teachers and researchers to determine whether or not students' literacy standards were improving. The researcher's understanding of assessment is in keeping with the definition of post-primary school assessment as defined by the NCCA.

Assessment is the process of generating, gathering, recording, interpreting, using and reporting evidence of learning in individuals, groups or systems. Educational assessment provides information about progress in learning, and achievement in developing skills, knowledge, behaviours and attitudes. (NCCA 2020).

There are three types of assessment involved in educational practice,

Formative Assessment or Assessment For Learning (AFL)

Certification or Assessment of Learning (AOL)

Diagnostic Assessment.

Assessment as Learning (AAL)

"Formative assessment stresses the value of informative feedback in the course of ongoing teaching. The information obtained from informal day-to-day assessment is used by the teacher to provide better-focused teaching. It can also be used by the learner as a powerful tool for improvement", according to Sainsbury. (Sainsbury *et al.* 2008). Formative assessment is "… all those activities undertaken by teachers, and or their students which provide information to be used as feedback to modify the teaching and learning activities in which they are engaged" (Black & William, 1998). The National Strategy to Improve Literacyand Numeracy Among Children and Young People advocated for the use of AFL in Irish schools. The strategy claims that AFL "should be used to inform all teaching but it is

not used sufficiently widely in our schools and we need to enable teachers to improve this practice" (Department of Education and Skills 2011). AFL is not only beneficial for teachers so that they can alter their teaching methods or strategies. AFL is very helpful for students as they are empowered to take control of their own learning experience as they can monitor and reflect on their learning progress. As Sainsbury states, "if pupils are able to monitor their own learning in this way, rather than relying on the teacherand other outsiders, they can play an active part in planning their own learning experiences" (Sainsbury *et al*. 2008).

Certification or Assessment of Learning (AOL) refers to "final examinations and tests [that] assess the reading curriculum covered in the course of schooling. The certificates awarded on the basis of these assessments serve to attest to the competence and understanding of the student" (Sainsbury *et al*. 2008). In Ireland these tests take the form ofend-of-year school exams and more high-risk state examinations such as the Junior Certificate and Leaving Certificate. The learning for this stage of the learner's life is over and the individual is awarded a final grade.

The third type of assessment is diagnostic assessment. "Diagnostic assessment is used when a child is experiencing difficulties in learning to read, in order to pinpoint the perceptual or cognitive problems that underlie the lack of progress", notes Sainsbury (Sainsbury *et al*. 2008). In this case a difficulty has been identified and a number of tests are conducted with the individual to determine the learning difficulty and to ascertain the correct procedures or support needed by the student.

A fourth type of assessment is known as assessment as learning. Assessment as learning is the ability "to self-regulate and critically evaluate" (Teaching and Learning, 2017). Assessment as learning is characterised by the individual student reflecting on their own learning and making adjustments so that that they can achieve deeper understanding. The focus of this type of assessment is on the learning journey rather than finding the correct answer to a question. Assessment as learning is particularly necessary in a digital age where students must navigate large amounts of data that is readily available to them. Students navigating this type of information learn to monitor their own learning and make adjustments as they see fit. The role of the teacher in this type of assessment is to provide opportunities for each studentto monitor their own learning.

To evaluate AR as a reading management programme it is important that the research evaluates the assessment methods used within the AR programme. The assessment method

types outlined above bring to light the question; what assessment methods does AR use and how effective are these methods in enhancing the literacy development of students?

AR's Assessment Methods

AR is a reading management programme that sets about aiding teachers to assess and monitor students' reading progress and literacy development. A number of researchers investigated AR's capabilities and usefulness as an assessment tool.

Topping and Paul claim "…accurately measuring the quantity of student reading was problematic before the creation of AR. Counting books students say they have read, observing the apparent time on task in the classroom, and using student logs are all of doubtful reliability and validity" (Topping & Paul 1999). They go on to say that "with computer assisted reading assessment, it has become much easier to measure reading practice and access data from much larger samples". As previously outlined in the Context Chapter, a student reads a chosen AR book, he or she logs onto their AR profile on a computer and takes a multiple-choice comprehension test on the content of the book. "The computer scores the test, awards the student points based on test results, and keeps a complete record of results" (Topping & Paul 1999). Topping states that "time allocated to reading does not necessarily equate to time engaged in reading, particularly at the right level and successfully" (Topping & Paul 1999). AR claims to measure reading practice and ensure that time spent reading is productive and accountable. This is inkeeping with Balajthy's idea of making students accountable for their reading as outlined earlier in this chapter. This poses the question; how do students feel about being accountablefor their reading? Thompson, Madhur and Taylor (2008) conducted a study using a student focus group to determine the students' views about the AR programme's efficacy. Accordingto their study one of the most common complaints from the focus group participants was that the way AR was being used at the school made students feel pressured and forced to read. One student is reported saying "I like to read, but I don't read anymore, and I have timeto read. Before, you would actually sit in your room and read a book and finish it in two
days. Now, I'm, like, after I finish the book, I have to go to school and take a test on it" (Thompson, Madhur *et al.* 2008). The focus group dissatisfaction with the assessment element of the AR program, claiming it was demotivating. The report states, "one student said that being forced to read decreased her motivation. She admitted, "I haven't even checked out a book yet, but it's because I hate reading when they tell me to" (Thompson *et al.* 2008).

Many researchers are not in favour of the assessment methods used by AR and indeed the content that AR assesses. Groce and Groce (2005) in particular take issue with AR quizzes, Groce and Groce (2005) state "The only thing a child must do to demonstrate comprehension and readiness to progress to the next level of books is score highly on the AR tests" Groce and Groce also claim, "the questions were not found to promote application, analysis, synthesis, or evaluation of the material presentedin the text". According to Groce & Groce (2005) "the only reading skills measured are comprehension and knowledge". Lamme echoes the thoughts of Groce and Groce on the assessment element of AR and observes, "students find it difficult to concentrate on the meaning of a text when they know that after reading they will need to take a test on facts in the book. TheAR tests examine memory of surface knowledge of character, setting, plot and theme, not about the deeper themes or issues in a book" (Lamme, 2003). Lamme 2003) advocates that "the tests encourage superficial reading and factual recall of information". This is also the case of the findings of Pavonetti, Brimmer and Cipielwski (2002) their research showed that "students typically don't have any trouble remembering the title of a book that they truly enjoyed reading, but AR readers scored poorly on a test of book title recognition".

It is the restricted assessment element of AR that is most criticised by researchers. As Biggers puts it "AR, like its counterparts restricts students to demonstrating their comprehension solely by completing a computer generated multiple-choice test. The program does not allow for or even suggest written responses, extension activities, or repeated interaction with the text" (Biggers 2001). Johnston in a journal article discussing literacy assessment in general not as a critique or AR states that, "we cannot afford assessment conversations that shrink our view of a child's promise and invite unproductive instructional practices and literate identities or that reduce the richness of the literacy we teach, regardless of the pressures to do so" (Johnston 2003). Johnston is not the only researcher that advocates for quality assessment of literacy skills. Kim, Hemphill *et al*. (2016) support Johnson when they state that "improvements in reading subskills … are not sufficient for deep comprehension. Effective intervention needs to expose adolescents to texts and reading tasks that are complex and open- ended enough to support sophisticated reasoning" AR's assessment methods are seen as restrictive and minimise literacy to its most basic component, instant recall of facts from books.

Brisco summarises the concerns and the problems that other researchers have with the literacy assessment method provided by AR when she says that once the computer programme is in place for the entire student body a books, "messages, its symbolism, or even

character development, come to an end. Instead, books are pulled off the shelves, examined for points, and then, without regard to genre or perhaps true interest, read by students in hopes of passing a 10- to 20-question multiple-choice test. This alone demonstrates that teachers and teacher-librarians are forgoing the instructional concepts of Bloom's taxonomy when it comes to literature instruction" (Brisco 2003). The students from Thompson's *et al* (2008) focus group echo the concerns of Brisco about the content of the AR quizzes. One student from the focus group that liked the AR programme criticised the content of the quizzes claiming that "the test should be more comprehensive. They do not really have anything about the book. It is, like, "where did they send so and-so in such and such chapter?" (Thompson *et al*. 2008). Research reports also found that teachers and school leaders had a problem with the assessment content of AR quizzes. They found that the quiz element of the programme was not challenging enough. "School leaders and teaching staff suggested that the AR quizzes need to be made more challenging in order to overcome doubts about whether pupils have read the books independently and not sought the answers from other resources" (Siddiqui *et al.* 2016). The teachers in this study also felt that the AR quizzes were a memory test. Some teachers believed that completing AR quizzes was as much a test of memory as of pupil's comprehension. They thought that pupils who had good memory and concentration levels scored higher than those who could not memorise details or those who had a short concentration span while doing a screen test. They would have preferred some writing activities to add variety to the assessment element of AR. "AR quizzes are always multiple-choice questions, but teachers felt that if there were small writing activities as well the intervention could have been more effective" (Siddiqui *et al.* 2016). From this it is clear that the literature on AR is critical of the assessment element of the program and its effectiveness.

Moran identifies a further problem with AR as an assessment tool in the Irish context. Moran, "sought to determine the extent to which the participating students' reading levels as determined by the AR diagnostic test the STAR reflects their reading levels as determined by the nfer Nelson Group Reading Test II (GRT II) Standardised Reading Test" (Moran 2009). With regard to this, the second aim of Moran's research, there were clear discrepancies between the STAR test results and the GRT II results. According to Moran's data, the STAR test showed that 62% of the participating students' reading ages increased. Whereas the GRT II test illustrates that 100% of the participating students' reading ages improved. Moran suggests that these discrepancies may be the result of a vocabulary issue in the wording of the STAR test compared to the wording of the GRT II test for the Irish

school context. Moran states, “vocabulary and terminology used in the STAR reading test can be confusing or inappropriate in an Irish context and may therefore cause students to score at a lower reading level on the test” (Moran 2009). E.g., drive/ride in the American context it is correct to say we went for a ride in the car however in the Irish context it is more common to say we went for a drive in the car (Moran 2009). This Moran explains may have caused confusion for Irish students taking the STAR test and, therefore, caused them to score lower. Due to the discrepancies between the two reading-age tests Moran says that further research is required, particularly in the Irish context.

Assessment Summary

In light of this research, AR’s assessment methods are seen as restrictive. The assessment methods used by AR minimise the definition of literacy. The review of the research literature found that AR assesses low level reading abilities and limits literacy to sentence completion and the ability to remember base line facts about a text. The assessment methods of AR limit the definition of reading and literacy while at the same time limiting the teaching and learning of literacy skills. It is also evident that only one study sought the opinion of the students using the AR programme. The literature raises a number of questions for the researcher:

1. Is it necessary to make reading accountable?
2. Is it the student or the teacher that benefits from this accountability?
3. Is there a better way of assessing a student’s literacy skills that does not limit the definition of literacy to word recognition and sentence completion?
4. Does the assessment of reading reduce a student’s motivation to read and to become lifelong readers? In other words, is assessment a motivating factor forstudents?
5. Do students enjoy and take pleasure from reading or are they motivated to read for extrinsic rewards, such as a high score on a reading comprehension test?

Motivation

Motivating students to read while encouraging and fostering a love of reading has always been a concern for teachers. It was no surprise then that motivation emerged as a theme during the literature review. Reading motivation refers to an individual’s values, beliefs, attitudes, and goals related to reading” (Kim *et al.* 2016). According to the 2011-2020 The National Strategy to Improve Literacy and Numeracy Among Children and Young People, any literacy programme employed by a school should “foster an enjoyment of reading among children and young people” (Department of Education and Skills 2011). The report clearly states that “positive attitudes and motivation are vital for progression in literacy and

numeracy". (Department of Education and Skills 2011). The AR manual reiterates this point as it claims that "the fundamental mission of Accelerated Reader is to bring the joy of reading to every student" (Renaissance 2014). AR strongly believes that students need to see their progress and reading success if they are to improve. The manual declares, "…if they [students] don't see the progress they're making with reading, they become discouraged or indifferent and resist reading altogether" (Renaissance 2014). The manual goes on to say that "[...] at its heart, Accelerated Reader is not about the quizzes, the points, or the technology. It is about turning kids on to books" (Renaissance 2014). From this it is evident that AR promotes itself as a motivational tool, aimed to enhance an individual's experience of reading and thus foster a student's desire to read for pleasure. Many researchers have asked the question: does AR motivate students to read and how exactly does it motivate?

Intrinsic and Extrinsic Motivations

Many researchers debate the best way to motivate students to read. Some researchers are in favour of extrinsic rewards while others advocate intrinsic rewards as a means of motivating students to read. "…intrinsic reading motivation refers to reading purely for its own sake, whereas extrinsic reading motivation refers to reading for external reasons, such as to gain recognition or a reward" (McGeown *et al.* 2016). The AR manual suggests numerous ways for teachers to motivate their students such as, reading logs, TOPS reports, wall charts, reading wall of fame, bulletin boards, prizes such as books for achieving reading goals and other rewards (Renaissance 2014). These rewards whether extrinsic or intrinsic are designed to motivate students to read and to improve their reading standards. These rewards are designed to improve a students view of their own reading abilities and increase their capacity for self efficacy. Self efficacy is a central component of motivation. Self efficacy is an individual's belief in his or her capacity to execute behaviours necessary to produce specific performance attainments (Bandura 1997). An individual's sense of self efficacy can provide the foundation for motivation, wellbeing and personal accomplishments. Schools whether they use AR or not use various motivational tools like those listed above to entice students and encourage them to become self directed, self regulatory, motivated readers. As Bandura (1997) states, "schools try to equip students with the intellectual tools, agentic self beliefs and self regulatory capabilities to educate themselves throughout their lifetime". (Bandura, 1997 p1219) Just as ICT has had an impact on the definition of literacy for twenty first century learners as discussed earlier in this chapter, ICT has also greatly impacted student learning and in particular how students learn. With the quantity and ease of access to educational and reading material online ICT is greatly impacting the move towards self

regulatory and self directed learning. “The accelerated pace of technological change and growth of knowledge are placing a premium on capability for self directed learning.” (Bandura, 1997 p1219) Bandura predicts that in the not so distant future, students will be educating themselves increasingly with multimedia instruction presented electronically by master teachers outside the confines of the school (Bandura, 1997). As previously stated AR is a computer program designed to motivate students to read. There is much debate among researchers about the motivational value of AR.

Deborah Biggers in *The Argument against Accelerated Reader* strongly argues against the motivational value of AR. Biggers argues that “tangible rewards such as the ones promoted by AR reduce internal motivations to read” (Biggers 2001). Biggers also claims that students will become dependent on such rewards and will read less often and less frequently when such rewards are removed or discontinued (Biggers 2001). R.D Groce and Groce’s article ‘Deconstructing the Accelerated Reader Program’ echoes the opinion of Biggers. Groce and Groce observes, “that the children who are earningthe most points were those who were already high achievers in reading” (Groce & Groce 2005). Children who are already successful readers do not need to be motivated to read. Groce’s research strongly questions AR’s success rate as a motivation tool. Groce and Biggers are not the only ones to query AR’s ability to motivate students to read and therefore,be successful readers. Pavonetti, Brimmer and Cipielewski found that "readers are notmotivated by a computer bookkeeping system" neither will they "[…] become lifelong readers from tests or points or incentive programs" (Pavonetti, Brimmer *et al.* 2002). In contrast to Groce, Biggers, Pavonetti, Brimmer and Cipielewski, Vollands, the researchof Toppings and Evans’ found that students are disinterested in tangible rewards, but were rather more “motivated by individualised performance feedback inherent in the [AR]Program” (R Vollands, Keith J Topping, Ryka M Evans, Stacy 1999). Moran’s study also supports these findings as her research reveals that AR had a positive impact on the students’motivation and engagement with reading. (Moran 2009). Other researchers claim that it is time spent in reading activities that motivates students to read. The more time students spendreading the more motivated they will be to read. “Children’s reading motivation has been consistently linked to their degree of engagement in a variety or reading activities” Baker & Wigfield 1999 as cited by (McGeown *et al*. 2016). However, Biggers warns about AR’s points system as a motivational tool. As explained in the Context Chapter it is not possible as a result of the way the points are calculated for a low ability student to score as many points as their high achieving counterpart. For this reason, Biggers warns about the need forother forms of motivation for the low ability student. Biggers states that, “without acknowledging such a student’s efforts

it is easy to see why she or he would become discouraged and avoid further engagement with reading" (Biggers 2001).

Similarly, Thompson *et al*. (2008) are strong in their conviction that their student focus group revealed students' unhappiness and lack of motivation because of the AR programme. Thompson *et al*. (2008) conclude, "although many of the students had previously loved to read, the overwhelming majority said that the way AR was being used at their school was counterproductive". Students in this study felt that they were being forcedto read and that it was not motivational. It resulted in students cheating in order to pass AR quizzes rather than developing a love of reading. "One of their main complaints was that they disliked being forced to read. This widespread displeasure with the AR program led tocheating", according to Thompson *et al* (2008).

The debate about what motivates students to read becomes even more complex when one considers the motivational factors associated with a student's gender. Vollands, Topping and Evans' (1999) data concluded that significant differences existed with relation to the motivation and achievement of boys and girls. Girls illustrated better reading attitudes than boys during the post-test stage, despite the fact that these attitudes were not evident at the pre-test stage (R Vollands, Keith J Topping, Ryka M Evans, Stacy 1999). Similarly, a study conducted by Nancy Everhart in three schools in both Scotland and England using structured interviews of teachers and students concluded, "that AR prizes are more effective with boys, but that boys are equally motivated by praise and recognition, and that girls are motivated more by discussing books and reading with others and generally like the AR program better" (Everhart 2005). All of the research reports call for and recommend more research tobe conducted on student reading motivation.

Motivation Summary

From this review of the literature it is clear that AR's ability to motivate reading and its methods of doing so are controversial. The success of AR as a motivational tool remains ambiguous. Further research is necessary to determine AR's motivational value. It is clear that more research needs to be conducted on the practices that motivate students to read and to increase their capacity for self efficacy and self directed reading and learning. It is unclear from the existing literature, if it is extrinsic rewards, intrinsic rewards or something else that motivates studentsto read. It is also unclear from the research whether there are different motivational factors for males and females. Further inquiry into gender differences is also

something that needs to be monitored and pursued in further research studies. (R Vollands, Keith J Topping, Ryka M Evans, Stacy 1999). The review of the literature regarding motivation raises the following questions:

1. Does AR motivate students to read?
2. What motivates boys to read?
3. What motivates girls to read?
4. Are boys and girls motivated to read for different reasons?

A student's willingness to read and motivation to read has a major impact on them becoming lifelong readers and learners.

Lifelong Reading

From the literature review, Lifelong Reading emerged as a theme. Many researchers are concerned with how students can become lifelong readers and lifelong learners. The AR website advertises AR as a means of creating lifelong learners. It states, "all learning starts with reading." Develop lifelong readers and learners with Accelerated Reader (Fleming 2016). The message to educators from AR is clear, buy and use AR with your students and you will create lifelong learners and readers.

However, Brisco questions AR's ability to deliver such a promise using the methods it employs. Brisco (2003) asks, "will these students become lifelong readers who can later evaluate and select material for reasons other than tangible reward or points listen on the inside of a cover". In 2002, Pavonetti, Brimmer and Cipielewski asked a similar question. They investigated whether seventh grade students who were exposed to AR during elementary school tend to do more reading of books in middle school than those who did not have such exposure. The study investigated 1,536 students from ten different middle schools. Some of the feeder elementary schools used AR and others did not. Students were surveyed using a Title Recognition test to determine their reading habits. The overall results of the survey did not support the claim that AR build lifelong readers. However, the results were not as straightforward as they might first have appeared. There were discrepancies between students. Some students who had been exposed to AR reader in elementary school and were also exposed in middle school continued to read while others did not. Similarly, some students who were not exposed to AR in elementary school but were exposed in middle school reduced their amount of time spent reading and other did not. (Pavonetti *et al*. 2002). Due to these discrepancies further research is needed to ascertain for certain whetheror not AR can build lifelong readers. The researchers advise "it is important to look at to reading behaviours and reading achievement such as motivation, reading ability and schooland

home environment" (Pavonetti *et al*. 2002). Pavonetti, Brimmer and Cipelewski (2002) conclude, "students will not become lifelong readers from tests or points or incentive programs".

Lamme (2003) agrees with Pavonetti, Brimmer and Cipelewski. Lamme (2003) has "examined the behaviours that exist in people that are avid readers and the skills and abilities they needto support their reading habits." Lamme (2003) defines thoughtful avid readers to be those that choose to read because reading gives them pleasure, are skilled at finding books they want to read, discuss books with friends to discover favourite authors and illustrators and seek out such reading material. Avid readers according to Lamme are also capableof adjusting the rate at which they read, slowing down to enjoy the good parts of a story andspeeding up for background information. Avid readers are capable of choosing when and where they read and for what purposes. They reread favourite books for no extrinsic rewards(Lamme 2003). Lamme questions AR's ability to "provide a literature background to help children become avid lifelong learners" (Lamme 2003).

According to the literature surrounding reading works of fiction, reading for pleasure appears to be the key to creating lifelong readers. When people read for pleasure, they are reading to enjoy the art ofreading and story. They do so because they get pleasure from the activity of reading itself. Reading is the reward. Rosenblatt describes these kinds of readers as aesthetic readers. Aesthetic readers are engaged in the experience of reading itself. As Rosenblatt states, "In aesthetic reading, the reader's attention is centred directly on what he is living through duringhis relationship with that particular text" (Rosenblatt 1994). They do not need a further reward or incentive to read. Rosenblatt contrasts aesthetic readers with efferent readers. Efferent readers according to Rosenblatt are defined as readers whose "...attention isprimarily focused on what will remain as a residue after the reading – the information to be acquired, the logical solution to a problem, the actions to be carried out" (Rosenblatt 1994).In other words, efferent readers read to gain information to take away facts. Unlike aesthetic readers, they do not read for the pleasure of reading. From this understanding of lifelong reading it becomes clear from the literature that a reading management programme and literacy education in a school should favour and promote the efferent reading of fiction.

Lifelong Reading Summary

It is clear from this review of the literature in relation to creating lifelong readers and

lifelong readers that a lot more research is needed. Everyone agrees that lifelong learners and lifelong readers are a desirable goal or aspiration of any educationsystem. AR makes some very bold statements about its capacity to create lifelong readers and more research is needed to determine whether or not such statements are true. Independent studies that test the claims by AR are certainly required if one is to agree that AR is the means by which a school can nourish efferent readers and encourage lifelong reading. This poses the question; how can an education programme/literacy programme encourage students to become lifelong readers? The literature also causes the researcher to ask, do males and females require different stimulus and literacy education to become lifelong readers?

Gender

Throughout the literature review it was noted that researchers discovered different findings for males and females. Reading ages, reading preferences and motivation to read was different for males and females. In light of these varying findings for males and females gender emerged as a theme in the literature review stage. In this research the researcher uses the node gender to include references from the literature that expressed a finding or observation related to reading, literacy and gender preferences. It has been noted for many years in the Irish education system that girls outperform boys. According to the Sé Sí Report "girls outperform boys in more than 80% of Leaving Certificate subjects…" (O'Connor, 2007). The report goes on to explain that "in English, girls have consistently outperformed boys since the early 1960s" (O'Connor,2007). The report also recognises that gender is one of a range of background characteristicsthat appear to affect pupil's achievement in the literacy assessments. The report makes this even more specific when it states that "gender appears to be a significant factor, particularlyon the performance of pupils in reading" (O'Connor 2007). The findings of PISA 2000 also supports the Sé Sí Report. PISA 2000 showed that girls performed better than boys in everycountry that participated. The same gender difference is observed throughout the OECD "with 13.5% of boys registering poor performance, compared with 8.3% of girls" (O'Connor 2007). "The PISA assessments of literacy in OECD countries show that girls achieve higherlevels of performance in reading literacy than boys. This is true in all OECD countries, andboys consistently outnumbered girls among those with poor levels or reading literacy" (O'Connor 2007). The out performance of girls over boys causes the researcher towonder, is one reading management programme capable of providing for both male and female students alike or do males and females require different levels and methods of literacyinstruction? The researcher asks, is AR capable of increasing male and female students' reading ages? Is AR capable of

motivating males and females to read?

Attitude towards reading and reading proficiency

According to Jan Shelton Nichols attitude towards reading tends to become more negative over time for both genders. Logan and Johnston cited in (Shelton Nichols 2013) found that females have a more positive attitude toward reading as a recreational activity. The study also showed that the females' attitude towards reading tended to be more stable over time than the attitude of their male counterparts. Clark and Cunningham in their longitudinal study with the National Literacy Trust also compared and contrasted the data for males andfemales to analyse the effect of gender on an individual's reading attainment and attitude towards reading. The National Literacy Trust is an organisation focused on improving the literacy attainments of UK students. It reported that of the 1,500 UK students they tracked the patterns of relationships were largely the same for boys and girls that use AR. However, they did note that "reading frequency in 2011 positively predicts reading attainment in 2012 for AR girls but not for AR boys. Conversely, reading attitudes in 2011 positively predict reading attainment in 2012 for AR boys but not for AR girls. These suggestthat reading frequency is initially more important for girls who use AR, while attitudes towards reading are initially more important for boys who use AR" (Clark and Cunningham 2016). Clark and Cunningham draw their report to a conclusion by emphasising the need forboth boys and girls to enjoy reading in order to achieve regardless of whether they use AR or not. "In sum, strong bi-directional influences exist with respect to reading enjoyment in both boys and girls regardless of whether they use AR" (Clark and Cunningham 2016). Clark and Cunningham do however note that reading confidence is a much more important factor for boys in determining and predicting their reading attainment. "… reading confidence is a more important (unidirectional) predictor for reading attainment in AR boys than AR girls or non-AR boys and girls. For AR boys, initial attitudes towards reading play a role in predicting later reading attainment" (Clark and Cunningham 2016). Jan SheltonNichols reiterates and supports the point that males are driven to achieve by their confidencein a reading activity. Jan Shelton Nichols clearly explains that in his study he found that "…if males have a negative attitude towards reading that attitude will affect their reading proficiency" (Shelton Nichols 2013). Nicholas, Clark and Cunningham all go against the common understanding that it is poor reading or a lack of reading proficiency that affects amale's attitude about reading. These studies clearly conclude that if the attitude of the malestudent is positive about reading then they will have a greater level of reading proficiency.

Gender Summary

As this review of the literature suggests, and the Sé Sí Report rightly concludes "improving the level of engagement of males in reading activities … needs to be a major policy objective if greater gender equality in educational outcomes is to be achieved" (O'Connor 2007). It is vital that a reading management programme or initiative works for both males and females to reach their literacy potential and become proficient readers. If AR is to be deemed an effective means of improving the literacy standards of Irish post-primary schools, then it must indeed be effective for both males and females. At present from the review of the available literature it is unclear as to whether AR is effective as a literacy tool for both males and females.

Literature Review Findings

The literature review establishes a number of significant gaps in the research. The literature review reveals inconsistent findings about the effectiveness of AR as a means of improving students' literacy standards. The research suggests that AR has a positive impact on students' reading ages. Many studies report that AR increased a students' reading-age by three months. However, it is unclear whether this is a significant improvement in reading- age and therefore more research is needed. Also, because a control group was not used in the research, it is unclear whether or not AR was responsible for this increased reading-age or if some other factor caused the reading ages of the students to improve. This calls for research to be conducted that employs the use of a control group. A control group not using the AR programme would ascertain for certain that it is the AR programme bringing about the change in reading-age if a change is to be found.

Furthermore, the literature does not sufficiently support the claim that AR motivates students to read and create lifelong readers. The literature itself calls for further research into a number of aspects of the AR programme "…there is clearly a need for more studies to be conducted about this program (Thompson *et al.* 2008). The literature review also shows that at present it is unclear as to whether or not AR is an effective means of improving the literacy standards of males and females. It is unclear from the literature whether or not AR is effective in motivating both genders to read and develop their literacy skills equally.

The literature review also highlights the lack of research conducted on AR in the Irish context. There are no doctoral studies and only one master's study by Irish researcher Catherine Moran conducted on AR in Irish schools. Further research is certainly needed on the impact of AR and its effectiveness in the Irish context. As the document, *Literacy and Numeracy for Learning and Life, The National Strategy to Improve Literacy and Numeracy*

among children and Young People 2011-2020 states, "we will have to ensure the most efficient use possible of available resources… to enable us to improve the literacy and numeracy skills of the children and young people in our care" (Department of Education and Skills 2011). It is vital that available resources such as ARare tested robustly to ensure that they are the best and most effective means of improving the literacy standards of Irish students before they are used in our schools. Kennedy (2014) also agrees that literacy programmes need to be evaluated by schools, "schools should critically examine their program for literacy and consider how time is being used …" (Kennedy 2014). Further research is needed in the Irish context to determine the effectiveness of AR as a means of improving the literacy standards of Irish post-primary Students. The prominent gap in the literature identified by the researcher is the lack of research that takes into account the opinions of the students using the AR programme. The majority of the research conducted focuses on the opinions of the teachers and administrators of the AR programme. Student voice is very limited in the literature reviewed. There is very little evidence of qualitative data from students about their experience of using AR.

Student Voice

It is clear from the aforementioned research that the majority of the research conducted on AR focuses on students' performance in standardised tests. However, as Accelerated Reader also claims to increase student motivation there is more to analyse and research thantest scores alone. As Alexander states when talking about educational research in general "The vast majority of research studies focus on academic achievement (often defined as performance on standardised tests) but less is known about the factors shaping student engagement and motivation…" (Alexander 2008). This is certainly true of the research conducted on AR. Alexander goes on to say that "…Children and young people themselves emphasise the affective (emotional) as much as the cognitive (learning) domain in discussing their school experiences. (Alexander 2008). In light of this it is clear that student voice ought to be at the centre of any research that aims to evaluate the lived experience of students' literacy education. Dr Domnall Fleming defines student voice as "… an overarching term that concerns dialogue, discussion and consultation with the students and by students about their experiences in our schools and their classrooms" (Fleming 2016). When commenting of Junior Cycle reform in the Irish context, Flynn correctly identifies students as "experts on their own experience of learning" (Flynn 2017). Flynn's words echo those laid down in The National Policy Framework 2014-2020, Better Outcomes, Brighter Futures, as it calls for mechanisms to be put in place to give young people the opportunity to be heard.

"Mechanisms to provide children and young people with the opportunity to be heard in Primary and post-primary schools" (Department of Children and Youth Affairs 2014). The National Policy recognises "The importance of children and young people having a voice in decisions made in their local communities, in their schools and in the wider formal and non-formal education system" (Department of Children and Youth Affairs 2014). If this is to be the case, then the educational research conducted must seek out and listen to the voice of the student. Rudduck and McIntyre, cited in (Smyth & McCoy 2011). advocate that, "Evidence should ideally draw on a mix of sources, including students' own perspectives. An increasing body of work shows the value of taking account of the student voice in school improvement" Seidel and Shavelson cited in (Smyth, McCoy 2011) also claim that "that student reports of teaching methods are more strongly predictive of academic outcomes than teacher reports" Considering this research, it is clear that in order for the researcher to ascertain the effectiveness of a reading management programme listening to the lived experience of the students using it is vital. This research concurs with Flynn's (2017) definition of student voice when it advocates that students are experts on their own experience of literacy education. Students are the best qualified to articulate what they like and what they dislike about literacy education. As stated earlier the researcher views the teacher as a facilitator. The researcher supports the facilitative theory of Bruner (1978). According to Bruner the teacher or a knowledgeable other should help an individual to develop skills through the process of scaffolding. Scaffolding according to Bruner (1978) refers to the steps taken to reduce the degrees of freedom in carrying out some task so that the child can concentrate on the difficult skill she is in the process of acquiring." (Bruner 1978, p.17). According to the researcher's educational philosophy, for a teacher to facilitate literacy education and to scaffold the learning for the student it is essential that the lived experience of the students be listened to. Student voice is central to a teacher's ability to facilitate meaningful and purposeful literacy learning experiences.

Summary

This chapter reviews the literature relevant to the effectiveness of AR as a reading management programme. The first section of the review makes comment on the developer-sponsored research and the lack of independent peer-reviewed research available to the researcher. The second section of the review focuses on the key themes that emerged from the literature review conducted using NVivo. The emergent themes from the review of the literature were, Reading Gains, Assessment, Lifelong Learning, Motivation and Gender.

The review concludes that there are definite gaps in the research. Firstly, the review illustrates that there is a definite lack of research based within the Irish context. Secondly, the literature review concludes that student voice ought to be at the centre of further research in the area of literacy development. Thirdly, the review concludes that any further research should include a control to maximise and give credibility to the findings. Fourthly, there is also insufficient evidence to ascertain whether AR is an effective literacy tool for both male and female students. In terms of motivation it is unclear whether AR can motivate students to read. It is also unclear whether males and females are motivated to read in different ways. Finally, the findings from the literature review about measures used by AR to assess literacy skills are ambiguous. It is unclear from the reviewed research whether AR's method of testing reading ages alone is a sufficient assessment of literacy skills. It is found by most researchers that this measure of literacy narrows the definition of literacy and what it means to be literate today. In brief, the question that remains unanswered after reviewing the literature is the potential of AR to improve the literacy standards of Irish post-primary students.

The following chapter, the Methodology chapter outlines and justifies the research philosophy, design and methodology used to answer the research question, is AR an effective means of improving the literacy standards of Irish post-primary students?

Chapter Three
Methodology

Introduction

This research seeks to evaluate the effectiveness of Accelerated Reader (AR) as a means of improving the literacy standards of Irish post-primary students. This chapter outlines and justifies the design and methodology employed to satisfy the aim of the research. A mixed methods approach is used in this research to evaluate the effectiveness of AR. This chapter presents a rationale and a justification for choosing a mixed methods approach to achieve the aim of the research. The pragmatic philosophical, epistemological, and ontological underpinnings of the research are presented. The role of the researcher is presented and contextualised along with the student-centred attitude of the researcher as educator. The rationale behind the chosen research design, sampling method and data analysis methods are outlined. This chapter concludes by addressing the methodological issues considered inthis study along with a presentation of the strategies implemented to ensure validity and reliability.

Research Aim

The aim of this research is to evaluate the effectiveness of AR as a means of improving the literacy standards of Irish post-primary students. In light of this aim, it is clear that this study takes the natural form of a programme evaluation. An evaluation according to Robson is "[…] a study which has a distinctive purpose […]" (Robson 2011). Robson continues to explain that "the purpose of an evaluation is to assess the effects and effectiveness of something, typically some innovation, intervention, policy, practice or service. It is sometimes referred to as a program evaluation" (Robson 2011). The distinct purpose of this research is to evaluate the effectiveness of AR as a means of improving the literacy standards of Irish post-primary students.

Embedded in this aim are two research questions. Firstly, does AR increase student's reading ages? Secondly, Does AR increase student's motivation to read or cause a change in attitude towards reading? A mixed-methods multiphase design is the chosen method of research for this study. Serious consideration was given to various other research methods such as a single qualitative or quantitative study. While the first embedded research question under investigation relates to the numerical increase of students' reading ages, it initially appears to lend itself most naturally to quantitative methods. However, the research simultaneously

relates to the experience of human beings, namely Irish post-primary students and therefore the second embedded research question appears to naturally lend itself to qualitative methods. It was deemed by the researcher and supporting supervisors that a mixed method approach was the best means of answering the overarching research question proposed in this study and fully evaluating the effectiveness of AR. Using solely quantitative methods or qualitative methods would only answer half of the research question and therefore not fully satisfy the aim of the research. As seen in the literature review, each method used in isolation limited the scope of the research. If this research used only one method either qualitative or quantitative, it would not convey the complete lived experience of the students. The research question would not be fully answered, and the researcher would not gain insight into the students' lived experience of literacy education in Ireland. As Dewey (1938) advocates, "everything depends upon the quality of the experience" The researcher felt it was necessary to use a mixed methods approach in order to evaluate the students' experience of AR.

AR can only be proven an effective means of improving the literacy standards of Irish post-primary students if it increases pupils' reading ages while simultaneously giving them a positive experience of reading. Improving reading ages alone will not make AR an effective reading management programme. It must also motivate and encourage a culture of reading and a desire to read and learn. As Dewey (1938) states, "The most important attitude that can be formed is that desire to go on learning" Similarly, this view of effectiveness is reiterated in the Department of Education and Skills' National Strategy to Improve Literacy and Numeracy Among Children and Young People 2011-2020 with the addition of the word 'Life' in the title of the strategy, 'Literacy and Numeracy for Learning and Life'. The strategy advocates the need for society to create "lifelong learners" (Department of Education and Skills 2011). Furthermore, it is the role of the educator, "if [he] is an educator to be able to judge what attitudes are actually conductive to continuedgrowth and what are detrimental" (Dewey 1938). For this reason this researcher and educatoradvocates the use of mixed methods research to evaluate the effectiveness of AR as means of improving the literacy standards of Irish post-primary students.

Unlike other research conducted on AR as presented in the literature review, this study places the student firmly at the centre of the evaluation. The students' reported experiences along with their literacy attainments form the basis of the research. The mixed methods approach is intended to facilitate triangulation of the results with a view to ensuring the validity of the

findings. The mixed methods approach is intended to enable the researcher toconclude whether or not AR is an effective means of improving the literacy standards and experiences of Irish post-primary students. Before accounting more fully for the researcher'suse of a mixed methods approach and the researcher's definition of mixed methods it is necessary to clarify the role of the researcher in this mixed methods evaluation.

Role of the Researcher in Mixed Methods Research

My career as an English and Religious Educator in Irish post-primary schools has afforded me the experience of working with students with various degrees of literacy skills. This experience has come at a time in Irish Education when literacy has been at the forefront of educational conversation. As Minister for Education and Skills, Mr Ruairi Quinn emphasises,

"Literacy and numeracy are among the most important life skills that our schools teach. No child should leave school without having mastered these skills to the best of theirabilities… Ensuring that all young people acquire these skills is one of the greatest contributions that we can make to achieving social justice and equity in our country" (Department of Education and Skills 2011).

Broadly speaking I have observed that students that read for pleasure and enjoy reading have greater reading ages than those that do not. Considering this observation, I as an educator began to reflect on the resources available to me to improve the literacy standards of my students. AR was at one point in my career a resource that was available to me. As I used the programme withstudents I began to reflect on its effectiveness. I took note as a teacher that there seemed to be very little research conducted on this programme and none at the time was conducted within the Irish context. However, this research is not based on my observations as an educator. This research is independent and is focused on the learning experience of the students and their lived experience of literacy education in Irish post-primary schools. This research is a combination of qualitative and quantitative methods aimed to measure the effectiveness of AR as a reading management programme through the eyes of the students that experience it.

As previously stated, this research required both qualitative methods and quantitative methods to establish the students' lived experience of AR. As a researcher who is "already engaged in the world" (Schwandt 2007). there are inherent challenges. The role of the researcher is complex in Mixed Methods research. In quantitative research, objectivity is sought and maintained between the researcher and participants; a neutral value-free position

is sought by the researcher (Robson 2011). Whereas “In qualitative research the researcher assumes a personal as opposed to impersonal role” (Schwandt 2007). Objectivityis not valued as it is seen to distance the researcher from participants. (Robson 2011). In a mixed methods study both qualitative and quantitative data is combined, therefore the role of the researcher can become blurred as they use both methods. In considering my role as researcher in this mixed method study I acknowledge that it is “unlikely, by force of humannature, that neutrality was maintained at all times” (Stake 1995). However, as a researcher,I put a number of measures in place to determine my position as researcher and to provide an unbiased student focused evaluation of AR.

In considering my position as researcher within this mixed method research I used Bishop’s five critical questions that can be used by researchers to determine and evaluate power relations prior to and during research activity (Bishop 2005).

Initiation: Who initiates the project?

This research was initiated by me, the researcher based on my observations as an educator. I also constructed the goals, the research question and the design of the work.

Benefits: What benefits will there be and for whom?

This research aims to benefit students and educators working in Irish post-primary Schools. It aims to help educators determine the effectiveness of AR as a means of improving the literacy standards of Irish post-primary students. It also aims to benefit the students’ experience of literacy skills as they are given a voice.

Representation: Whose interests, needs and concerns does the text represent and whose voice is heard?

It is the students’ experience and perception of AR that is delivered in this research. This research does not focus on the observations of the researcher or of the observations of the educators that use, implement, or deliver literacy instruction the participating schools.

Legitimation: What authority does the text have?

According to Tillman (2002 cited in Denzin, Lincoln 2005) “when considering who should conduct research… it is important to consider whether the researcher has the cultural knowledge to accurately interpret and validate the experiences… within the context of the phenomenon under study” My career and places of employment have provided me with the cultural knowledge to accurately interpret and validate the students’ lived experience of literacy in Irish post-primary schools. As researcher I acknowledge my position within each

of the participating schools and the effect this position has on the research. I was previously employed in School A, the Experiment Group using the AR programme and am currently employed by School B, the Control Group, i.e. the school not using AR, but using other literacy strategies as outlined later in this chapter. My employment in each school makes me an insider researcher. As Lambert (2012) points out "it is doubtful that research can ever be fully objective or free from bias." However, to combat the challenge and bias of being an insider researcher, it must be noted that I do not nor did not teach any members of the research's population from either the Control Group or the Experiment Group. In School A I am not known to any of the students as I have not worked there in over six years. I also was not part of the team that implemented AR in the school community and therefore have no bias towards its success or effectiveness. I did however use the programme with a cohort of students during my employment as an English teacher in School A. From this use, I gained vital first-hand knowledge of the tools, components, and elements of the AR programme. I got to view the programme from a teacher-student perspective. In School B I am known to students and acknowledge the power/influence I could potentially have over them as a member of the teaching staff. However, as previously stated I do not teach any of the students in the Control Group. This degree of separation from the population of the study gave me the benefit of being an insider researcher with an understanding of the topic and access to the students whose literacy needs will be studied. This separation from the population of the research avoids role confusion and allowed me to look at the data from a more objective position while minimising my influence over the population of the study. To reduce the impact of my position as an insider researcher while collecting the data, the qualitative survey data was collected using Survey Monkey and submitted by students anonymously online. Therefore, my influence as a teacher was counteracted. They were enabled to give their opinion freely. The qualitative interview data was collected in one to one face to face meetings with the students. Again, these students were not nor never have been taught by the researcher. Procedures to maintain objectivity and to limit the researcher's influence on students during this data collection phases were put in place and are outlined later in this chapter.

Accountability: Who is the researcher accountable to?

Both participating schools will have access to the findings of this research. I am aware as a researcher that I will have to present my findings to current and past colleagues. But it should be noted that my findings whether in favour or not of AR's effectiveness will not have any bearing on my position within the staff of either school. The research will simply present the

students' experience of AR and their literacy education.

I consider myself an advocate for the need to develop students' literacy skills in Irish post-primary schools. I seek to ensure that students' experiences of literacy strategiesare worthwhile and will serve them into the future. As seen in the review of the literature, most of the research conducted on AR focused on the teachers' reactions to the AR programme. The only data relevant to the students and presented in previously conducted research on AR was their reading ages. For this reason, this research focuses on the students'perspectives of the effectiveness of AR as a means of improving the literacy standards of Irish post-primary Students. As the former Minister for Education and Skills Mr. Ruairí Quinn observed, "…we will have to find the resources to implement this strategyby re-prioritising spending and by ensuring that we get the very best outcomes from existingfinancial and human resources" (Department of Education and Skills. 2011). In line with this statement, this research seeks to evaluate the effectiveness of AR as a means of improving the literacy standards of Irish post-primary students. My primary focus as a researcher is tobring the students' experience of AR and literacy instruction in Ireland to the fore. Before presenting the rationale for choosing Mixed Methods research for this evaluation it is necessary to clarify the definition of Mixed Methods research.

Defining Mixed Methods Research

There are many working definitions of Mixed Methods Research. As stated by Creswell and Plano Clark, "Several definitions for mixed methods have emerged over the years that incorporate various elements of methods, research processes, philosophy and design" (Creswell, Plano Clark 2011).

Johnson, Onwuegbuzie and Turner in 2007 set about identifying a single comprehensive definition ofMixed Methods research. The authors asked many of the leading researchers in the field of Mixed Methods research how they define the method. The authors then combined the findings in an attempt to define Mixed Methods research. As a result they defined Mixed Methods Research as "… the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches (e.g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth or understanding and corroboration" (Johnson, Onwuegbuzie *et al.* 2007). However, Tashakkori and Creswell leading researchersin this field, define Mixed Methods Research as "research in which the investigator collectsand analyses data, integrates the findings, and draws inferences using both qualitative and

quantitative approaches or methods in a single study or a program of inquiry" (Tashakkori, Creswell 2007). Similarly, Creswell, Fetters and Ivankova (2004) define Mixed Methods Research stating "mixed methods investigations involve integrating quantitative and qualitative data collection and analysis in a single study or program of inquiry" Also Robson a mixed methods researcher in the business discipline defines Mixed Methods Research as "research which combines both qualitative and quantitative methods in a planned design" (Robson 2011). The latter three definitions focus on the integration of the findings as well as an integration of methods in a single study.

Researcher's Definition of Mixed Methods Research

The definition of Mixed Methods research for the researcher in this study is in keeping Creswell's definition of Mixed Methods research. Mixed methods research ought to incorporate qualitative and quantitative methods for data collection and analysis in an integrated single study to fully answer the research question. The quantitative and qualitative data explain each other. Neither the numbers nor the figures alone can sufficiently answer or bring understanding to the research question. It is deemed by this researcher that a combination and integrated analysis of both qualitative and quantitative data provides a better understanding of the research question than either method or approach could achieve alone. As outlined by Creswell and Clark Mixed Methods Research's "…central premise is that the use of quantitative and qualitative approaches, in combination, provides a better understanding of research problems than either approach alone" (Creswell, Plano Clark 2011). As a researcher is not only bound my method definition, the researcher is also bound within a net of ontological, epistemological, and methodological premises Beteson 1972 (cited in Denzin, Lincoln 2005).

Philosophical Underpinnings

Educational research is embedded within numerous and diverse paradigms. A paradigm is "a basic set of beliefs that guide action … They define the world view of the researcher" (Guba, Lincoln 2005). A paradigm encompasses four terms, ontology, epistemology, methodology and axiology. A positivist paradigm holds that there is one objective reality; reality is singular and separate from consciousness. On the opposite end is the constructivism paradigm which holds that social phenomena develop in social contexts and that individuals and groups create in part their own realities. In the positivist paradigm the researcher is completely objective whereas in the constructivist paradigm the researcher is subjective, a relationship exists between the research and the researcher. The positivist paradigm is mainly the paradigm that informs qualitative research whereas the constructivist paradigm primarily

informs quantitative research (Quinlan 2011). As this researcher seeks to combine qualitative and quantitative methods and does not believe in the need to separate research methods when working within the realm of social science, an alternative paradigm was necessary. This researcher adheres to Robson's principle "…that the research question provides the key to most things when doing social research" (Robson, 2011). In this study the research question demands both qualitative and quantitative methods. A paradigm that bridges the gap between the objective and the subjective, and the gap between the ideal and the real best informs this mixed methods evaluation.

This research is positioned within a pragmatic paradigm. "Pragmatism as a world view or philosophy arises out of actions, situations and consequences rather than antecedent conditions. There is a concern with applications – what works – and solutions to problems. Instead of focusing on methods, researchers emphasise the research problem and use all approaches available to understand it" (Creswell, 2014). The researcher's views are located in line with those of Morgan (2007) qualitative research emphasises an inductive – subjective-contextual approach, whereas quantitative research emphasises a deductive – objective –generalising approach. Morgan goes on to state "Fortunately, the pragmatic approach offers an effective alternative through its emphasis on the abductive – intersubjective-transferable aspects of our research" (Morgan 2007) That is to say that a pragmatic approach does not impose any limits on the methods used to address the research question. This gives priority to the research question and allows the researcher the freedom to use both quantitative and qualitative research methods. Rather than qualitative researchers and quantitative researchers dismissing each other's work as based on wholly incompatible assumptions the goal is to search for useful points of connection. These are the kinds of opportunities that a pragmatic approach to social science research has to offer. A pragmatic approach rejects the need to choose between a pair of extremes where research results are either completely specific to a particular context or an instance of some generalised set of principles (Morgan 2007). The pragmatic paradigm informs the summative evaluation mixed methods model of this research. From a pragmatic approach, an important question is the extent to which we can take the things that we learn with one type of method in one specific setting and make the most appropriate use of that knowledge in other circumstances (Morgan 2007). This research evaluates whether the results from the evaluation of the programme AR have implications for the use of similar programmes in other contexts. The knowledge gained from this evaluation of AR as a means of improving the literacy standards of Irish post-primary students could potentially be applied to other contexts and indeed to

literacy skills development practices in the general sense. Consequently, this research embedded within a pragmatic paradigm is not committed to advocating ideology or generating theories. Instead this research will identify the independent and essential elements of AR to focus on "what works" within the research. This research focuses on generating knowledge from thestudents' experiences of AR, its consequences, and its value to teaching and learning as a means of improving the literacy standards of Irish post-primary students. This pragmatic paradigm is based on the assumptions of a pragmatic epistemology.

Epistemology

A pragmatic epistemology sees knowledge as being rooted within human experience. Knowledge according to a pragmatic epistemology is also rooted within a human context. Both the human experience and the human context are constantly fluctuating and can be fallible. In light of this, this research is embedded within a pragmatic epistemology as it seeks to evaluate the real world experience of Irish post-primary students as they engage with the reading management programme AR. Epistemology is the study of knowledge, how what is assumed to exist is known. Epistemology is the relationship between the researcher and that being researched. The researcher has a practical approach and relationship with the research. The researcher collects data by "what works" to address the research question (Creswell, Plano Clark 2011). In this research, "what works" is the combination of qualitative and quantitative research methods to answer the research question: Is AR an effective means of improving the literacy standards of Irish post-primary students? Furthermore, pragmatic epistemology understands knowledge as the practical consequences of an action. This research seeks to ascertain the practical consequences of using AR with Irish post-primary students as a reading management programme. The researcher seeks to discover "what works" for students and their literacy development in Irish post-primary schools.

Ontology

Ontology refers to the nature of reality. Ontology asks the question "what is the form and nature of reality and therefore, what is there that can be known about it?" (Guba, Lincoln 1994). A pragmatic ontological approach incorporates both singular and multiple realities, e.g. Researchers test hypotheses and provide multiple perspectives (Creswell, Plano Clark 2011). The hypothesis of this research is to evaluate the effectiveness of AR a means of improving the literacy standards of Irish post-primary students. This research asks two questions. Does AR improve students' reading ages? and, does AR motivate students to

read? This hypothesis was tested by the researcher using a mixed methods approach to combine the perspectives of qualitative and quantitative data. The research also used a Control Group to evaluate whether it is the AR programme that brings about the findings or an alternative source. In doing this the researcher acknowledges that reality is constantly renegotiated, debated, interpreted in light of its usefulness in new unpredictable situations.

Advantages of a Mixed Methods Approach

Many researchers actively promote a mixed methods approach to research. Onwuegbuzie and Leech (2005) in their article outline a number of advantages in choosing a mixed strategy design. Onwuegbuzie and Leech explain that mixed method research "enables researchers to be flexible in their investigative techniques, as they attemptto address a range of research questions that arise" (Onwuegbuzie & Leech 2005). They also state that researchers are more likely to view research as a holistic endeavour. However, themost important and significant advantage of mixed method research is that the researcher isarmed with a bi-focal lens (i.e. both quantitative and qualitative data) rather than with a single lens. "Pragmatic researchers are able to *zoom in* to microscopic detail or to *zoomout* to indefinite scope" (Onwuegbuzie & Leech 2005). In other words, the researcher is able to use qualitative data to understand quantitative finding and vice versa, thus giving an overall view of the subject matter. To evaluate the effectiveness of AR as means of improving the literacy standards of Irish post-primary students a bi-focal lens is essential. The reading ages, the surveys on their own, only tell half of the story. In order to fully evaluate the programme, it's necessary to determine AR's ability to increase reading ages and to motivate students to read.

Potential Challenges of a Mixed Methods Approach

As with any research design there are advantages and disadvantages to choosing a mixed method approach. Bryman outlines a number of problem areas associated with the use of mixed method research such as time, researcher's skillset and discrepancies in findings. Bryman's study warns that time can be a major drawback to the use of mixed method research (Bryman 2004). In effect, the researcher has twice the amount of data to gather, analyse and integrate in comparison to a mono-method study. Bryman also states that "quantitative and qualitative components sometimes [have] different time implications" (Bryman 2004). In most cases one phase of data collection will be completed much quicker than the other phase and this can impact on the timing of the overall research project. Another fundamental disadvantage to mixed method research according to Bryman is researcher's integration skills. Bryman found that "nearly one half of all articles using both quantitative

and qualitative research do not in fact integrate the findings" (Bryman 2004). Robson echoes Bryman's concern regarding the skillset of a researcher as he identifies the possibilitythat discrepancies may occur between the quantitative and qualitative data sets. It is the dutyof the researcher to have the skills necessary to deal with divergent findings (Robson 2011).Greene, however, acknowledges that discrepancies between findings, does not always impact negatively upon the research. Discrepancies according to Greene can in fact "deepen understanding of the studied phenomena" (Greene 2007). In order for a research project to gain from using both qualitative and quantitative data, it is essential that the researcher has the skills necessary to integrate both forms of research and come to an overall understanding of the subject area. In light of these disadvantages the researcher allocates an entire section to the integration of both qualitative quantitative data. Only when both sets of data are analysed will the researcher have full insight into the effectiveness of the AR programme as a means of improving the literacy standards of Irish post-primary students.

Justification of the Method

Mixed methods research is a design for collecting, analysing, and mixing both quantitative and qualitative data in a single study to understand a research problem. The reason for choosing Mixed methods research for this research is two-fold. Firstly, the research question demands it and secondly, Mixed Methods research enables the study to reach the parts that other studies could not reach as a result of method limitations.

The Research Question Demands It

The primary rationale for choosing a Mixed Methods research design is that a complete evaluation of AR's effectiveness cannot be generated by any one method alone. Tashakkori and Creswell write that "a strong mixed methods study starts with a strongMixed Methods research question" (Creswell, Plano Clark 2011). Likewise, according to Robson, in order for a research project to be a mixed method study it must have a clear research question that can only be answered fully with both qualitative and quantitative data(Robson 2011). Similarly, Plano Clark and Badiee describe that a study is MM when there is an umbrella or overarching question that requires a quantitative and qualitative approach.The research then has sub-questions which each require a different approach (Plano, Clark & Badiee 2010).

The aim of this study is to determine the effectiveness of AR as a means of improving the literacy standards of Irish post-primary students. In light of this, the overarching research question asks, Is AR an effective means of improving the literacy standards of Irish post-

primary students? This overarching question has two very distinct sub-questions. The first research sub-question asks, does AR improve student's reading ages? This question requires quantitative research. The second research sub-question asks, does AR increase student's motivation to read or cause a change in attitude towards reading? This question requires qualitative research. Therefore, it is clear that both qualitative and quantitative research elements are necessary for this evaluation. Neither research method alone is sufficient in answering the overall research question. As Creswell and Plano Clark explains "a need exists because one data source may be insufficient" (Creswell, Plano Clark 2011). In light of this it is clear that the research aim cannot be satisfied by qualitative or quantitative data alone. As explained by Creswell and Plano Clark, "…the combination of quantitative and qualitative data provides a more complete understanding of the research problem than either approach by itself" (Creswell, Plano Clark 2011). This research is not only interested in the students' reading ages and AR's impact (if any) on these statistics. AR claims to motivate students to read. Therefore, an analysis of students' attitude towards reading in relation to these statistics is necessary to fully evaluate the effectiveness of AR as a means of improving the literacy standards of Irish post-primary students.

1. **Avoids Method Limitations**

As a method, mixed methods focus on collecting, analysing and mixing both quantitative and qualitative data in a single study. Combining qualitative and quantitative data "provides better understanding of research problems than either approach alone" (Creswell, Plano Clark 2011). Mixed methods research provides strengths that offset the weaknesses of both quantitative and qualitative single method studies. Quantitative studies are often criticised or deemed weak as the voices of the participants are not directly heard. The researchers are often in the background and their own personal biases and interpretations are seldom discussed. However, the qualitative element of Mixed Methods research compensates for this weakness. Similarly, qualitative research is "seen as deficient because of the personal interpretations made by the researcher" (Creswell, Plano Clark 2011). It is often seen as biased. Also, another drawback of a single quantitative method study is the limitations with regard to participants. The small population can lead to "difficulty in generalizing findings to a large group" (Creswell, Plano Clark 2011). However, quantitative research does not have these weaknesses. "Thus, the combination of strengths of one approach makes up for the weakness of the other approach" (Creswell, Plano Clark 2011).

Design Rationale

The most appropriate design for this research is a mixed method multiphase design.

Multiphase designs are primarily used for large scale longitudinal studies. However, it is possible to conduct a single mixed methods study using a multiphase design when both concurrent and sequential designs are being used. (Creswell 2014). According to Creswell and Plano Clark "the design fits the typical program evaluation and development approach well" (Creswell, Plano Clark 2011). This multiphase study consists of two distinct phases. In phase one the researcher collects and analyses the quantitative data and qualitative data simultaneously. This phase used a convergent parallel design. In phase two, the researcher collects and analyses the qualitative (text) data. This phase used a sequential explanatory design. The qualitative data helps explain and elaborate on the results obtained in the first phase. The second explanatory phase builds on the first convergent parallel phase and the findings of the two phases are integrated during the interpretation phase of the study. Through the combined interpretation of both phases the researcher was able to evaluate the programme AR and its effectiveness as a means of improving students' reading ages and its ability to motivate students to read.

Phase One - Convergent Parallel Design

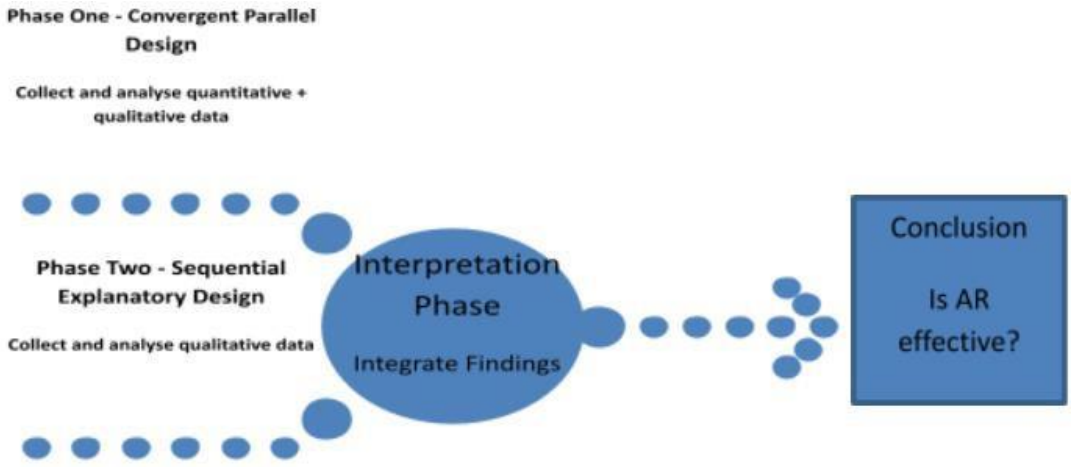


Figure 15: Flowchart Illustrating the Basic Procedure in Implementing a Multiphase Design

Typologies

A number of mixed method approaches could have been selected for a mixed method research project. One such method is sequential exploratory design. This design also combines qualitative and quantitative research. However, unlike sequential explanatory design, the focus of sequential exploratory design is on the qualitative data collection, using

quantitative data as a means of interpretation. This method was not deemed appropriate by the researcher because numerical data is an essential element of the research task. In order to determine the effectiveness of AR the researcher's focus must be on the fluctuating reading ages of the participating students. For this reason, quantitative data is essential in fulfilling the aim and therefore determining whether or not AR is a measurable means of improving student's reading ages.

Another method of mixed method design considered by the researcher was concurrent triangulation design, whereby qualitative and quantitative methods are used separately, independently and concurrently. Results are compared to assess their convergence (Robson 2011). However, the researcher also deemed this approach inappropriate. The aim of the research is not to find moments of convergence between the two sets of data. Rather, the desire is for the researcher to come to a clearer understanding of the programme through an analysis of the individual's motivation and attitude towards reading throughout the evaluation as well as the statistical change if any in reading ability.

Benefits of a Multiphase Design

A flexible multifaceted nature is the main strength of a multiphase design. A multiphase design fits the typical programme evaluation, which is the primary aim of this research. It also allows the researcher to utilise the mixed methods design elements required to address a set of interconnected research questions (Creswell, Plano Clark 2011). A multiphase design was deemed suitable by the researcher as the overall research explained earlier in thischapter had two interconnected research questions embedded in it. One embedded researchquestion requires qualitative research and the other embedded research question requires quantitative research.

Disadvantages of a multiphase design

The potential challenges of a multiphase design are mainly related to issues of connection and interpretation. The researcher needs to consider how to meaningfully connect the individual studies in addition to mixing quantitative and qualitative strands within phases (Creswell, Plano Clark 2011). The researcher also needs to consider how to translate research findings into practice. The researcher must have a clear method of integration to successfully conduct multiphase Mixed Methods research.

Methods of Integration

The purpose of a multi-phased mixed methods approach is to obtain quantitative results

regarding reading ages and qualitative results regarding attitude from a survey and then follow-up with a select number of individuals to interview as a means of exploring the results from phase one in more depth.

In the first convergent parallel design phase, a quantitative reading test was administered to the population before and after the implementation of the programme. The class teacher administered a STAR reading test which is approved by AR at the beginning and end of the programme evaluation with both the Experiment Group and the Control Group. This test was conducted by students independently of the class teacher using AR Software. These pre-tests and post-tests allowed the researcher to compare the students' reading ages. Simultaneously, a qualitative digital survey was administered to determine the impactAR has on students' motivation and attitude towards reading with both groups. In the second explanatory sequential design phase qualitative interviews were used with twenty participants to determine whether or not AR has an impact on a student's attitude towards reading.

Exploring both sets of data provides the researcher with an overall view of the effectiveness of AR as a means of improving literacy skills in Irish schools. For this reason, mixed method multiphase design was perceived as being the best approach to determine the effectiveness of Accelerated Reader. This research method enables the researcher to discover the effect the experience of Accelerated Reader has on the literacy statistics of the participating students. The combination of qualitative and quantitative data allows the researcher to examine and analyse students' reading ages, as well as their attitudes towards reading throughout their engagement with the Accelerated Reader programme. The combination of numerical and text data gives the researcher a clearer indication of the effectiveness of Accelerated Reader as a means of improving the literacy standards of Irish post-primary students.

Population of the Study

The target population of this study is first year students from two Irish post-primary schools. The population from School A from here on in will be known as the Experiment Group. This group will use the AR programme fully. School B will be known as the Control Group. This group will only use AR to access the STAR reading test. The Control Group will use the AR STAR test to get their initial reading ages at the start of the research. They will then be tested again using STAR at the end of the research. This will enable the researcher to determine whether or not their reading ages changed. The Control Group will not engage with the AR

programme throughout the research period. The research recruited two English class groups from two post-primary Irish schools. The Control Group had a population of thirty-seven students. This total comprised of twenty-one males and sixteen females. The Experiment Group had a population of forty-nine students. This group comprised of twenty-four males and twenty-five females. The total population of the study was eighty-six students.

Inclusion Criteria

Students will need to be:

1. Registered 1st year students in an Irish post-primary school.
2. Have access to the reading management programme Accelerated Reader.
3. Have scheduled library access (one class per week – 35 minutes).
4. Be able to read and complete the STAR reading comprehension tests and digitalsurveys independent of teachers and classmates.

Excluded from this evaluation are any students who are studying English as a second language as these students were on Erasmus programs or similar and therefore would not be staying in the school for the full academic year. In these classes the students were using the library more than once a week and availing of extra English classes. In the Experiment Grousetp these students had access to the AR programme but they needed an EFL teacher or the class teacher's assistance when completing STAR tests or quizzes. Such usage was outside the criteria and parameters of the study. The researcher felt that the inclusion of EFL students could impact on the findings of the research.

Managing the Ethical Considerations

This research and the recruitment of the population led to a number of ethical considerations for the researcher. Firstly, the researcher had to consider the degree to which participants were enabled to give free consent. The research involved seeking consent from five parties, the Board of Management, the school principal, the class teacher, the parents and the student. To ensure that all participants were free to choose whether or not they wanted to be involved in the research, each party was approached independently of the other. This eliminated the possibility of the principal influencing the class teacher and the class teacher impacting on the involvement of the individual students. Participants were informed of "the process in which they are engaged, including why their participation is necessary, how it will be used and how and to whom it will be reported" (Ethical Guidelines for Educational Research 2011). Procedures to protect confidentiality was agreed, the participants' names would not be identified in the research. The voluntary nature of participation in the study and the option

of withdrawal at any stage from the research was highlighted to the population. Furthermore, there was no incentive used to encourage participation and no coercion whatsoever. Secondly, the researcher considered the exposure of the schools' literacy standards and policies and how this would impact the principal's willingness to consent for the school to partake in the research. This ethical consideration was of particularconcern for the control school, the one that would not have the Accelerated Reader programme implemented. For this school, their own literacy improvement procedures wouldbe evaluated so too would their students' attitude towards reading and their motivation to read. To combat this ethical issue when designing the research, the requirements of the Ethics Committee in Dublin City University were strictly adhered to. The school principalswere guaranteed that their schools would not be identified in the research, they would remain anonymous. The name nor location of the school would not be disclosed in the research report. Finally, because the population of the research are under the age of eighteen, parentalconsent was sought. Parents were requested to sign a permission slip. The permission slip was accompanied by a letter informing parents of the research and a plain language statement which clarified issues relating to confidentiality and risk.

Regarding risk to student participants, the research is considered low risk. It was possible that pressure could be placed on student participants from other participants such as teachers and principals making them feel uncomfortable or pressured to participate. It was also deemed possible that students might come under scrutiny based on their reading ages or attitude towards reading as tested in the research. However, these risks were eliminated through the guarantee of confidentiality and anonymity both to other participantsand in the writing of the report.

In light of data protection laws all the interview transcripts were password protected in the researcher's home on their personal computer. Only the researcher had access to the password and the information. No information was kept on the researcher's external hard drive. The data was made anonymous by issuing a code to each participant at the time of the interview. All data collected was maintained in compliance with the Data Protection Act 1998. The study was approved by Dublin City University Research Ethics Committee prior to the start of the study.

Sampling

Phase One – Convergent Parallel Design (QUAN + QUAL)

For the purpose of the quantitative phase of this evaluation, convenience sampling was

employed. As stated by Quinlan, convenience sampling enables a researcher to recruit participants that are conveniently located (Quinlan 2011). In the case of this evaluation all participants are enrolled and attend two schools in which the researcher knows. As explained earlier in this chapter the researcher was previously employed in School A and is currently employed in School B. The participants are divided into two distinct groups. Group one: the Experiment Group from School A and Group two: the Control Group from School B.

Phase Two –Sequential Explanatory Design (QUAL).

Due to the nature of the sequential explanatory design of this study, the selection of the participants for this phase depended on the results from the first convergent parallel design phase. Based on these results, stratified random sampling was exercised by the researcher. Stratified random sampling, according to Robson, involves "dividing the population into a number of groups or strata, where members of a group share a particular characteristic or characteristics. There is then random sampling applied within the strata" (Robson 2011). The population of this evaluation was divided into four classifications, namely girls Experiment Group, boys Experiment Group, girls Control Group and boys Control Group. The researcher deemed it necessary to divide the groups according to gender as this will allow the researcher to determine if literacy strategies impact males and females differently. The researcher during analyses of data will be able to identify if AR is more effective, if at all for females or males. It must also be noted that the researcher followed the gender classifications of PISA and other literacy reports as outlined in the previous Context Chapter of this research. Each classification was organised in strata according to the following characteristics as evident from the pre-test and post-test reading-age scores:

1. Improved reading-age
2. No change in reading-age
3. Reading-age deteriorated

Random sampling was then applied to each stratum to choose which students would be asked to participate in the interview process of the evaluation. Four students (two male and two female) from each stratum was selected for interviewing. In total, twenty-four interviews were conducted.

Data Collection

The data collection process of a multiphase mixed methods design is complex in nature and administration. It is best described as a series of steps. The following flowchart outlines the steps necessary to conduct this mixed methods study.

STEP ONE **<u>Phase One</u>**	**Quantitative Data Collection** Administer pre-STAR	**Qualitative DataCollection** Administer survey on students' attitude towards reading
STEP TWO	**Administer The Programme**	
	Control Group	**Experiment Group**
	35 minutes of scheduled reading Select books at randomfrom school library Keep a record of the number of books they read	Access to AcceleratedReader programme – take AR quizzes and TOPS reports after reading a book. 35 minutes of scheduled reading Select books according to result from STAR test from school library AR will automatically keepa record of number of books students read
STEP THREE **<u>Phase One</u>** **Continued**	**Quantitative Data Collection** Administer post-STAR	**Qualitative Data Collection** Administer survey on students' attitude towards reading (Identical survey to step one)

STEP FOUR	**Analyse QuantitativeData** Compare the pre- programme STAR with the post-programme tests	**Analyse Qualitative Data** Compare the pre-programme surveys to the post-programme surveys
STEP FIVE	**Analyse Qualitative + Quantitative Data** Merge the two sets of data Identify commonalities and differencesDivide into strata	
STEP SIX **Phase Two**	**Implement qualitative strand** Conduct and record the interviews	
STEP SEVEN **Phase TwoContinued**	**Analyse the Qualitative data**	
STEP EIGHT	**Interpret the Connected Results** Draw on the data from phase one and phase two toevaluate the effectiveness of Accelerated Reader	

Figure 16: Flowchart of the procedure involved in data collection and analysis across this mixed method multiphase design

Phase One Quantitative Data Collection

Experiment Group (School A)

The Experiment Group in step one was introduced to Accelerated Reader and instructed in the use of the software. Students were pre-tested using STAR to ascertain their initial reading ages. Students were encouraged to read books that are included in the AR programme. The students were not limited in their book selection. The only requirement of students was to read within their ZPD. Each student on completion of a book took an AR quiz on that specific book. Students were allocated class time for quizzing on books and one class per week was

dedicated to the Drop and Read initiative. AR software rewarded points for each student as he or she read and completed quizzes in the form of TOPS (The Opportunity to Praise Students) reports. AR also kept a record of the number of books and quizzes taken by each student. During step three at the conclusion of the programs' administration students were tested again using STAR reading comprehension test. These results were compared to the initial reading ages and the changes were analysed, during steps four and five.

Control Group (School B)

The Control Group was pre-tested during step one using STAR to determine their initial reading ages. Students had access to AR approved books. However, upon completion of a book students did not use AR to take a reading practice quiz. Students in the Control Group were also allocated one class a week to the Drop and Read initiative. Students were not awarded points, nor did they receive TOPS reports upon completion of a book. At the conclusion of the programme administration during step three, students completed a STAR reading comprehension test. The pre-test and post-test reading ages were analysed during step four the quantitative analysis stage and step five the qualitative analysis stage.

Phase One Qualitative Data Collection

The parallel qualitative part of phase one asks the question "To what extent does AR motivate students to read?" Structured data gathering methods were employed for this stage of the evaluation. As Quinlan (2011) states, structured data gathering methods asks the same, simple, clear, concise, and precise questions to each respondent. A pre-programme and post-programme survey was conducted with the entire population. The survey enables the researcher to discover whether or not AR effects a student's motivation and desire to read.

Due to the extensive use of IT in both post-primary schools partaking in this survey, an online survey was deemed to be the most appropriate method of data collection for this evaluation. The survey contained ten multiple-choice questions. In compiling the survey, the researcher was conscious of the students' reading and comprehension ability. The survey was administered in a group setting within the time frame of one class period in each school, respectively. According to Quinlan, an online survey has many advantages as it "[...] provides different options in terms of organisation and style, facilitates the administration of the instrument and the collection of results" (Quinlan 2011). For the purpose of this evaluation the most prominent advantage to a web-based survey is that participants' responses were automatically stored in a database and could be easily transformed into numeric data in Excel. The researcher is also skilled in this type of data collection.

Content and Structure of the Survey

The survey was carried out using Survey Monkey, an online survey authoring package. The survey consisted of ten questions. (Appendix 1) A conscious effort was made to keep the language of the survey clear and concise to meet the populations' reading ages. Forthis reason, all questions maintained the same structure. The questions were phrased as sentences that required completing. The options for completion were provided in a tick the box format. Students were required to click the box beside the sentence which best finishedthe sentence in their opinion. The survey was also designed to ensure that it was long enoughto gather the required data but concise enough so that students would not find it laborious tocomplete. Students in both groups were given the survey before they began any literacy instruction. The survey was then repeated after the literacy instruction in both groups had been conducted. From here on in the first survey is known as the pre-programme survey andthe repeat of the survey is known as the post programme survey. It is important to note thatno changes were made to the content of the pre-programme survey for the post –programme survey. The exact questions were asked again to the students after their literacy instruction in the post programme survey. This allowed the researcher to see if a change in attitude towards reading had occurred throughout the study. The questions sought to determine the students' attitude towards reading before and after the study.

Question one sought purely nominal data, classifying the respondents according to gender. This was a dichotomous question which was an easy start for participants. The second question again was dichotomous asking if the students enjoyed reading, with a clear yes/no response option. This was followed by a multiple-choice question which sought to discover the frequency with which the students read, every day, every week, every month, sometimes or never. The fourth question asked about the location in which students would read, at home, in school, somewhere else or nowhere. The fifth question asked students to give an approximate number for the amount of books they would read every month. The next question focused on the students' attitude towards choosing a book, they were asked whether choosing a book was very easy, sometimes easy, difficult, or very difficult. Question seven asked the students whether they thought it took them a long time to read a book, yes or no. Question eight asked students to complete the sentence 'When I read by myself I understand…' with one of the following five options, everything, almost everything, some things, almost none of what I read or none of what I read. Next the students were asked about the value they place on being able to read well. They were asked whether knowing how to read well is very important, sort of important or not important. Finally, students were asked

how they felt about reading aloud, whether they felt happy, okay or nervous.

Pilot Survey

A pilot online survey was carried out prior to the study with five second year students from School B. These students were not part of the evaluation population. Permission was sought from the students and their parents prior to the pilot. The goal of the pilot study was to test the reliability of the instrument and to help establish the content validity of the survey. The pilot survey proved the reliability and validity of the survey. The technology worked correctly, and the students were able to complete the surveys without difficulty.

Phase Two Qualitative Data Collection

Phase two of the evaluation involved interviewing participants. There are three types of interviews that could have been used. These include:

1. Structured interviewing
2. Unstructured interviewing
3. Semi-Structured interviewing

Semi-structured interviewing was the preferred method of interviewing for this evaluation. One to one interviews were used in preference to holding focus groups. According to Robson, semi-structured interviewing is widely used in flexible and mixed methods approaches. (Robson 2011). There is more freedom and flexibility associated with semi-structured interviews. In order to successfully interview first year students with various literacy skills, it was essential that the researcher had flexibility regarding question sequence, wording and the amount of time allotted to certain topics. Flexibility was also required regarding the nature of the questions asked to each stratum. The interview questions focused on what motivates students to read and their overall attitude towards reading. The interview with the Experiment Group had subsequent questions added that focused on their use of AR. In order to keep focused in such a flexible interview situation, the researcher used one strategy of semi-structured interviewing as suggested by Robson. The strategy involved writing the topics and associated questions and prompts on a series of cards. The interviewer began with an initial topic and from there was by some extent guided by the interviewee's responses. Once a question or series of questions had been asked, they were then moved to the other side of the table (Robson 2011). This strategy allows the interviewer to remain focused and maintain a constant and natural flow during the interview process.

Interview Content

Interview protocol included fourteen open ended questions for both the Control Group and the Experiment Group. The questions focused on the issue of motivation. The questions were:

1. Do you enjoy reading?
2. Why do you like/not like reading?
3. Did you enjoy taking part in 'drop and read' each week in English class?
4. What did you like about 'drop and read'?
5. What did you not like about 'drop and read'?
6. If you could change anything about the 'drop and read' class what would it be?
7. Would you like to have a drop and read class next year?
8. How many books did you read this year?
9. How did you feel about the number of books you read?
10. How did you choose a book to read?
11. Was it difficult or easy to choose a book?
12. Do you read books at home?
13. Do you buy books?
14. Do you think your reading has improved in the past year?

The interviewer's aim was to determine what motivates students to read and to discover to what extent the Experiment Group were motivated through their engagement with the AR programme to read. For this reason, the Experiment Group were asked eleven additional questions specifically about the AR programme. These questions were:

1. How did you choose which AR books to read?
2. Is it easy or difficult to choose a book?
3. What do you like best about AR?
4. What do you like least about AR?
5. If you could change one thing about AR what would it be?

6. Do you find the AR quizzes to be easy or hard?
7. Do you like taking the AR quizzes after reading a book?
8. Does your library have a good selection of AR books?
9. Are their books you would like to read that are not included in your AR library?
10. Did you read any books that were not part of the AR library?
11. Do you think all schools should use AR?

Due to the young age and inexperience of the interviewees, prompts were used when it was felt that further clarification was needed. The interviewees received the interview questions prior to the scheduled interview time. They were informed in advance that the interviews would be audio recorded and transcribed at a later time by the researcher.

Pilot Interview

A pilot interview was conducted with three of the five participants who piloted the web-based survey from School B. The aim of the pilot interviews was to check the clarity of the questions and to ensure that they are not ambiguous or misleading. The pilot interviews also sought to check the reliability of the audio recorder. Debriefing with the participants was conducted to obtain information on the clarity of the interview questions.

Data Analysis

Data analysis in Mixed Methods research is complex due to the variety of data. The researcher must use techniques for each of the qualitative and quantitative data sets as well as techniques to mix the data sets. "Mixed methods data analysis consists of analytic techniques applied to both the quantitative and the qualitative data as well as to the mixing of the two forms of data concurrently and sequentially in a single project or a multiphase project" (Creswell, Plano Clark 2011).

Phase One – Convergent Parallel Design

As outlined previously, the purpose of phase one, the convergent parallel design was to gather simultaneously the qualitative and quantitative data necessary to answer the research question. This research is informed by a pragmatic paradigm as it aims through theevaluation of AR to discover practical ideas that could be implemented by schools to improve the literacy standards of Irish post-primary students. The convergent parallel design enabled the researcher to gain access to the students' lived experience of AR and literacy instruction. The lived experience of the students is contained in the three data sets.

1. Reading ages (Quantitative data)
2. Survey responses (Qualitative data)
3. Interview responses (Qualitative data)

The researcher initially analysed each data set independently. Later the integration of all three data sets provided a holistic insight into the lived experience of literacy education and the AR programme in the Irish context.

Phase One Quantitative Data Analysis Procedure

The researcher used AR's reporting software to generate a growth report to compare the pre and post-STAR tests for the Control Group and the Experiment Group. This report illustrated in table format the pre-programme reading-age of the individual student, the post programme reading-age and the change in years and months if any. (Appendix 2) The researcher manually analysed the numerical data by hand according to the following steps.

Step One: The researcher highlighted the data on the growth report according to the strata outlined in the Methodology chapter, improved reading-age, no change in reading-ageand reading-age deteriorated. The researcher created percentage frequency distribution charts for each strata. According to the Encyclopaedia of Survey Research Methods, "A percentage frequency distribution is a display of data that specifies the percentage of observations that exist for each data point or grouping of data points"(Lavrakas 2008). The researcher calculated the percentage of the population from the Control Group and the Experiment Group with an improved reading-age, a deteriorated reading-age and a reading-age that didn't change. These percentages were recorded and graphed using Microsoft Excel.

Step Two: The researcher also wanted to consider the impact of student gender on the findings and in light of this asked, does AR impact differently on the reading ages of males and females? The findings of this analysis were illustrated in graph format using Microsoft Excel.

Step Three: The researcher compared the data from the Experiment Group with the data from the Control Group to answer the quantitative research question; does AR improve students' reading ages? The comparison of data also answered the research question: does AR impact on the reading ages of males and females differently? The comparative results

were illustrated in graph format using Microsoft Excel.

Phase one's quantitative analysis identified the students that were eligible to populate the qualitative element of phase two as the students for each stratum were identified.

Phase One - Qualitative Data Analysis – Surveys

The aim of this research is to evaluate the effectiveness of AR as a means of improving the literacy standards of Irish post-primary students. As previously outlined, this involves evaluating the effect the programme has on reading ages as well as the effect the programme has on students' attitude towards reading in general. The survey was designed to answer the question; does AR motivate students to read?

Phase One Qualitative Data Analysis Procedure

In keeping with Greene's analysis procedure, the researcher analysed the surveys by means of data transformation. The researcher quantised the qualitative data. That is to say that the researcher turned the qualitative data into numerical data to make comparisons, e.g. seven males like to read, twenty-three students like to read at home etc. The researcher input the data from Survey Monkey into NVivo in the form of a CSV file for analysis. Once in NVivo the researcher was able to apply attributes to each of the respondents. The researcher then ran queries using NVivo to find the links between attributes, such as how many females liked reading and read at home in the Experiment Group. The same query was then run for the Control Group. These findings were calculated as percentages of the population for both the Control Group and the Experiment Group for the purpose of comparison. The results were recorded in excel and percentage frequency distribution graphs were created to illustrate the findings.

Phase Two – Sequential Explanatory Design

The results of phase one populated phase two of this research. Therefore, the analysis of phase two was dependent on the analysis of phase one. This is by definition sequential mixed data analysis. **"**Sequential mixed data analysis occurs when the QUAL and QUAN strands of a study occur in chronological order, such that the analysis in one strand emerges from or depends on the previous strand" (Teddlie, Tashakkori 2008). Phase Two – Sequential Explanatory Design Procedure.

Step One: After interviewing each participant the audio recordings of the interviews were transcribed.

Step Two: The transcribed interviews were input into a qualitative data analysis computer software package, NVivo. Each interview transcript was assigned to a case that included a classification sheet. The classification sheet included information such as, case name, gender, stratum and whether or not the interviewee was from the Experiment Group or the Control Group.

Step Three: Using NVivo, the researcher coded the interviews to prepare them for analysis. "Coding is the process of breaking down segments of text data into smaller units (based on whatever criteria are relevant), and then examining, comparing, conceptualizing and categorizing the data" (Strauss, Corbin, 1990). The researcher used open coding to beginan analysis of the interviews collectively. "An open code is simply a new label that the researcher attaches to a piece of text to describe and categorise that piece of text" (Strauss, Corbin, 1990). Each of these codes formed a node in NVivo. These nodes contained student responses to broad topics such as, AR Quiz, STAR Tests, attitude towards reading, attitude towards the number of books read, choosing a book, school investment in AR, selection of books in school library etc.

Step Four: The researcher formulated a question or a number of questions for each topic/node. These questions were mostly from the interview script. Some of the questions presented themselves naturally to the researcher during the open coding process. In keeping with the researcher's pragmatic paradigm, the researcher formulated the questions that would work and find out what works to improve the literacy standards and the lived experience of Irish post-primary students. These questions included:
Should schools invest in AR?

What do students like and dislike about AR?How do students choose a book?
What do students like and dislike about reading?

What do students like and dislike about drop and read?Are parents aware of students' reading habits?
Where do students prefer to read and why?

Step Five: With the question in mind the researcher then used analytical coding

to analyse each of the nodes and to create sub-nodes. “As its name suggests, an analytic code is more than a descriptive code. It becomes more interpretive” (Cohen, L. et al 2011). This process of coding allowed the researcher to see emerging patterns within the nodes and therefore find answers to the posed questions.

Step Six: The interviews were analysed according to their strata and classification. Such an analysis determined if for example differences exist with regard to how boys are motivated to read compared to how girls are motivated to read or how students with improved reading ages are motivated to read compared to students with no change in their reading-age. To carry out this analysis, queries were run in NVivo. Similarly, queries were run to compare the themes and emerging patterns between the Experiment Group and the Control Group. The aim of this analysis was to determine whether or not AR motivates reading.

Step Seven: The findings of the analysis were illustrated by means of a graph where possible and presented in the Findings chapter.

Mixed Methods Research Inferences

At this stage of the data analysis process the researcher has the following three data sets

1. Reading-age results (QUAN)
2. Survey findings (QUAL)
3. Interview findings (QUAL)

In order to answer the overarching Mixed Methods research question, is AR an effective means of improving the literacy standards of Irish post-primary Students, the researcher must combine the results from phase one and phase two of the study. According to Teddlie and Tashakkori “…the most important step in any MM study is when the results (i.e., findings, conclusions) from the study’s QUAL and QUAN strands are incorporated into a coherent conceptual framework that provides an effective answer to the research question” (Teddlie, Tashakkori 2008). In keeping with Greene’s analysis procedure, the researcher conducted an inference process in order to integrate the data and draw conclusions from thestudy. “Inference process is the process of making sense of the results of data analysis” (Teddlie, Tashakkori 2008). Teddlie and Tashakkori further state that “In all MM studies … an enhanced understanding is possible only if the outcomes of research strands are effectively linked or integrated…” (Teddlie, Tashakkori 2008). In order to make sense of thedata the researcher used thematic analysis.

Thematic Analysis

The researcher used thematic analysis to integrate the three data sets and to reach a conclusion as to whether AR is an effective means of improving the literacy standards of Irish post-primary students or not. The researcher used this method to review the literature for the literature review and it proved to be useful. As outlined in the literature review, thematic analysis is "…a method of identifying, analyzing, organising, describing, and reporting themes found within a data set" (Braun, Clarke 2006). The researcher chose thematic analysis of the data for a number of reasons. Firstly, thematic analysis allows for patterns to emerge within a data set. Secondly, having used thematic analysis for the literature review it provided the researcher with a lens in which to view the new data and to make links between the sets. As stated by Robson, "there is nothing to stop you starting the analysis with predetermined codes or themes, perhaps arising from your reading of the research literature" (Robson 2011). After all, an objective of this research is to advance the knowledge surrounding AR that exists at present. For this reason, it made pragmatic sense to analyse the data through the lens of the themes that emerged during the literature review. That being said, it is worth noting that the researcher did not limit the research to the predetermined themes. The researcher was open to new themes and codes emerging from the data sets. To aid the thematic analysis of the data sets, NVivo was used by the researcher.

Integrate Phase One and Phase Two Results Analysis

The researcher input qualitative data from Survey Monkey to NVivo. In order to input the data, the researcher generated a CVS file using Survey Monkey's features. This file was uploaded to NVivo for analysis. This enabled the researcher to compare the phase one qualitative Survey Monkey results to the phase two qualitative interview results.

Integrate Phase One and Phase Two Qualitative and Quantitative Results

Finally, the researcher combined the quantitative data from phase one with the integrated qualitative data from phase two. The researcher again used open coding to identify common themes between both sets of data. In a similar process as before the researcher then used analytical coding to find emerging patterns within the combined data sets. By analysing both data sets comparatively the researcher answers both elements of the research question.

1. Does AR increase students' reading ages?
2. Does AR motivate students to read?

This collaboration between phase one and phase two, qualitative and quantitative data determines the extent to which AR is an effective means of improving literacy standards of

Irish post-primary students. These integrated findings and their connection to the existing literature are explored later in this thesis in the Discussion Chapter.

Methodological Issues

Use of CAQDAS

The usefulness and the use of computer-aided qualitative data analysis software (CAQDAS) is a much debated issue in literature (Robson 2011). identifies many advantages and disadvantages of specialist quantitative data analysis packages. One of the most substantial advantages of computer-aided analysis is its ability to store large amounts of data in one easy to access location. This advantage becomes even more important for the mixed methods researcher. CAQDAS enables the researcher to analyse differences, similarities and relationships between coded elements. CAQDAS also has the ability to illustrate these relationships in a variety of ways. That is, data is presented "as an organised, compressed assembly of information that permits conclusion drawing and/or action taking"(Huberman, Miles 1998). This is particularly helpful for a Mixed Methods research as they try to show moments of convergence between the various data sets and answer the Mixed Methods research question.

However, there are a number of disadvantages to specialist QDA packages. Proficiency in their use takes time and effort. Also, there may be difficulties in changing, or reluctance to change, categories of information once they have been established (Robson 2011). However, it must be noted that the paper method of photocopying numerous copies or data and manually using a highlighter and pen to code the qualitative data is also a very time consuming task. Similarly, it could be argued that a researcher could be just as reluctant to change their categories of information once they have manually highlighted and coded their data. One of the primary concerns with using CAQDAS is the possibility of the researcher becoming removed or distanced from the qualitative data. “In the reporting of quantitative research, there is no space for the researcher and the researcher is completely written out of the analysis” (Quinlan 2011). In contrast qualitative reporting is subjective, as Quinlan (2011) states “the researcher becomes subjectively immersed in the data and does not stand objectively apart from the data. As this is the case there is a need for the researcher to “provide a reflective account of themselves within the research project” (Quinlan 2011). CAQDAS such as NVivo can aid the researcher with this task as the computer stores a “memory of the analysis conducted on the data” (Quinlan 2011). It should also be noted that the computer does not automatically generate the codes for which the data is to be analysed.

"The central analytical task in qualitative research—understanding the meaning of texts—cannot be computerized" (Kelle 1995). It is a system that enables the researcher to read the data and analyse it using codes, just as they would manually. "…the main function of CAQDAS is not to analyse data but rather to aid the analysis process, which the researcher must always stay in control of" As Kelle (1995) advises "Researchers who make use of these packages must remain alert to the need to preserve the integrity and context of the original material and not lose sight of this during the process of coding and subsequent analysis.

Upon analysis and reflection of the advantages and disadvantages the researcher chose to use CAQDAS. The chosen system of data analysis was NVivo. A number of factors influenced the researcher's need to use NVivo. Firstly, the research employs mixed methods. By its nature, a Mixed Methods research project has a large quantity of data as it combines qualitative and quantitative data sets. In particular, this research comprises of a large quantity of qualitative data requiring analysis over two distinct phases. The researcher wanted to achieve true integration of data in this research and saw CAQDAS as a means ofdoing so. "The use of a computer program in the process of mixing methods can not only assist in, but greatly extend the use of data gathered for complementary or expansion purposes because such use facilitates matching of different data sources for individual respondents; comments, expressions of attitude, or observations made by a particular personcan be matched with their particular rating of their own experience, or their demographic details. The comparison process is therefore refined, providing the basis for comparative pattern analysis, illustrative understanding, and potential also to reveal new (or previously unobserved) dimensions in the data" (Bazeley 2006). Phase one of this research consists of two data sets that are gathered at different stages of the research.

NVivo as a system is capable of storing this quantity of data and allowing the researcher easy access to this data. NVivo also has the ability to enable the researcher to make comparisons between both sets of data. This can then be presented in a visual for ease of interpretation. NVivo will enable the researcher to code the transcribed interviews as a means of identifying themes in them. Phase two of the research consists of a data set containing twenty interviews. NVivo also allows the researcher to make links between the data sets of phase one and phase two in an organised, visual and structured manner. The researcher feels that using NVivo will keep the data analysis more organised than the alternative paper and highlighter method. Furthermore, when the data is matched and analysed in the way described, discrepancies can be easily identified. As Bazeley states "instances where individuals go against a trend can be readily identified and explored in detail" (Bazeley

2006).

Finally, the researcher deems the use of CAQDAS necessary as the quantitative and qualitative data was gathered using ICT, the surveys were conducted using Survey Monkey, the interviews were recorded using an audio recorder and later transcribed using a processor and the quantitative reading-age results were gathered using AR's STAR reading test. Therefore, the data is already in a format suitable for analysis using NVivo.

Validity and Reliability

Validity is an essential element of effective research. If a piece of research is invalid, then it is worthless**.** Quantitative research and qualitative research require specific types of validity checks. Errors exist naturally in both quantitative research and qualitative research. "Quantitative research possesses a measure of standard error which is inbuilt, and which has to be acknowledged. In qualitative data the subjectivity of respondents, their opinions, attitudes and perspectives together contribute to a degree of bias" (Cohen, Manion *et al.* 2011).

Since Mixed Methods research is the combining of both qualitative and quantitative data strands "it raises additional validity concerns that extend well beyond the validity concerns that arise in the separate quantitative and qualitative methods procedures" (Creswell, Plano Clark 2011). However, using a mixed methods approach can add validity to a research project as the research is not dependent on one research method over another, rather it is the combining of both qualitative and quantitative methods. Exclusive reliance on one method may bias or distort the researcher's picture of a particular slice of reality that is being investigated. Whereas, when different methods of data collection yield the same results or correspond to each other, confidence can be achieved and the results validated (Cohen, Manion *et al.* 2011).

Validity in Mixed Methods research is defined by Creswell and Plano Clark, as "employing strategies that address potential issues in data collection, data analysis, and the interpretations that might compromise the merging or connecting of the quantitative and qualitative strands of the study and the conclusions drawn from the combination" (Creswell, Plano Clark 2011). This research has two phases each with a number of validity threats or issues. The specific strategies outlined below were put in place to address and minimise the threats in each design phase.

Phase One: The Convergent Parallel Design Phase

Creswell and Clark (2011) identify a number of potential validity threats for a convergent parallel design research project. Creswell and Plano Clark (2011) categorise the threats under three headings, data collection issues, data analysis issues and interpretation issues. The following potential data collection threats for merging data in a convergent parallel design were considered and measures were put in place by the researcher to minimise them.

1. Selecting inappropriate individuals for the qualitative and quantitative data. To reduce this threat the researcher populated the research with the same population to make the data comparable.
2. Obtaining unequal sample size for the qualitative and quantitative data collection. In this phase of the research the same number of students completed the online surveys and the reading-age tests.
3. Collecting two types of data that do not address the same topics. In this research both the qualitative data and the quantitative data address the same research question, "Is AR an effective means of improving the literacy standards of Irish post-primary students?"

The following data analysis issues were also considered validity threats to this research project. The following measures were put in place to combat them.

1. Using inadequate approaches to converge the data. A joint display with quantitative categorical data and qualitative themes is necessary to identify the links between these data sets.
2. Making illogical comparisons of the two results of analysis. The researcher must find quotes from the qualitative data that matches and supports the quantitative findings (Creswell, Plano Clark 2011).

In relation to interpretation issues the following threats were considered by the researcher with measures put in place to lessen and eliminate their impact.

1. Not resolving divergent findings. Phase two, the sequential explanatory design phasewill resolve and shed light on any divergent findings that arise from phase one.
2. Giving more weight to one form of data over the other. A joint display will be usedto give equal weight to both sets of data and to illustrate the merging of the data sets.

Each set of data has its own research sub-question. The quantitative data set answers, "Does

AR improve students' reading ages?" while the quantitative data set answers, "Does AR increase students' motivation to read or cause a change in attitude towards reading?" Both data sets are necessary to answer the overall research question, Is Accelerated Reader an effective means of improving the literacy standards of Irish post-primary students.

Phase Two: The Sequential Explanatory Design Phase

There are a number of potential validity threats when connecting data in a sequential explanatory design. Again Creswell, Plano Clark (2011) categorise these threats according to three distinct phases of the research process namely, data collection, data analysis and interpretation.

Data Collection Validity Threats

In relation to data collection validity issues for this phase of the research the researcher identifies as outlined by Creswell, Plano Clark (2011) three distinct potential validity threats.

1. Selecting inappropriate individuals for the qualitative and quantitative data collection. To combat and minimise this threat the researcher selected the same individuals to follow up on the findings.
2. Using inappropriate sample sizes for the qualitative and quantitative data collection. In order to reduce this validity, threat the researcher used a larger sample size for the qualitative data, one hundred students and a smaller sample size for the qualitative phase. In the qualitative phase of this research twenty students were interviewed.
3. Choosing inadequate participants for the follow-up who cannot help explain significant results. To avoid this threat the researcher ensured that the interviewed students participated in the initial quantitative phase to determine their reading-age. The students that participated in the phase two interviews came from a range of results from the phase one reading-age levels. Four students, two male and two female were selected from each reading-age strata.

Data Analysis Validity Threats

In relation to the data analysis threats the researcher identifies two distinct issues:

1. Choosing weak quantitative results to follow up on qualitatively. In light of this threatthe researcher ensured that the results used for follow-up actually needed further explanation. The researcher sought to explain in this sequential explanatory phase the reason for students' reading ages to have improved, deteriorated or not changed at all. The interviews aimed to clarify and further explain the quantitative data, the reading ages.

2. Including qualitative data in an intervention trial without a clear intent of its use. In this research project there is a clear intent of use for the qualitative data. The interviews are designed to explain the change or lack of change in the students' reading ages. The interviews are also designed to answer the distinct qualitative element of the overall research question, does AR motivate students to read.

Data Interpretation Validity Threats

Regarding interpretation threats Creswell and Plano Clark (2011) identify a number of possiblemixed methods validity issues for this phase of the research. The researcher deems the following to be of relevance for this research project.

1. Comparing the two data sets when they are intended to build rather than merge. Creswell and Plano Clark (2011) advise the researcher to interpret the quantitative and qualitative data sets to answer the Mixed Methods research question. In this study the quantitative reading-age results need to be analysed prior to the implementation of the qualitative explanatory interviews. The interviews are coded and analysed independently of the quantitative data. Only after both sets of data have been analysed will the qualitative data be used to explain the quantitative data. In this wayboth sets of data fulfil the aim of the research, to evaluate the effectiveness of Accelerated Reader as a means of improving the literacy standards of Irish post- primary students. In fulfilling this research aim the interpretation of the data answerstwo key research questions. Firstly, does AR increase students' reading ages? Secondly, does AR increase students' motivation to read or cause a change in attitudetowards reading?

2. Not relating the stages in a multiphase study to each other. This study has two clear phases. Phase one, the convergent parallel design phase and phase two, the sequential explanatory design phase. Both phases of the study are necessary to determine the effectiveness of AR as a means of improving literacy standards of Irish post-primary students. Phase two builds on the qualitative and quantitative data gathered in phase one. The interviews in phase two aim to explain the reading-age results from phase one's quantitative data. The interviews in phase two, also aim to explain the attitudes identified in the qualitative results of the surveys from phase one.

Validity and Reliability Summary

The validity and reliability strategies outlined above for both phase one and phase two of this research were designed to ensure equivalence for both the Control Group and the Experiment Group. The researcher ensured that the research population was maintained in both groups for the duration of the research. The research question was the same for both groups. Similarly, the time given to reading, the completion of pre and post tests, pre and post surveys and interviews was equal for both groups. Both groups were also given the same notice regarding the collection of data. In light of this all data gathered from both groups was analysed and interpreted in the same way with the use of NVivo. The validity and reliability strategies as outlined above for both phases of the research were also designed to eliminate bias. The Mixed Methods design of the study helped the researcher to eliminate bias. The quantitative and qualitative elements of the research worked together to answer the research question and verify the findings. The multiphase structure of the research is designed to eliminate bias as phase two of the study seeks to clarify and explain the findings from phase one of the study. Furthermore, the aim of this research is to evaluate the effectiveness of AR as a means of improving the literacy standards of Irish post primary students. The researcher as outlined earlier is not connected to the program its success or failures in any way. The researcher is interested in the program's effectiveness and in turn discovering pragmatic elements and strategies that could improve the literacy standards of Irish post primary students.

Summary

This chapter outlined and justified the design and the methodology employed to satisfy the aim of the research and to seek answers to the research question. This chapter justifies the use of a Mixed Methods research approach and outlines the data collection and analysis procedure together with an account of validity. The role of the researcher was presented along with the pragmatic philosophical underpinnings of the research. The chapter concludes by addressing the methodological issues considered in this study and the measures taken to ensure validity and reliability. The findings obtained from the use of the selected strategies and methods of analysis will be presented in Chapter 4, Findings and discussed in relation to the themes in Chapter 5, Discussion.

Chapter Four

Findings

Introduction

This chapter outlines the findings from this research. In this study there are three data sets.

1. Reading ages – quantitative data
2. Surveys – qualitative data
3. Interviews – qualitative data

This chapter outlines the findings from each data set independently. Integrated or collective findings are then presented in list format in a summative way at the end of this chapter. Comparisons are then drawn between each of the data sets and this is presented in the form of a thematic analysis in the Discussion Chapter.

Phase One – Quantitative Results – Reading Ages

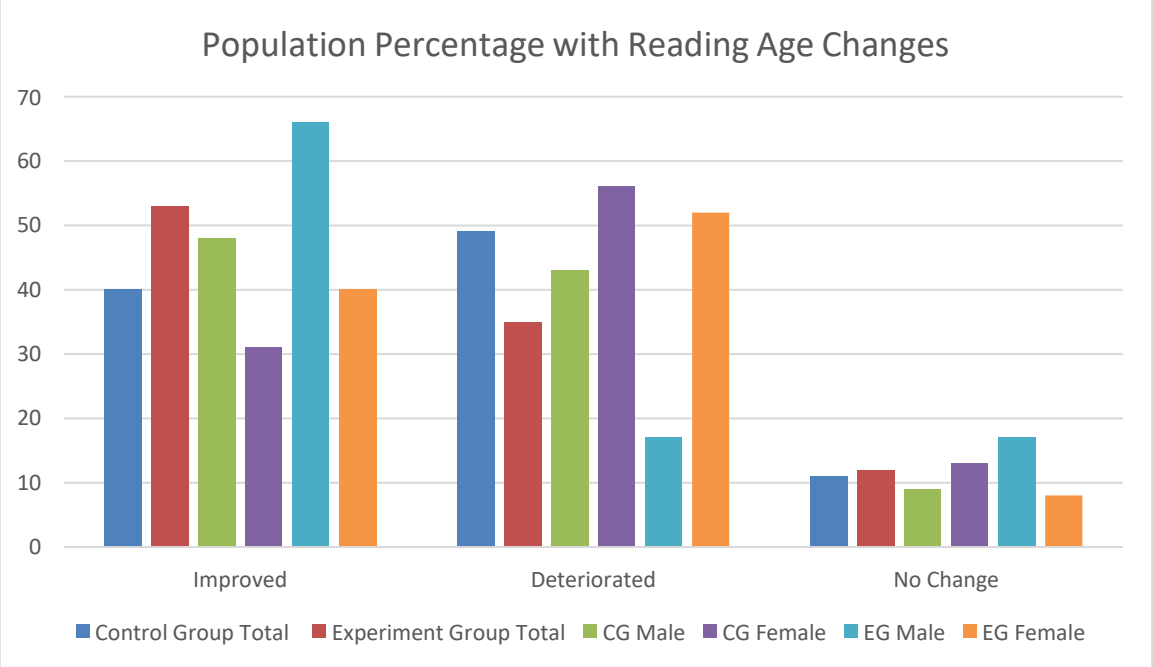


Figure 17: Population Percentage with Reading-Age Changes

In the Control Group 40% of the population had an improved reading-age. In the Experiment Group 53% of the population reported an improved reading-age. As outlined in the previous chapter, the only variable between the two groups is the AR programme. The Control Group did not have access to the programme while the Experiment Group did. In light of this it is clear that AR had a positive impact on the students' reading ages as over half of the Experiment Group improved their reading-age. In both groups some students' reading ages deteriorated. In the Control Group 49% of the population had a reading-age that deteriorated, while 35% of the Experiment Group's population had a reading-age that deteriorated. From

these statistics it is clear that the reading ages of the students not using the AR programme were most affected and showed signs of deterioration. Not all students illustrated a change in reading-age. In the Control Group 11% of the population reported a reading-age that did not change. In the Experiment Group the percentage of students with a reading-age that did not change was 12%. This shows that more students in the Experiment Group with the use of AR maintained their reading-age throughout the school year. How the percentage rate of change in reading ages was different for males and females. Males and females responded differently to the reading instruction in both the Control Group and the Experiment Group.

In the Experiment Group 66% of the males increased their reading age and 40% of the females increased their reading age. In the Control Group 48% of the male students and 31% of the female students had an increase in reading age. 17% of the male students in the Experiment Group had decrease in reading age and 52% of the female populations reading ages decreased. This compares to 43% of the males in the Control Group had a decrease in reading age and 56% of the females in the Control Group had a decrease in reading age. In the Experiment Group 17% of the males experienced no change in relation to reading age and 8% of the females experienced no change in relation to reading age. In the Control Group 9% of the males experienced no change in relation to reading age and 13% of the boys experienced no change in relation to reading age. From these findings it is clear that males and females reading ages are affected differently by different reading instructions. The findings of this research show that in both the Control Group and the Experiment Group over half of the female populations experienced a decline in reading age after their year of literacy instruction

Males in the Experiment Group increased their reading ages by an average of 7 months. Males' average pre reading-age of 10 years and 1 month increased to an average post reading-age of 10 years and 8 months. Females in the Experiment Group experienced a decline in their reading-age. On average in the Experiment Group the reading-age of the female students decreased by one month. The average pre reading-age of the females was 10 years and 1 month, this decreased to an average post reading-age of 10 years and 8 months. In the Control Group the reading-age of the females declined by an average of 6 months. The females averaged a pre reading-age of 11 years, this declined to an average post reading-ageof 10 years and 6 months. The males in the Control Group improved their reading-age by an average of 3 months per male student. The average pre reading-age of the males was 9 years and 8 months, this increased to a post reading-age of 9 years and 11 months. These statistics

alone do not fully answer whether or not AR improves students' reading ages. While the use of AR appears to have a greater impact on students' reading ages, with 8% more students scoring an improved reading-age in the EG, further analysis was needed to determine whether AR improves students' reading ages or not. For this reason, the researcher focused on and compared the average pre and post reading ages for each group. For the Control Group there was no change between the average pre and post reading ages. The Control Group maintained an average reading-age of 10 years and 3 months. The average reading-age for the experiment pre-AR was 10 years and 4 months. After using AR for one academic year the pre-average reading-age increased to 10 years and 7 months. This shows an average increase of 3 months per student in the Experiment Group.The significance of raising reading ages by three months is discussed in the Discussion Chapter under the theme of Reading Gains.

From the quantitative data the researcher concludes that AR improves the reading standard of Irish post-primary students. A greater percentage of the Experiment Group showed an improved reading-age. The average reading-age of the Experiment Group increased by three months. These statistics also draw our attention to the decline of the female students reading ages for both the Control Group and the Experiment Group.

Phase One Qualitative Data Results – Surveys

As outlined in the Methodology chapter, students were given a Survey Monkey survey that aimed to determine whether or not AR has an impact on a student's motivation to read. Each student in both the Control Group and the Experiment Group were given the exact same survey with ten multiple-choice questions. The survey was repeated at the end of the school year to determine if students' attitude and motivation towards reading changed after their year of literacy education. Survey monkey calculated the findings in percentage form to two decimal places, the researcher for ease of understanding and clarity rounded the percentages to the nearest whole percentage. The researcher felt that rounding the numbers to the nearest whole percentage did not alter the accuracy of the findings but enhanced the clarity of the results. The following presents in graph and text format the findings from each question asked in the survey.

Q1 Do you like reading?

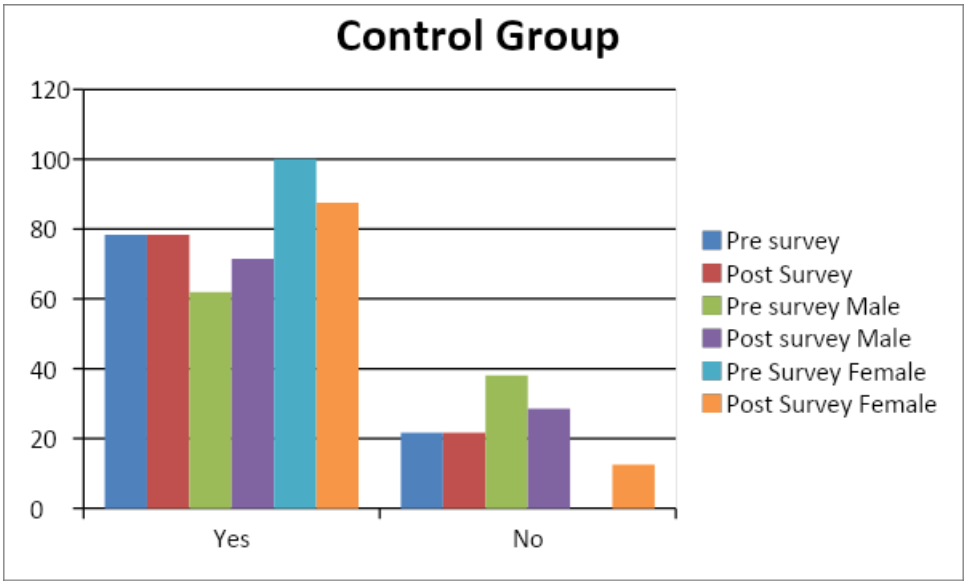


Figure 18: Do you like reading – Control Group

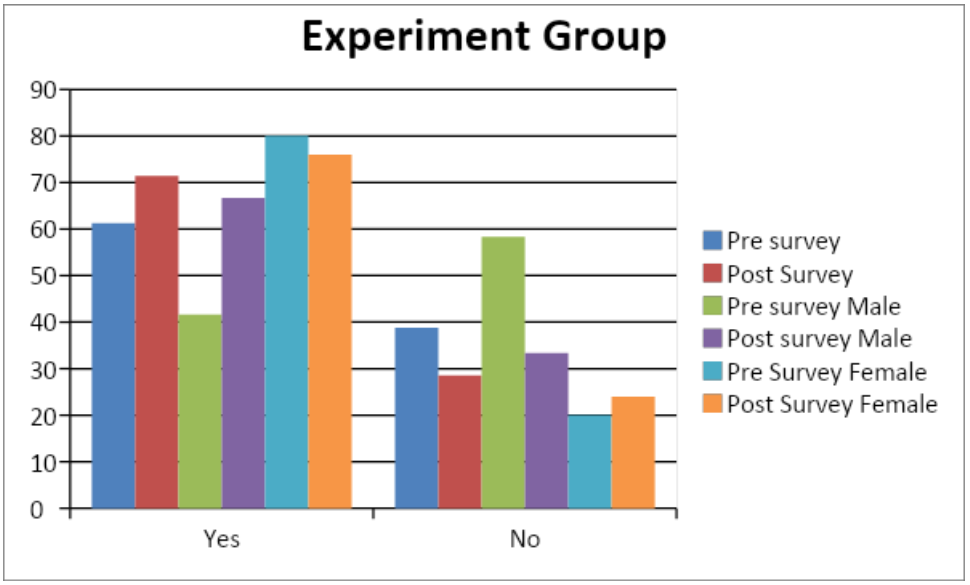


Figure 19: Do you like reading – Experiment Group

The survey question, do you like reading allowed the researcher to gain an insight into the students' general attitude towards reading. In the Control Group the pre-programme survey showed that 78% of the population liked reading. 62% of the male population liked reading and 100% of the female population liked reading according to the Control Group's pre-programme survey. In the Control Group's post programme survey the percentage of the population that liked reading remained the same with a total of 78% of the population claiming to like reading. However, there was a change in the female and male attitude towards reading. In the post programme survey 71% of the male population liked to read and 88% of the female population liked to read. This shows that there was a decline in the number of females that liked reading and increase in the number of males that liked reading.From

their year of literacy instruction 12% fewer females enjoyed reading. In the Experiment Group, the pre-programme survey showed that 61% of the population liked reading. 42% of the male population liked reading and 80% of the females liked reading. In the post programme survey, the percentage of the population that liked to read rose by 10% to a total of 71%. The greatest increase for the group was the males' attitudes towards reading. The post programme survey showed that 67% of the male population claimed that after using AR they liked reading. This is a margin increase of 25%. The males in the Control Group did not have the same level of attitude change. The Control Group experienced a 9% margin increase in the percentage of males that liked reading. This would suggest that the male population from the Experiment Group responded well to the AR programme and had a positive experience of reading. However, the survey results also showed an area of concern for both groups. The females' attitude towards reading declined over the course of the study. In the Control Group 0% of the female population disliked reading in the pre-programme survey. This figure rose to 13% in the post programme survey after following the literacy strategies for one year. Similarly, the females in the Experiment Group displayed a change in attitude towards reading. In the pre-programme survey 20% of the females claimed to dislike reading, this figure rose to 24% in the post programme survey, after using the AR programme for one year. These statistics posed a question for the researcher, why did the females' attitude towards reading change negatively in both the Control Group and the Experiment Group? What was it about the literacy instruction delivered to first year females that was turning them off reading?

Q2 I read, every day, every week, every month, sometimes or never

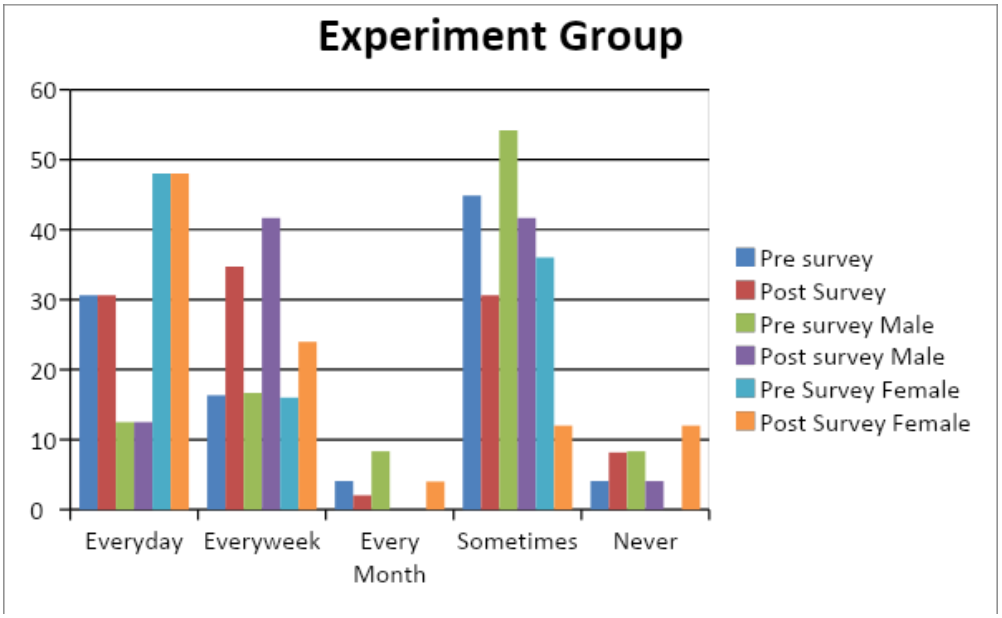


Figure 20: I read, every day, every week, every month or never – Experiment Group

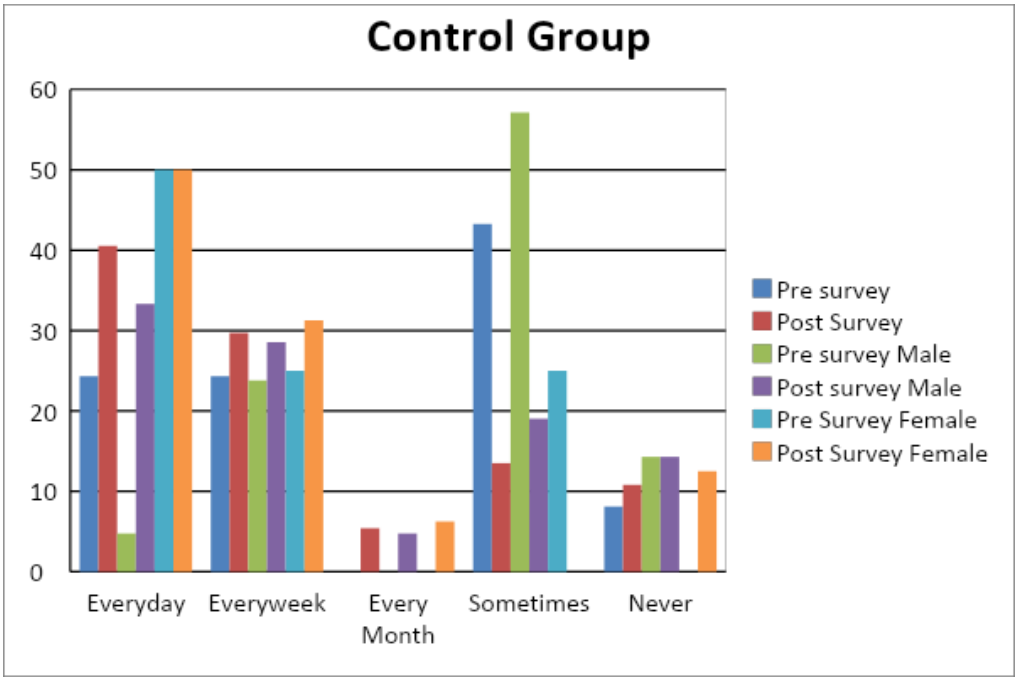


Figure 21: I read, every day, every week, every month or never – Control Group

In the Control Group's pre-programme survey, 24% of the overall population claimed to read every day. 5% of the males read every day and 50% of the females read every day. In the post programme survey for the Control Group, 41% of the population read every day. The percentage of the Control Group reading every day increased by 17% to 41%. Throughout the course of the year, the percentage of males reading everyday significantly increased from 5% to 33%. In the Experiment Group the pre-programme survey revealed that 31% of the population claimed to read every day. 13% of the males claimed to read every day and 48% of the females claimed to read every day. In the post programme survey 31% of the population claimed to read every day. 13% of the males claimed to read every day and 48% of the females claimed to read every day. The overall increase of students reading every day occurred in the Control Group and not in the Experiment Group, the school using AR. The Control Group experienced a 17% increase in the percentage of students reading every day. The greatest increase of students reading everyday was for the male population of the Control Group. The percentage of males reading everyday rose from 5% in the pre-programme survey to 33% in the post programme survey. In the Experiment Group the percentage of students reading every day did not change. The percentage of malesand females reading every day in the Experiment Group did not change. In the post programme survey, 13% of the males and 48% of the females as in the pre-programme survey claimed to read every day. In the Control Group's pre-programme survey, 24% of the population claimed to read everyweek. This increased to 30% in the post programme survey. In the Experiment Group, 16%of the population claimed to read every week in the pre-programme

survey. This increased to 35% in the post programme survey. That is a marginal increase of 19%. In the ExperimentGroup, the percentage of males reading every week rose by 25% from 17% to 42%. The percentage of females reading every week in the Experiment Group rose by 12%. In the Control Group the percentage of females reading every week rose from 24% in the pre- programme survey to 29% in the post programme survey. That is a marginal increase of 5%.Similarly, the percentage of males reading every week increased from 25% to 31%. That isa marginal increase of 6% more males reading every week in the post programme survey than in the pre-programme survey.

The pre and post programme surveys for both the Experiment Group and the Control Group shows that the percentage of students claiming to never read increased. In the Experiment Group's pre-programme survey 4% of the population claimed to never read. This was made up of 8% of the male population and 0% of the female population. In the post programme survey the overall percentage of students in the Experiment Group claiming to never read increased to 8% with 12% of the females claiming to never read. The percentage of males claiming to never read in the Experiment Group rescued to 4%. Similarly, the Control Group experienced an increase in the population claiming to never read. The pre-programme results rose from 8% to 11% in the post programme survey. In the pre-programme survey 14% of the male population and 0% of the female population claimed to never read. In the post programme survey the percentage of males students claiming to never read remained the same. The percentage of female students claiming to never read increased to 13%. It is very important to note the finding that in both groups at the start in the pre-programme survey 0% of the females claimed to never read. Yet, in the post programme survey there was an increase in the number of females claiming to never read. After their year of literacy instruction some of the females had stopped reading.

When taken together the percentage of students reading every day and every week there is an increase in the overall percentage of reading occurring. In the Control Group there was an overall increase in reading activity of 22%. In the Experiment Group there was an overall increase in reading activity of 18%. Also, in the Control Group there was a decrease of 30% of the population that claimed to read sometimes. Likewise, in the Experiment Group there was a decrease of 14% of the population claiming to read sometimes. It is worth noting that the greatest impact on reading activity happened in the Control Group.

Q3 I read at home, at school, somewhere else, no where

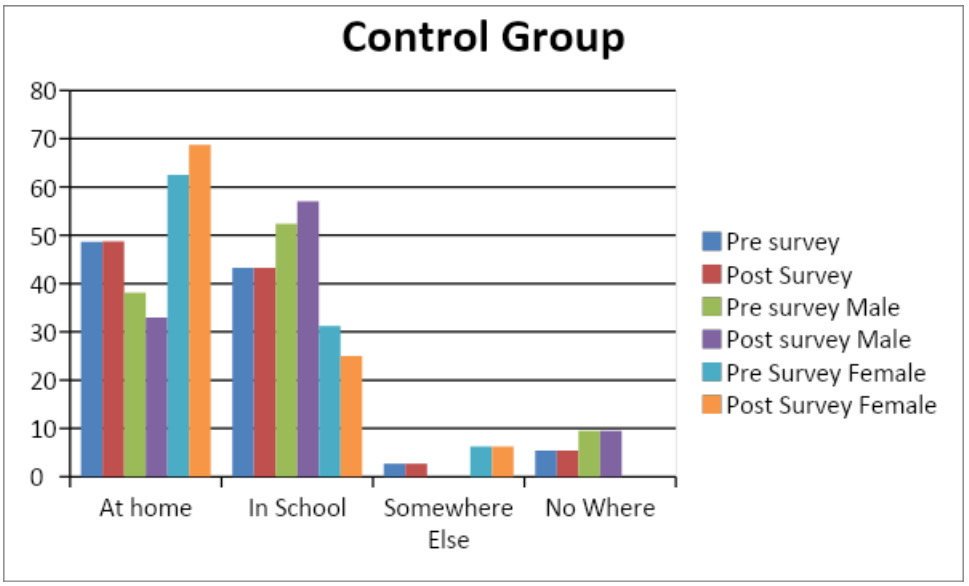


Figure 22: I read at home, at school, somewhere else, nowhere – Control Group

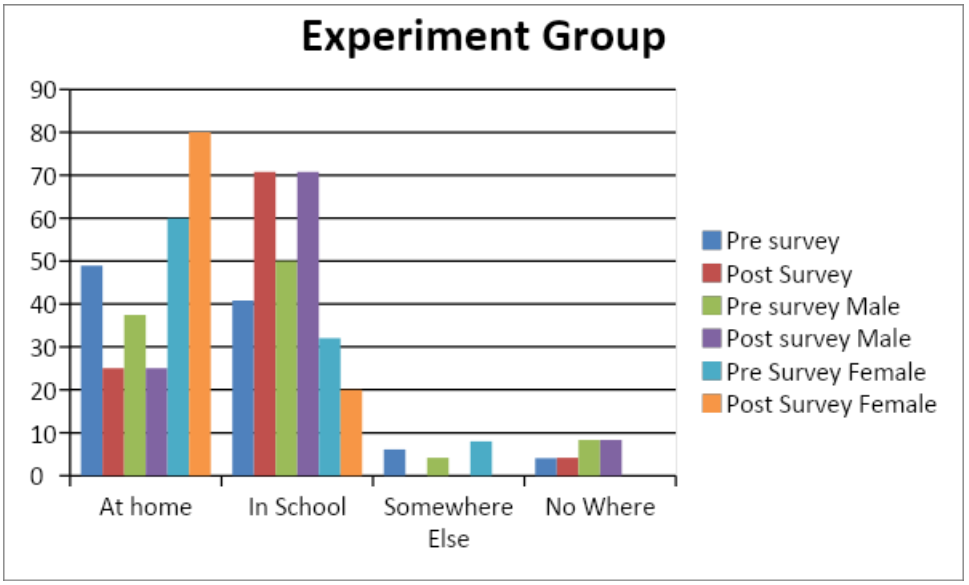


Figure 23: I read at home, at school, somewhere else, nowhere – Experiment Group

In the Control Group the overall percentage of students that preferred to read at home remained at 49%. In the pre-programme survey and the post programme survey the percentage of students that read in school also remained at 43% for the Control Group. The change in location for preferred reading in the Control Group was minimal, the statistics remained mostly unchanged. There was a slight increase in the number of females that preferred to read at home. The number of females that preferred to read at home increased from 63% to 69%. In turn this meant that the number of females that preferred to read in

school decreased from 31% to 25%. In contrast to this the males preferred to read in school than at home. The number of males that preferred to read in school increased from 52% in the pre-programme survey to 57% in the post programme survey.

In the Experiment Group the percentage of the population that liked reading and read at home decreased by 24% from 49% in the pre-programme survey to 25% in the post programme survey. The percentage of females in this group that preferred to read at home increased from 60% to 80% that is a marginal increase of 20%. The percentage of males that prefer to read at home decreased from 38% to 25%. These males in the Experiment Group after using AR now seem to prefer reading in school rather than at home. The percentage of males that like reading and prefer to read in school increased from 50% to 71% in the Experiment Group.

These statistics suggest that after using the AR programme more males liked reading in school. It also suggests that the females like to read at home. Overall, after using the AR programme there was a 30% increase in the number of students that liked to read and like to do so in school as opposed to at home or somewhere else. The percentage increased from 41% in the pre-programme survey to 71% in the post programme survey for the Experiment Group. This poses the question is AR responsible for the increased preference for reading in school?

Q4 Every month I read…

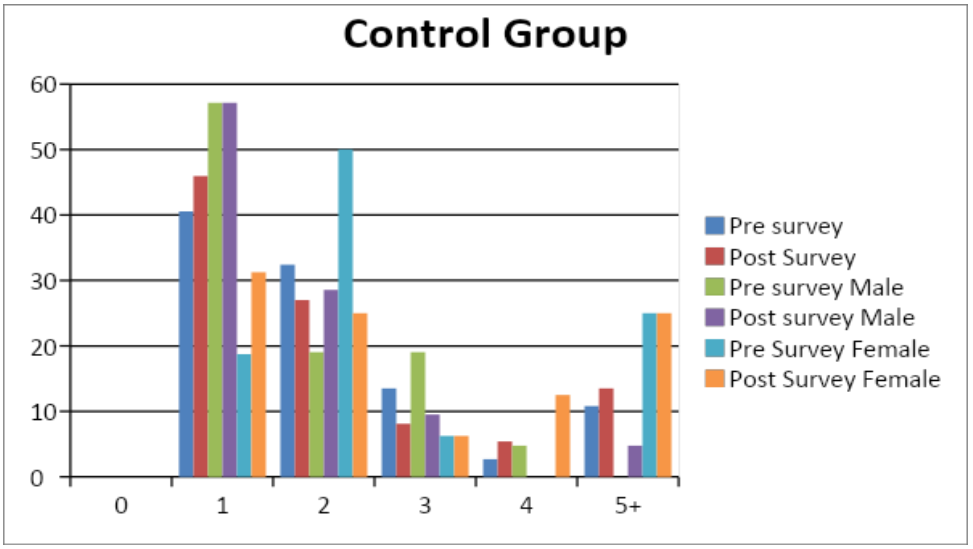


Figure 24: Every month I read – Control Group

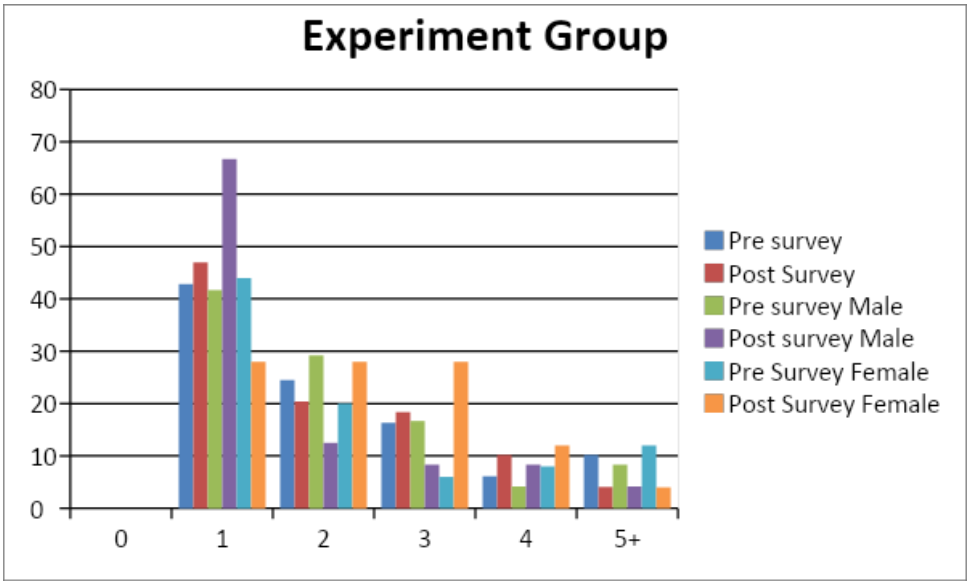


Figure 25: Every month I read – Experiment Group

In the Control Group's pre-programme survey, 41 % of the population were reading at least one book per month. This increased to 46% of the population reading at least one book per month in the post programme survey. In the Experiment Group 43% of the population were reading at least one book in the pre-programme survey. This increased to 47% in the post programme survey. In both the Control Group and the Experiment Group all students were at least reading one book per month.

The Control Group experienced an increase in the number of students reading 5+ books per month. The pre-programme results show that 11% of the population were reading 5+ books per month. This increased to 14% of the population reading 5+ books per month in the post programme survey. The percentage of females reading 5+ books per month remained at 25%. However, the number of males reading 5+ books per month increased to 5% from 0%.The Experiment Group experienced a decrease in the number of students reading 5+ books per month. The percentage of students reading 5+ books per month decreased from 10% to 4%. While the male students experienced a decrease of 4% in the number of students readingfive books per month. The greatest decrease in the percentage of students reading 5+ booksper month was for the female population of the Experiment Group. The percentage of females reading 5+ books per month dropped from 12% in the pre-programme survey to 4%in the post programme survey.

Q5 Choosing a book is …

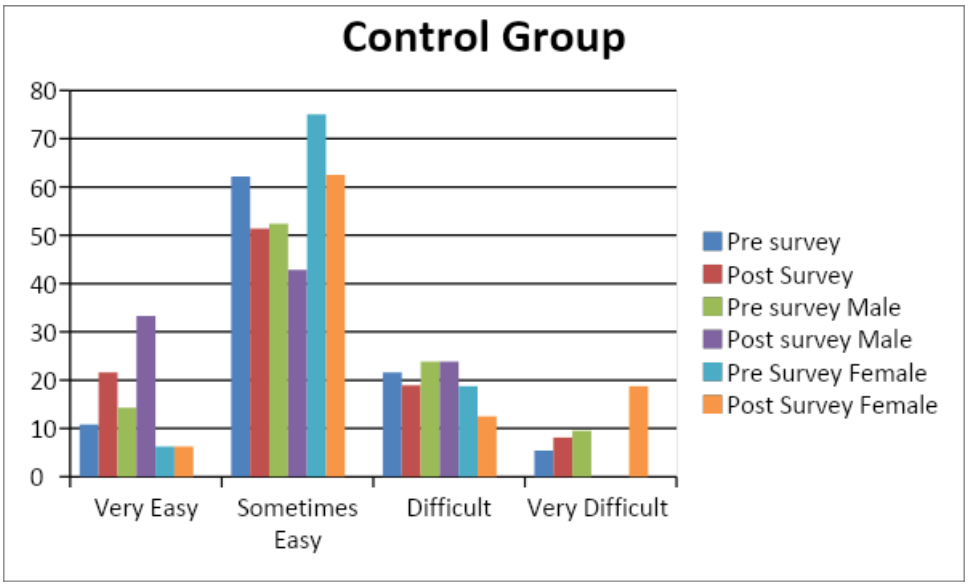


Figure 26: Choosing a book is – Control Group

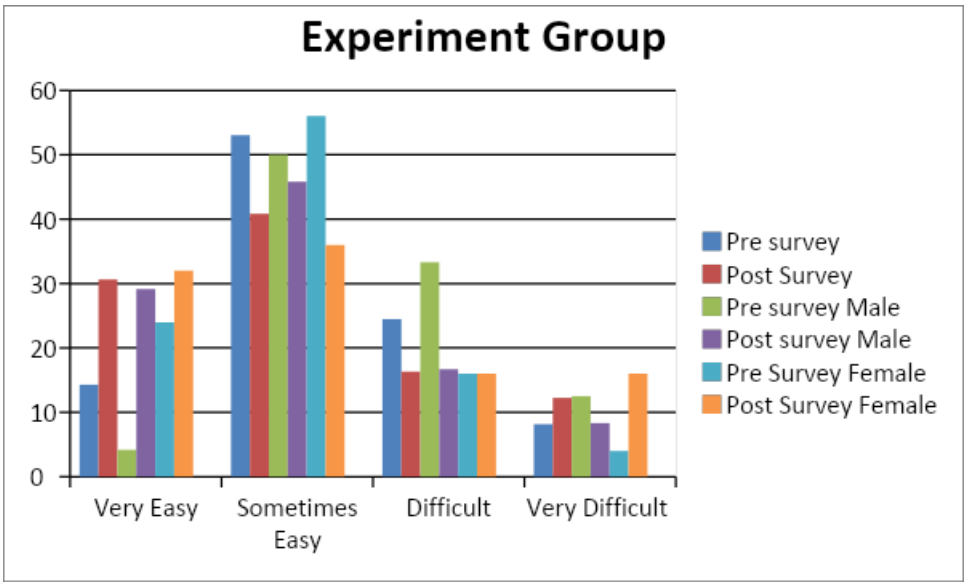


Figure 27: Choosing a book is – Experiment Group

In the pre-programme survey 11% of the Control Group claimed to find it very easy to choose a book. This figure increased to 22% in the post programme survey. Also, in the pre-programme survey 5% of the Control Group found it very difficult to choose a book, this decreased to 8% in the post programme survey. In the Experiment Group 14% of the population claimed to find it very easy to choose a book. This increased to 31% in the post programme survey. In the Experiment Group 8% found it very difficult to choose a book this increased to 12% in the post programme survey.

In the Experiment Group the programme had the greatest impact on the males. In the pre-programme survey 4% of the males found choosing a book very easy, this greatly increased to 29% in the post programme survey. Also 13% of the males in the pre-programme survey found choosing a book difficult. This percentage decreased to 8% in the post programme survey. Similarly, in the Control Group the pre-programme surveys show that 10% of the males found choosing a book very difficult. This decreased significantly to 0% of the males finding it very difficult to choose a book in the post programme surveys. The females in both the Experiment Group and the Control Group did not have the same success with choosing books as their male counterparts. In the Experiment Group's pre-programme survey 4% of the females found choosing a book very difficult. In the post programme survey16% of the females found choosing a book very difficult. This was also true of the females in the Control Group, in the pre-programme survey 0% of the females found choosing a bookvery difficult, yet in the post programme survey 19% of the females found choosing a bookvery difficult. This poses the question, what made choosing a book so difficult for the females and what helped to make choosing a book easy for the males?

Q6 It takes me a long time to read a book …

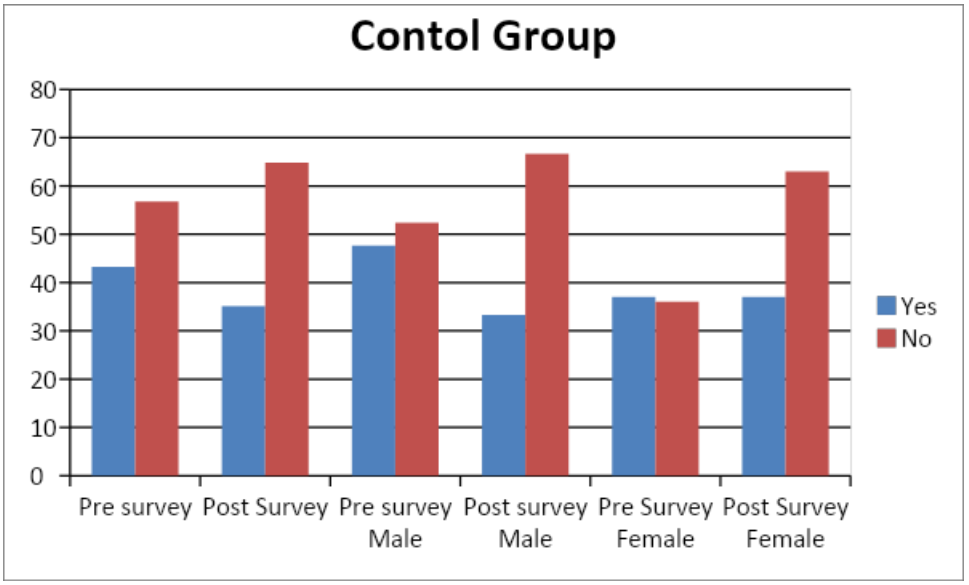


Figure 28: It takes me a long time to read a book – Control Group

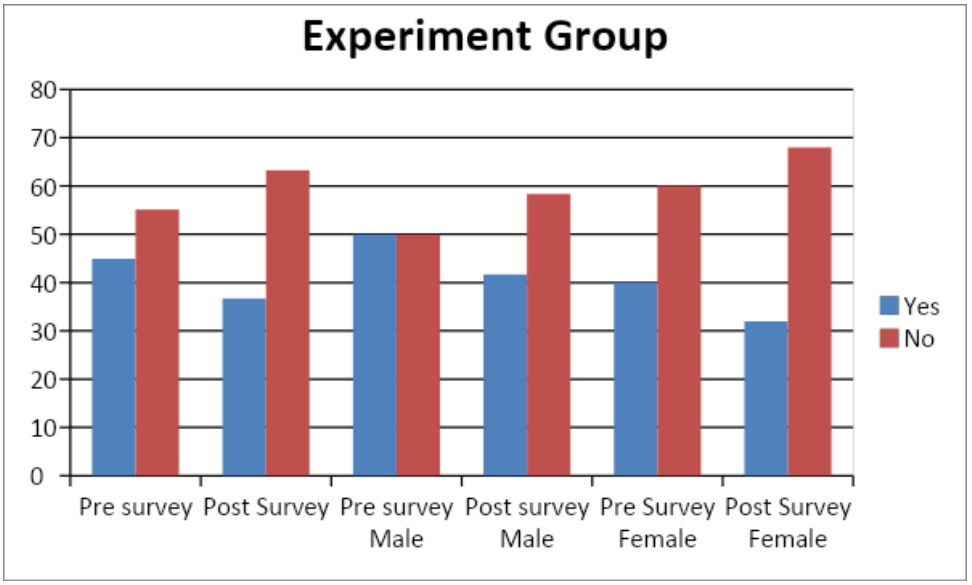


Figure 29: It takes me a long time to read a book – Experiment Group

In both the Control Group and the Experiment Group the post programme results show that as the year progressed students felt that they became quicker at reading books. In the pre-programme survey 43% of the Control Group's population felt it took them a long time to read a book. This figure decreased to 35% in the post programme survey. Similarly, 45% of the Experiment Group's population felt that it took them a long time to read a book in the pre-programme survey. This figure decreased to 37% in the post programme survey.

In the Control group the females' attitude about the amount of time it takes them to read a book did not change from the pre-programme survey to the post programme survey. The percentage of females that felt it did not take them a long time to read a book remained at 63% and the percentage of females that found it did take them a long time to read a book remained at 37%. In the Experiment Group the percentage of females that found reading a book takes a long time dropped from 40% to 32%.

In the Control Group the percentage of males that claimed it took them a long time to read a book decreased from 48% in the pre-programme survey to 33% in the post programme survey. Similarly, the percentage of males in the Experiment Group that claimed it took them a long time to read a book decreased from 50% in the pre-programme survey to 42% in the post programme survey.

Q7 When I read by myself I understand …

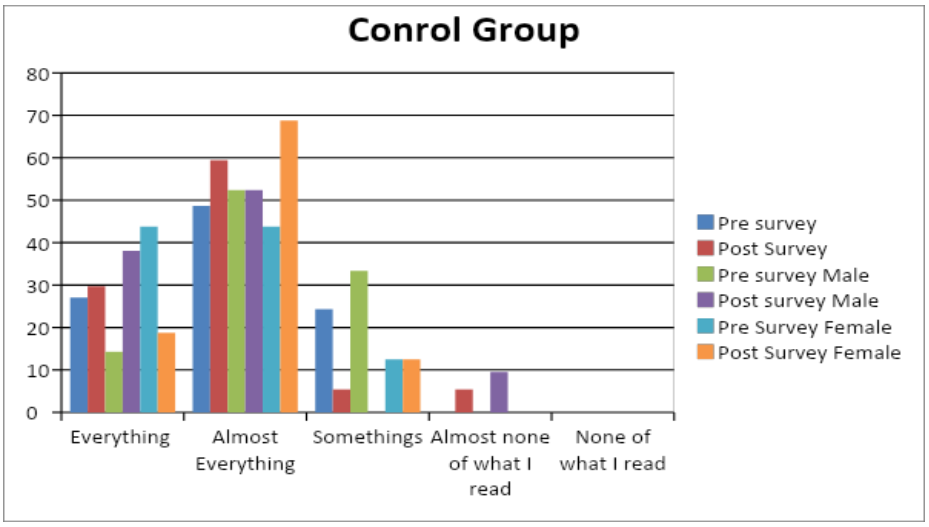


Figure 30: When I read by myself I understand – Control Group

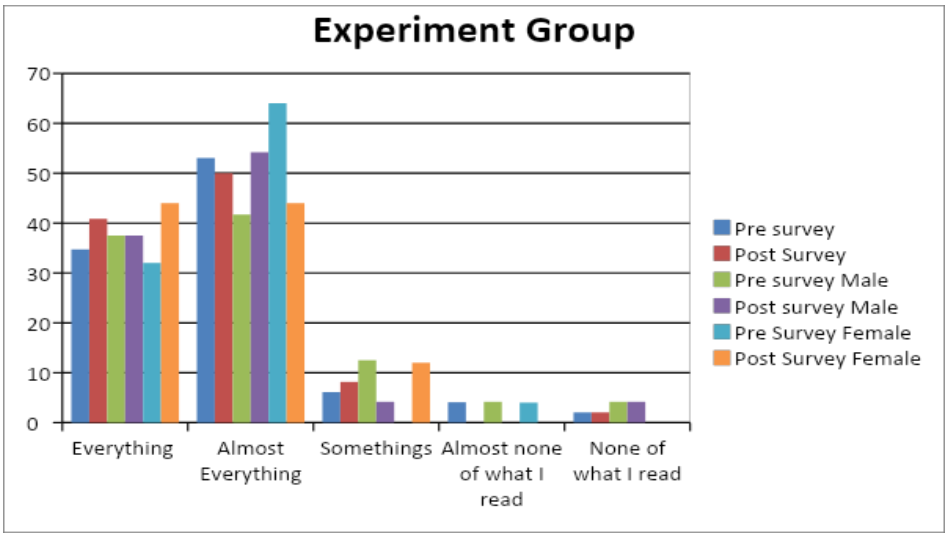


Figure 31: When I read by myself I understand – Experiment Group

Students' confidence increased in both the Control Group and the Experiment Group. Both schools showed an increase in the percentage of students claiming to understand almost everything of what they read. In the Control Group there was a percentage increase of 3%. In the Experiment Group there was a percentage increase of 6%. In both the Control Group and the Experiment Group the percentage of students claiming to understand none of what they read was maintained. 0% of the Control Group in both the pre-programme survey and the post programme survey claimed to understand none of what they read. In the Experiment Group the percentage of students claiming to understand none of what they read remained at 2%. It is worth noting that for both the Control Group and the Experiment Group 0% of the females claimed to understand none of what they read in both the pre-programme and the post programme surveys.

In the pre-programme survey 4% of males in the Experiment Group claimed to understand none of what they read and 4% stated that they understood only some of what they read. After using AR the percentage of male students in the Experiment Group claiming to understand almost none of what they read decreased to 0% and the percentage of students claiming to understand none of what they read was maintained at 4%. In contrast to this the Control Group had an increase in the percentage of males claiming to understand almost none of what they read from 0% in the pre-programme surveys to 10% in the post-programme surveys. The number of males understanding none of what they read was maintained at 0% for the Control Group.

Q8 Knowing how to read well is …

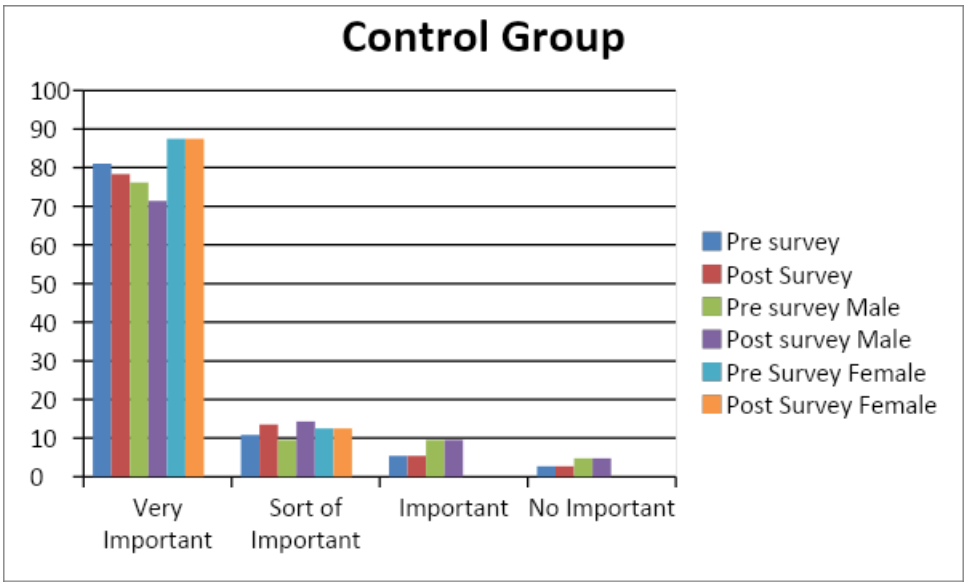


Figure 32: Knowing how to read well is – Control Group

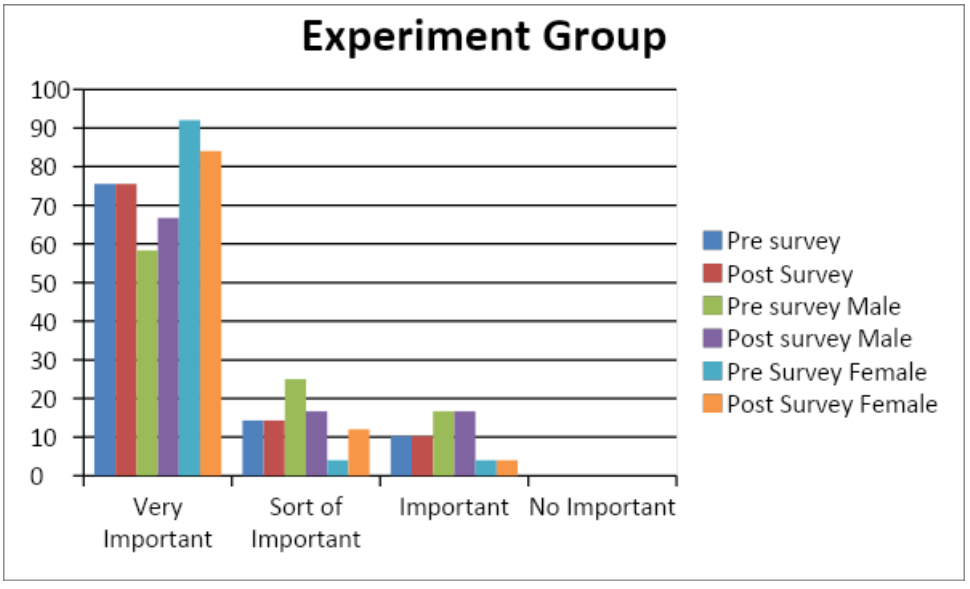


Figure 33: Knowing how to read well is – Experiment Group

In the Control Group 81% of the population felt that knowing how to read was very important in the pre-programme survey. In the post programme survey 78% of the population felt that knowing how to read was very important. 76% of the male population and 87% of the female population thought that knowing how to read well was very important in the pre-programme survey. In the post programme survey 71% of the male population and 88% of the female population felt that knowing how to read well was important. Similarly, in the Experiment Group 76% of the population in the pre-programme survey felt that reading was very important. This percentage remained at 76% in the post programme survey. 58% of the male population and 92% of the female population felt that reading well was very important in the pre-programme survey for the Experiment Group felt that knowing how to read well is very important. In the post programme survey the percentage of males in the Experiment Group that felt that knowing how to read well was very important increased to 67% and the percentage of females decreased to 84%.

In the Control Group the percentage of the population that felt that reading was sort of important increased from 11% in the pre-programme survey to 14% in the post programme survey. In the Experiment Group the percentage of students that felt knowing how to read well was maintained at 14% from the pre-programme survey to the post programme survey.

The number of students in the Control Group that felt that reading was important was maintained at 5% from the pre-programme survey to the post programme survey. The percentage of students who felt reading was important in the Experiment Group was also maintained at 10%.

In the Control Group the number of students that felt reading was not important was maintained at 3% It is worth noting that all the students that thought reading was not important in the Control Group were males. In the Experiment Group 0% of the students in the pre-programme survey claimed that reading was not important. This statistic was maintained in the post programme survey.

The trend found in the Experiment Group overall was that they males changed from thinking that reading was sort of important to thinking that reading is very important. Similarly, the females in the Experiment changed from thinking that reading is very important to sort of important from the pre-programme survey to the post programme survey.

Q9 When asked to read aloud I feel …

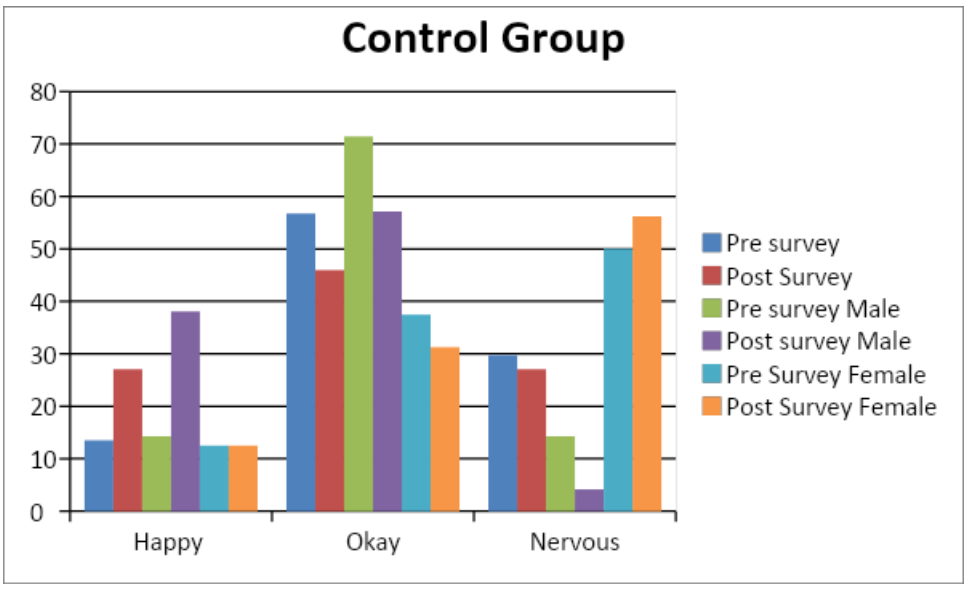


Figure 34: When asked to read aloud I feel – Control Group

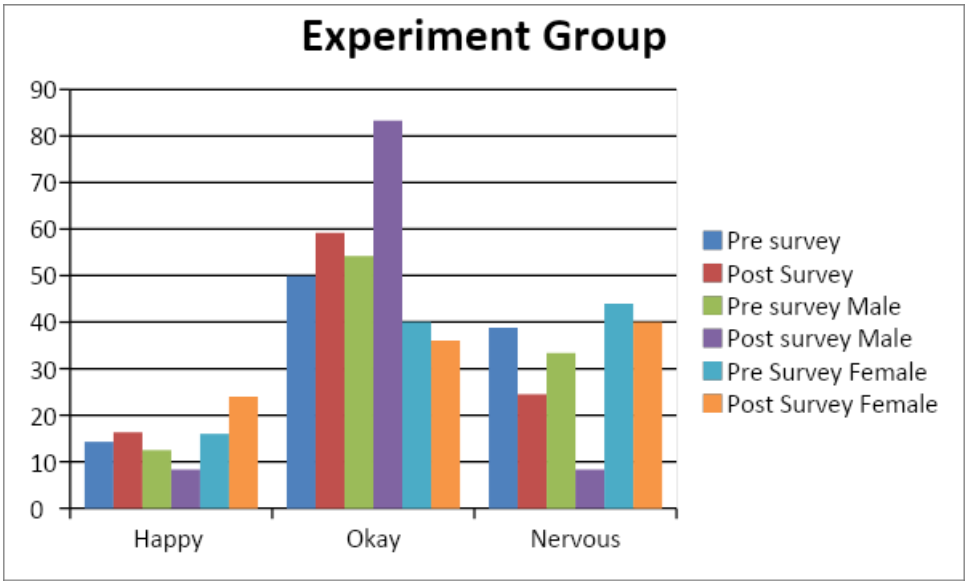


Figure 35: When asked to read aloud I feel – Experiment Group

In the Control Group 14% of the population in the pre-programme survey claimed to feel happy when asked to read aloud. This increased to 27% in the post programme survey. In the Experiment Group there was a slight increase in the percentage of the population that felt happy when asked to read aloud. The statistics increased from 14% in the pre-programme survey to 16% in the post programme survey. The most significant change in the statistics occurred in the Experiment Group. In the pre-programme survey 39% of the population claimed to be nervous when asked to read aloud. This decreased to 24% of the population in the post programme survey. The Control Group showed a decrease of 3% of the population feeling nervous when asked to read aloud. The pre-programme survey showed 30% of the population felt nervous when asked to read aloud, Thais decreased to 27% in the post

programme survey for the Control. Similarly, the percentage of people feeling okay in the Control Group decreased from 57% to 46%. In the Experiment Group, there was an increase in the percentage of students feeling okay. In the pre-programme survey 50% of the population felt okay, this increased to 59% of the population claiming to feel okay when asked to read aloud in the post programme survey.

In the Control Group the percentage of females feeling happy about reading aloud was maintained at 13%. There was a decrease in the number of females feeling okay from 38% to 31%. There was an increase in the number of females feeling nervous when asked to read aloud from 50% in the pre-programme survey to 56% in the post programme survey. In the Experiment Group there was an increase in the number of females feeling happy when asked to read aloud. The percentage increased from 16% in the pre-programme survey to 24% in the post programme survey. Similarly, there was a decrease in the number of females feeling nervous when asked to read aloud in the Experiment Group. There was a decrease from 44% in the pre-programme survey to 40 % in the post programme survey.

The most significant positive findings were for the male students in both the Control Group and the Experiment Group. In the Experiment Group, while there was a decrease from 13% in the pre-programme survey to 8% in the post programme survey of male students happy when asked to read, there was a significant increase of male students feeling okay when asked to read aloud. The pre-programme survey showed that 54% of the male students felt okay when asked to read aloud and 33% of the male students felt nervous when asked to read aloud. The post programme survey showed that 83% of the males felt okay to read aloud and 8% of the males nervous when asked to read aloud. In the Control Group, the pre-programme survey revealed that 14% of the males felt happy when asked to read aloud. This changed to 38% of the males feeling happy to read aloud in the post programme survey. This increase in happiness about reading aloud meant that the number of males feeling okay about reading aloud dropped from 71% in the pre-programme survey to 57% in the post programme survey. Similar to the Experiment Group, the number of males feeling nervous to read aloud decreased from 14% in the pre-programme survey to 4% in the post programme survey.

Phase Two Qualitative Results – InterviewsDo students like to read?

All students were asked during the interview process, ‘Do you like to read?’ The results of this question are illustrated in the graph below.

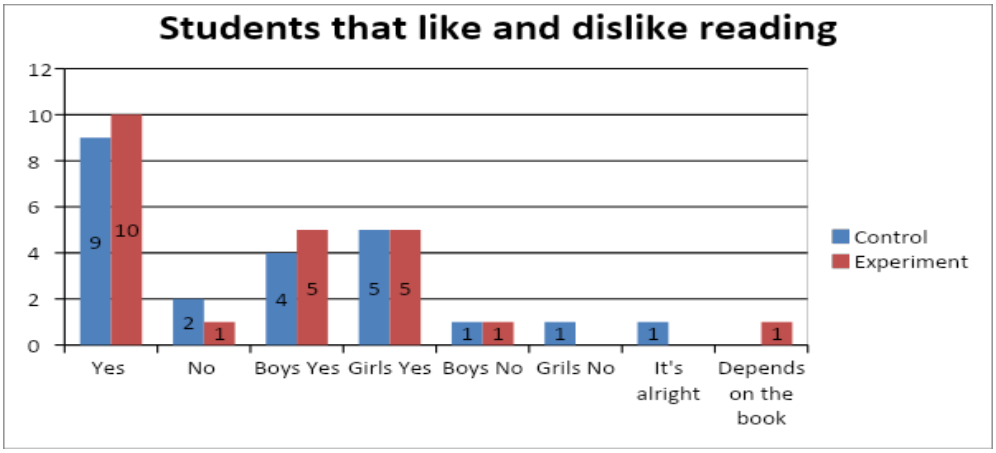


Figure 36: Students that like and dislike reading

When asked do you like reading? Most students responded positively.

"Yeah" (CG 10)

"Ah it's alright" (CG 4)

"Yeah, I like reading" (EG 2)

"I actually love reading" (EG 6)

From the graph it is clear to see that the students in the Experiment Group appear to like reading marginally more than the students in the Control Group. Some students said that they do not like reading. The number of students that do not like reading is marginally higher in the Control Group. Two students, one from each group made it clear that whether a student likes to read is not a simple yes or no answer. Certain factors determine whether or not a student enjoys reading. The researcher must ask what affects a students' attitude towards reading. What do students like and dislike about reading?

What Do Students Like About Reading?

Each student interviewed was asked what they liked about reading. The graph below illustrates the reasons that students like reading.

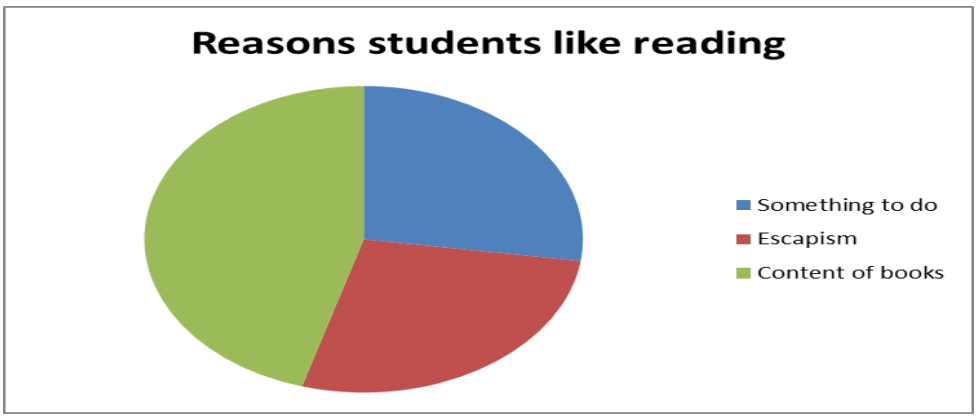


Figure 37: Reasons students like reading

1. Content of Books

The content of a book is the primary reason that students like reading. A students' attitude towards reading is directly linked to the material they read. A students' interest in reading according to the statements they made during the interviews is reinforced by the material they are exposed to. It became clear during the interviews that if a student liked the books, they were reading then they liked reading.

"It depends on the book"

"OK so you can you explain that to me, what do you mean?" (TT)

"Like, if I was sort of bored of a book, but I'd not really like reading after it, but if it was a really good book, I'd like, want to read more books like that" (EG 3)

"I like, just like, you know, like what the author says and like, all of the stories and all the different chapters" (CG 2)

"I like reading about, like, fact books and like, all these interesting books and especially history books, I really like history" (CG 1)

When asked this question students immediately made the link between the books they read and their attitude towards reading. Most students answered this question by saying what type of books they liked or the author they liked. Reading was not an abstract idea for the students. Their attitude towards the concept or the idea of reading was based around their lived experience of reading particular books.

"Just good stories, like, loads of stuff, like just stuff that was, like, written good" (EG 5)

"Well I like some action books, like and then I don't like documentary or like, I don't know, like, just boring books. Three's some I find boring a lot" (EG 8)

"I like learning about new stuff" (CG 7)

I like reading about, like, fact books and like, all these interesting books and especially history books, I really like history. (CG 1)

"Michael Morpurgo" (CG 5)

"You like Michael Morpurgo's books?" (TT)

"Yeah" (CG 5)

Students also claimed to like reading when they could picture the content of the book. They liked reading when a book provided them with images. They like to be able to physically imagine the material in the books that they read.

"Well I'm able to, you know, imagine it …" (EG 2) *"It's more descriptive than watching a film, sometimes."Will you explain that to me?"* (TT)

"Like if you're reading it, it explains like what someone is doing better"(CG 10)

"If you watch a movie and then read the book, you know what the characters look like or you can make it up in your own mind when you read first" (CG 3)

2. Escapism

Students liked reading as a form of escapism. They claimed that they liked reading because it transported them into a different time or place. They found reading to be relaxing and a means of entering into a different world.

"*It's relaxing, it's nice to get away"* (CG 8)

"I like that when you are reading it gives you an image in your mind and it takes you away from where you are at the moment" (CG 9)

"I don't know, I just get into it and sometimes, it's just easy to, like, just drift into the book and, you know, that's it" (EG 11)

"It kind of takes you into like, a different world you could say. Instead of just reading, it's like you're going somewhere else" (EG 6)

3. Something To Do

Many students claimed that they read as a means of overcoming boredom. They viewed reading as an activity that they liked when they had nothing else to do.

"Like if you're bored and you want something to do that's interesting" (CG 12)"It's something to do when you're bored, sitting at home" (EG 12)

"It's a good pastime" (EG 7)

"Can you explain a bit more to me, or…?" (TT)

"*It's good when you have nothing else to do, like"* (EG 7)

"If I'm bored and I've nothing really much to do, I just read but like if I'm in class I just wouldn't really think of reading" (CG 4)

However, not all students liked reading as an alternative to being bored and having nothing else to do. Some students liked reading for reading's sake. They liked it as a hobby and a pastime.

"Find it, it's a hobby, it's quite interesting and it's fun to do" (EG 4)

What Do Students Not Like About Reading?

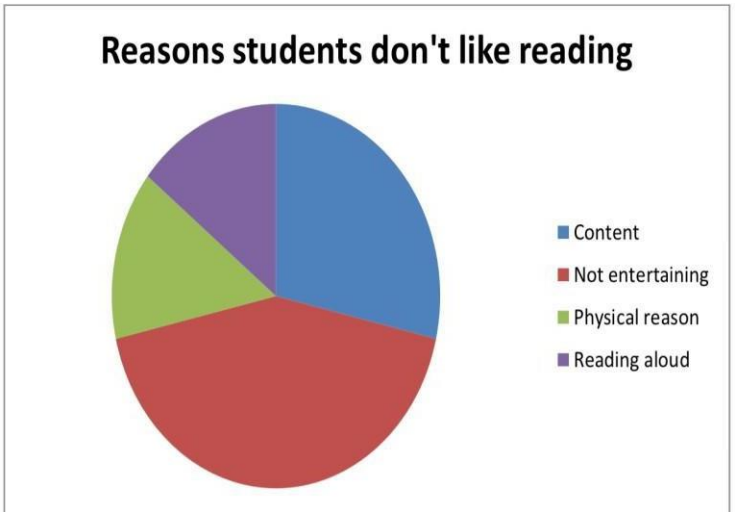


Figure 38: Reasons students do not like reading

From interviewing the students that do not like reading it became clear that a number of factors contributed to their dislike of reading.

1. **Not Entertaining**

The main reason for students' dislike or reading is that they do not view it as an entertaining activity. They see it as a boring activity. The students that do not like to read claimed that reading was boring and too much effort. It was not a good way to pass time.

"I just don't like sitting down watching or reading or looking at a book". (CG 6)

"OK. Any reason why?" (TT)
"I just get too distracted" (CG 6)

"It's just like effort, kind of" (EG 1)
"Because sometimes it makes like everything go really slow, like the time" (EG 3)

2. **Content**

Just as some students like to read because they like the content of the books they are reading, some students do not like reading because they do not like the content of the books that they are reading. The content of a book greatly impacts on a student's perception of reading as a concept.

"Like, I don't like when like they have this big long picture and then just a small little bit of reading" (CG 2)
"I don't like when you start reading and there isn't something to bring you into the book

till maybe more than half way through the book, so you're just reading for the sake of getting to that point" (CG 9)

How Do Students Feel About Choosing a Book?

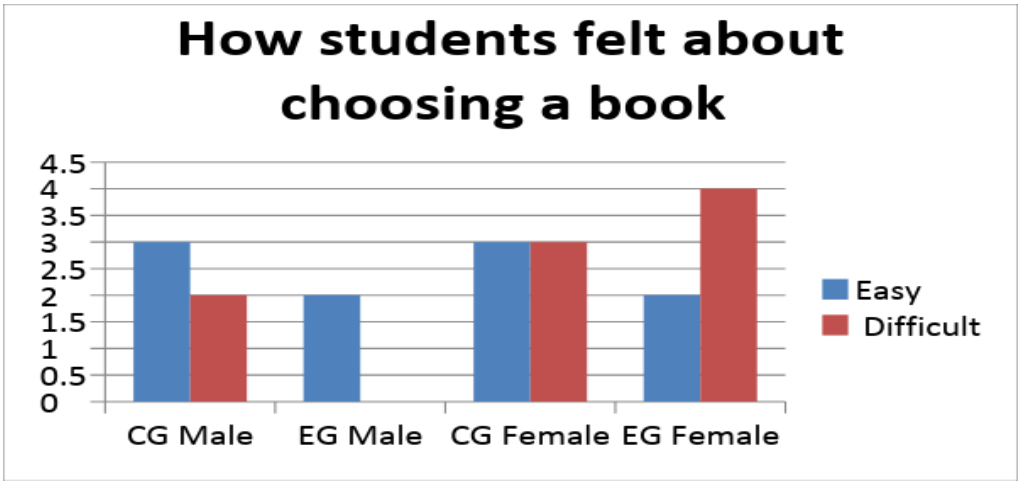


Figure 39: How students felt about choosing a book

The above graph illustrates students' attitude towards choosing a book. Females in the Experiment Group found it more difficult to choose a book than males. In the Experiment Group none of the males found choosing a book difficult. In the Control Group the same number of males and females found it easy to choose a book. When asked how they felt about choosing a book students found it easy to choose a book.

"*I find it easy to choose a book"* (EG 2)

"Oh, it's really easy" (CG 12)

"It's easy for me" (CG 2)

Other students expressed their difficulty in choosing a book.

"Sometimes, yeah" (CG 10)

"Hard" (CG 3)

"It is difficult" (EG 9)

It is important to note that some students claim choosing a book is difficult because they have read a lot of the books that they think are good from their library already. Therefore, it is difficult to find a book they consider to be good from the books available, not that they do not know how to choose a book or don't have the skills necessary to choose a book.

"Yeah a long…Well sometimes it's difficult because you've read good books, most of the good books, and then you can't find any good books or sometimes it's easy, that you can just pull a book from the shelf" (EG 6)

"Sometimes it can be like very hard, like I could be like in here for the whole of break trying

to find one" (EG 10)

"Sometimes it's quite hard to look for a good book" (EG 4).

How Do Students Choose a Book?

When questioned about the way in which students choose a book a number of methods were suggested. Students were not asked about DEAR books or AR books specifically. They were asked the question and given free reign to explain how they choose a book to read. The graph below illustrates the number of students that identified the following methods of choosing a book.

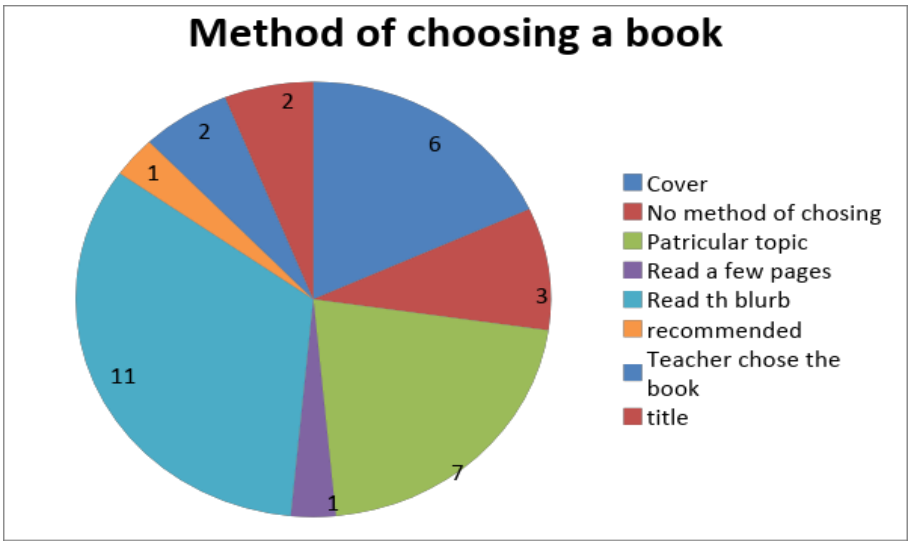


Figure 40: Method of choosing a book

1. **Read the Blurb**

The majority of students interviewed said that they choose a book to read by reading the blurb at the back of the book. This lets them know if they would like to read the book or not.

"I read the back of it, like the blurb" (CG 2)

"I go into the factual part of the bookstore, I'd read the back of it. If I liked it, I'd buy"(CG 3)

"I'd see what it's about. Like, I'd read the back and see" (CG 7)

"Am I'd usually have a look at the back and see what's about and see from there or else look at the cover and if the cover is interesting I'd pink it then" (CG 9)

"I'd just read the back of it and see if I'd like to read it" (EG 2) "Because I just like look at the back of it and read it first" (EG 8)

2. Topic

The second most popular method of choosing a book was to find a book that contained a topic that the student was interested in. Students chose a book based on its content. All the students that claimed to choose a book based on content were from the Experiment Group. This suggests to the reader that they know the books that they like and therefore choosing a book is not that difficult. They can choose books based on genre.

"I just look for a sports book, like" (CG 12)

"Well like it kind of depends on like what's out or like, because most of the books I read are like fantasy and stuff. So like, if there's say a new one out I might try that or say if there's a moving coming out, I'll read the book before I go to see the movie" (EG 10)

"I'd just kind of look at the sections that I think I'd be interested in" (EG 11)

"Well when I go into, you know, like Eason's and stuff they have usually a teen section so I usually find like a John Greene or whatever there" (EG 2)

"Just like I think of all the books that I usually would read and what like they have in common with the book I'm going to pick" (EG 5)

3. Cover

Some students choose a book by looking at the cover of the book and judging from there whether they wanted to read the book at all.

"I decide by the cover, if it looks good like I'll choose" (CG 10)

"Like I pick whatever one comes to my hand, or like whatever looks, the cover whatever looks better" (CG 4)

"By maybe the cover or the back" (CG 5)

"Just pick one I like the look of and see if I like it or not" (EG 11)

"Well first, I'll look at the cover and see if I like it and then, if I like it, I read the summary on the back" (EG 7)

4. No Method

A number of students did not have any method of choosing a book. All the students that did not have a method of choosing a book were from the Control Group.

"…just go to the shelf and pick one" (CG 11)

"I just pick up a random book" (CG 6)

"I don't know, I just picked whatever was there" (CG 8)

5. **Title**

Some students choose a book based on its name.

"Yeah I'd just read some like title that sounds interesting, I'd just read the back of it and see if I'd like to read it" (EG 2)

"I normally just read the title and then I read like, a couple of pages in and I see if it's good or not" (EG 9)

6. **Teacher Intervention**

Some students found it difficult to choose a book and said that their teacher chose the book for them to read or helped them to find a book that they could read. Both students that said that a teacher chose their book were from the Experiment Group.

"My teacher gave it to me" (EG 1)

For the above student it would appear that they were unable to choose a book, so the teacher chose the book for them to read. This student did not like the book and did not finish reading the book.

"Well sometimes I get information, or like, advice off the teachers" (EG 6)

Unlike the student EG1 this student just got advice from their teacher on their book choice. They were not handed a book and told to read it.

7. **Recommendation**

One student said that they choose books based on recommendations made to them.

"*Well I mostly just… like people recommend stuff and then I read the back of it and I'll just try some out and probably like them"* (EG 4)

8. **Read a few pages:**

One student stated that their method of choosing a book is to read a couple of pages and see if they like the book or not.

"Normally just read the title and then I read like, a couple of pages in and I see if it's good or not" (EG 9)

How Do Students Choose AR Books?

It became evident through coding the transcripts that AR was not mentioned as a means of choosing a book. None of the Experiment Group mentioned the AR system as a means of choosing a book. As outlined in the Context Chapter AR has a system whereby a numerical value known as a ZPD is placed on each AR book. Books are categorised according to this code in the AR library. Students are encouraged to read books that are within their ZPD. It

is interesting to note that none of the AR students referred to this method of choosing a book or the process involved when asked about choosing a book. In fact, students had to be asked specifically about choosing AR books and even then, they did not identify the method outlined above. The following graph outlines the methods of choosing AR used by students.

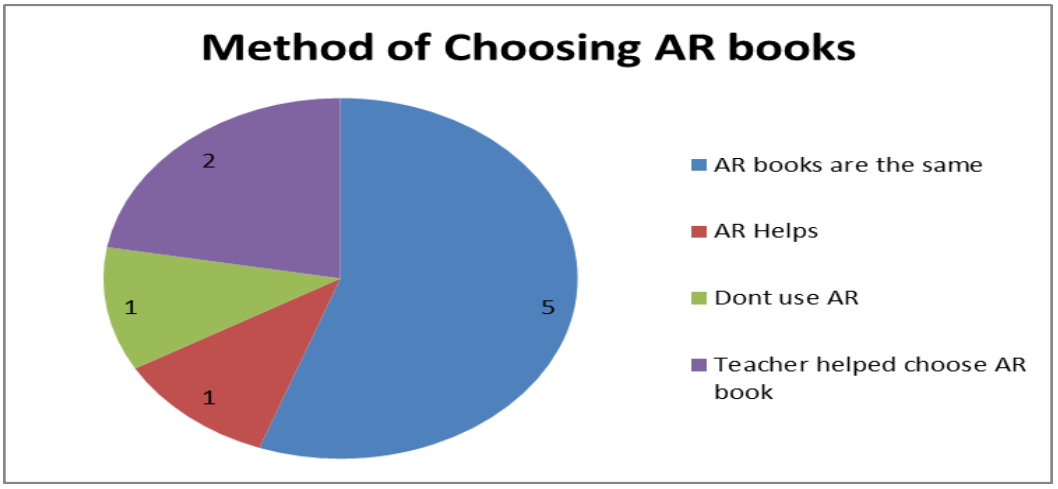


Figure 41: Method of choosing AR books

1. **AR Books Are The Same**

Most students explained that they do not choose AR books any differently to the way that they choose non-AR books. They choose all books in the same manner.

"How do you choose which AR books to read? (TT) *"Kind of the same as a normal book"* (EG 10) *"OK, so you just treat them exactly the same?"* (TT) *"Yeah"* (EG 10)

"You don't see a difference?" (TT)

"No" (EG 10)

"Well I don't know, I just pick them" (EG 8)

"Pick them in the same way as you pick any book?" (TT)

"Yeah" (EG)

2. **AR Helps**

One student when asked about using AR to choose a book said that it helped them. They found it useful that AR gives a summary of a book on its system.

"Does that help you choose a book?" (TT)

"Yeah kind of, yeah" (EG 12)

"How"? (TT)

"Because it tells you stuff about the book and like a summary type thing" (EG 12)

How Do Students Feel About the Quantity of Books They Have Read?

The following graph illustrates students' feelings about the number of books they read in the year.

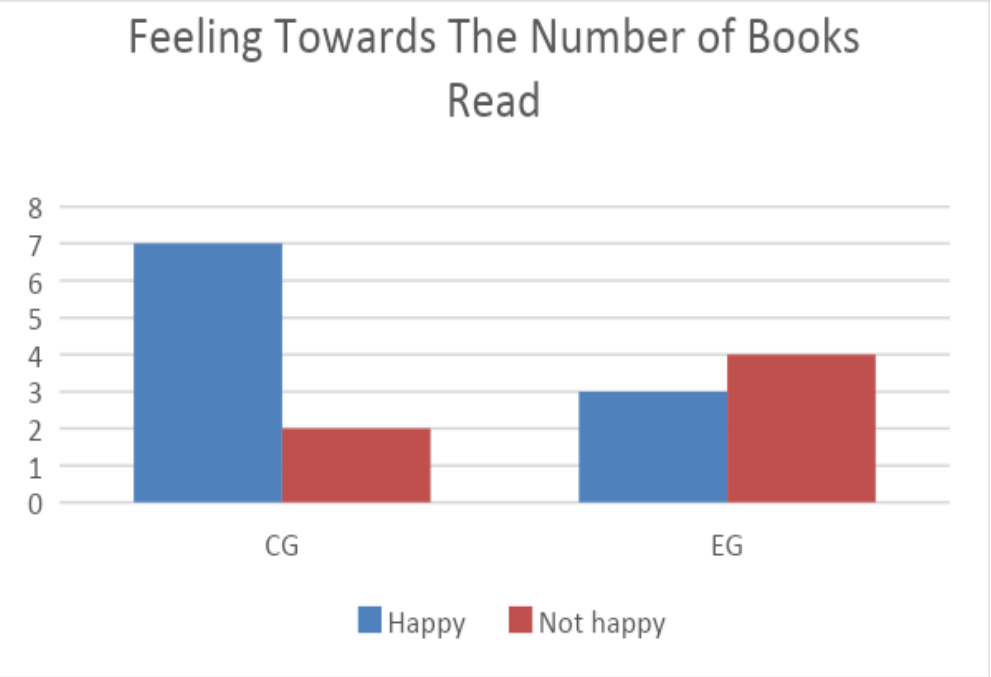


Figure 42: Feeling towards the number of books read

Happy

The Control Group appear to be happier with the number of books they have read compared to the Experiment Group.

"Were you happy about the amount of books you read this year?""Yeah" (CG3)

"You are. Why?" (TT)

Because the books were a decent size and I finished a couple of the series. (CG3)"*And were you happy with the number of books that you read?" (TT)*

"Yeah" (CG1)

"How did you feel about it?" (TT)

"I felt very happy about it. I felt that I was coming along with my reading and…" (CG1)

Some of the Control Group were happy with the number of books they read despite the fact that they read less books than the previous year.

"Happy" (CG7)

"*Happy, did you read more or less than last year do you think?"* (TT)

"Probably a bit less" (CG7)

"*…and how do you feel about that number of books?"* (TT)"*Ah yeah good"* (CG 11)

"Is it more or less than last year?" (TT)

"Ah less" (CG11)

Despite the fact that the majority of the Experiment Group were not happy with the number of books they read some students were happy.

"*Yeah, because considering I'm not the best reader, so yeah I was delighted*" (EG12)One student accredited AR for their reading success.

Very good, OK. And were you happy with that numberof books? (TT)

Yeah, like we were all doing work and all in school. (EG4)

Yeah good. And do you think that was more books than you would have read without Accelerated Reader, or would you have read that many books anyway in a year? (TT)

I probably wouldn't have read as many books. Like I didn't really read in 6th class in primary school. I kind of started to get into it when I came into this school. (EG4)

Similar to the Control Group, members of the Experiment Group also claimed that they were happy with the number of books they read despite the fact that they read more last year.

"Yeah I think it's good enough yeah" (EG5)

"Yeah. Is it more books than you would have read in other years or less books?" (TT)

"Less books, I think" (EG5)

Not Happy

In both the Control Group and the experiment students expressed feelings of discontent for the number of books that they read during the year. However, interviewees from the Experiment Group expressed more discontent than interviewees from the Control Group.

"I feel like I could do a bit more" (CG4)

"I wish I read more" (CG5)

"Very good. And are you happy with the amount of books you're read this year? "(TT)

"Yeah" (EG2)

"You are?" (TT)

"But I would have liked to have read a bit more, maybe but…" (EG2)

"Not really. I used to read a lot more in primary, like my own books and stuff," (EG11)

Students from both groups expressed time as being the obstacle that prevented them from reading more. Whether they were happy or not with the quantity of books read, students from both the Experiment Group and the Control Group said that they had less time for

reading this year and therefore did not read as much as the previous school year.

"*Less time"* (CG7)

"…probably less because I'm studying more this year" (CG9)

"but it does take me a while to get through the one book" (EG10)

"Well, you know, like secondary now, it's more homework and stuff so I don't really have, you know, much time now" (EG2)

"I think that it's just like I don't get a lot of time anymore, like I'm kind of like, you know, with friends outside of school as well and doing homework and all that, I don't really get a lot of time" (EG5)

Where Do Students Prefer to Read?

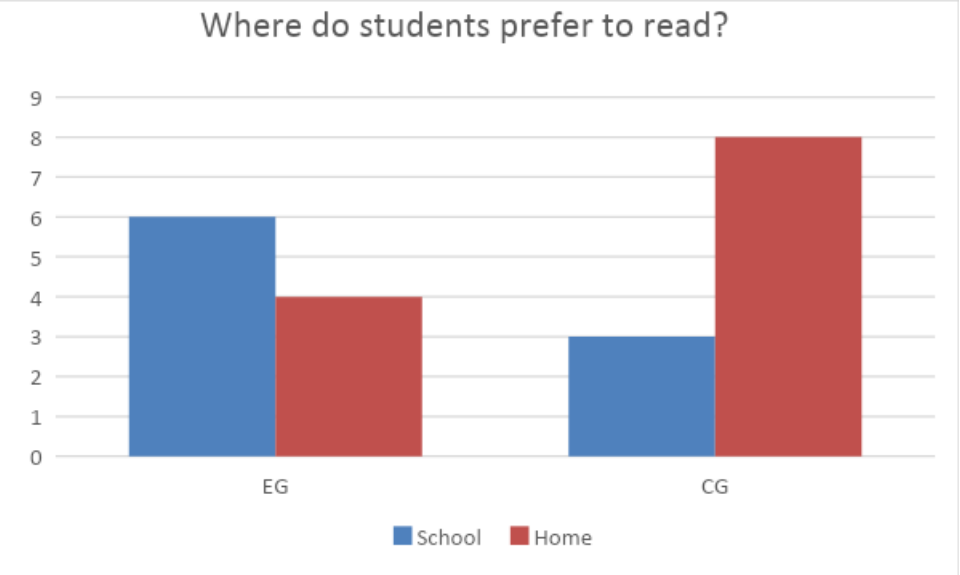


Figure 43: Where do students prefer to read?

When asked where they prefer to read the majority of the Control Group claim to prefer to read at home.

"At home" (CG3)

"At home" (CG6)

Many students narrowed down their preferred location to read to the bedroom and to their bed.

"Going to bed" (CG8)

"In a quiet place. In my bedroom, or" (CG1)

"At night in my bed before, I got to sleep" (CG2)

While the Experiment Group preferred to read in school, some preferred to read at home.

"*read at home"* (EG2)

"At home" (EG5)

"*Probably at home"* (EG6)

Like the Control Group, some also prefer the comfort of their own bedroom to read

"*Probably in my room"* (EG4)

Do Students Know If Their Reading Has Improved and How Do They Measure Improvement?

Each interviewee was asked whether their reading had improved throughout the year.

1. **Reading Improved**

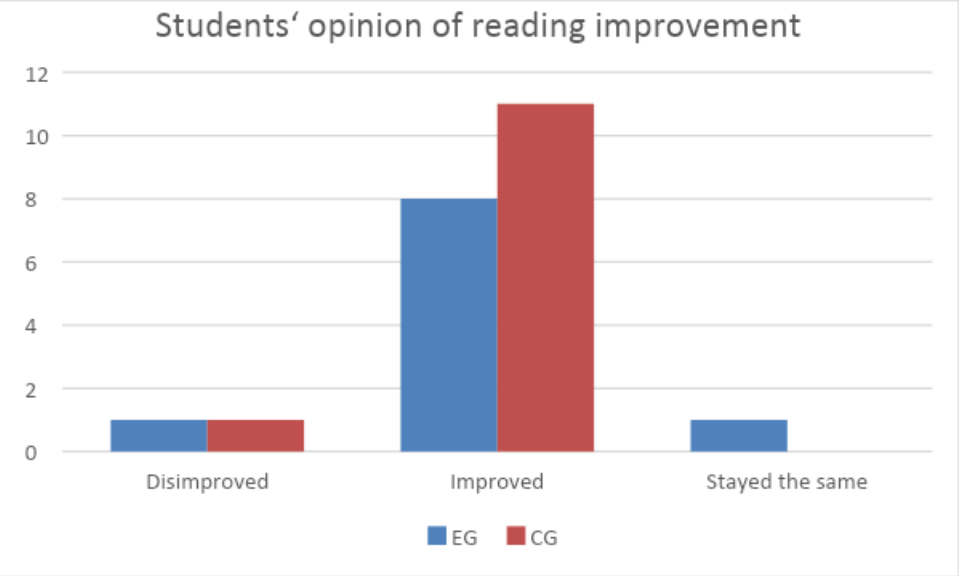


Figure 44: Students' opinion of reading improvement

The majority of students interviewed in both groups felt that their reading improved over the year.

"Improved" (CG10) *"Improved"* (CG3) *"Definitely"* (EG6) *"I'd say so"* (EG9)

However, by comparison more of the Control Group felt that their reading had improved compared to the Experiment Group.

2. **Deteriorated**

Only one student from each group felt that their reading had deteriorated.

"Mmmm no" (CG4)

"No" (EG3)

3. **Stayed the Same**

Only one student for the interviewed population felt that there was no change in their reading throughout the year.

"I don't think it's improved. I think it kind of stayed the same" (EG10)

Why Did Students Feel Their Reading Ages Improved?

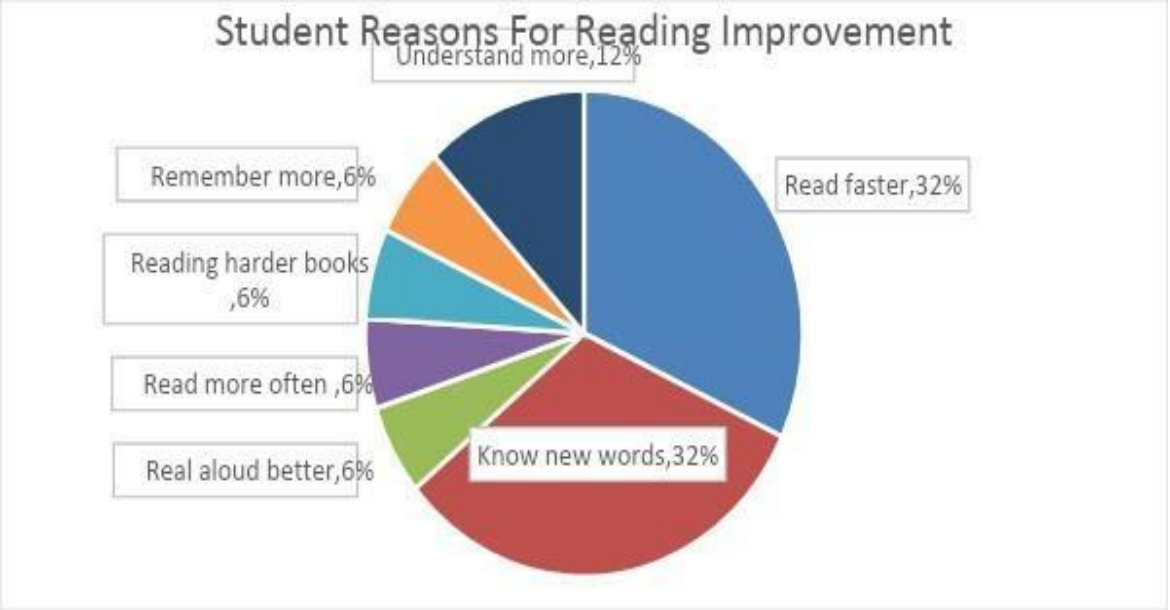


Figure 45: Student reasons for reading improvement

Since the majority of students felt that their reading improved, it was important to discern what they were using to measure their success. How did a student know if their reading improved or not? The majority of students measured their reading success by their ability to read faster and know more words. Other reasons were also given by the minority of the interviewed population, one student per reason. These reasons were reading harder books, reading more often, reading aloud better and understanding more. It is interesting to note that none of the Experiment Group said that AR informed them of their reading improvement. It is also interesting to note that none of the Experiment Group mentioned the ZPD levelling of books as a way of knowing that their reading had improved.

1. **Reading Faster**

32% of students interviewed claimed that their ability to read faster was a sign that they were becoming better readers. This opinion was expressed by both the Control Group and the Experiment Group.

"Because, like, I'd be taking my time but now, like, I fly through it" (CG12)"That I can read faster" (CG5)

"I don't take as long to read" (CG8)

"Because I was very slow last year and this year, I can just fly through the books and remember" (EG6)

"I'm reading a bit faster" (EG9)

2. **Know New Words**

32% of Students also measured their reading success by their ability to recognise more words while reading. Both the Control Group and the Experiment Group felt that they knew more words after the year and therefore their reading must have improved.

"I know new words" (CG7)

"Because I know a lot more words to describe things" (CG8)

"*If I come across words that I didn't know, usually I'd just skip them but now I'd kinda look them up more in the dictionary and learned what the words mean"* (CG9)

"Because I'm not, like… when it's like a big word I can't like say it and then, like, I won't be able to say it and it will come out as like a different word" (EG3)

"Well kind of like works I never came across I kind of know better" (EG9)

3. **Understand More**

12% of students claimed that they judged their reading had improved based on their comprehension. They understand more of what they read, therefore they are better readers.

"*coz, last year I didn't really understand it, couldn't read but this year I can"* (CG11)

"Just better knowledge, I'd know what certain words meant" (CG3)

4. **Read Aloud Better**

One student measured success by their ability to read aloud in class.

"Like I read better" (CG6)

"OK. Like when?" (TT)

"In class when the teacher asks me to read it out" (CG6) *"OK so you're, are you better at reading out loud now than you used to be?"* (TT) *"Yeah"* (CG6)

5. **Read More Often**

Another student measures their improvement on their motivation to read more often. They felt their reading had improved because they read more than they previously did.

"Because I read a bit more" (EG1)

6. **Reading Harder Books**

Being capable of reading harder books is another way in which one student measured the success of their and their reading improvement.

"Yeah, because I'm reading a bit harder books than I would have last year" (EG2)

7. **Remember More**

Another student measured their reading improvement on the amount they could remember

after reading.

"I can just fly through the books and remember them" (EG6)

What Do Students Like About AR?

Students liked AR for a variety of reasons. The graph below illustrates the reasons for liking AR as a programme.

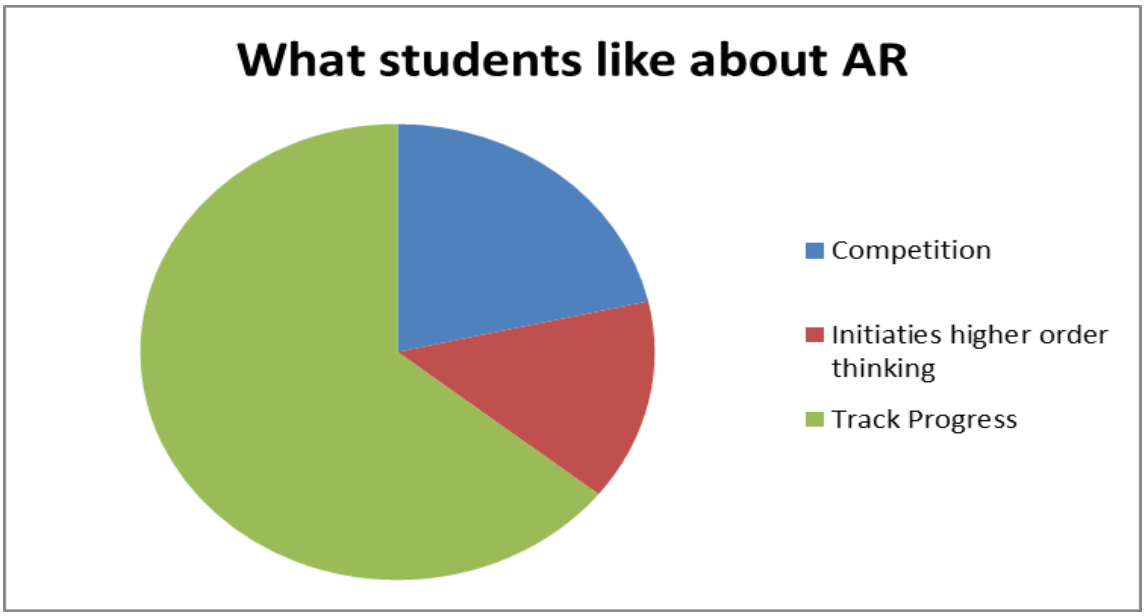


Figure 46: What students like about AR

1. **Track Progress**

The primary reason students liked the AR programme was for its ability to track their progress and reading attainment. Students liked seeing the physical representation of their progress.

"I like seeing the sunflower growing" (EG S10)

"Yeah and it goes up as like, as the points go up" (EG S10)

Students liked to see how well they are doing with one book compared to another. They liked getting a score after doing a quiz to see how much of the book they remembered.

"I just like to, you know, see if you can remember like most things you've read" (EG S6)

Students used the tracking process to determine if they had read a book to a good standard. They used their score to determine their knowledge of the book and to test their memory of its details.

"Like, it kind of tests your knowledge on the book" (EG S5)

"Basically, it just shows how into the book you were and…" (EG S11)

"But with that you can, like, make sure you've taken everything all in" (EG S3)

2. Competition

Students not only liked to track their own progress but to compare their progress to other students. Students claimed to like the competitive element of the AR programme. They could read books and compete with their friends and classmates.

"I like the challenges in it. You can be in competition with other people to see, like, who has read the most books and who gets better results in the quizzes and stuff" (EG S7)

"*We are kind of getting in a competition to see who's going to get up the furthest"* (EG S10)

Students showed a desire to be as good as their classmates and to read more so that they too would get book recommendations on the AR programme.

"And a few people that, like, really got into they read like six books or something last month and, you know, they've taken quizzes on them and they're getting like recommendations and all" (EG S11)

3. Initiates higher-order thinking

One student also claimed that the questions given during the quiz element of the AR programme encouraged them to think deeply about the book they had read. The questions prompted higher order thinking and encouraged the reader to view the book from a different perspective. *"You're almost seeing a different perspective, because like there's the questions and then itmakes you think about it and then you're like Oh I didn't really notice that when I was reading it"* (EG S10)

What Do Students Not Like About AR?

Students dislike a number of elements associated with the AR programme. The graph illustrates the reasons students have for disliking AR.

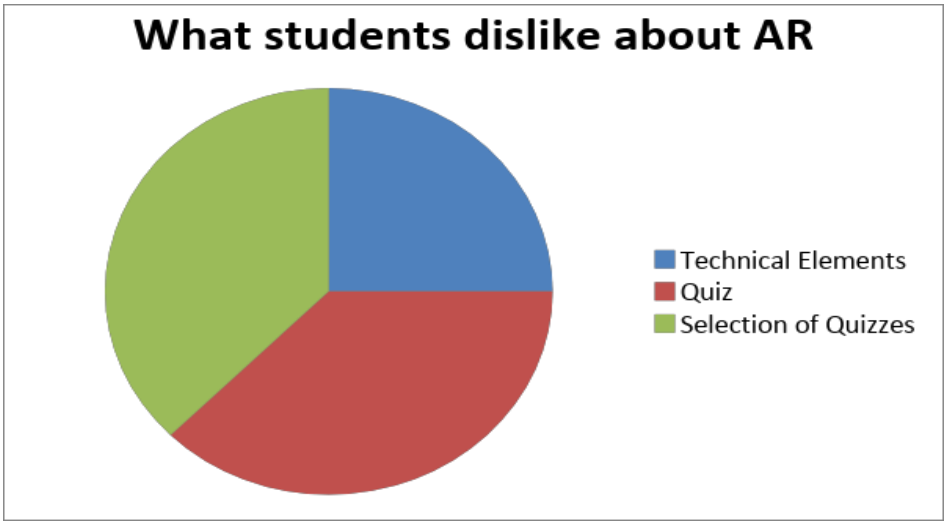


Figure 47: What students dislike about AR

1. Selection of Quizzes

When asked what students did not like about the AR programme, the majority of the students expressed their dissatisfaction with the selection of AR quizzes available to them in the AR programme.

"And what do you not like about it?" (TT)

"*That you can't really find some books on it"* (EG S4)

"Some of the books aren't there" (EG S10)

"Most of them are not really there on it" (EG S4)

Students expressed their frustration with looking up a book that they have read on the AR programme and not being able to find the quiz for that book.

"*Like say, I went online and I tried to find the version of it and it wasn't there. And then I tried to find another book and it wasn't there. And I was trying to see if I was spelling the name of the book wrong, but I wasn't"* (EG S10)

Students become disappointed when they cannot find a book in the AR quiz library and see it as a waste, reading a book that did not have a quiz.

"OK and does that bother you?" (TT)

"Yeah sometimes, it kind of does" (EG S4)

"Like it's kind of... it's sort of disappointing because like I always read the book and then do the test" (EG S10)

"So, then it's kind of like 'Ah that was a kind of a waste of time" (EG S10)

Not all students viewed reading a book that does not have a quiz as a waste of time, but they would prefer that a book they read had a quiz available on the AR programme.

"OK and does that bother you, would you still read the book?" (TT)

"Yeah I'd still read the book. It's just, you know, just not the quizzes, you know, they don't have a quiz on it" (EG S2)

"OK, so would you prefer if they had a quiz on it?" (TT)

"Yeah" (EG S2)

2. Quiz

One student claimed that some students only read the books to take the quiz and they viewed this as a negative aspect of the AR programme. This student claims that the focus when using the AR programme is not on the books or reading but rather on passing quizzes and tests.

"like some people only read the books for the quiz" (EG S10)

Another student that is not a fan of reading also states that they do not like the quiz element of the programme because it forces the student to read a book.

"That you have to read the book" (EG S1)

Another student identified the disappointment with a negative result after doing a quiz. This student expresses disappointment if they do not pass a quiz or score as they would like to in the quiz after reading a book.

"just, like if I get it wrong, I like get a bit disappointed, because I thought I like read it enough but, yeah" (EG S8)

This student is no longer reading for pleasure they are reading to pass a quiz that tests their recall of a text.

3. Technical Difficulties

The other negative aspects of the AR programme identified by students are those related to the programme's reliance on technology and an IT infrastructure. Students claimed that they had difficulty signing into the platform.

"*I found it hard to get into it, like you have the time to get into it because you have to go through all the internet and stuff because it's not as handy as some of the stuff that you might have like, the options"* (EG S11)

This student finds the process of accessing AR to be tedious and not very convenient. One student also identified the need for a good internet connection. A failure with the internet connection or a drop in network can cause problems with the AR programme.

"Well sometimes, obviously it doesn't work in school and that's a problem but most of the time it does and that's good," (EG S6)

"OK so you mean internet connection doesn't work?" (TT)

"Yeah" (EG S6)

Should Schools Invest in AR?

When asked whether or not schools should invest in AR each student responded in favour or the use of AR in all schools. Students gave a variety of reasons for their recommendation to use AR in all post-primary schools. The graph below illustrates the reasons given by students for using AR.

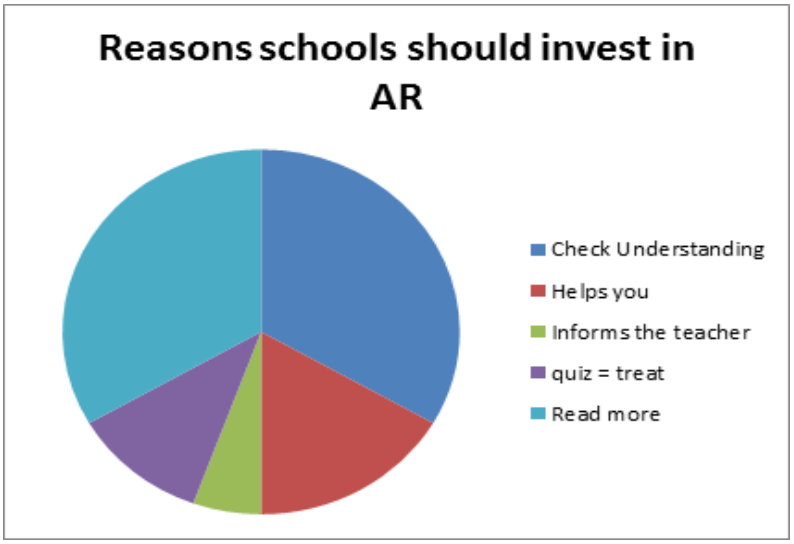


Figure 48: Reasons schools should invest in AR

1. **Checks Understanding**

Students primarily claimed that AR should be purchased in all schools as it checks understanding after reading a book. Students liked the accountability factor provided by AR. After reading a book student log on to their AR profile and take a quiz on that book. The students are given a result immediately after taking the quiz. This lets the student know how many correct or incorrect questions they got. In the interviews it became apparent that students thought this was a positive aspect of AR. They saw the result as a way of affirming their reading ability by answering instant recall questions.

"Because it's a good way to like see how much or even how good you are and stuff" (EG S1)

"It tells you how good you are and how many words you've read and stuff" (EG S1)

"So just see if like you understood it and can remember everything" (EG S2)

Students also thought that this process ensured that they read their books with care. Students know that they will have to take a quiz on their book after reading it. For this reason, they claimed that AR made sure that you read the book with care and paid attention while reading.

"By making sure you're reading things and taking it in properly…" (EG S3)
"I think they should have it because like it keeps you more paying attention when you're reading" (EG S4)

2. **Read More**

Students also claimed that using AR made them read more books. The interviews made it clear that students associated their increase in reading with the AR programme. They claimed that if schools had this programme then the students in their schools would read more.

"*Its kind of gets you reading more, so yeah"* (EG S6)

"Because it will encourage people to read more" (EG S7) Students claimed that using AR would make students like reading.*"Kids just getting more to like books and stuff"* (EG S5) The students interviewed then claimed that if students liked reading as a result of improving their reading then they would read more. They claimed that AR could achieve this.

"So, like, they get better at reading… Because they're reading more and if they don't have it then they're not reading as much" (EG S8)

OK, so you think that because you have Accelerated Reader, you read more in school? (TT)

"Yeah" (EG S8)

3. Helps You

Students claimed that AR helped them with their English and their ability to remember. It was a skill that they practiced every time they took a quiz after reading a book.

"Like it helps you remember stuff" (EG S6)

One student claimed that her spelling improved because of the frequency with which she was seeing vocabulary.

"I'd say mostly because it does help if you need to do a book report and then it will help with like, your spellings and stuff or like difficult words, because you'll see it over and over again" (EG S9)

4. Quiz Viewed as a Reward

Students claimed that schools should have AR because the quiz element of the AR programme is a treat or a reward for completing a book.

"because then like the kids could get like something to do like when they finish a book, like a treat almost for finishing the book" (EG S10)

Students viewed the quiz as a break from day-to-day class work.

"I think it just, it's nice to have, like, just to take a break from everything and just have a little quiz" (EG S4)

5. Informs the Teacher

Students identified that the use of AR in schools would not only benefit the students of that school but also the teachers. Students claimed that AR is an effective means of keeping teachers informed of student progress and tracking reading achievement.

"*Well it gives the teacher a better idea of what they're at, because reading is the important thing in English along with writing and stuff, so...*" (EG S11)

When asked further about this statement, the student also identified AR as a means of

deciding or determining differentiation in the classroom. The student suggested that AR could help to inform teachers of students' literacy standards and then allowances for these standards could be made in the classroom.

"OK. And what do you mean it gives the teacher a better idea of what they're at?" (TT)

"Well like it tells the teacher, you know, how well they can read and, you know, they have to kind of give certain allowances for, kind of, their level of reading or whatever" (EG S11)

Integrated Research Findings

This chapter presented the findings which emerged from an analysis of three distinct data sets, the reading ages, the surveys and the interviews. Each data set has the common thread of focusing on the student's voice. The integrated and combined findings provided an insight into the students' experiences and perceptions of literacy education in their first year of post-primary School. The findings when viewed as a whole offer the following valuable insights into the lived experience of students' literacy instruction in Irish post-primary schools.The reading ages of students in the Experiment Group increased by an average of three months after using the programme AR.

1. The general attitude of students towards reading was positive after the year of literacy instruction in both groups.
2. Gender affects the type of literacy instruction required. Males and females respond differently to the same literacy instruction. The general attitude of males was more positive than their female counterparts in both groups. AR had the greatest positive impact on the male students' attitudes towards reading. Females in both groups began to dislike reading and reduced their daily reading time significantly. In the pre-programme surveys none of the girls in the Control Group and the Experiment Group claimed to never read. However, in the post-programme survey 13% of the girls in the Control Group and 12% of the girls in the Experiment Group claimed to never read. This poses a serious question to literacy instructors and educators; why are female students being unmotivated and not engaging in reading activities after their first year of post-primary school?
3. Book selection and content greatly impact a student's attitude towards reading. If a student likes the content of the book they are reading, they claim to like the act of reading.
4. There was an increase in the number of students that found choosing a book very difficultin both groups. However, in the interviews it became clear that this was a result of bookchoice. Students found it difficult to choose a book when they had

read a lot of the booksin their library. Male Students in both groups found it easier to choose a book after the year. Female students in both groups found choosing a book more difficult after their year of literacy instruction.

5. Students' preferred location for reading changed. Reading moved from a home activity to a school centred activity for the Experiment Group. Home was the place of reading activity for girls while school became the place of reading activity for males.
6. There was an increase in reading activity for both groups. Everybody was reading at leastone book per month after the year of literacy instruction. Students reading everyday increased in the Control Group by 17%. The biggest increase in reading activity was formales in the Control Group. The percentage of males reading every day in the Control Group increased from 5% to 33%. There was no change in the percentage of students reading every day in the Experiment Group.
7. Girls reading 5+ books in the Control Group remained the same with 25% of the female population claiming to read 5+ books per month. Girls reading 5+ books decreased in the Experiment Group from 10% to 4%. This finding combined with others shows that the literacy instruction provided for female students is not motivating and encouraging reading.
8. The Control Group was happier with the quantity of books they read. The ExperimentGroup expressed dissatisfaction with the quantity of books that they read.
9. Both groups claimed to be quicker at reading. The Control Group felt their reading hadimproved in the interviews despite this not actually being the case.
10. Male's confidence in ability to read increased for both groups.
11. Students did not talk about AR until they were directly asked a question about AR. In the interviews the Experiment Group had to be prompted to talk about the AR programme.
12. Students claimed to be happier reading aloud.
13. ARs ability to track a student's reading progress was a key feature that students liked when asked about the AR programme.

Summary

This chapter presents the findings from the three data sets, reading ages, reading surveys and interviews. The data sets are initially presented separately to gain insight into their distinct aims. Finally, the data sets are integrated to present the initial observations and to provide

an overall view of the positive and negative results from the research populations' literacy instruction after one year in post-primary school. The following chapter, the Discussion Chapter will discuss using thematic analysis the implications of this research's findings and their impact on current literature as previously outlined in the literature review.

Chapter Five
Discussion

Introduction

This chapter offers a critical analysis of the findings. This chapter focuses on the impact of using AR as a means of improving the literacy standards of Irish post-primary students. The interpretation and discussion of the findings also necessitates reflection on the planning, acting and implementation of a quality literacy education that enables our young people to 'be literate'.

This study set out to evaluate the effectiveness of AR as a means of developing students' literacy skills in Irish post-primary schools. As a result of the literature review the researcher decided that the most appropriate means of answering this research question was to capture the learners' experience. The literature review pointed to the need for this research to capture student voice to evaluate the effectiveness of AR in the Irish context. This research compared two methods of literacy instruction from two schools referred to as the Control School and the Experiment School. As outlined in the Methodology chapter, the Experiment School employed the use of AR as a reading management programme while using a Drop and Read initiative. The Control School followed the same Drop and Read initiative as the Experiment School, but it did not use the AR programme. By comparing the literacy instruction of both schools, the researcher sought to answer the pragmatic questions contained in the research aims; firstly, does AR increase student's reading-age? Secondly, does AR motivate students to read? As explored in the Findings Chapter, the findings of this research gave the researcher an insight into practical and pragmatic practices that encourage and promote literacy development according to students themselves.

The philosophical framework underpinning this research has relied heavily on The National Framework of Junior Cycle as outlined by the NCCA and explored in the Context Chapter of this research. The National Framework identifies eight key skills for post-primary Junior Cycle students. Being literate is at the core of this framework and is identified as one of the key skills. As outlined in the Context Chapter, according to the framework being literate includes:

- Developing understanding and enjoyment of words and language
- Reading for enjoyment and with critical understanding
- Writing for different purposes
- Expressing ideas clearly and accurately

- Developing spoken language
- Exploring and creating a variety of texts, including multimodal texts (National Council for Curriculum and Assessment 2019)

The National Strategy to Improve Literacy and Numeracy for Learning and Life together with The National Framework for Junior Cycle informed the researchers definition of literacy. Key researchers such as Kennedy, Dunphy, Dwyer, Hayes, Mc Philips, Marsh, O'Connor and Shiel (2012) as well as Alexander (1997) also informed the researcher's definition of literacy as presented in the Context Chapter. The definition of literacy that underpins this evaluation is; literacy is an essential skill that when nurtured evolves and grows with the individual to meet their needs at each stage of their life. Literacy is a skill that when nurtured grows with the individual and enables that individual to interact and engage with the ever changing society and world around them. As outlined and explained in the Context Chapter ICT is the latest change in twenty first century society that our literacy skills need to evolve and develop with. It is with this definition in mind that this research set about to evaluate the effectiveness of AR as a means of improving the literacy standards of Irish Post Primary students. In order to ascertain the effectiveness of AR as a means of improving the literacy standards of Irish post-primary students and meet the skills of literacy as outlined by The National Framework, this research sought out the voice of the students.

Student Voice

As outlined in the literature review and summarised by Dr Domnall Fleming "Student voice is an overarching term that concerns dialogue, discussion and consultation with the students and by students about their experiences in our schools and their classrooms" (Fleming 2016) This research deliberately and purposefully chose to focus on the voice of students alone to ascertain what works for literacy education and instruction in Ireland. If the teacher is to provide the scaffolding as advocated by Bruner (1978) that is required to facilitate a student to reach their literacy goals then it is vital that the facilitative teacher listens to the student to discern the scaffolding that is required. It is the firm belief of the researcher that the students' lived experience of an initiative or reading management programme is the reality of the success of that initiative or programme. As Flynn states and this researcher agrees "Young people need to know they have been heard and to have their input and opinions acknowledged. Opportunities to involve students in curricular development and co-construction embodies democratic, collective responsibility for education reform" (Flynn

2017). The literature review revealed that the majority of the research conducted on AR did not seek the opinions of the students using the programme.The literature review concluded that the majority of the research asked teachers andadministrators about the effectiveness of the AR programme. One study that did use a studentfocus group to gather data on the effectiveness of AR had predominantly negative findings. As explored in the literature review, the students from the focus group expressed reservations about the effectiveness of AR. They were particularly negative about the AR quizzes and expressed concerns of feeling pressured to read to collect AR points rather thanreading for pleasure (Thompson, Madhuri *et al.* 2008).

Student voice is at the centre of this discussion as it brings to light the lived experience of the students' literacy education with an aim to finding out what works to improve students' literacy standards in Irish post-primary schools. Building on the Methodology chapter and the Findings Chapter the following themes emerged.

1. Reading Gains
2. Assessment
3. Lifelong Learning
4. Motivation
5. Gender

Reading Gains

This research found that AR improved the reading-age of Irish post-primary students by an average of three months. Improving a student's reading-age is seen as a reading gain and therefore a means of improving a student's literacy standards. As outlined in the Literature Review chapter, all studies carried out on AR show that the programme does indeed have a positive impact on a student's reading-age. This study also confirms and reinforces these findings. 40% of the Control Group had an improved reading-age whereas 53% of the Experiment Group experienced an increase in their reading-age. Fewer students, 35% in the Experiment Group experienced their reading-age deteriorate, whereas 49% of the students in the Control Group experienced deterioration in their reading-age. Overall, the Control Group maintained an average reading-age of 10 years and 3 months while the Experiment Group's average reading-age increased from 10 years and 4 months to 10 years and 7 months. That is an average increase of 3 months per student. This finding is in keeping with two studies conducted on the effectiveness of the AR programme. As discussed in the literature review, Siddiqui, Gorard *et al.* (2016) and the EEF (2019) found that AR improved a student's reading-age by an average of three months (Siddiqui *et al.* 2016). found that after

twenty weeks the students' reading ages had increased by an average of three months. Similarly, the EEF (2019) found that "pupils who were offered Accelerated Reader made three months additional progress in reading" (EEF 2019). While it is important to increase the reading-age of students this research argues that there is more to reading than reading ages. Successful literacy instruction ought to seek to increase all elements of a student's reading ability in keeping with the National Frameworks outline of being literate and not just increase a reading-age score.

Building student confidence in relation to literacy is a reading gain. If students are to become literate and enjoy reading, a literacy programme must foster a sense of achievement and celebrate reading success. This research found that the Control Group felt happier with the number of books they read compared to the Experiment Group. 58% of the Control Group were happy with the number of books they read compared to 25% of the Experiment Group. When interviewed, the majority of the Control Group also felt that their reading hadimproved. 92% of the Control Group felt that their reading had improved compared to 67%of the Experiment Group. This in fact was not the case as the findings from the reading-age tests outlined earlier demonstrates. Also as outlined in the Methodology chapter students were divided into strata for interview according to their reading-age developments, improved reading-age, deteriorated reading-age and no change in reading-age. Students, however, were unaware of this division and selection. The evidence from this research highlights that the students in the Control Group were more confident in their reading success than the students in the Experiment Group. Despite the fact every student's reading-age in the Control Group did not improve was irrelevant to them. The students in the Control Group did not know their reading score and yet, the students themselves felt that their reading had improved. Therefore, this self-belief and sense of success gave them confidence in their own reading ability. As the statistics above illustrate, the Control Group was happy with their reading achievements and felt their reading had improved. Their lived experience of literacy instruction and achievement was positive.

It is interesting to note that neither the Control Group nor the Experiment Group mentioned reading ages as a means of measuring their reading success. This suggests that the students had other methods of determining and measuring their reading gains that did not involve reading test scores. It could be suggested that their understanding of a reading gain is not limited to reading ages and may be more in keeping with Sainsbury's four key stages in the development of the act of reading as outlined in the literature review. As previously explained in the literature review, reading ages determine a student's ability to recognise

words and to complete sentences therefore testing stage one and stage two of Sainsbury's four step process (Sainsbury, Harrison *et al.* 2008). It would appear from students' responses to the question "how do you know that your reading has improved?" that they answered with responses more in keeping with stage three responding and stage four analysing of Sainsbury's process (Sainsbury *et al.* 2008).

The responses given by students referred to, speed of reading and increased word recognition as indicators of reading improvement. This research found that both groups claimthat reading at a fast pace is an indicator of reading improvement. This research found that students judged the quality of their reading and their ability to read by the speed at which they read. If they read a book quickly then they concluded that their reading was improving.
"*Because like I'd be taking my time but now, like, I fly through it"* (CG12)
"I don't take as long to read" (CG8)
"Because I was very slow last year and this year, I can just fly through the books and remember them" (EG6)

Both groups also claimed that is a primary indicator of reading improvement was an increasing in word recognition or knowing more words.
"*Well kind of like words I never came across I kind of know better now"* (EG9)
"Because I know a lot more words to describe things" (CG8)
This finding highlights the fact that students are aware of their reading fluency and level of vocabulary. According to this research, students feel that their reading is improving if they understand the words that they encounter in a text. In light of these findings, it is clear that students do not use reading-age scores as a measure of reading success. They use indicators such as word recognition and speed of reading to determine their reading success.

Exploring a variety of texts and reading a range of books is another reading gain. In this research the Experiment Group expressed dissatisfaction with the quantity of books that they had read throughout the year.
"*...I used to read a lot more in primary, like my own books and stuff, and this year it's been harder because of less time to do things and stuff"* (EG11)
"I would have liked to have read a bit more" (EG2)
The Control Group were happier with the number of books they read in the year compared to the Experiment Group.
*"Were you happy about the amount of books you read this year? (*TT)*"Yeah"* (CG3)
"You are. Why?" (TT)

"Because the books were a decent size and I finished a couple of series" (CG3).

This student wanted to read books that they enjoyed as part of a series and liked that they read books of what they considered to be a "decent size". There are a number of possible reasons for this outcome. As part of the AR programme there is a bookshelf on the AR profile of each student. As outlined in the Context Chapter, this shelf illustrates the number of books read by each student. As a student reads a book and takes a quiz on the book the front cover of that book appears on their digital AR shelf. The students in the Control Group did not have this visual record of the quantity of books they had read, nor could they compare their number of books in a physical way with another student. This may have meant that the Control Group were not as concerned with counting the number of books they had read and comparing to other students, rather they were focused on the experience of reading and just enjoying whatever number of books they managed to read in the year. This shows that the motivation and the value for the Control Group was invisible, the motivation and value of reading was found in the process of reading and not in the accumulation of books on a bookshelf, digital or otherwise. The Control Group did not have a physical reminder of the quantity of books that they had read and therefore could not compare this to other students to measure their success or failure. It could be argued that the motivation to read for the Control Group is more in keeping with Bandura's theory of self efficacy. The Control Group, execute behaviours necessary to produce specific performance attainments. (Bandura 1997). The motivation to execute these behaviours for the Control Group appears to come from an intrinsic source. It comes from the love of books and the experience of reading.

This research demonstrates the students' observation on the lack of time they have to engage in reading. Both groups expressed their concern about the lack of time they have for reading in secondary school. Students made it clear in the interviews that they had more time to read when they were in primary school and now that they are in secondary school there are many more activities that consume their free time.

"Less Time" (CG7)

"*I think that it's that I don't get a lot of time anymore, like I'm kind of like you know, with friends outside of school as well and doing homework and all of that I don't really get a lot of time"* (EG5)

In light of this time constraint as expressed by the students themselves, in order for a reading management programme or a literacy programme to be successful it must be embedded in the daily lives and routines of students. It must be mindful of the demands on student time. It should not be seen as an 'add on' to their workload but part of their daily routine at home

and in school. Despite the time constraints, after the year in both schools according to the surveys, all students were reading at least one book per month. This is certainly a reading gain as it means that every student was given a reading experience in their first year of secondary school. For the Control Group there was also what could be considered a reading gain in terms of the frequency of reading. In the Control Group students claimed to be reading more frequently. There was a 17% increase in the number of students reading every day in the Control Group, however the number of students reading every day in the Experiment Group remained the same at 31%. It is logical to conclude that the more time students spend engaged in an activity the more they will improve. If a reading program encourages frequent reading and encourages students to become regular readers, it follows that they will make reading gains.

Reading Gains Summary

In light of these findings and this discussion, this research argues that reading ages have a value but they are not the summation of a student's literacy and reading attainment. Ernest Balajthy as explored in the literature review, correctly argues, there is some value to standardised tests such as reading-age tests as they hold students accountable for their reading and provide teachers with baseline data to aid literacy instruction (Balajthy 2007). From the comments made by students themselves in this research about reading gains, it is clear that reading ages gains alone only serve to tell part of a student's literacy development story. The reading-age data gathered from standardised tests is baseline data. It is not the full summation of a student's literacy achievements. A successful literacy programme must be mindful of the student's lived experience of reading. If students are to develop their understanding and enjoyment of words and language and read for enjoyment with a critical understanding, as laid down in the National Framework for Junior Cycle (National Council for Curriculum and Assessment 2019) a literacy programme must ask, is it better to have students that feel a sense of achievement after a year and have had a better reading experience or is it better to increase reading ages? As stated by Kennedy and outlined in the literature review, "… if we allow basic skills to dominate what counts for literacy in our classrooms, we deny children the opportunity to develop the higher-order skills within authentic literacy experiences which promote literacy as a useful and desirable activity that can enrich our lives" (Kennedy 2014).

The increase in reading-age of three months in the researcher's opinion is not sufficient enough to outweigh the positive experience of reading that the Control Group had. The Control Group were happier with the number of books they read, they felt their reading had

improved and overall they were reading more frequently. If educators assess reading success on reading ages alone then they limit the definition of literacy and may in turn stifle a student's reading confidence. This discussion of reading gains highlights the need for a literacy programme to be mindful of the message its assessment procedures sends to a student about what constitutes a reading gain. A reading management program or any form of reading instruction must evaluate its means of assessment if it is to enable students to 'be literate' in the fullest sense of the term. This poses the questions, what does good literacy assessment look like?

Assessment

The findings of this research illustrate that the assessment methods used by AR limit the definition of literacy. As the *National Strategy to Improve Literacy and Numeracy Among Children and Young People,* states "Improving the ways in which we use student assessment can play a major role in improving literacy and numeracy learning" (Department of Education and Skills 2011). Before discussing whether or not AR is a suitable means of assessing the literacy standards of Irish post-primary students it is first necessary to define what is meant by assessment and what is meant by literacy/reading assessment. As defined in the literature review "Assessment is the process of generating, gathering, recording, interpreting, using and reporting evidence of learning in individuals, groups or systems, which relies upon a number of instruments, one of which may be a test. Educational assessment provides information about progress in learning" (NCCA 2007). The literature reviewclearly outlines that there are three distinct types of assessment involved in educational practice in Ireland. The three types of assessment are Formative Assessment (AFL), Assessment of Learning (AOL) and Diagnostic Assessment.

It is vital that students' literacy standards be assessed. As The National Strategy to Improve Literacy and Numeracy Among Children and Young People states, "Knowing how well students are learning can help us to improve their achievement" (Department of Education and Skills 2011). However, it is just as vital that educators know what they are assessing when they assess reading and literacy. "A curriculum that combines clear statements of learning outcomes and accessible examples of what learners should know or be able to do in literacy and numeracy can provide a reliable framework of reference against which teachers, parents and students can benchmark achievement and progress" (Department of Education and Skills 2011). The definition of literacy understood by an education system leads itself to a particular type of assessment. If the definition of literacy is narrow, then the assessment methods used will also be narrow. If thedefinition of literacy is broad, then a

wider variety of assessment methods are necessary to test and evaluate an individual's level of literacy competency.

Assessing reading is not the same as assessing a student's knowledge of a particular subject area e.g. Rocks in Geography or Islam in Religious Education. The act of reading is a complex skill. "Reading is a fundamental educational construct, and it is unsurprising that its definition is difficult. It is a flexible skill rather than a body of knowledge" (Sainsbury *et al.* 2008). Sainsbury defines the act of reading as "… deciphering, or decoding, written words and letters, transforming them into recognisable language, and understanding their meaning" (Sainsbury *et al.* 2008). Reading as a means of communication is in keeping with what it means to be literate. "Literacy includes the ability to use and understand spoken language, print, writing and digital media" (Department of Education and Skills 2011). Sainsbury, as outlined in the literature review and referred to earlier in this chapter inrelation to reading gains, identifies four key stages in the development of the act of reading. She refers to this as "The Construct of Reading". In summary, the first stage of theconstruct is decoding, the second is comprehension, the third responding and the finalstage is analysing. Refer to the literature review for a more in-depth explanation of each of these four stages. In light of this definition and reading construct the question emerges, howuseful is AR as a means of assessing students' literacy and reading standards? The *NationalStrategy to Improve Literacy and Numeracy Among Children and Young People* advises that"we need to combine good assessment for learning practice with appropriate assessment of learning approaches (Department of Education and Skills 2011). This causes the researcher to ask; does AR combine AFL and AOL methods and satisfy the remit for quality literacy assessment practices? To answer these questions the researcher must determine exactly what it is that AR assesses.

As outlined in The Context Chapter, AR incorporates two assessment elements:

1. STAR –standardised test used to identify the student's reading-age and ZPD
2. Quiz – test taken after the completion of a book.

The student is awarded a score out of ten based on the number of questions they get correct immediately after reading a book. According to The National Strategy to Improve Literacy and Numeracy among Children and Young People, "Teachers should base their judgements about the progress pupils are making on different sources of evidence, including conversations with the learner, an analysis of the learner's own self-assessment, the teacher's observations of the learner's engagement with tasks, test scores, examples of students' work and, in the post –primary school, written, oral and practical examinations. But simply

assessing the progress that learners have made is not enough" (Department of Education and Skills 2011). The STAR and the quiz components of AR predominantly tracka student's progress. Both the STAR and the quiz test very basic levels of literacy and reading competency. At best they satisfy the assessment requirements of stage one from theconstruct of reading, decoding and stage two comprehending. As outlined in the literature review, Groce and Groce and Lamme both independently draw attention to the limited definition of literacy and reading that AR is capable of assessing. They both agree that AR tests measure base line data. Lamme (2003) clearly states, "The AR tests examine memory of surface knowledge of character, setting, plot and theme, not about the deeper themes or issues in a book." Bigger too as seen in the literature review is also very critical of AR's assessment methods. Biggers (2001) claims that "…AR restricts students to demonstrating their comprehension solely by completing a computer generated multiple-choice tests" The findings of this research are in keeping with the findings of Bigger, Lamme and Groce.

Like Bigger, Lamme and Groce and Groce, this research found that after completingAR assessments a reading instructor could satisfy the remit that their learners can recognise words and infer literal meanings to texts but that is all. When interviewed the students in this study themselves recognised this basic function of AR's quizzes. Their statements about the AR quizzes in particular, illustrate the students' understanding of the purpose ofthe AR assessments. They see the assessments as something that tests their knowledge of a book and checks that they have remembered the details of that book. The quiz element of AR is problematic, it overshadows the experience of the book itself for the student.

"like it kind of tests your knowledge of the book" (EG S5)

"…make sure that you have taken everything all in" (EG S3)

From these statements and previous research carried out on AR quizzes it is clear that the quiz assessment provides a very narrow understanding of the skill of reading and the competency of being literate. These statements made by students after using AR and taking AR quizzes also shows that this method of assessing limits the student's understanding of literacy. Another student expressed their disappointment at getting quiz questions wrong. For this student it meant that they had not read the book correctly, as if reading can be done incorrectly. This student believed that if they did not remember all of the facts in a book, then you hadn't read the book correctly.

*"…Like if I get it wrong I like get a bit disappointed, because I thought I like read it enough but yeah" (*EG 8)

One student also said that the quiz informed them of their interest in the book.

"Basically, it just shows how into the book you were…" (EG 11)

The student in this case did not know if they had enjoyed the book or not until after they took the quiz on the book. For this student it was after the completion of the quiz and seeing the result that the student could determine whether or not they were engaged in a text and enjoyed it. From this statement the enjoyment of the book did not come from reading the book itself but from passing the book's AR quiz. Presumably if the student got a high score in the quiz, this student would think they had enjoyed the book. Also, the same follows that if the student got a low score in the quiz then they would assume that they did not enjoy the book. The observation made by student EG11 illustrates the potential liminality of AR's assessment methods. Students that are literate should be able to know while reading if they are enjoying a book and if they are engaged in a book. They should not need the result of an assessment to determine their enjoyment of a book. The assessment of the text or reading ability should not inform them of enjoyment or engagement. Testing will never and should never replace teaching. As Johnston correctly warns, "…the features of literate behaviour on which we focus, and our interpretations of them, have consequences. We cannot afford assessment conversations that shrink our view of a child's promise and invite unproductive instructional practices and literate identities or that reduce the richness of the literacy we teach" (Johnson 2005). This research and previous research as outlinedin the literature review has found that the quiz element of the AR programme reduces the richness of literacy instruction. It limits what it means to be literate. Consistent with the literature, this research found that the quiz element of AR limits the definition of AR and causes students to become more fixated on quizzes than on the act of reading itself.

However, that being said, the educator does need some baseline elements to help and guide a reader in their literacy journey. As The National Strategy to Improve Literacy Standards among Children and Young People states, "… standardised assessment test have their limitations, when used properly they can provide very useful information about the progress of individual students" (Department of Education and Skills 2011). Standardised tests cannot measure the progress students have made in achieving many important learning outcomes, including, for example, students' oral language abilities or their ability to write creatively. However, they are one important tool that teachers can use to monitor student progress. The STAR test is a test that provides this data, however there are other tests such as Group Reading Test 11 (GRT 11) and Computer Adaptive Testing (CAT) that can provide the same information. According to Moran as outlined in the Literature Review chapter, these tests might even be more suitable and accurate for the Irish context. As Kim et al (2016) warns if,

“we limit our efforts to improvereading and literacy instruction to simply substituting one new “hot” strategy for an older one, or a new assessment device for an existing one that served much the same purpose, suchchanges at best yield only incremental improvements in the quality of our service”.

Assessment Summary

This research has found that the assessment methods of AR limit the definition of what it means to be literate. Literacy as understood and defined by the researcher after considering and exploring many existing definitions of literacy in the Context Chapter is: literacy is an essential life skill that when nurtured evolves and grows with the individual to meet their needs at each stage of their life. Standardised tests and reading tests such as STAR have their uses in aiding literacy instruction. However, the AR quizzes restrict a student’s reading ability while it forces them to remember facts. The quizzes do not enable a student to read for pleasure and simply enjoy the narrative. The student is reading to remember facts from the story to pass a quiz. These findings have important implications for developing literacy instruction. This research highlights the need for educators to be mindful of the message their assessment methods are sending to students. If educators only assess a student’s ability to read a book and recall facts the message is clear to students that the summation of reading is one’s ability to read and remember facts. This will not enable students to ‘be literate’, which is deemed not only a desirable skill but a necessary one according to the NCCA’s National Framework of Junior Cycle. From this it is clear that using a narrow method of assessment in turn narrows the definition of literacy.

The role of the teacher is indispensable in helping students to reach the definition of literacy as envisaged by the researcher for a twenty first century learner. The role of the teacher in assessment is also indispensable. It is teachers that are capable of aiding students to nurture literacy as an essential life skill and to meet a literacy standard that evolves and grows with the student at each stage of their life. “There is a delicate balance to be achieved between word skills and higher level skills…effective teachers are adapt at getting the balance right and routinely integrate both skill sets into instruction.” (Petscher 2010). A teacher’s ability to assess and tailor assessments to the needs of a particular cohort of students cannot be replaced by a programme. Teachers not programmes are capable of encouraging, fostering and engaging students in higher-order skills. “…it is higher order skills that are so valued in the adult world and which provide the purpose and passion for engagement in literacy in the first place (Petscher 2010). Students that learn to enjoy reading will engage with literature throughout their lives, not to gain a score on a test but for pleasure. Groce and Groce (2005)

highlights that “assessment items such as portfolios, student writing, student projectsand observations provide a much more qualitative kaleidoscope of how students are progressing in school.” If such methods of literacy assessment are combined with some necessary standardised testing, the rewards will not be extrinsic; the reward will be the activity of reading itself. Students that enjoy reading and read for pleasure will not make statements such as “*Basically, it just shows how into a book you were*” (EG 11) when asked about a literacy assessment tool.

Lifelong Reading

Despite not being a long-term study, this research does provide some insight into early readers and what can potentially encourage lifelong reading. The potential for lifelong reading is not encouraged through extrinsic motivation. The current study found that AR encourages a limited experience of reading as it is more heavily built on extrinsic rewards than on intrinsic motivation. This research found that an experience of reading that is built on extrinsic rewards is less likely to encourage students to become lifelong readers. Consistent with the literature, this research supports the argument that when the extrinsic reward for reading is removed, students will no longer want to partake in the act of reading. As the literature highlighted, lifelong readers need to be intrinsically motivated by the act of reading itself and not by an external or extrinsic motivation. Encouraging lifelong reading and in turn lifelong learning is an ambitious and central desire of any curriculum. The *National Strategy to Improve Literacy and Numeracy Among Children and Young People* recognises this desire in its very title, *Literacy and Numeracy for Learning andLife* (Ireland. Department of Education and Skills 2011). Schools, policy makers, educatorsand societies want to encourage students to have a passion and a desire to learn. In the literature review Lamme (2003) outlined the qualities that avid readers possess. In summaryavid readers according to Lamme,

1. Read for pleasure
2. Skilled at choosing a book
3. Discuss books with friends
4. Discover authors and illustrators
5. Adjust the pace of their reading
6. Choose when, where and for what purpose to read
7. Reread favourite books

Lamme's research questioned AR's ability to deliver this level of reading instruction to students. Similarly, Brisco (2003) questioned AR's ability to create lifelong readers that can chose reading material when the extrinsic rewards for reading are removed.

In keeping with the literature of Lamme (2003) and Brisco (2003), this research also questioned AR's ability to encourage lifelong readers. For the purposes of this research students were interviewed and asked what they liked about reading. The findings revealed that the Control Group were better able to articulate their reasons for enjoying reading. When asked; what do you like about reading? some of the Control Group were able to name authors that they enjoyed reading and describe the genre of book that they prefer to read.
"Michael Morpurgo" (CG5)

"I like reading about, like, fact books and like, all these interesting books and especially history books, I really like history" (CG1)
Some replied to this question saying that they enjoyed reading more than watching a film.

"It's more descriptive than watching a film," (CG10)

"Like if you're reading it, it explains like what someone is doing better" (CG 10)

Whereas the Experiment Group were less articulate and a lot more vague with their responses to the same question.
"Just good stories, like, loads of stuff, like just stuff that was, like, written good" (EG 5)
"Like, if it was a sort of bored of a book, but I'd not really like reading after it, but if it was a really good book, I'd like want to read more books like that" (EG 3)

Another student was unsure of the type of books they liked and used the word boring when asked what they liked about reading. This student also seems confused by book genre.
"Well I like some action books, like and then I don't like documentary or like, I don't know, like just boring books. There's some I find boring a lot" (EG 8)
From this, it is clear that the Control Group have more of the skills of avid readers as laid out by Lamme. The above dialogue shows their awareness of authors, genre and ability to choose books. The AR website claims to "get kids excited about books". This research finds that the Control Group are much more excited about the books they read than the Experiment Group were. In stark contrast to the Control Group, who were energetic discussing books, the Experiment Group had a lot more energy when they spoke about AR quizzes rather than the books they read.
"It's like a treat almost for finishing a book" (EG 10)

"I like seeing the sunflower growing" (EG10)

"Yeah and it goes up as like, as the points go up" (EG10)

"I just find it's cool the way it kind of quizzes you and it's just interesting, like it's different from anything else." (EG 4)

"I like the challenges in it. You can be in competition with other people to see, like, who has read the most books and who gets better results in the quizzes and stuff" (EG7)

These findings support the concern of Brisco (2003), when the extrinsic value of reading is removed it appears that the Experiment Group will be more likely to lose interest in reading. The Control Group demonstrates a greater passion for reading, authors, genre and books. For this reason, it is logical to conclude that the Control Group will be more likely to continue to read into the future when the school's literacy instruction is finished. The Control Group is more likely to read in the summer or after they leave school as their reading pleasure is not supported by quizzes but by the content of books they read and the act of reading itself. From this study it becomes clear, that the primary method of encouraging lifelong readers is to encourage students to read for pleasure, to instil in them a love of literature andto enable them to find reward in the act of reading. As Pavonetti, Brimmer and Cipielewskistate "reading must be pleasurable for students to do it on their own when requirements and incentives are removed" (Pavonetti, Brimmer and Cipielewski 2002). Lamme (2003) also reiterates thispoint when she states, "It is aesthetic reading that makes one a lifelong avid reader". It is important to note the context of Lamme's statement. Lamme when making this statement is referring to reading literature and fictitious books not factual books. There is certainly a value to being able to recall facts from a factual book and this point is not being disputed. However, in the case of Lamme and in this research the material being read and the reading that is referred to is for the most part fictitious novels.

With the reading of fiction in mind, if the goal is to encourage lifelong readers, then educators must focus on reading aesthetically. Aesthetic reading is defined by Rosenblatt and noted in the Literature Reviewchapter of this thesis. Rosenblatt makes a distinct difference between efferent reading and aesthetic reading. Efferent reading is defined by Rosenblatt as reading to get information. "The reader's attention is primarily focused on what will remain as a residue after the reading- the information to be acquired, the logical solution to a problem, the actions to be carried out" (Rosenblatt 1994). Aesthetic reading on the other hand is defined by Rosenblatt as the reading that occurs when readers are engaged in the experience of reading itself. Rosenblattstates, "In aesthetic reading, the reader's attention is centred directly on what he is living through during his relationship with that particular text"

(Rosenblatt 1994). In light of the distinction between efferent reading and aesthetic reading of fictitious literature, it is clear to see that AR focuses on efferent reading skills. Students read a text and take from it as much information as theycan remember to pass a quiz. The very nature of the AR programme encourages and lends itself to efferent reading. It is efferent reading skills that AR assesses. Therefore, it is logicalto conclude that it is efferent reading skills that AR values. However, that is not to say that readers using the AR programmes will not read aesthetically. Some readers will of course read aesthetically and read for pleasure. But it is important to note that efferent reading is the type of reading that AR promotes through its very design. Lamme (2003) states, "If our goal is for students to be readers for life, they need access to really good literature and time to read and discuss books in the course of their school day". Lamme's understanding of reading is more in keeping with Rosenblatt's definition of aesthetic readingand for this reason the keyword in the above statement by Lamme is 'discuss'. Literature discussion is the key to creating aesthetic readers and in turn lifelong readers. Students needto be heard and given time to engage in interesting conversations about literature in order to find value and worth in books. Imagine if every time a person watched a film they had to take a quiz on the facts contained in the film's content rather than discussing the plot, the cinematography, the actors, the special effects etc. the enjoyment of the film would be undoubtedly reduced. The entertainment value of what is a recreational activity would certainly be reduced. The findings of this research show that some students do read for pleasure. When asked why they liked reading, students in both groups respondedwith statements that made it clear that reading provides them with escapism. Students said. *"It's relaxing, it's nice to get away*" (CG 8)

"I like that when you are reading it gives you an image in your mind and it takes you away from where you are at that moment" (CG 9)

"… I just get into it sometimes, it's just so easy to, like, just drift into the book and you know, that it" (EG 11)

"It kind of takes you into like, a different world you could say. Instead of just reading, it's like you're going somewhere else" (EG 6) In light of this, it is clear that educators need to create moments in their lessons that allow for discussion. This research highlights the need for students to learn how to choose a book because of its content, themes, characters and how it makes them feel. This research also shows that students need to be encouraged to choose books and enjoy books. It is clear from this research and the voice of students themselves that when they read for pleasure they are transported to new places and given a sense of escapism.

Being able to choose what to read is one skill that an avid reader and a potential lifelong reader possesses. Avid readers have other choices to make too that determine they capacity and likeliness of becoming lifelong readers. Choosing where and when to read is also a feature of an avid reader. According to the findings of this research the Control Group prefers to read at home whereas the Experiment Group prefers to read in school. The survey findings illustrate that after using AR the boys in the Experiment Group's preference to reading in school changed from 33% in the pre-test to 62% in the post-test. From this it is clear, boys no longer enjoyed reading at home and saw reading as a school activity. The finding poses a lot of serious questions regarding the potential of encouraging lifelong reading. What effect does this view of reading as a school activity have on lifelong reading? If a student sees reading as a school activity will they then stop reading when they stop attending school? Upon completion of school will the student feel that their learning has now finishedand so too has their reading? Another aspect of only reading in school that must beconsidered is the issue with summer holidays. Will students stop reading for the summer if they view reading as a school activity? Lamme (2003) points out "a further advantage of helping students to become readers by choice instead of for rewards is that the students willthen read over the summer even when there are no incentives." For students who are not regular readers, there is attrition of reading skills during the summer. This research is not a long-term study and cannot for certain say whether the view of reading as a school activity will reduce the potential for lifelong reading. However, the literature surrounding this research together with the findings of this research raises the concern, that if students view reading as solely a school activity, when the student is no longer in school they will no longer take part in the school activity of reading.

Lifelong Reading Summary

From this discussion on lifelong reading and how educators can encourage students to become lifelong readers, it has become clear that the Control Group displays more of the skills described by Lamme (2003) that make avid readers. From the findings, the Control. Group demonstrates a greater passion for reading. They have favourite authors and genres of books. They are able to articulate their reasons for liking the act of reading.They make reference to genres and authors. They demonstrate that they can choose a book and can read for pleasure. This is in stark contrast to the Experiment Group that have more energy when they speak about quizzes than about books. The enthusiasm for quizzes and not books causes an educator to worry about what happens to reading when the quiz incentive is removed. If teachers are having difficulty getting students to read it would be more effective

to provide professional development than to purchase a programme that accomplishes the task through extrinsic means. As Lamme (2003) correctly states “Extrinsic rewards entice students to read in a specific setting, but not to become autonomous readers” Quality discussion about a variety of texts, read for a variety of purposes, is the key to creating lifelong passionate and literate readers. In light of this, it isclear that the AR quizzes encourage students to become efferent readers of fictious books. In the short-term, AR with its encouragement of efferent readers might get students reading more. However, it is likely that the short-term gains will not last. It is likely that once the programme is removed the desire to read will also dwindle. This research shows that the AR programme does not encourage the aesthetic readers that the literature claims is necessary to encourage lifelong reading. Furthermore, this research and the discussion on lifelong reading raises theconcern about making reading a school activity. To encourage lifelong reading there must be a balance and a harmony between reading at home and reading in school if educators areto be confident that students have been equipped with the tools necessary to engage in reading activities when their school days have ceased.

Motivation

The results of this research indicate that students are motivated to read for a variety of reasons. The findings illustrate that student motivation is anchored on a student’s interest in the content of a particular book. If a student likes the content of the book that they are reading, this research has found that the student then claims to like the act of reading itself. Time spent in reading activities is also seen as motivational for students. This research found that the more time students spent engaged in the act of reading the more they enjoyed reading. One critical finding from this research shows that in order for a student to be motivated to read they must have a sense of achievement. For students to feel motivated to read they must feel that their reading is progressing. Student motivation is a core topic among educators for every aspect of school life. The National Strategy for Literacy and Numeracy clearly states that motivation is essential for the students to progress in literacy. **“**Positive attitudes and motivation are vital for progression in literacy and numeracy” (Department of Education and Skills. 2011). It is not possible to have learning without motivation to learn. As stated in the ‘Reading Research Quarterly, “Reading motivation refers to an individual’s values, beliefs, attitudes, and goals related to reading” (Kim *et al.* 2016). As seen in the literature review there has been a large quantity of academicwriting about the correct way to motivate students to read. A lot of research and researchershave debated between intrinsic rewards and extrinsic rewards as seen in the literaturereview. “…intrinsic reading motivation

refers to reading purely for its own sake, whereas extrinsic reading motivation refers to reading for external reasons, such as to gain recognition or a reward" (McGeown *et al.* 2016). AR in the handbook provided with the programme makes suggestions for extrinsic rewards, such as pizza parties, public announcements, awards, recognition buttons etc.

AR promotes the use of extrinsic rewards to motivate students to read more and to gain AR points. However, Biggers warns that "this creates a rather Skinnerian system of literacy learning that poses the threat of extinction once the rewards are withdrawn as well as the threat of satiation as AR is perpetuated year in, year out at every level of schooling" (Biggers 2001). The findings of this research shows that students did not mention extrinsic rewards as motivating factors in either group. This suggests that either extrinsic rewards were not used or students placed no value on such rewards. In fact, it is important to note that at no point throughout the interview process did the Experiment Group mention the AR programme freely in their answers. Students in the Experiment Group had to be asked directly about AR before they spoke about or made comment on its effectiveness. This suggests that AR is not the motivational tool that it claims to be. Students using AR did not feel the need to mention it when asked about reading. This seemed strange to the researcher as the AR programme consumed a huge part of the Experiment Group's reading instruction time. The programme is used in the Experiment Group for each part of the reading process, from choosing a book to completing a book and yet they did not see it as a worthwhile thing to mention or an influencing factor when questioned about their reading practices and motivations. When asked about AR specifically and what they liked about the programme, many students said that AR's ability to track their reading progress was motivational. They could see their points go up, their digital bookshelf grow and their visual such as the sunflower grow with every book they read and quiz they passed.

"I like seeing the sunflower growing"

"Yeah and it goes up as like, as the points go up"

"We are kind of getting in a competition to see who's going to get up the furthest" (EG10)

These findings may help educators to understand the motivational factors linked to reading. This research found that book content, time spent reading and a student's sense of achievement were motivational factors linked to reading.

Book Content

This research has found that reading motivation is simple, if students enjoy the content of

the books that they are reading then they have a positive attitude towards reading and enjoy the act of reading. That is to say, if students are enjoying reading a particular book then they are motivated to read. Book choice, content and variety are fundamental in motivating students to read. The content of a book is the primary reason that students enjoy reading. If the book is good then the student thinks reading is good. Similarly, if the book is what a student considers bad then the student considers reading to be bad. This finding came to light during the interview stage of the research when students were asked the question 'Do you like reading?' As outlined in the Findings Chapter, students immediately made the link between book content and their enjoyment of reading. Students in both the Experiment Group and the Control Group found these two things to be synonymous.

"It depends on the book"

"OK so you can you explain that to me, what do you mean?" (TT)

"Like, if I was sort of bored of a book, but I'd not really like reading after it, but if it was a really good book, I'd like, want to read more books like that" (EG 3)

"I like, just like, you know, like what the author says and like, all of the stories and all the different chapters" (CG 2)

"I like reading about, like, fact books and like, all these interesting books and especially history books, I really like history" (CG 1)

When students were asked what they did not like about reading they also made theconnection to book quality and content.

"Like, I don't like when like they have this big long picture and then just a small little bit of reading" (CG2)

"I don't like when you start reading and there isn't something to bring you into the book till maybe more than half way through the book, so you're just reading for the sake of getting to that point." (CG) In light of the findings of this research it is clear, that book content is anessential means of motivating students to read.

Book Choice

Book choice was also a reason the Experiment Group gave for not liking AR. AR itself advocates the need to ensure that students are reading books that they are interested in, in order to increase their motivation to read. As the programme's promotional material states, "A sure-fire way to turn a student on to reading is to introduce him to just the right book. AR BookFinder is a free online tool designed to help you do that" (Renaissance 2014). However, the findings of this research show that this is not the case. The book choicesavailable to AR students left some feeling demotivated rather than motivated. Students became

demotivated by AR when a book did not have a quiz.

"Some of the books aren't there" (EG10)

This particular student went to a lot of effort and showed signs of distress when trying to find the quiz for a book that they had read on AR to take a quiz. They doubted their spelling of the title and felt disappointed when they could not take a quiz on a book that they had read.

"I went online and I tried to find the version of it and it wasn't there. And then I tried to find another book and it wasn't there. And I was trying to see if I was spelling the name of the book wrong, but I wasn't" (EG10)

"Like it's kind of… it's sort of disappointing because like I always read the book and then do the test" (EG10)

This student became so demotivated by not being able to find a particular book that they saw the time spent reading the book as a waste of time.

"So, then it's kind of like, ah that was a kind of a waste of time. (EG10)

Another student had the same complaint about the AR programme, some of the books they read were not on the programme and this was disappointing. They would have preferred if the book was available for quizzing.

"Most of them are not really there on it. (EG4)

"OK and does that bother you?" (TT)

"Yeah sometimes, it kind of does" (EG4)

These findings show that students in the Experiment Group felt reading was a waste of time if they could not take a quiz after completing a book. This poses a significant problem for educators and the message that they are sending to students by using the AR programme as a motivational tool. The motivation to read is not the act of reading itself but rather to fulfil a different purpose, pass a quiz. This becomes a worry for educators that want to instil a love of reading in their students. AR in this case moves the goal of reading, reading is now only of value if a student can take a quiz on a book after reading it. The reward is not in reading itself but in the passing of a computer-generated quiz. This means that educators are creating efferent readers, ones as described by Rosenblatt and discussed earlier in this chapter and in the literature review as readers that read for information only. (Rosenblatt 1994). This style of literacy instruction is not creating Rosenblatt's aesthetic readers, a reader that enjoys the act of reading and reads for pleasure (Rosenblatt 1994). In light of the students' responses illustrated above, it is fair to conclude that the students in the Experiment Group are only

happy when they read books that were part of the AR library and therefore had quizzes available on them. If a book does not have a quiz available and a student has spent time reading it, they are then disappointed. This has a demotivating effecton the student. It is reasonable to suggest that students are drawn to the interactive nature ofthe online quiz and for this reason they like to be rewarded with a digital quiz after completing a book. However, it is necessary to note from the literature review that this styleof literacy instruction whereby a student reads a book and then takes a quiz on it reduces readers to efferent readers and limits a student's capacity to read for pleasure. The findings of this research suggest that a much more enriching literacy instruction programme and reading experience would be to provide a well stocked, well researched library that gives students choices and allows them to become aesthetic readers. As students did like taking AR quizzes and were therefore disappointed when one was not available, it is reasonable tosuggest that a follow-up task after the completion of a book is seen as a desirable activity bystudents. However, it is vital that the task be something that can be completed for anybook. A task such as a report, discussing the book's themes, analysing a character etc couldbe motivational activities used to engage students in aesthetic reading.

Reading Time

According to the research outlined in the Literature Review chapter a student's motivation to read is linked to the time they spend engaged in reading activities. As Kennedy (2014) states "The amount of time must be sufficient to accelerate achievement". The theory follows that the more students read and are given opportunities to engage in reading activities their motivation to read increases. As Baker and Wigfield state, "Children's reading motivation has been consistently linked to their degree of engagement in a variety of reading activities" (Baker, Wigfield 1999). The findings of this research illustrate that in both the Experiment Group and the Control Group there was an increase in daily reading activity. As mentioned in the Findings chapter, everybody in both groups after the year of literacy instruction read at least one book per month. For this reason, it could be concluded that the forty minute drop and read time that was allocated to each group is a positive element of a school's literacy programme and should be continued for both groups.

Sense of Achievement

A sense of achievement is also shown to be a motivating factor when encouraging students to become avid readers. As outlined in the literature review, if students feel like their reading is progressing, they are more likely to enjoy reading and therefore continue to read. As

Lockwood (2012) suggests, "The association between reading motivation and reading attainment, as well as progress, is a particularly compelling argument for the importance of positive attitudes to reading…" This research found that the Control Group had a greater sense of achievement. More students in the Control Group felt that their reading had improved over the course of the year compared to those in the Experiment Group. Similarly, the Control Group were more content with the number of books they read in the year compared to the Experiment Group.

"And were you happy with the number of books that you read?" (TT)

"Yeah" (CG1)

"Yeah" (CG8)

"*Happy"* (CG7)

"How did you feel about it?" (TT)

"I felt very happy about it. I felt that I was coming along with my reading…" (CG1)
"Because the books were a decent size and I finished a couple of the series" (CG3) The Experiment Group were not as pleased with the number of books that they read.
"Not really. I used to read a lot more in primary, like my own books and stuff, and this year it's been harder because of less time to do things and stuff" (EG11)
"I would have liked to have read a bit more, maybe but…" (EG2)

Even though the Experiment Group do not mention AR as a reason for their dissatisfaction with their reading attainment, one could argue that the Experiment Group were not as happy with their reading achievement because AR provides students with a visual of the number of books that they have read on their digital bookshelf and points for each book that they pass a quiz on. For this reason, AR students might have been more aware of the number of books they read, and their reading progression compared to the Control Group.

As outlined in the Findings Chapter, when interviewed and asked about whether their reading had improved more students in the Control Group felt that their reading had improved compared to those in the Experiment Group. This of course was not the case because an equal number of improved reading ages, deteriorated reading ages and reading ages that were maintained were interviewed from both the Control Group and the Experiment School. These findings suggest that the Control Group had a greater sense of achievement after their year of literacy instruction compared to the Experiment Group. As Petscher says, "… it is not a question of whether a relationship exists between reading attitudes and achievements

but of how practically, positive attitudes can be sustained or improved through interventions" (Petscher 2010). The following Recommendations Chapterexplores in more detail possible practical ways of maintaining or improving a student's attitude towards reading based on the findings from student voice expressed in this research.

Motivation Summary

From the above discussion surrounding the motivational factors that affect a student's reading attainment, it is clear that students are motivated to read when they like the books that they are reading. For this reason, it is vital that a well-stocked, well researched library is available for students to choose books from. This research shows that when students enjoy the content of the books they are reading they then like the act of reading itself. When they like the content of the books they begin to read for pleasure. From this research it would appear that students also seem to like a method of tracking their reading attainment in a visual way. The students in the Experiment Group liked watching the sunflower grow as they read books, passed quizzes and gained points. That being said, this research argues that it is important that the method of tracking is not counterproductive. The findings from the Experiment Group show that the students were not happy with their reading progress. They did not feel that their reading had improved. In contrast to the Experiment Group, the Control Group were happy with their reading development and felt that they had made improvements. For this reason, this research suggests that in the future, literacyinstruction programmes need to incorporate a system of tracking that is motivational and builds student confidence. Overall, it is clear from this research that a sense of achievementis motivational. In order for students to engage in reading they must feel that they are achieving and gaining from the experience. This research also found that the Drop and Readinitiative is a positive element of literacy instruction. The Drop and Read time increased thenumber of books read by both the Control Group and the Experiment Group.

Gender

As explored in the literature review, males and females respond differently to literacy interventions. In keeping with the literature, this research found that males and females responded differently to the research instruction delivered to them in both the Control Group and the Experiment Group. Gender can have an impact on the way students learn and respond to literacy interventions. As the Sé Sí Report concludes and advises, "improving thelevel of engagement of males in reading activities … needs to be a major policy objective ifgreater gender equality in educational outcomes is to be achieved" (O'Connor 2007). In thisresearch

the findings highlight a number of instances when the results varied for males and females. Both schools that formed the research population were mixed schools, meaning theclasses comprised of a mix of both male and female students. Throughout this research therewas no specific or differentiated literacy instruction given to cater for males or females, theliteracy instruction was the same for both genders. The findings however show that males and females responded differently to the literacy instruction. This most significant findingsof this research in relation to gender difference was found in response to the following aspects of literacy instruction:

1. Attitude towards reading and reading proficiency.
2. Reading location.
3. Choosing a book.

Attitude Towards Reading and Reading Proficiency

The most controversial or surprising finding of this research in relation to gender emerged when students were asked in the survey whether or not they liked reading. Males responded positively to the question. There was a 9% margin increase of males claiming to like reading in the Control Group from the pre-survey to the post-survey. However, the increase in the Experiment Group was even more significant. The percentage of males that claimed to like reading after using AR in the Experiment Group increased by 25%. This shows that AR had a positive impact on the attitude of the males towards reading. This finding is even more positive when one considers the findings of (Shelton Nichols 2013) and Clark and Cunningham as outlined in the Literature Review chapter. These researchers found that improving the attitude of males towards reading is the first step to improving the male students' reading proficiency (Shelton Nichols 2013, Clark, Cunningham 2016). From this it is fair to deduce that the male students liked the structure of AR as a reading management tool.

Another significant gain for the boys was in relation to their comprehension levels and reading proficiency. In the pre-programme survey 4% of males in the Experiment Group claimed to understand none of what they read and 4% stated that they understood only some of what they read. After using AR the percentage of male students claiming to understand almost none of what they read decreased to 0% and the percentage of students claiming to understand none of what they read was maintained at 4%. In contrast to this the Control Group had an increase in the percentage of males understanding almost none of what they read from 0% in the pre-programme surveys to 10% in the post-programme surveys. The

number of males understanding none of what they read was maintained at 0% for the Control Group. This is a significant gain for the Experiment Group, especially for the male students. This is a positive and may support the use of AR with male students as a means of boosting their reading confidence. As discussed in the Literature Review chapter "reading confidence is a more important predictor for reading attainment in AR boys than AR girls or for non-AR boys and girls" (Clark, Cunningham 2016). AR in this research was seen to increase the male students' view of their own reading and in turn it has improved their impression of their own comprehension abilities.

The same gains cannot be said for the female students. In both groups the females responded negatively towards reading after their year of literacy instruction. In the Control Group the number of females that did not like reading increased by 13%. In the Experiment Group, the number of females that did not like reading increased by 4%. From these findings it is clear to see that females are being turned off reading in post-primary schools. This may be aresult of the limited reading frequency provided for during the year. Each group was given forty mins of reading time each week. Perhaps for girls this was too limiting and in order tobe motivated to read and enjoy reading they needed more reading time. It is important to note that this 4o minute time slot also includes the time AR students spend taking quizzes on their books. As outlined in the literature review, Clark & Cunningham found that readingfrequency was initially more important for girls who use AR (Clark, Cunningham 2016). These findings advocate the need for a literacy programme or a reading managementprogramme to be tailored to the gender specific needs of males and females. These findingsshow that a one size fits all approach to literacy will not work in post-primary schools for first year students

Reading Location

After using the AR programme, the males in both groups preferred reading at school. There was a significant increase from 50% to 71% of the males in the Experiment Group claiming to prefer reading in school after their year of using the AR programme. The move from home to school as a reading location has consequences for the potential of encouraging lifelong readers as discussed earlier in this chapter under the heading 'lifelong reading'. Interestingly the use of AR had the opposite effect on females. After using AR, the females in the Experiment Group preferred to read at home. There was a 20% increase in the percentage of the females in the Experiment Group that wanted to read at home rather than in school.

Choosing a Book

The Findings chapter illustrates the different attitudes expressed by the males and the females when it came to choosing a book. The findings show that the males in the Experiment Group found it easier to choose a book using the AR system. In the pre-programme survey 4% of the males in the Experiment Group found choosing a book very easy, this significantly increased to 29% in the post-programme survey. The males in the Experiment Group confirmed this during the interviews. None of the males interviewed from the Experiment Group found choosing a book difficult. They all claimed that finding abook to read was easy.

"I find it easy to choose a book" (EG 2)

"Well, easy" (EG 8)

"Easy" (EG 3)

In contrast to the Experiment Group some of the males in the Control Group expressed difficulty in choosing a book.

"hard" (CG 3)

"Is it difficult to choose a book?" (TT)

"Yeah" (CG 5)

The fact that all male students interviewed in the Experiment Group found choosing a book easy could lead a researcher to conclude that the AR system made choosing a book easier for the males in the Experiment Group. In order to determine whether this is true or not the researcher must examine the findings from the interview question, how do you choose a book? The responses to this question made it clear that the AR system was not in fact the thing that helped these male students to choose a book. As outlined in the Findings Chapter, none of the students interviewed made reference to the AR system and use of ZPD as a way of choosing a book. As the Findings Chapter shows, the students made reference to reading the blurb, looking at the cover, reading the title, recommendations from other students or the teacher and reading a few pages of the book.

"Because I just like look at the back of it and read it first" (EG 8)

"Yeah I'd just read some like title that sounds interesting, I'd just read the back of it and see if I'd like to read it" (EG 2)

From this it is clear that the method of book classification used by AR to tailor book choice for students did influence the decisions of the males or the females when choosing a book. In the Control Group the same number of males and females found choosing a book easy.

"Oh, it's really easy" (CG12)

"It's easy for me" (CG 2)

"mostly easy" (CG 7)

However, the females in the Experiment Group during the interviews expressed that they find choosing a book difficult.

"Sometimes it can be like very hard. Like I could be in here for like the whole of break trying to find one" (EG 10)

"Sometimes it's quite hard to look for a good book" (EG 4)

"Well sometimes it's difficult because you've read good books, most of the good books, and then you can't find any good books or sometimes it's easy, that you can just pull a book from the shelf" (EG 6)

"I do find it hard to pick a book I like" (EG 9)

The reason for the females' difficulty in choosing a book in the Experiment Group appears to be because of book choice. It could be suggested that the female students are restricted by the books on offer to them in their AR library. As can be seen above, the female students in the Experiment Group make statements such as "because you've read good books, most of the good books" (EG 6) and "hard to look for a good book" (EG4). These statements suggest that these students know how to choose a book but that they do not like the books on offer to them in the library. They feel that their choices are restricted and do not deem the books available to them to be a "good book".

Gender Summary

This research has listened to the voices of the male students and the female students both independently and collectively to find what works for literacy instruction in Irish post-primary schools and to determine whether or not AR is an effective means of improving the literacy standards of Irish post-primary students. In summary, the findings in relation to gender are clear. There is a different approach needed for males and for females in order to improve their literacy standards. A one size fits all approach to literacy instruction will not work. Males and females respond differently to different literacy approaches. From the evidence discussed above, the males responded well to the AR programme. This suggests that they like the process of reading a book and taking a quiz on that book. However, the females in the Experiment Group did not respond well to the AR programme with the majority claiming not to like reading after the year. The females in the Control Group also had a negative response to reading instruction, making the motivation of female readers an urgent concern for educators. It became clear from the findings that girls respond better to quality reading time with book discussions after the completion of a book. Both males and

females used the same methods of choosing a book and did not mention the AR programme as being part of the choosing a book process. However, it became clear that boys found it easier to choose a book than girls. The girls did not like to be limited in their book choices. They liked to be able to choose from a wide variety of books and claimed to find it difficult to find a "good book". Once again it becomes clear from the discussion that book content and book choice is essential to encourage students to read. Regardless of gender both males and females are drawn to read books that have content that they perceive as interesting.

From this discussion it is vital that any future literacy instruction must take into account the strategies that work for males and for females. Males appear to like answering short answer questions on a book. It would also appear from the findings that male students were motivated by seeing their reading progress in a tangible way. It could be suggested that this created a competitive environment that the male student's confidence thrived in. The female students on the other hand respond well to discussion and did not like the task of answering short answer fact focused questions. From this it is clear that the implications for reading instruction and the creation of a reading culture in both home and school environments must be mindful of the reading instruction preferences of males and females. Each gender must have their literacy needs met with strategies that motivate and encourage both genders to become lifelong readers. Above all a library must be well stocked with books that have content that appeals to its readers.

Summary

This chapter discussed key themes that emerged from the review of the literature and the analyses of the data. The themes of Reading Gains, Assessment, Motivation, Lifelong Reading and Gender were discussed to outline the contribution to new knowledge made by this research. This discussion identifies the positives and negatives associated with AR as found in this research. Using AR as a reading management programme is not a bad thing. This research has found that students like the interactive quizzes that AR provides. Students also appear to like using the technology associated with AR after reading a book. However, this research shows that AR has its limitations and must be used with these limitations in mind. This research also verifies the findings of other researchers' work and for this reason validates its contribution to literacy instruction in Ireland. This research and the discussion of key themes has thrown up some questions that future research might explore. The next chapter will discuss the overall summary of the research with the implications of the research for future educators and policy makers. The Conclusion and Recommendations Chapter aims to conclude the research by outlining pragmatic approaches that could be implemented by

schools to support literacy instruction in the Irish post-primary context. The next chapter will also acknowledge the limitations of this research and make recommendations for future research.

Chapter Six Conclusion and Recommendation

Introduction

This thesis presents a pragmatic evaluation of AR as a reading management programme. This research sought to evaluate the effectiveness of AR as a means of improving the literacy standards of Irish post-primary students. The findings of this research are intended to be of practical use to future teachers, educators and policy makers. The findings of this research are intended to help those interested in developing literacy instruction programmes in post-primary schools and make a contribution to the field of literacy instruction. In conjunction with the literature review, the conclusions drawn from this research are derived from the interpretations of the findings from three sets of data:

1. Student reading ages test – STAR
2. Student surveys
3. Student interviews

Chapter Summaries Chapter One - Context

This chapter contextualises the research study. The Context Chapter defined the term literacy and explored what it means to have reading fluency. This chapter also focused on how ICT has impacted the evolving definition of literacy in the twenty-first Century. The Context Chapter also provided an overview of the position of Irish literacy policy and practice in the broader context of the European and international developments. The chapter provides an overview and gives context to AR as a reading management programme. The Context Chapter through outlining external evaluations and comparative studies highlighted the need for Ireland to improve the literacy standards of students in order to enable each person to engage with society and to be socially included. The chapter showed that a strong top-down approach to literacy driven by external agencies has been in place in Irish literacy policy. This research advocates for a ground up approach that puts students at the centre of their learning. The review of literacy policy provided in this chapter made it clear that literacy policy alone is not sufficient to increase literacy standards. Given the financial and personal investment in IT, it is clear from the review of literacy policy in this chapter that AR and other literacy strategies and programmes need to be evaluated.

Chapter Two - Literature Review

This chapter reviewed the extant literature around literacy, digital literacy and technology

aimed at enhancing literacy education. The literature review focused on the literature relevant to the effectiveness of AR as a reading management programme. The first section of the literature review considered developer-sponsored research and highlighted the lack of independent peer-reviewed research available to the researcher. The second section of the literature review focused on the key themes that emerged from the literature review conduced with the use of NVivo. The themes that emerged from this section of the literature review were, Reading Gains, Assessment, Lifelong Learning, Motivation and Gender. This review concluded that further research was needed to determine the effectiveness of AR as a means of improving the literacy standards of Irish post-primary students as there were definite gaps in the research. It became clear from the literature review that this research needed to seek out the opinions of students to gain an insight into the effectiveness of AR as a means of improving the literacy standards of Irish post-primary students. The literature review highlighted the need for student voice to be at the centre of any research that was to be conducted in the area of literacy development. It also became clear from the literature review that further study would require the use of a control group to maximise and give credibility to the findings. Finally, the literature review revealed that a lot of ambiguity surrounds the assessment methods used by AR to assess literacy standards. It is unclear from this analysis whether AR's methods of assessing reading ages alone is a sufficient means of measuring the literacy success of a student. It is found by most researchers that this method of assessment as used by AR limits the definition of literacy and what it means to beliterate in the twenty-first century. The review of the literature still left the researcher questioning the potential of AR to enhance the literacy standards of Irish post-primary students and therefore highlighted a gap in the literature and a need for further research.

Chapter Three – Methodology

This chapter outlined and justified the use of a Mixed Methods methodology. The aim of this research was to evaluate the effectiveness of AR as a means of improving the literacy standards of Irish post-primary students. This chapter outlined the research question; Is AR an effective means of improving the literacy standards of Irish post-primary students? This chapter explained that there are two questions embedded in this research question.

1. Does AR increase a student's reading-age?
2. Does AR increase student's motivation to read or cause a change in attitude towards reading?

The first question requires the analysis of quantitative data while the second question

requires the analysis of qualitative data. In light of these questions it became clear, that in order to fulfil the aim of this research and answer the research question, the researcher needed to use a Mixed Methods methodology. This chapter considered the limitations of a Mixed Methods approach but despite the limitations the research question demanded the use of a Mixed Methods methodology and it was deemed by the researcher as the most suitable research methodology. This chapter highlights that using a Mixed Methods approach avoids the limitations that exist in studies that uses either quantitative or qualitative alone. The Methodology chapter in keeping with the ideology of Creswell, Plano Clark (2011) advocated that using a mixture of quantitative and qualitative data would provide a better understanding of the research problem than either approach alone. The Methodology chapter also addressed the methodological and ethical challenges of the research. Furthermore, the chapter examined these methodological and ethical challenges regarding the work of an insider researcher. The pragmatic nature of this research was presented in this chapter in a discussion about the philosophical, epistemological, and ontological underpinnings of this research. The rationale behind the research design, sampling method and data analysis methods was also outlined.

Chapter Four – Findings provides a detailed presentation of the findings of this research. Firstly, the chapter outlines the findings from the quantitative reading-age data, secondly the research presents the findings from the student surveys. Thirdly, the chapter presents the findings from the qualitative student interviews. Finally, the chapter concludes by integrating the qualitative and the quantitative data sets to present the overall findings on the effectiveness of AR as a means of improving literacy standards. The most significant findings from the research were three-fold. Firstly, the research found that AR did increase the reading ages of the students in the Experiment Group that used the programme by three months. This finding was in keeping with the findings of Siddiqui, Gorard *et al* (2016) and the EFF (2019) that were reviewed in the Literature Review chapter. Secondly, this research found that males and females respond differently to the same literacy instruction. The same method of literacy instruction will not encourage the development of literacy skills for both males and females. Thirdly, this research found that the key to encouraging students to read and to like reading is to have a selection of books that appeal to the students. Book content and choice is essential according to students if they are to be motivated to read. The findings of this research highlights that when students liked the content of the book, they were reading they claimed to like the act of reading itself. Similarly, when students did not like the content of the book they were reading, they claimed to dislike the act of reading.

Chapter Five- Discussion

This chapter provided a thematic discussion of the themes of Reading Gains, Assessment, Motivation, Lifelong Reading and Gender that emerged from the review of the literature and the analysis of the data. This chapter connects the findings of this research with previous research that was presented in the literature review to outline the contribution to new knowledge made by this research. This thematic discussion provides insight into how the findings of this research advance the dialogue about literacy instruction in Ireland with a particular focus on the role of AR. This Discussion Chapter discusses the positives and negatives associated with using AR as found in this research. This discussion concluded that AR has its uses as a reading management tool. The AR programme increased the readingages of its users by three months. Students claimed to like the interactive quizzes that AR provide together with the technology associated with AR after reading a book. However, the discussion in this chapter highlights that this research demonstrates the limitations of AR as a means of improving the literacy standard of Irish post-primary students. This Discussion Chapter warns that these limitations must be kept in mind when using the AR programme as a means of improving the literacy standards of Irish post-primary students.

Chapter Six- Conclusion and Recommendations:

The Conclusion and Recommendations chapter draws together the themes of this research to provide insight into pragmatic approaches that can be implemented by schools to support literacy instruction in Irish post-primary school. This chapter presents the overall summary of the research with the implications of the findings for future literacy instruction in Irish post-primary schools. After acknowledging the limitations of the research, the chapter concludes by making recommendations for future research.

Conclusion

This thesis began with a very distinct purpose, to evaluate the effectiveness of the reading management programme Accelerated Reader as a measurable means of improving students' literacy skills. As outlined previously this purpose has two distinct research questions. Firstly, does AR increase student's reading ages? Secondly, does AR increase students' motivation to read or cause a change in a students' attitude towards reading?

Does AR Increase Students' Reading Ages?

As AR was the only variable in this research, it is reasonable to conclude from the findings of this research that AR does increase a student's reading-age by an average of three months.

This finding as illustrated in the Findings Chapter and discussed in the Discussion Chapter is in keeping with the findings of Siddiqui, Gorard *et al.* (2016) and EEF (2019). However, taking into consideration the 'Construct of Reading' by Sainsbury *et al* (2008) from the literature review and the comments made by students during the interviews conducted in this research about the way students themselves measure reading success and progress, this research concludes that this increase in reading-age is not a sufficient reason to employ the use of AR in all schools as a means of improving literacy standards. In light of this evidence, this researcher believes that AR has the ability to increase reading ages not literacy standards. It is the distinction between reading ages and literacy standards that is at the core of this research. Reading-age scores as explored in the Literature Review and the Discussion Chapter measure the very basics of a person's reading ability. Standardised reading tests measure instant recall and sentence completion. They do not require a student to have a deeper knowledge of a text. They do not require a student to explore themes, characters, moments of conflict, resolution etc. While standardised tests have their value in literacy instruction, this research advocates that they have limitations. This research finds that there is a lot more to a student's reading ability and literacy standard than reading-age scores alone. Reading-age scores are not the total measure of a student's reading ability. For this reason, this research finds that a literacy programme has the capacity to encompass more than reading-age scores alone. A well-rounded literacy programme will use reading-age scores for their intended purpose as base line data while building student literacy by encouraging a sense of community and discussion around books and book content.

Does AR Increase Students' Motivation to Read or Cause a Change In Students' Attitudes Towards Reading?

As this research is not a longitudinal study, the researcher cannot measure the long-term impact of AR on student motivation. However, despite this, the research did point to patterns of change regarding student motivation and attitude towards reading during their year of literacy instruction. This research found that AR motivated students to complete books in order to complete AR quizzes. The findings of this research suggest that students were not motivated to read for reading sake, they were motivated to read for the extrinsic reward of completing an AR quiz and watching their digital sunflower grow. The motivation is the completion of quizzes and not the completion or enjoyment of books. Students in the Experiment Group spoke with more passion about quizzes than they spoke about books. The students were motivated and excited about quizzes, but they were not excited about the material that they read. This research concludes that a quality literacy programme should get

students excited about books, characters, themes, authors etc. A quality literacy programme should not get students excited about tests, quizzes, and assessments. If studentsare excited about quizzes and not books the danger is that when the quizzes are finished students will no longer read. The reading was the necessary task that students had to complete to enjoy and take part in quizzes. Therefore, when the quiz is removed the need toread is also removed.

Recommendations

In light of this research, the following six practical considerations for schools and individuals interested in improving literacy standards are offered.

Resourcing Literacy in the School

The number one recommendation from this research is for schools to invest quality books with content that appeals to their students. The content of books is the primary reason students like or dislike reading according to this research. Considering these findings this research recommends that schools prioritise books.

Harness Student Voice

In keeping with the ground up approach promoted by this research, this research recommends that student voice be at the centre of literacy education and instruction. This research has found that it is essential that students feel part of their literacy journey. After all, it is the lived experience of the students that determines the quality of the literacy instruction as identified in the previous recommendation, the stocking of a school library with books that students deem to be good books is essential. One way of ensuring that students have a voice is by giving them control over the books that they choose to read. This research recommends that schools purchase the reading material that appeals to the students that they hope to encourage to enjoy the act of reading. Hearing the voice of students could be achieved in a number of ways from a recommendation wall, to a library committee or through and active student council. Each school would have to decide for themselves the best way of giving all students a voice and a chance to enhance the reading material available to them.

Resourcing reading material is not the only way of incorporating student voice into a literacy programme. Students should also be asked regularly or spoken to about their own personal literacy development. Focus groups or informal chats are a great way for students to express

how they are finding their literacy journey. This research proves that students have a lot to say about reading and their experience of literacy instruction. Teachers need tobe mindful of the way that students measure their reading success. As this research found and presented in the Findings chapter, students do not use reading ages to measure their reading success. To measure their reading success, students use reading speed, word recognition and most importantly comprehension. The opinions of students are vital if schools want to build a quality literacy programme that fosters and encourages students to become lifelong learners.

Shared Reading Experiences

This research affirms the need for class time to be given to reading for pleasure and creating moments withing the classroom for shared reading experiences. Both the Control Group and the Experiment Group were given one thirty-five-minute class per week to read. The research showed that both groups were positive about this time spent reading. Giving this scheduled time to reading shows students that reading is a priority in the school. This research also found that one of the main reasons students in secondary school did not read was because of time constraints. Therefore, the obvious conclusion is to give the students time to read in school. The hope then is that they will enjoy this time spent reading and maybe even read at home or at other times. Reading is a skill and like any other skill it needsto be practiced. Shared reading experiences gives students time to read and practice the skillof reading.

Varied Assessments

This research acknowledges the need for assessments but recommends that literacy instruction needs to be mindful of the message that its assessment methods send to students about what it means to be literate. This research found that AR focused on the assessment of reading rather than the pleasure of reading and the art of reading and therefore limited the definition of literacy. There is, therefore, a definite need for educators to use assessment methods that encompass the full definition of literacy. This research suggests that instead of having content recall questions for each book that a student reads, a better use of resources would be to have class discussions about the books that students have read or set meaningful and varied post reading tasks. There are endless possibilities for the tasks that teachers could use in their classroom to engage students and encourage them to think about the books they have read. Students could make a presentation to their class about their favourite book that term, complete a book report, review of a book, make a film trailer for a book, complete a project on a character, theme or a setting or compare one book to another by the same

author. The list goes on. Any one of these tasks would encourage students to read for pleasure while also getting them to develop other literacy skills such as their oral communication skills, their written skills and even their digital literacy skills and therefore express to students a broader understanding of what it means to be literate.

Monitoring Reading Progress

The most positive aspect of AR for the Experiment Group was their ability to track their progress. The interviews with the Experiment Group found that elements of AR such as the digital bookshelf and the sunflower that grew with every quiz they passed were positive and motivational for students. For this reason, this research recommends that a literacy programme should incorporate a method of keeping track of student progress. This research feels that a visual way of representing reading progress and celebrating reading success would be a positive addition to any reading management programme. The researcher suggests that perhaps students could keep track of their reading in a reading log or reading journal. This log/diary could be digital if the school uses forums such as Schoology,Edmodo, Google Classroom or OneNote Class Notebook as students in this research liked the use of IT to track their reading progress. Reading progress by its nature is not obvious itand may take a long time for a student to see improvements. Simple motivational visuals like those suggested above could help to keep students motivated on their reading journey.

Gender

This research recommends a varied approach to literacy instruction, one that is mindful of the needs of both male and female students. Both schools that populated this research were mixed schools. As this research listened to the voice of the students as collective groups, it also listened to the voices of the male and the female students independently. This research found that a one size fits all literacy instruction model does not work. The independent needs of males and females needs to be met in order to achieve reading proficiency among both genders. This does not mean that a mixed school needs two separate literacy programmes. This research does however recommend that a literacy programme must offer variety for both genders to be motivated. In practical terms a literacy programme that focuses solely on book discussion would benefit the girls but would be off putting to the boys. Similarly, aliteracy programme that focuses on instant recall questions and recalling facts would be attractive to the boys but would demotivate the girls. This research concludes that male and female students are motivated to read differently and recommends that literacy programmes

be mindful of the different motivational factors that impact males and females.

Suggestions for the Implementation of the Recommendations

This research evaluated the effectiveness of AR as a means of improving the literacy standards of Irish Post Primary students. It did not evaluate the effectiveness of any other literacy improvement methods however, the findings of the research point towards some practical ways to implement the recommendations of the research.

1. Book in a Bag: It could be suggested from the recommendations that requiring students to bring reading material with them to all classes would be positive and practical at post primary school. By each student having book in their school bag, it would allow for teachers to do drop and read time at any time of the day that best suited them. Students could also be encouraged to read their book if they have completed the classwork for the lesson or if they have a substitute teacher for a lesson.
2. Digital Surveys: The increased focus on IT in schools, has made the gathering of student opinion quick and efficient. Short quick surveys can be sent to students, directly to their school email. There are a number of platforms that can be used to collect and analyse the data such as Survey Monkey and Microsoft Forms. Surveys like this would also be a practical way of finding out the expectations of the male students and the expectations of the female students towards literacy instruction. The students could be asked to select the methods of literacy instruction that they like, for example answering short answer questions, writing book reports or other extension activities, taking part in book discussions etc.
3. Choosing books: A practical way of choosing reading material to stock a school library is to include students in the process. Students could be asked in their tutor groups to compile a list of books that they would like to have made available to them in their school library. A library committee populated by students could be formed to manage the school library and give students ownership of the library and its stock. A TY group would be a suitable group for this task. Another practical way of including students in the process of choosing and purchasing books could be to put the choosing of library books on the agenda of Student Council meetings. The Student Council involves students from all year groups therefore it would be a good way to hear the voice of all students and to choose books that have appeal for each year group.
4. Track reading progress: A simple and effective way of tracking student reading is to

have a digital record of books read on MS Teams or Google Classroom. Students could each be given a page in these online platforms to upload a picture of the front cover of the book that they have read. Students could watch the number of books grow. If a digital platform was not available, students could keep a page in their copy or a scrapbook to record the books that they have read. Some schools have also created 'A Read Wall' in classrooms. When a student completes a book they print a picture of the front cover of the book, give it a rating and stick the cover to 'The Read Wall'.

Strengths of the Study

The present study has a number of strengths. Firstly, this study has the strength of being an independent research project. This project is in no way funded by AR or any other body that has a financial concern or benefit from the results of the research. This research is independent, it neither sought to promote or to demerit AR as a reading management programme. This programme simply sought to evaluate the effectiveness of AR as a means of improving the literacy standards of Irish post-primary students.

Secondly, this research has the strength of student opinion. This research gives voice to the students that engage with literacy instruction every day in Irish classrooms. This study does not focus on the opinions of teachers, educators or school management. The findings of this research captured, listened to and interpreted the lived experience of Irish students both in the Control Group, not using AR and in the Experiment Group using AR to evaluate the effectiveness of AR as a reading management programme.

Thirdly, the research's findings are strengthened by the use of a Control Group. It became evident from the literature review that prior research had not employed a control group. Previous researcher conducted on AR compared Pre-AR results to Post AR results. They did not use a Control Group to compare students using the AR programme to students not using the AR programme. The findings of this research are strengthened by the using a Control Group. The findings of this research have validity as the only variable in the data collection stage was the AR programme. For this reason, differences in reading ages, students' motivation to read etc. were as a result of the success or failure of the AR programme and not some other variable.

Fourthly, this research employed a Mixed Methods methodology grounded in a pragmatic philosophy. This was certainly a strength of the research. In the literature review, it became

clear that a number of the research reports conducted on AR were limited in terms of methodology. The research outlined in the literature review either focused solely on qualitative data or quantitative data. The research either focused on AR's ability to increase reading ages or its ability to motivate students to read. This research is unique in the fact that it integrates qualitative and quantitative data.

Finally, this research used mixed schools to populate the research. This meant that the schools had both male and female students. This allowed for very interesting findings in relation to literacy instruction and what works for each gender. The mixed population allowed the researcher to determine whether AR was effective for one gender over another.

Considering these strengths this research has made a unique contribution to the body of work available on the AR programme. This research has also gone beyond the scope of merely evaluating the reading management programme AR and has also articulated valuableinsights into practical things that teachers and educators can do to enhance literacy instruction programmes in schools. These practical approaches have been outlined above under the heading 'Recommendations'. Despite the unique contribution made to literacy education by this research, there are some limitations that the researcher acknowledges.

Limitations of the Research

Despite the contribution that this research has made to advance the knowledge of literacy instruction in Ireland through its evaluation of the AR programme and its practical recommendations for literacy programmes, there are some limitations to the study that the researcher is conscious of. These limitations are summarised in the following three points. Firstly, this is not a longitudinal research project as it records the progress of students in two schools over the course of one academic year. There is scope for the research to be repeated.

Secondly, while limited, the size of this study enabled the researcher to gain deep insights into literacy instruction in Ireland and AR as a reading management programme. However, it would be valuable to carry out the research with more schools and a larger research population. Nonetheless, as stated previously the small sample size was balanced by the use if a control group to validate the findings.

Despite the limitations it is hoped that this research will nevertheless contribute to an evolving understanding of literacy instruction in Ireland. It is also hoped that this research will be valuable to Irish schools considering whether or not to purchase AR or another

reading management programme AR.

Future Areas of Research

Through its evaluation of the AR programme, this research has shed light on areas of literacy instruction that require further research. Several additional topics are worth investigating but were beyond the scope of this study. Future research might explore:

1. Reading Ages – a possible future study that would be beneficial to the developmentof literacy education in Ireland would be one that investigates in depth the value of reading ages and the accuracy of reading ages as determined by standardised tests. This study could perhaps seek to find the link between a student's reading-age and their comprehension levels.
2. AR's Saturation point – as pointed out previously this study was not a longitudinal study. This research tracked a group of students over the course of one academic year. A study in the future could focus on repeating this study to determine whetherAR has a saturation point for students. Is there a point where students using AR stopincreasing their reading ages? Is there a point for students where they cease to enjoytaking AR quizzes? What happens to the students using the AR programme if their interest in quizzes and their ability to improve their reading ages becomes saturated?
3. Gender – Further research is also required into the various elements that motivate males and females to read. This study has made it clear that a one size fits all literacy instruction programme will not work equally for males and females. Further research is needed to determine specific methods and interventions that couldmotivate males and females to read.

4. Resourcing reading material – research is needed to determine the types of books that first year students like. As outlined in this research, students that like to read doso because they like the content of the books that they read. In order to stock a qualityand dynamic library, a lot of research is needed into the types of books that studentslike. Gender interests would also have to be taken into account in this type of research.
5. Reading For Pleasure – This thesis emphasises the benefits of encouraging students to read for pleasure and recommends giving students time to read for pleasure. This research, despite not being a longitudinal study supports the claim

that students that read for pleasure are more likely to become avid lifelong readers. In light of these findings there is the potential for future research to ask the question; what motivates students to read for pleasure? The potential is also there for future research to explore this question further and to ask are males and females motivated differently to read for pleasure and if so, how?

6. ICT – While this thesis acknowledges the impact that ICT developments and their incorporation into school has made to literacy education, it does not focus on the role of technology in literacy learning or technology enhanced learning. This research focuses on one reading management programme. For this reason, there is scope for further research on the impact of ICT on literacy education.

Summary

By listening to the voice of students this research has evaluated the effectiveness of AR as a reading management programme. In carrying out this evaluation and listening to the voice of students this research has identified pragmatic procedures that schools could implement on the ground to improve the literacy standards or Irish post-primary students. As outlined in the Discussion Chapter, this research gives a lot of food for thought when it comes to developing literacy instruction for Ireland. A quality literacy education needs to be mindful of the varying factors that motivate males and females to read for pleasure. Regarding literacy assessment, this research suggests the need to be mindful of the message that assessment tasks inadvertently send to students about literacy and what good literacy is. This research has also shed light on the need to include students in their educational journey. Students have opinions and know what works for them. This research recommends that students ought to be listened to and to be made feel part of the designing and shaping of their own literacy education. The use of AR in classrooms can require spending a significant amount of instructional funds. This researcher feels that it was important for administrators, educators and teachers to have access to as much evidence as possible to determine the programme's level of effectiveness before investing scarce funds in the programme. This research concludes by stating that AR does have the ability to increase students' reading ages by three months. However, this is not the sole focus of a literacy programme. There is much more to literacy instruction and literacy education than remembering key facts and baseline details about a book in order to pass a quiz. This research proposes that the money a school plans to spend on AR is invested into a well-run, well stocked resource of reading material that focuses on the needs and wants of the students that it hopes to encourage to read. From this research it is clear, that it is beneficial for schools to regularly invest in quality books in

order to build dynamic and up-to-date reading material that get students excited. Remember, if students like the book they are reading, they say that they like to read. Without doubt, the sure way to turn students on to reading is to turn them on to books. This research has found that in order to achieve this, educators need to give students two things, two things that are completely free, a voice and time.

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APPENDICES

Appendix 1: Survey Monkey

Top of Form

1. Are you male or female?

- Male
- Female

2. I enjoy reading

- Yes
- No

3. I read

- Every day
- Every week
- Every month
- Sometimes
- Never

4. I read

- At Home
- In School
- Somewhere Else
- No Where

5. Every month I read

- 0
- 1
- 2
- 3
- 4
- 5+

6. Choosing a book is

- Very Easy
- Sometimes Easy
- Difficult
- Very Difficult

7. It takes me a long time to read a book

- Yes
- No

8. When I read by myself I understand

- Everything
- Almost Everything

- Some things
- Almost none of what I read
- None of what I read

9. Knowing how to read well is

- Very important
- Sort of important
- Important
- Not important

10. When asked to read aloud I feel

- Happy
- Okay
- Nervous

Appendix 2: Interview Questions

Control Group	Experiment Group
Do you enjoy reading?	**Same questions as Control group with the following added**
Why do you like/not like reading?	How did you choose which AR books to read?
Did you enjoy taking part in 'drop and read' each week in English class?	Is it easy or difficult to choose a book?
What did you like about 'drop and read'?	What do you like best about AR?
What did you not like about 'drop and read'?	What do you like least about AR?
If you could change anything about the 'drop and read' class what would it be?	If you could change one thing about AR what would it be?
Would you like to have a drop and read class next year?	Do you find the AR quizzes to be easy or hard?
How many books did you read this year?	Do you like taking the AR quizzes after reading a book?
How did you feel about the number of books you read?	Does your library have a good selection of AR books?
How did you choose a book to read?	Are their books you would like to read that are not included in your AR library?
Was it difficult or easy to choose a book?	Did you read any books that were not part of the AR library?
Do you read books at home?	Do you think all schools should use AR?
Do you buy books?	
Do you think your reading has improved in the past year?	
Do your parents know how many books you have read this year?	

Appendix 3: Plain Language Statement for Co-operating Teachers (Experiment Group)

This document contains an outline of the purpose of the research to which you are being invited to participate. Please read it carefully to ensure that you are completely aware of what the research is, what your involvement in it will be should you choose to participate, and how the information you provide will be used. In addition, you will be required to sign the 'Informed Consent' statement to verify your willingness to participate.

Please feel free to contact me at any stage if you have any questions, comments or concerns about your participation in this study (contact details below).

Title of the Research Study	Accelerated Reader: An approach to combatting literacy problems in second level schools
Introduction/Purpose of the Study	The objective of my research is to determine whether or not Accelerated Reader can increase students' reading ages and motivate students to read This study is being conducted for the purpose of a thesis to be submitted in partial fulfilment for the award of PhD at the Mater Dei Institute of Education, A College of Dublin City University.
What would be expected of you?	I propose conducting research with fifty first year pupils in your school over the course of one academic year. **Participating students in your class will be required to:** Complete Standard Testing and Reporting (STAR) Complete Standard Group Reading Tests (GRTII) at the end of the research period Take part in 30-35 minutes of in class scheduled reading per week Complete an AR generated quiz upon completion of an AR book Complete a survey at the beginning and end of the research period The researcher also seeks permission to provide each student with an online student profile. As part of AR students are issued with an online profile to complete STAR tests. Each student is issued with a computer generated username and password. The log in details are generated by the AR program **As the co-operating teacher you would be asked to** encourage your pupils to read and allow them one class per week for supervised silent reading. During the research, participants would be required to complete a survey and a reading comprehension test to determine attitude towards reading and reading ages. The researcher would also like to conduct interviews with a focus group of pupils. Each of these elements will be carried out by the researcher at a time that best suits you and your class. You would be required to stay with the class during tests, surveys and interviews for monitoring and

	supervision purposes. You are free to participate or not in this research study. If you choose to participate you may withdraw from the research study at any point.
Benefits of the Study	The study will enhance participants' interest in reading. The study will also monitor the reading progress and literacy development of participants. The scheduled reading class could be used as part of your department's literacy action plan for 2014/2015 subject planning purposes.
Potential Risks	There are no physical or psychological risks associated with this study.
Anonymity	Every effort will be made to protect your anonymity. Your name and those of any persons, places or groups of persons that you mention will not appear in the results of the study, so as to best protect the anonymity of all parties involved.
Confidentiality	Please note that all information supplied as part of your participation in this research is subject to the established legal limitations on confidentiality.
Results of the Study	The results of the study will appear in a thesis. Participants will be free to read the thesis at any stage once it is completed. The findings of the research will be presented by the researcher to your school's staff upon completion. As a student of MDI, a copy of my thesis may be kept in the MDI Library – which you are free to access. The data collected for this study will be destroyed upon completion of the thesis.
Contact Persons (Include Principal Investigator and Other Investigators),	Name: Tara Talbot Email: tara.talbot2@mail.dcu.ie Phone: 086-8986817 Teaching Council Number: 164721

Appendix 4: Plain Language Statement Template for Co-operating Teachers (Control Group)

This document contains an outline of the purpose of the research to which you are being invited to participate. Please read it carefully to ensure that you are completely aware of what the research is, what your involvement in it will be should you choose to participate, and how the information you provide will be used. In addition, you will be required to sign the 'Informed Consent' statement to verify your willingness to participate.

Please feel free to contact me at any stage if you have any questions, comments or concerns about your participation in this study (contact details below).

Title of the Research Study	Accelerated Reader: An approach to combating literacy problems in second level schools
Introduction/Purpose of the Study	The objective of my research is to determine whether or not Accelerated Reader can increase students' reading ages and motivate students to read This study is being conducted for the purpose of a thesis to be submitted in partial fulfilment for the award of PhD at the Mater Dei Institute of Education, A College of Dublin City University.
What would be expected of you?	I propose conducting research with fifty first year pupils in your school over the course of one academic year. **Participating students in your class will be required to:** Complete Standard Testing and Reporting (STAR) Complete Standard Group Reading Tests (GRTII) at the end of the research period Take part in 30-35 minutes of in class scheduled reading per week Complete a survey at the beginning and end of the research period The researcher also seeks permission to provide each student with an online student profile. As part of AR students are issued with an online profile to complete STAR tests. Each student is issued with a computer generated username and password. The log in details are generated by the AR program **As the co-operating teacher you would be asked to** encourage your pupils to read and allow them one class per week for supervised silent reading. During the research, participants would be required to complete a survey and a reading comprehension test to determine attitude towards reading and reading ages. The researcher would also like to conduct interviews with a focus group of pupils. Each of these elements will be carried out by the researcher at a time that best suits you and your class. You would be required to stay with the class during tests, surveys and interviews for monitoring and supervision purposes.

	You are free to participate or not in this research study. If you choose to participate you may withdraw from the research study at any point.
Benefits of the Study	The study will enhance participants' interest in reading. The study will also monitor the reading progress and literacy development of participants. The scheduled reading class could be used as part of your department's literacy action plan for 2014/2015 subject planning purposes.
Potential Risks	There are no physical or psychological risks associated with this study.
Anonymity	Every effort will be made to protect your anonymity. Your name and those of any persons, places or groups of persons that you mention will not appear in the results of the study, so as to best protect the anonymity of all parties involved.
Confidentiality	Please note that all information supplied as part of your participation in this research is subject to the established legal limitations on confidentiality.
Results of the Study	The results of the study will appear in a thesis. Participants will be free to read the thesis at any stage once it is completed. The findings of the research will be presented by the researcher to your school's staff upon completion. As a student of MDI, a copy of my thesis may be kept in the MDI Library – which you are free to access. The data collected for this study will be destroyed upon completion of the thesis.
Contact Persons (Include Principal Investigator and Other Investigators),	Name: Tara Talbot Email: tara.talbot2@mail.dcu.ie Phone: 086-8986817 Teaching Council Number: 164721

Appendix 5: Plain Language Statement Parent/Guardians (Experiment Group)

This document contains an outline of the purpose of the research to which your child is being invited to participate. Please read it carefully to ensure that you are completely aware of what the research is, what your involvement in it will be should you choose to participate, and how the information you provide will be used. In addition, you will be required to sign the 'Informed Consent' statement to verify your willingness to participate.

Please feel free to contact me at any stage if you have any questions, comments or concerns about your participation in this study (contact details below).

Title of the Research Study	Accelerated Reader: An approach to combatting literacy problems in second level schools
Introduction/Purpose of the Study	The objective of my research is to determine whether or not Accelerated Reader can increase students reading ages and motivate students to read. This study is being conducted for the purpose of a thesis to be submitted in partial fulfilment for the award of PhD at the Mater Dei Institute of Education, A College of Dublin City University.
What would be expected of you?	I propose conducting research with fifty first year pupils in your school over the course of one academic year. **Participating students will be required to:** Complete Standard Testing and Reporting (STAR) Complete Standard Group Reading Tests (GRTII) at the end of the research period Take part in 30-35 minutes of in class scheduled reading per week Complete an AR generated quiz upon completion of an AR book Complete a survey at the beginning and end of the research period The researcher would also like to conduct interviews with a focus group of pupils. If your child is selected for this element of the research your permission will be sought at a later date. The researcher also seeks permission to access your child's GRTII results as conducted by the school in September. Each of these elements will be carried out by the researcher at a time that best suits your school under the supervision of the co-operating teacher. The researcher also seeks permission to provide each student with an online student profile. As part of AR students are issued with an online profile to complete STAR tests. Each student is issued with a computer generated username and password. The log in details are generated by the AR program.

	You are free to consent or not to your child's participation in this research study. If you choose for your child to participate you may withdraw him/her from the research study at any point.
Benefits of the Study	The study will enhance participants' interest in reading. The study will also monitor the reading progress and literacy development of participants.
Potential Risks	There are no physical or psychological risks associated with this study.
Anonymity	Every effort will be made to protect your child's anonymity. His/her name and those of any persons, places or groups of persons that you mention will not appear in the results of the study, so as to best protect the anonymity of all parties involved.
Confidentiality	Please note that all information supplied as part of your participation in this research is subject to the established legal limitations on confidentiality.
Results of the Study	The results of the study will appear in a thesis. Participants will be free to read the thesis at any stage once it is completed. The findings of the research will be presented by the researcher to your school's staff upon completion. As a student of MDI, a copy of my thesis may be kept in the MDI Library – which you are free to access. The data collected for this study will be destroyed upon completion of the thesis.
Contact Persons (Include Principal Investigator and Other Investigators),	Name: Tara Talbot Email: tara.talbot2@mail.dcu.ie Phone: 086-8986817 Teaching Council Number: 164721

Appendix 6: Plain Language Statement Parent/Guardians (Control Group)

This document contains an outline of the purpose of the research to which your child is being invited to participate. Please read it carefully to ensure that you are completely aware of what the research is, what your involvement in it will be should you choose to participate, and how the information you provide will be used. In addition, you will be required to sign the 'Informed Consent' statement to verify your willingness to participate.

Please feel free to contact me at any stage if you have any questions, comments or concerns about your participation in this study (contact details below).

Title of the Research Study	Accelerated Reader: An approach to combatting literacy problems in second level schools
Introduction/Purpose of the Study	The objective of my research is to determine whether or not Accelerated Reader can increase students reading ages and motivate students to read. This study is being conducted for the purpose of a thesis to be submitted in partial fulfilment for the award of PhD at the Mater Dei Institute of Education, A College of Dublin City University.
What would be expected of you?	I propose conducting research with fifty first year pupils in your school over the course of one academic year. **Participating students will be required to**: Complete Standard Testing and Reporting (STAR) Complete Standard Group Reading Tests (GRTII) at the end of the research period Take part in 30-35 minutes of in class scheduled reading per week Complete a survey at the beginning and end of the research period The researcher would also like to conduct interviews with a focus group of pupils. If your child is selected for this element of the research your permission will be sought at a later date. The researcher also seeks permission to access your child's GRTII results as conducted by the school in September. The researcher also seeks permission to provide each student with an online student profile. As part of AR students are issued with an online profile to complete STAR tests. Each student is issued with a computer generated username and password. The log in details are generated by the AR program Each of these elements will be carried out by the researcher at a time that best suits your school under the supervision of the co-operating teacher.

	You are free to consent or not to your child's participation in this research study. If you choose for your child to participate you may withdraw him/her from the research study at any point.
Benefits of the Study	The study will enhance participants' interest in reading. The study will also monitor the reading progress and literacy development of participants.
Potential Risks	There are no physical or psychological risks associated with this study.
Anonymity	Every effort will be made to protect your child's anonymity. His/her name and those of any persons, places or groups of persons that you mention will not appear in the results of the study, so as to best protect the anonymity of all parties involved.
Confidentiality	Please note that all information supplied as part of your participation in this research is subject to the established legal limitations on confidentiality.
Results of the Study	The results of the study will appear in a thesis. Participants will be free to read the thesis at any stage once it is completed. The findings of the research will be presented by the researcher to your school's staff upon completion. As a student of MDI, a copy of my thesis may be kept in the MDI Library – which you are free to access. The data collected for this study will be destroyed upon completion of the thesis.
Contact Persons (Include Principal Investigator and Other Investigators),	Name: Tara Talbot Email: tara.talbot2@mail.dcu.ie Phone: 086-8986817 Teaching Council Number: 164721

Appendix 7: Plain Language Statement Template for Principal (Experiment Group)

This document contains an outline of the purpose of the research to which your school is being invited to participate. Please read it carefully to ensure that you are completely aware of what the research is, what your involvement in it will be should you choose to participate, and how the information you provide will be used. In addition, you will be required to sign the 'Informed Consent' statement to verify your willingness to participate.

Please feel free to contact me at any stage if you have any questions, comments or concerns about your participation in this study (contact details below).

Title of the Research Study	Accelerated Reader: An approach to combating literacy problems in second level schools
Introduction/Purpose of the Study	The objective of my research is to determine whether or not Accelerated Reader can increase students' reading ages and motivate students to read This study is being conducted for the purpose of a thesis to be submitted in partial fulfilment for the award of PhD at the Mater Dei Institute of Education, A College of Dublin City University.
What would be expected of you?	I propose conducting research with fifty first year pupils in your school over the course of one academic year. **Participating students in your class will be required to:** Complete Standard Testing and Reporting (STAR) – conducted by researcher Complete Standard Group Reading Tests (GRTII) at the end of the research period – conducted by researcher Take part in 30-35 minutes of in class scheduled reading per week – monitored by co-operating teacher Complete an AR generated quiz upon completion of an AR book Complete a survey at the beginning and end of the research period – conducted by researcher. The researcher would also like to conduct interviews with a focus group of pupils. If your child is selected for this element of the research your permission will be sought at a later date. The researcher seeks permission to access GRTII results conducted by your school at the start of the academic year. The researcher also seeks permission to provide each student with an online student profile. As part of AR students are issued with an online profile to complete STAR tests. Each student is issued with a computer generated username and password. The log in details are generated by the AR program You are free to participate or not in this research study. If you choose to participate you may withdraw from the research study at any point.

Benefits of the Study	The study will enhance participants' interest in reading. The study will also monitor the reading progress and literacy development of participants. The scheduled reading class could be used as part of your school's literacy action plan for 2014/2015 subject planning purposes.
Potential Risks	There are no physical or psychological risks associated with this study.
Anonymity	Every effort will be made to protect your anonymity. Your name and those of any persons, places or groups of persons that you mention will not appear in the results of the study, so as to best protect the anonymity of all parties involved.
Confidentiality	Please note that all information supplied as part of your participation in this research is subject to the established legal limitations on confidentiality.
Results of the Study	The results of the study will appear in a thesis. Participants will be free to read the thesis at any stage once it is completed. The findings of the research will be presented by the researcher to your school's staff upon completion. As a student of MDI, a copy of my thesis may be kept in the MDI Library – which you are free to access. The data collected for this study will be destroyed upon completion of the thesis.
Contact Persons (Include Principal Investigator and Other Investigators),	Name: Tara Talbot Email: tara.talbot2@mail.dcu.ie Phone: 086-8986817 Teaching Council Number: 164721

Appendix 8: Plain Language Statement Template for Principal (Control Group)

This document contains an outline of the purpose of the research to which your school is being invited to participate. Please read it carefully to ensure that you are completely aware of what the research is, what your involvement in it will be should you choose to participate, and how the information you provide will be used. In addition, you will be required to sign the 'Informed Consent' statement to verify your willingness to participate.

Please feel free to contact me at any stage if you have any questions, comments or concerns about your participation in this study (contact details below).

Title of the Research Study	Accelerated Reader: An approach to combating literacy problems in second level schools
Introduction/Purpose of the Study	The objective of my research is to determine whether or not Accelerated Reader can increase students' reading ages and motivate students to read This study is being conducted for the purpose of a thesis to be submitted in partial fulfilment for the award of PhD at the Mater Dei Institute of Education, A College of Dublin City University.
What would be expected of you?	I propose conducting research with fifty first year pupils in your school over the course of one academic year. **Participating students in your class will be required to:** Complete Standard Testing and Reporting (STAR) – conducted by researcher Complete Standard Group Reading Tests (GRTII) at the end of the research period – conducted by researcher Take part in 30-35 minutes of in class scheduled reading per week – monitored by co-operating teacher Complete a survey at the beginning and end of the research period – conducted by researcher. The researcher seeks permission to access GRTII results conducted by your school at the start of the academic year. The researcher would also like to conduct interviews with a focus group of pupils. If your child is selected for this element of the research your permission will be sought at a later date. The researcher also seeks permission to provide each student with an online student profile. As part of AR students are issued with an online profile to complete STAR tests. Each student is issued with a computer generated username and password. The log in details are generated by the AR program You are free to participate or not in this research study. If you choose to participate you may withdraw from the research study at any point.
Benefits of the Study	The study will enhance participants' interest in reading. The study will also monitor the reading progress and literacy

	development of participants. The scheduled reading class could be used as part of your school's literacy action plan for 2014/2015 subject planning purposes.
Potential Risks	There are no physical or psychological risks associated with this study.
Anonymity	Every effort will be made to protect your anonymity. Your name and those of any persons, places or groups of persons that you mention will not appear in the results of the study, so as to best protect the anonymity of all parties involved.
Confidentiality	Please note that all information supplied as part of your participation in this research is subject to the established legal limitations on confidentiality.
Results of the Study	The results of the study will appear in a thesis. Participants will be free to read the thesis at any stage once it is completed. The findings of the research will be presented by the researcher to your school's staff upon completion. As a student of MDI, a copy of my thesis may be kept in the MDI Library – which you are free to access. The data collected for this study will be destroyed upon completion of the thesis.
Contact Persons (Include Principal Investigator and Other Investigators),	Name: Tara Talbot Email: tara.talbot2@mail.dcu.ie Phone: 086-8986817 Teaching Council Number: 164721

Appendix 9: Plain Language Statement Students (Control Group)

This document contains an outline of the purpose of the research to which you are invited to participate. Please read it carefully to ensure that you are completely aware of what the research is, what your involvement in it will be should you choose to participate, and how the information you provide will be used. In addition, you will be required to sign the 'Informed Consent' statement to verify your willingness to participate.

Please feel free to contact me at any stage if you have any questions, comments or concerns about your participation in this study (contact details below).

Title of the Research Study	Accelerated Reader: An approach to combatting literacy problems in second level schools
Introduction/Purpose of the Study	The objective of my research is to determine whether or not Accelerated Reader can increase students reading ages and motivate students to read. This study is being conducted for the purpose of a thesis to be submitted in partial fulfilment for the award of PhD at the Mater Dei Institute of Education, A College of Dublin City University.
What would be expected of you?	I propose conducting research with fifty first year pupils in your school over the course of one academic year. **Participating students will be required to**: Complete Standard Testing and Reporting (STAR) Complete Standard Group Reading Tests (GRTII) at the end of the research period Take part in 30-35 minutes of in class scheduled reading per week Complete a survey at the beginning and end of the research period The researcher would also like to conduct interviews with a focus group of pupils. If you are selected for this element of the research your permission will be sought at a later date. The researcher also seeks permission to access your GRTII results as conducted by the school in September. The researcher also seeks permission to provide you with an online student profile. As part of AR students are issued with an online profile to complete STAR tests. Each student is issued with a computer generated username and password. The log in details are generated by the AR program Each of these elements will be carried out by the researcher at a time that best suits your school under the supervision of the co-operating teacher.

	You are free to participate or not in this research study. If you choose to participate you may withdraw him/her from the research study at any point.
Benefits of the Study	The study will enhance participants' interest in reading. The study will also monitor the reading progress and literacy development of participants.
Potential Risks	There are no physical or psychological risks associated with this study.
Anonymity	Every effort will be made to protect your anonymity. Your name and those of any persons, places or groups of persons that you mention will not appear in the results of the study, so as to best protect the anonymity of all parties involved.
Confidentiality	Please note that all information supplied as part of your participation in this research is subject to the established legal limitations on confidentiality.
Results of the Study	The results of the study will appear in a thesis. Participants will be free to read the thesis at any stage once it is completed. The findings of the research will be presented by the researcher to your school's staff upon completion. As a student of MDI, a copy of my thesis may be kept in the MDI Library – which you are free to access. The data collected for this study will be destroyed upon completion of the thesis.
Contact Persons (Include Principal Investigator and Other Investigators),	Name: Tara Talbot Email: tara.talbot2@mail.dcu.ie Phone: 086-8986817 Teaching Council Number: 164721

Appendix 10: Plain Language Statement Students (Experiment Group)

This document contains an outline of the purpose of the research to which you are invited to participate. Please read it carefully to ensure that you are completely aware of what the research is, what your involvement in it will be should you choose to participate, and how the information you provide will be used. In addition, you will be required to sign the 'Informed Consent' statement to verify your willingness to participate.
Please feel free to contact me at any stage if you have any questions, comments or concerns about your participation in this study (contact details below).

Title of the Research Study	Accelerated Reader: An approach to combatting literacy problems in second level schools
Introduction/Purpose of the Study	The objective of my research is to determine whether or not Accelerated Reader can increase students reading ages and motivate students to read. This study is being conducted for the purpose of a thesis to be submitted in partial fulfilment for the award of PhD at the Mater Dei Institute of Education, A College of Dublin City University.
What would be expected of you?	I propose conducting research with fifty first year pupils in your school over the course of one academic year. **Participating students will be required to:** Complete Standard Testing and Reporting (STAR) Complete Standard Group Reading Tests (GRTII) at the end of the research period Take part in 30-35 minutes of in class scheduled reading per week Complete an AR generated quiz upon completion of an AR book Complete a survey at the beginning and end of the research period The researcher would also like to conduct interviews with a focus group of pupils. If you are selected for this element of the research your permission will be sought at a later date. The researcher also seeks permission to access your GRTII results as conducted by the school in September. Each of these elements will be carried out by the researcher at a time that best suits your school under the supervision of the co-operating teacher. The researcher also seeks permission to provide you with an online student profile. As part of AR students are issued with an online profile to complete STAR tests. Each student is issued with a computer generated username and password. The log in details are generated by the AR program.

	You are free to participle or not in this research study. If you choose to participate you may withdraw from the research study at any point.
Benefits of the Study	The study will enhance participants' interest in reading. The study will also monitor the reading progress and literacy development of participants.
Potential Risks	There are no physical or psychological risks associated with this study.
Anonymity	Every effort will be made to protect your child's anonymity. His/her name and those of any persons, places or groups of persons that you mention will not appear in the results of the study, so as to best protect the anonymity of all parties involved.
Confidentiality	Please note that all information supplied as part of your participation in this research is subject to the established legal limitations on confidentiality.
Results of the Study	The results of the study will appear in a thesis. Participants will be free to read the thesis at any stage once it is completed. The findings of the research will be presented by the researcher to your school's staff upon completion. As a student of MDI, a copy of my thesis may be kept in the MDI Library – which you are free to access. The data collected for this study will be destroyed upon completion of the thesis.
Contact Persons (Include Principal Investigator and Other Investigators),	Name: Tara Talbot Email: tara.talbot2@mail.dcu.ie Phone: 086-8986817 Teaching Council Number: 164721

Appendix 11: Informed Consent Form (Experiment Group)

Mater Dei Institute of Education
Research Ethics Committee

Informed Consent Form (Experiment Group)

Research Study Title	Accelerated Reader: An approach to combatting literacy problems in second level schools
School / Department	Education
Principal investigator	Tara Talbot
Other investigators	N/A
Statement of the Purpose of the Research	To determine whether or not Accelerated Reader can increase students' reading ages and motivate students to read.
Statement of Participation Activities	Complete Standard Testing and Reporting (STAR) – conducted by researcher Complete Standard Group Reading Tests (GRTII) at the end of the research period. Take part in 30-35 minutes of in class scheduled reading per week Complete an AR generated quiz upon completion of an AR book Complete a survey at the beginning and end of the research period – The researcher would also like to conduct interviews with a focus group of pupils. If your child is selected for this element of the research your permission will be sought at a later date.
Other Relevant Details	The researcher seeks permission to access GRTII results conducted by your school at the start of the academic year. The researcher also seeks permission to conduct a GRTII test at the end of the data collection period. GRTII is a reading comprehension test that takes 30 minutes to administer. The researcher also seeks permission to provide each student with an online student profile. As part of AR students are issued with an online profile to complete STAR tests. Each student is issued with a computer generated username and password. The log in details are generated by the AR program

Statement of Informed Consent

Name of Intended Participant	
Address (optional)	
Name of parent or legal guardian (if under 18 years of age)	
Declaration of informed consent	*I have read the **Plain Language Statement** and I have been made fully aware of the implications of participation in the above named research project.* *I agree to take part in the above named research study.* **Signature** **Date** **Witness**

Appendix 12: Student Informed Consent Form (Control Group)

Mater Dei Institute of Education
Research Ethics Committee

Student Informed Consent Form (Control Group)

Research Study Title	Accelerated Reader: An approach to combatting literacy problems in second level schools
School / Department	Education
Principal investigator	Tara Talbot
Other investigators	N/A
Statement of the Purpose of the Research	To determine whether or not Accelerated Reader can increase students' reading ages and motivate students to read.
Statement of Participation Activities	Complete Standard Testing and Reporting (STAR) – conducted by researcher Complete Standard Group Reading Tests (GRTII) at the end of the research period. Take part in 30-35 minutes of in class scheduled reading per week Complete a survey at the beginning and end of the research period – The researcher would also like to conduct interviews with a focus group of pupils. If you are selected for this element of the research your permission will be sought at a later date.
Other Relevant Details	The researcher seeks permission to access GRTII results conducted by your school at the start of the academic year. The researcher also seeks permission to conduct a GRTII test at the end of the data collection period. GRTII is a reading comprehension test that takes 30 minutes to administer. The researcher also seeks permission to provide each student with an online student profile. As part of AR students are issued with an online profile to complete STAR tests. Each student is issued with a computer generated username and password. The log in details are generated by the AR program

Statement of Informed Consent

Name of Intended Participant	
Address (optional)	
Name of parent or legal guardian (if under 18 years of age)	

Declaration of informed consent	*I have read the **Plain Language Statement** and I have been made fully aware of the implications of participation in the above named research project.* *I agree to take part in the above named research study.* **Signature** **Date** **Witness**

Appendix 13: Student Informed Consent From (Experiment Group)

Mater Dei Institute of Education
Research Ethics Committee

Student Informed Consent Form (Experiment Group)

Research Study Title	Accelerated Reader: An approach to combatting literacy problems in second level schools
School / Department	Education
Principal investigator	Tara Talbot
Other investigators	N/A
Statement of the Purpose of the Research	To determine whether or not Accelerated Reader can increase students' reading ages and motivate students to read.
Statement of Participation Activities	Complete Standard Testing and Reporting (STAR) – conducted by researcher Complete Standard Group Reading Tests (GRTII) at the end of the research period. Take part in 30-35 minutes of in class scheduled reading per week Complete an AR generated quiz upon completion of an AR book Complete a survey at the beginning and end of the research period – The researcher would also like to conduct interviews with a focus group of pupils. If you are selected for this element of the research your permission will be sought at a later date.
Other Relevant Details	The researcher seeks permission to access GRTII results conducted by your school at the start of the academic year. The researcher also seeks permission to conduct a GRTII test at the end of the data collection period. GRTII is a reading comprehension test that takes 30 minutes to administer. The researcher also seeks permission to provide each student with an online student profile. As part of AR students are issued with an online profile to complete STAR tests. Each student is issued with a computer generated username and password. The log in details are generated by the AR program

Statement of Informed Consent

Name of Intended Participant	
Address (optional)	
Name of parent or legal guardian (if under 18 years of age)	
Declaration of informed consent	*I have read the **Plain Language Statement** and I have been made fully aware of the implications of participation in the above named research project.* *I agree to take part in the above named research study.* **Signature** **Date** **Witness**

Appendix 14: Informed Consent Form (Control Group)

Mater Dei Institute of Education
Research Ethics Committee
Informed Consent Form (Control Group)

Research Study Title	Accelerated Reader: An approach to combatting literacy problems in second level schools
School / Department	Education
Principal investigator	Tara Talbot
Other investigators	N/A
Statement of the Purpose of the Research	To determine whether or not Accelerated Reader can increase students' reading ages and motivate students to read.
Statement of Participation Activities	Complete Standard Testing and Reporting (STAR) – conducted by researcher Complete Standard Group Reading Tests (GRTII) at the end of the research period. Take part in 30-35 minutes of in class scheduled reading per week Complete a survey at the beginning and end of the research period – The researcher would also like to conduct interviews with a focus group of pupils. If your child is selected for this element of the research your permission will be sought at a later date.
Other Relevant Details	The researcher seeks permission to access GRTII results conducted by your school at the start of the academic year. The researcher also seeks permission to conduct a GRTII test at the end of the data collection period. GRTII is a reading comprehension test that takes 30 minutes to administer. The researcher also seeks permission to provide each student with an online student profile. As part of AR students are issued with an online profile to complete STAR tests. Each student is issued with a computer generated username and password. The log in details are generated by the AR program

Statement of Informed Consent

Name of Intended Participant	
Address (optional)	
Name of parent or legal guardian (if under 18 years of age)	
Declaration of informed consent	*I have read the **Plain Language Statement** and I have been made fully aware of the implications of participation in the above named research project.* *I agree to take part in the above named research study.* **Signature** **Date** **Witness**

Page Break

Appendix 15: Letter to Co-operating Teacher

Annaghmore,
Kinnitty,
Co - Offaly.

Dear English Teacher,

My Name is Tara Talbot. I am a post primary English teacher in Tipperary. I am also currently engaged in doctoral research with Mater Dei Institute of Education, Drumcondra, Dublin. I am undertaking research regarding the literacy development of young people. My research will examine IT programs that claim to enhance literacy levels. The research will focus on the reading management program, Accelerated Reader.

What is Accelerated Reader?

Accelerated Reader (AR) is an American designed reading management software program that was introduced to the market in 1986. It is the most widely used reading management software in the world today and boasts of being purchased by more than 70,000 schools worldwide.

There are three core steps involved in the AR program.

The objectives of my research are to determine whether or not Accelerated Reader can increase students reading ages and motivate students to read.

In order to achieve these objectives I propose conducting research with fifty first year students from your school over the course of one academic year. Please see the attached **Plain Language Statement** for the details of the research.

Should you have any questions please do not hesitate to contact me for more information.

Yours Faithfully,

_____

Tara Talbot
Phone: 086-8986817
Email: tara.talbot2@mail.dcu.ie

Appendix 16: Letter to the Principal/Board of Management

Annaghmore,
Kinnitty,
Co - Offaly.

Dear Principal,

My Name is Tara Talbot. I am a post primary English teacher in Tipperary. I am also currently engaged in doctoral research with Mater Dei Institute of Education, Drumcondra, Dublin. I am undertaking research regarding the literacy development of young people. My research will examine IT programs that claim to enhance literacy levels. The research will focus on the reading management program, Accelerated Reader.

What is Accelerated Reader?
Accelerated Reader (AR) is an American designed reading management software program that was introduced to the market in 1986. It is the most widely used reading management software in the world today and boasts of being purchased by more than 70,000 schools worldwide.

There are three core steps involved in the AR program.

As part of AR students are issued with an online profile to complete STAR tests. Each student is issued with a computer generated username and password. The log in details are generated by the AR program

The objectives of my research are to determine whether or not Accelerated Reader can increase students reading ages and motivate students to read.
It is not necessary for your school to purchase AR to take part in the research.

In order to achieve these objectives I propose conducting research with fifty first year students in your school over the course of one academic year. Please see the attached **Plain Language Statement** for the details of the research.

Should you have any questions please do not hesitate to contact me for more information.

Yours Faithfully,

_____

Tara Talbot
Phone: 086-8986817
Email : tara.talbot2@mail.dcu.ie

Appendix 17: Letter to Parents/Guardians

Annaghmore,
Kinnitty,
Co - Offaly.

Dear Parent/Guardian,

My Name is Tara Talbot. I am a post primary English teacher in Tipperary. I am also currently engaged in doctoral research with Mater Dei Institute of Education, Drumcondra, Dublin. I am undertaking research regarding the literacy development of young people. My research will examine IT programs that claim to enhance literacy levels. The research will focus on the reading management program, Accelerated Reader.

What is Accelerated Reader?
Accelerated Reader (AR) is an American designed reading management software program that was introduced to the market in 1986. It is the most widely used reading management software in the world today and boasts of being purchased by more than 70,000 schools worldwide.

There are three core steps involved in the AR program.

Should you have any questions please do not hesitate to contact me for more information.

Yours Faithfully,

_____
Tara Talbot
Phone: 086-8986817
Email: tara.talbot2@mail.dcu.ie

Appendix 18: Statement of Consent for Survey

Title of Research: Accelerated Reader: An approach to combatting literacy problems in second level schools

Name of Researcher/Investigator: Tara Talbot

Purpose of Questionnaire: To determine participant's attitude towards reading

You are invited to participate in a research study about your reading habits and your attitude towards reading. Your completion and submission of this questionnaire demonstrates your voluntary consent to take part in this research. You are free to withdraw from completing the questionnaire at any time and you may omit any question you prefer not answer. The questionnaire is anonymous.

If you would like to be informed of the results when the study is completed, please feel free to contact Tara Talbot on tara.talbot2@mail.dcu.ie

Your completion of this questionnaire confirms you understand the purpose of this study and your free consent to participate in the study.

Thank you for your participation

Tara Talbot

Appendix 19: Statement of Consent for Standard Testing and Reporting (STAR)

Title of Research: Accelerated Reader: An approach to combatting literacy problems in second level schools

Name of Researcher/Investigator: Tara Talbot

Purpose of STAR: To determine participant's reading standard

You are invited to participate in a reading test. Your completion and submission of this STAR test demonstrates your voluntary consent to take part in this research. You are free to withdraw from completing the test at any time and you may omit any question you prefer not answer. The test results will remain anonymous.

If you would like to be informed of the results when the study is completed, please feel free to contact Tara Talbot on tara.talbot2@mail.dcu.ie

Your completion of this STAR test confirms you understand the purpose of this study and your free consent to participate in the study.

Thank you for your participation

Tara Talbot

Appendix 20: Statement of Consent For 'DROP AND READ' Time

Title of Research: Accelerated Reader: An approach to combatting literacy problems in second level schools

Name of Researcher/Investigator: Tara Talbot

Purpose of 'Drop and Read': 'Drop and Read' is 30-35 minutes of scheduled silent reading. This time is designed to give you time to practice your reading and hopefully improve your reading skills.

You are invited to participate in one reading class per week as scheduled by your class teacher. Your completion and submission of this reading time demonstrates your voluntary consent to take part in this research. You are free to withdraw from the 'drop and read' at any time. Such withdrawal with automatically withdraw you from the overall research.

If you would like to be informed of the results when the study is completed, please feel free to contact Tara Talbot on tara.talbot2@mail.dcu.ie

Your completion of this 'drop and read' time confirms you understand the purpose of this study and your free consent to participate in the study.

Please sign here to confirm your willingness to participate

_____

Thank you for your participation

Tara Talbot

Appendix 21: Statement of Consent for AR quizzes

Title of Research: Accelerated Reader: An approach to combatting literacy problems in second level schools

Name of Researcher/Investigator: Tara Talbot

Purpose of AR quizzes: To determine knowledge of a book upon completion

You are invited to participate in AR generated quizzes to determine your knowledge of a specific book upon completion. Your completion and submission of AR quizzes demonstrates your voluntary consent to take part in this research. You are free to withdraw from completing the test at any time and you may omit any question you prefer not answer. The test results will remain anonymous.

If you would like to be informed of the results when the study is completed, please feel free to contact Tara Talbot on tara.talbot2@mail.dcu.ie

Your completion of this AR quizzes confirms you understand the purpose of this study and your free consent to participate in the study.

Thank you for your participation

Tara Talbot

Appendix 22: Email Confirmation of Ethics Approval

MDI REC Reference: MDIREC201305-Application for Interviews

Proposal Title: Accelerated Reader: An approach to combatting literacy problems in second level schools.

Applicants: Dr. Elaine McDonald, Dr. Sabrina Fitzsimons, Ms Tara Talbot

Dear Elaine, Sabrina and Tara

The MDI Research Ethics Committee has reviewed your application for interviews, received 21.04.2015 (with amendments 11.05.2015). The MDI REC approves this research proposal.

All the very best with your project.

Yours sincerely

_____

Dr Alan J. Kearns
Chair