

**An Investigation into Teachers' views on Effective Teaching Strategies for
Nutrition Education in a DEIS band 1 context.**

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Professional Master of Education Programme.

By

Niamh Kelly

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Supervisor: Mairéad Minnock

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Declaration

I hereby certify that this material, which I now submit for assessment on the programme leading to the award of the degree of Professional Master of Education, is entirely my own work and has not been taken from the work of others, save to the extent that such work has been cited and acknowledged within the text of my work. I further declare that this dissertation has not been submitted as an exercise for a degree at this Institute and any other Institution or University. I agree that the Marino Institute of Education library may lend or copy the thesis, in hard or soft copy, upon request.

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Abstract

The prevalence of childhood obesity has increased significantly worldwide over the past three decades, with over one in four Irish children identified as being overweight or obese at present. There is a known higher prevalence of childhood obesity in areas of economic disadvantage. Nutrition Education (NE) from an early age can equip the child with the appropriate knowledge needed for them to make well-informed decisions relating to food and nutrition. Teachers have a significant role to play in the provision of NE, especially in low income areas where children may not receive this at home. The aim of this research was to investigate teachers' views on effective teaching strategies for nutrition education in a DEIS band 1 context. The research design used was a qualitative method. The researcher completed a total of nine interviews with an array of teachers from different class levels in a DEIS band 1 school.

The present study found that almost one half of the teachers were unaware of the recent statistics indicating the prevalence of childhood obesity in Ireland, however identified obesity as a problem in their school. Teachers identified child-centred, active methodologies as effective strategies for NE implementation, across all class levels. This research discovered that the main barriers to effective NE implementation were lack of time, lack of concrete resources and lack of parental involvement when it comes to implementing NE in practice. Further research similar to this study should be conducted on a larger scale in order to pinpoint exactly how best to implement nutrition education in the current climate of growing childhood obesity prevalence.

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List of Abbreviations

| | |
|---------|--|
| BMI | Body Mass Index |
| COSI | Childhood Obesity Surveillance Initiative |
| DEIS | Delivering Equality of Opportunity in Schools |
| DES | Department of Education and Skills |
| DOH | Department of Health |
| ENF | European Nutrition Foundations |
| GUI | Growing up in Ireland |
| HI | Healthy Ireland |
| ITE | Initial Teacher Education |
| IUNA | Irish Universities Nutrition Alliance |
| NCCA | National Council for Curriculum and Assessment |
| NE | Nutrition Education |
| NHES | National Health and Education Standards |
| SCOTENS | Standing Conference on Teacher Education North and South |
| SES | Socio-economic Status |
| SPHE | Social Personal and Health Education |
| USA | United State of America |
| WHO | World Health Organisation |

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Chapter 1: Introduction

This study aims to investigate teachers' views on effective teaching strategies for Nutrition Education (NE) in a DEIS band 1 context. The research was conducted using a qualitative method of data collection, with a total of nine interviews being conducted with teachers in an urban DEIS band 1 school in Co. Cavan. A purposive sampling approach was used as participants were chosen to represent a variety of class levels, to allow comparison of results.

Background to the Study

The prevalence of Childhood Obesity has increased significantly worldwide over the past three decades, especially in North America and Western Europe (Wang & Lobstein, 2006). In 2009, the Growing up in Ireland (GUI) study found that one in four nine-year olds were either overweight or obese (Layte & McCrory, 2011). As childhood obesity poses a significant risk to health, it is imperative that we address this issue immediately. NE from an early age can equip the child with the appropriate knowledge needed for them to make well-informed decisions about their health. NE is defined "as any combination of educational strategies, accompanied by environmental supports, designed to facilitate voluntary adoption of food choices and other food and nutrition- related behaviours conducive to health and well-being" (Contento, 2008, p. 176). For the purposes of this dissertation, the researcher will discuss NE in terms of the school-based educational strategies used to promote healthy eating in a DEIS band 1 context.

Latest results from the Childhood Obesity Surveillance Initiative (COSI) in Ireland show that children attending DEIS schools tend to have higher levels of obesity, and this gap becomes wider as children get older (Bel-Serrat et al., 2017) . As children spend a significant amount of their time in school the school context is identified as a key setting for health promotion. Teachers play a significant role in health and wellbeing education with Social

Personal and Health Education (SPHE) recognised as a key curricular area. It is evident from the COSI research that the area of NE in primary schools is an important concept that should be investigated in terms of effective strategies, given the significance of the current global obesity epidemic. As there is a paucity of research concerning NE in low income areas, this paper will focus on disadvantaged schools as the basis for this research.

Research Questions

The purpose of this study is primarily to investigate teachers' views on effective teaching strategies for NE in a DEIS band 1 context. To further explore this concept this paper will:

- Elicit teacher's understanding of the importance of NE in the current climate of the obesity epidemic, and in doing so elicit knowledge about the definition, causes and consequences of CO.
- Assess current practices in relation to NE in schools and explore teachers' attitudes in relation to same.
- Analyse the alternative approaches used when teaching NE across different class levels.
- Identify any facilitators and barriers to the teaching of NE in schools.

The primary research question and sub-questions listed above were used as a guide to develop a semi-structured interview schedule which was used in the data gathering phase of this research. The purpose of the interviews was to ascertain teachers' views, opinions and experiences regarding NE in a DEIS band 1 context.

Rationale for the Study

Given my background in the field of human nutrition and dietetics, this was an area that I wanted to investigate for my dissertation. I chose to investigate practices in a DEIS school context as this is where many of the issues relating to overweight and obesity are most

prevalent (Bel-Serrat et al., 2017). The health of children is of paramount importance and as a student teacher I aspire to help children develop not only academically but holistically as individuals. In completing this study, I hope to gain a deeper insight into the optimal strategies that we as teachers can use to teach NE to ensure children are fully confident and competent in making well-informed health related decisions. I hope to discuss the implications of the findings in an educational context and make recommendations that will help address issues highlighted by the findings of the study.

Organisation of the Study

This dissertation consists of six chapters. The current chapter provides the context and rationale for the proposed study and presents the research questions to the reader. Chapter Two will provide a critical review of pertinent literature around the research topic. Chapter Three will outline the research methodology that was used in this study. Chapter four will discuss and analyse the findings with reference to relevant literature. Finally, Chapter Five will conclude the dissertation where a summary of the findings will be shared, and recommendations resulting from this research will be made.

Chapter 2: Literature Review

Introduction

This literature review will critically discuss the following topics: the causes and consequences of CO, the school as a context for NE, the current nutrition initiatives from an international and national perspective and the role of the teacher in NE. Obesity is a complex issue caused by a combination of individual and environmental factors (Dehghan, Akhtar-Danesh, & Merchant, 2005; Lobstein, Baur, & Uauy, 2004). Diet and exercise have a pertinent role to play in its aetiology. Research has identified that food habits during infancy can influence food preferences and nutritional practices in later life (Neumark-Sztainer, Wall, Larson, Eisenberg, & Loth, 2011; Nicklaus & Remy, 2013). It is therefore essential to establish effective strategies for nutritional education in order to equip children with the appropriate knowledge for making health related decisions.

Background of Childhood Obesity

Childhood Obesity is defined as an excessive or abnormal fat accumulation which poses a risk to health (World Health Organisation, 2018). Body mass index (BMI) is used to indirectly measure obesity in the population (Australian Institute of Health and Welfare, 2014). BMI provides a generally accepted measure of the level of fatty tissue in the body, as higher weight-for-height is an indicator of increased fat mass (Layte & McCrory, 2011). The World Health Organisation (WHO) defines being overweight as having a “BMI-for-age greater than 1 standard deviation above the WHO Growth Reference median” and obesity as having a “BMI-for-age greater than 2 standard deviations above the WHO Growth Reference median” (World Health Organisation, 2018). The WHO identifies overweight and obesity as a global epidemic, with 340 million children and adolescents aged between 5-19 years identified as being overweight or obese in 2016 (World Health Organisation, 2018).

From a national perspective, the 2009 Growing up in Ireland study found that almost a quarter of nine-year olds are defined as overweight or obese, reporting “a total of 75% of nine-year-olds in GUI were defined as being of healthy BMI, 19% were overweight and 7% obese” (Layte & McCrory, 2011, p.14). A recent systematic review conducted by Keane, Kearney, Perry, Kelleher, & Harrington (2014) showed that the combined prevalence of overweight and obesity in Irish primary school-aged children ranged from 20-34%. Research conducted by Perry, Whelton, Harrington, & Cousins (2009, p. 262) identified a 65% increase in the average weight of children between 1948 and 2002 across all age groups, concluding that the results provide us with “stark and compelling evidence on the evolution of the obesity epidemic in Irish children in tandem with the increase in economic prosperity”. While the prevalence of overweight and obesity remains high in Ireland, there is some evidence to suggest that rates may now be plateauing (Heinen et al., 2016a; Heinen et al., 2014). However, it is important to note that this stabilising trend cannot be extrapolated to populations across all socioeconomic backgrounds (O’Dea & Dibley, 2010; Rokholm, Baker, & Sørensen, 2010). In their systematic review investigating a possible levelling off trend in obesity, Rokholm, Baker and Sorensen contend that “the levelling off was less evident in the lower-SES groups” (Rokholm et al., 2010, p. 835).

Causes and Consequences of Childhood Obesity

Obesity is multifactorial in origin, but diet and physical activity have a significant role to play in its aetiology (Share & Strain, 2008). In essence, obesity arises due to a prolonged state of imbalance between energy intake and energy expenditure (Reilly, Ness, & Sherriff, 2007). Davison et al describe an ecological model which proposes that childhood risk factors for obesity include diet, physical activity and sedentary behaviour (Davison & Birch, 2001). The three aspects of this ecological model can be tackled through effective nutrition and physical education in the primary school setting. As well as these modifiable risk factors

there are more complex issues which determine one's risk of becoming obese; these include their genetic composition, socioeconomic background and family characteristics (Anderson & Butcher, 2006; Bel-Serrat et al., 2017; Moens, Braet, Bosmans, & Rosseel, 2009).

Effective NE strategies can help support children and their families to make positive health related decisions to enhance their quality of life.

In developed countries, obesity is viewed as a condition that is more prevalent in people of lower socioeconomic status (SES) (Wang & Beydoun, 2007). Latest results from the Childhood Obesity Surveillance Initiative (COSI) in Ireland show that children attending DEIS (Delivering Equality of Opportunity in Schools) schools tend to have higher levels of obesity, and this gap becomes wider as children get older; "... Overweight and obesity rates among children older than 8 years in disadvantaged schools seem to increase as they grow up" (Bel-Serrat et al., 2017, pg. 4). This study will examine teachers' understanding and awareness of obesity and its prevalence in DEIS schools. The high prevalence of obesity is attributable to the obesogenic environment in which we live, which is characterised by a shift towards high fat and high sugar diets accompanied by an increase in sedentary behaviour (Yach, Stuckler, & Brownell, 2006). The obesogenic environment is defined by the WHO as "an environment that promotes high energy intake and sedentary behaviour" (World Health Organisation, 2016, pg.4). Modifying this environment at a community and policy level has the potential to reduce incidence of this chronic illness (Powell, Spears, & Rebori, 2010).

CO can have a significant impact on a child's social and emotional health, self-esteem and physical wellbeing (Sahoo et al., 2015). Obesity is a major risk factor for many chronic diseases including cardiovascular disease, several common cancers, diabetes and osteoarthritis (Pi-Sunyer, 2009). Implementing effective NE from a young age can result in a reduced risk of these conditions, due to improved knowledge around food and health. This research seeks to ascertain teachers' awareness of the consequences of obesity on the child's

health. Arguably the most important justification for health education and promotion in schools is the evidence that eating habits which exist in childhood often persist to adulthood (Neumark-Sztainer et al., 2011). Acting on childhood obesity can have a major positive impact on the health care services and subsequently on the global economy. It is estimated that obesity costs the European Union €70 billion per annum through healthcare costs (Eatwell, 2011). On a national level, the direct and indirect costs of being overweight or obese in 2009 were estimated at €1.13 billion (Perry et al., 2017). An action taken to reduce childhood BMI by an average of 5% could result in a €1.1 billion cost saving in Ireland alone (Perry et al., 2017). Health interventions at an early stage in life are needed to reduce childhood obesity and increase diet quality (Prellip, Erausquin, & Slusser, 2006), which in turn will result in significant cost saving for the economy. This study aims to address the most effective interventions and strategies for NE in a specific socioeconomic context.

School as a Context for Nutrition Education

As a result of the increasing prevalence of overweight and obesity in children in Europe, the European Commission has identified children as a priority group in its strategy on nutrition (Commission of the European Communities, 2007). Furthermore, the EC has acknowledged the school as a priority setting for health promotion and NE (Commission of the European Communities, 2007). As children spend a significant amount of time in school, this environment is an important factor to consider in the prevention of childhood obesity. In conducting this study, the researcher wishes to explore if practising teachers also identify the school as a priority setting for health promotion and NE. Results of the Lifeskills Survey 2015 published in July 2017 by the Department of Education and Skills (DES) showed that 92% of Irish primary schools have a healthy eating policy in place (Department of Education and Skills, 2017a). This survey reports that all schools teach their pupils about the importance of a balanced diet (i.e. nutrition education), as part of the SPHE curriculum. In interpreting

the findings of the Lifeskills survey, it is important to acknowledge that the response rate was only 53%. Therefore, these results may not be providing the full picture of health promotion and NE across all Irish schools.

Schools have a pivotal role to play in contributing to the Healthy Ireland (HI) agenda that is being led by the Department of Health (DOH) and is supported by the DES and other government departments (Healthy Ireland, 2019). The purpose of the HI initiative is to support the public's efforts to improve their health and wellbeing (Healthy Ireland, 2019). Research links healthy lifestyle behaviours with improved academic performance, behaviour and cognitive skills (Centers for Disease Control and Prevention, 2014). HI have recently launched the new *Nutrition Standards for the State's School Meals Programme*, with the aim of ensuring only healthy foods that meet the standards will be provided for school meals in applicable schools (Healthy Ireland, 2017). "As children from low-income households are more vulnerable to inadequate nutrition, the DEIS school setting is a primary target for these Nutrition Standards" (Healthy Ireland, 2017, p.5). This initiative is directly supporting the provision of NE in schools, as it is an example of an environmental support "designed to facilitate voluntary adoption of food choices conducive to health" (Contento, 2008).

A common theme emerging from the literature is that schools should work in partnership with parents through supporting and reinforcing parental efforts with regards to healthy eating. The most effective nutrition interventions are those that contain an element of parental involvement "It is believed that parents play a direct role in children's and adolescent's eating patterns and consequently it is advocated that interventions, aimed at improving children's and adolescent's nutrition, need to address the family" (Van Cauwenberghe et al., 2019, p. 793). However, while the need to focus on parental involvement is recognised as an important success factor in the prevention of childhood obesity, few programmes are family-centred (Campbell & Hesketh, 2007; Lindsay, Sussner,

Kim, & Gortmaker, 2006). Della Torre Swiss, Akre, & Suris (2010) argue that while schools have a significant role to play in reaching children from all socio-economic backgrounds in obesity prevention programmes, improvement in eating habits are largely the responsibility of the parents. Perhaps this highlights a niche in the role of Home School Community Liaison (HSCL) Coordinator, in creating that link with the parents to educate and involve them in NE. The role of the HSCL is to promote partnership between parents and teachers, in order to ensure appropriate interventions are being put in place for children who are at risk of educational disadvantage (Department of Education and Skills, 2019b) .

Nutrition and DEIS Status

Delivering Equality of Opportunity in Schools (DEIS), is the Action Plan for Educational Inclusion which was launched in 2005, and most recently reviewed in 2017 (Department of Education and Skills, 2017b). The focus of DEIS is to address and prioritise the educational needs of children from disadvantaged areas (Department of Education and Science, 2005). Where the level of disadvantage is greatest, urban/town primary schools are classified as participating in Band 1 of DEIS (Department of Education and Skills, 2019a). In addressing this research, it is important to understand the reasons behind why obesity is more prevalent in areas of low income. There are many different factors which influence the propensity towards developing obesity including restricted access to fresh food, fewer recreational activities and parental education level (Kant & Graubard, 2013; Vaughan et al., 2013; Ver Ploeg et al., 2012). Low-income families are less likely to own a car and therefore may opt for processed foods which have a longer shelf life (Vaughan et al., 2013). Education is not only linked to understanding what a healthy diet comprises of but also understanding how to implement this (Wardle, Parmenter, & Waller, 2000). Research illustrated that children of more educated parents are more likely to eat breakfast and less likely to consume high calorie snacks (Kant & Graubard, 2013). Amongst the many objectives of the DEIS

initiative, is the aim of providing equal opportunity for optimal health outcomes. This aim is reflected in the development of nutritional guidelines for food provided in schools through engagement and collaboration between the DCYA and the Department of Health (DOH), DSP and DES (Department of Education and Skills, 2017b). In response to this objective, was the launch of the aforementioned *Nutrition Standards for the State's School Meals* programme by Healthy Ireland. Despite these national guidelines, there is very little literature surrounding NE in DEIS schools. This dissertation highlights the need for further research in this area.

Nutrition Education: A Global Perspective

As the prevalence of overweight and obesity have increased, so too have national and international health initiatives and nutritional education programmes. The WHO's Global School Health Initiative, launched in 1995, aims to increase the number of Health-Promoting Schools with the overall goal of strengthening health promotion and educational activities (World Health Organisation, 2019). The WHO defines a Health Promoting School (HPS) as one that constantly strengthens its capacity as a healthy setting for living, learning and working (World Health Organisation, 2019). A HPS should foster a positive attitude towards NE and identify it as a priority learning need. This research seeks to identify the effects, if any, that the HPS initiative has had on both whole school and class level NE. A recent circular published by the DES illustrates that currently only 40% of primary schools are participating in the HPS initiative (Naughtion, 2016). HPS advocate a whole school approach to deliver curricular activities which are strengthened through a supportive school ethos and environment (Lee, 2009). A 2014 review of the HPS framework found that the HPS approach reduced BMI, increased physical activity levels and improved fruit and vegetable consumption, all factors which have the potential to reduce obesity levels (Langford et al., 2014).

In 2010, the European Nutrition Foundations (ENF) was established to facilitate the sharing of nutrition-related information and best practice regarding NE in countries across Europe (Weichselbaum, Gibson-Moore, Ballam, & Buttriss, 2011). A recent report on nutrition in schools across Europe concluded that out of these ten countries, only three countries (Ireland, Portugal and the UK) included nutrition as an obligatory part of the school curriculum (Weichselbaum et al., 2011). However, in these three countries, NE is not taught as a discrete subject but is integrated into other subjects. In other European countries, NE was not a compulsory part of the curriculum but instead was left up to individual teachers to decide if they wanted to teach this topic or not. The provision of health education in the United State of America is regulated by the National Health and Education Standards (NHES). The NHES developed a framework in 1995 which contains a list of grade descriptors to aid educators and policy makers in designing and selecting curricular content (Centers for Disease Control and Prevention, 2019). Although the majority of US schools mandate health education, a recent report found that only 37% of districts allocate specific time to the provision of health education (Toth, O’Neal, & Evans, 2018).

Nutrition Education: A National Perspective

In addition to these international initiatives there have been a number of nutrition interventions focusing on healthy eating behaviours that have been trialled and implemented in primary schools on a national level (e.g. Food Dudes, Eat Smart Move More, and Tastebuds). The aim of these programmes is to improve the nutritional knowledge of children and empower them to make informed decisions to lead health enhancing lifestyles. Evidence shows that the most effective programmes are those that adopt a whole-school approach and are implemented on a long-term basis (Lister-Sharp, Chapman, Stewart-Brown, & Sowden, 1999; Stewart-Brown, 2006). A 2011 review found robust evidence to support positive effects of childhood obesity interventions on BMI, identifying access to NE, increased

physical activity, parental involvement and staff support and training as key factors in the successful implementation of these programmes (Waters et al., 2011). This research piece will address teachers' views in relation to the effectiveness of such interventions.

Information pertaining to food and nutrition is located in the SPHE curriculum. The overarching goal of the SPHE curriculum is to nurture the personal development, health and well-being of the individual child (National Council for Curriculum and Assessment, 1999). Of the six aims listed in the SPHE curriculum document, two of these relate specifically to healthy eating and NE (National Council for Curriculum and Assessment, 1999, p. 9); “to promote the health of the child and provide a foundation for healthy living in all its aspects” and “to enable the child to make informed decisions and choices about the social, personal and health dimensions of life both now and in the future”. The principal teaching approach recommended for SPHE is active learning which promotes action, enabling children to transfer these new skills to real life situations. Active participation in learning is imperative in supporting children in understanding health related messages and putting them into practice.

The role of the teacher

Teachers are important role models in students' lives and have been shown to have a central role in NE through the modelling of appropriate health habits and the adaption of curricular content (Kupolati, MacIntyre, & Gericke, 2014; Rosário et al., 2017). Therefore, developing an understanding of what teachers learn and how this is translated into practice is fundamental for the creation of effective interventions (Cordingley et al., 2015). Specifically, developing an understanding of what teachers view as effective NE strategies and why they consider them to be so is extremely important in the current climate of the obesity epidemic. The SCOTENS report on Primary School Teachers' Experiences of Teaching Healthy Eating indicates that teachers use a variety of active learning methodologies to teach this topic.

However, they identified amenities and resources as a barrier to undertaking practical food sessions (Mooney, Angela, Eileen Kelly-Blakeney, Amanda Mc Cloat, & Dorothy Black, 2011). Dudley et al found that experiential learning strategies had the largest impact on healthy eating behaviours and increased nutritional knowledge (Dudley, Cotton, & Peralta, 2015). Hennessy & Deasy (2009) discovered that one in five teachers in Ireland feel that the current curriculum doesn't cover NE adequately. These results reflective of the findings from the SCOTENS report, which highlighted teachers' views regarding the need for in-service training on healthy eating. Young, de Boer, Mikkelsen, & Rasmussen (2005) highlighted that the training of teachers and food providers is an essential component in the success of nutrition interventions in schools. Speller et al (2010) contends that initial teacher education (ITE) is the ideal stage for developing teacher competencies in health promotion. However, the reality is that in an overcrowded ITE programme little time is spent on NE. Teachers' own perceptions of health have an important role to play in NE, as perception is known to influence behaviour, therefore efforts should be made to nurture and develop these perceptions (Hall et al., 2016). This dissertation will address teachers' perceptions regarding health and their impact (if any) on NE. There is a limited amount of research examining the strategies teachers should employ in order to yield maximum effect from their teaching interventions to foster healthy eating behaviours.

A common theme arising from the existing literature on the role of the teacher in implementing nutrition interventions is the time-constrained environment (Griffin et al., 2015; Hall et al., 2016; Mooney et al., 2011). Time, resources, and core subjects have consistently been identified as a barrier to delivering nutritional education. Primary school teachers are subject to increasing pressures to produce students who score well on standardised tests. These standardised assessments focus primarily on reading literacy, mathematical literacy and scientific literacy (Organisation for Economic Co-operation and

Development, 2018). A systematic review by Clarke, Fletcher, Lancashire, Pallan, & Adab (2013) highlighted the academic pressures that teachers face as a barrier to NE. Information pertaining to these factors will be gathered in the data collection phase of this study.

Conclusion

From examining the literature, it is evident that urgent action needs to be taken to tackle the issue of childhood obesity. This issue remains prevalent in disadvantaged areas of society. As childhood obesity poses a significant risk to health, it is imperative that we address this issue immediately. NE from an early age can equip the child with the appropriate knowledge needed for them to make well-informed decisions about their health. The school setting provides an excellent opportunity for health education and promotion for young children but time constraints as well as other limitations hinder this. The WHO indicate that school environments which promote healthy food choices may protect children against weight gain and obesity (World Health Organisation, 2003). Teachers play a significant role in health and wellbeing education, with SPHE recognised as a key curricular area. Further research is needed regarding effective methodologies for teaching NE in schools and their outcomes.

Chapter 3: Methodology

Aim of Research

The aim of this research is to explore Primary School Teachers' views on effective teaching strategies for Nutrition Education (NE) in a DEIS band 1 school. This chapter describes the chosen research design and instrument, outlines the participant recruitment process and discusses data collection and analysis. The limitations and ethical considerations of this study are also addressed. This research has been conducted in a DEIS band 1 school in an urban setting, comprising of a total of 532 children, 40 teachers and an administrative principal. It is important to note that the school involved in this research is a vertical school, with mixed classes from Junior Infants to 1st class, and all girls from second class onwards. The school is also recognised as both an *Active Flag School* and a *Health Promoting School* and therefore there is a significant focus on physical activity and health promotion in this school. These factors may impact the results obtained in the research and therefore caution should be taken when interpreting the data generated.

Research Design

This study will be approached from a social constructivist perspective. Social constructivist methods ensure that cultural contexts are accounted for in their research, as they have a major impact on the individuals' interpreted meaning of the world around them (Koltko-Rivera, 2004). Social context is of particular relevance in this study, which is based in a DEIS band one school, where participant's experiences may be impacted by DEIS status. The researcher is aiming to interpret the views of participants in relation to the teaching of NE, and perhaps establishing a pattern of meaning. Qualitative research is primarily concerned with "the way in which people shape the world" (Denscombe, 2010, p. 10) and aims to gain understanding of "the meaning individuals or groups ascribe to a social or human problem" (Creswell, 2009, p. 4). In this study, qualitative methods of research have

been chosen over quantitative methods, as it is dealing with the views and experiences of practising teachers with regards to NE. Qualitative research will enable the researcher to explore teachers' opinions and experiences in greater detail than quantitative methods (e.g. a survey). The researcher is seeking to elicit personal attitudes from the participants in relation to teaching strategies and resources used for NE implementation, qualitative research will allow the thorough investigation of these attitudes and not only highlight the most effective strategies but pinpoint why they are deemed to be so. In terms of identifying facilitators and barriers to effective NE implementation, qualitative research will not only explore the perceived barriers but also the reasons behind why they are perceived as barriers and more importantly how can this be adapted.

Research Instrument

The chosen research instrument for this study is a semi-structured interview. This method of qualitative research was thought to be most appropriate for this topic as research advocates that interviews are one of the most powerful ways of accessing peoples' perceptions, understandings, descriptions of situations and constructions of actuality (Punch, 2009). This will help the researcher understand the opinions, values and experiences of the teachers in relation to knowledge of childhood obesity, as well as gathering meaningful, rich data on the most effective strategies and resources that they are currently using to implement NE. Interviews allow a wealth of information to be gathered in a short space of time, this is advantageous to the researcher as she has a limited time frame in which to gather a robust data set. In this case, the researcher will compose an interview schedule which will consist of pre-set questions accompanied by a series of optional discussion points associated with each question. A similar interview schedule was utilised by the SCOTENS report in their investigation into teacher's experiences of teaching healthy eating in the curriculum (Mooney et al., 2011). It is important to note that the topic of nutrition is indeed a subjective one,

therefore the researcher may encounter a variety of perspectives in the role of teachers in health promotion. Hence, interviews act as very suitable methods for allowing explanation of participants' views. According to Newby (2010), semi-structured interviews should contain a clear list of questions which reflect the research question while allowing for a degree of flexibility in the direction of conversation. It is important to acknowledge that interviews, like other methods of data collection, do have their disadvantages. Interviews can often favour the articulate and generate a limited range of responses from the participants, due to the phrasing of questions and time constraints (Denzin & Lincoln, 2011). Difficulties can also arise during the transcription process as the element of non-verbal communication is omitted, opening the conversation up to data loss and misinterpretation.

Pilot Interview

A pilot study is defined as “a small-scale test of the methods and procedures to be used on a larger scale” (Porta, 2008). The completion of a pilot study increases the reliability, validity and practicability of the research instrument being used (Cohen, Manion, & Morrison, 2007). Piloting interview schedules can provide the interviewer with experience of using this tool and enhance their confidence, as well as identifying any inappropriate questions that may cause discrepancies with data collection (Bryman, 2001). The pilot interview was conducted with a primary school teacher from a different DEIS Band 1 school, a friend of the researcher, in January 2019. This person was chosen to complete the pilot interview with as she had experience in teaching a range of different class levels and was guaranteed to provide honest and constructive feedback. Pilot testing the interview schedule allowed the researcher to obtain feedback regarding the wording of questions, interview structure and time taken to complete it. No modifications to the interview schedule were required following the pilot study.

Sampling

In February 2019, 8 participants were recruited from a DEIS band 1 primary school using non-probability, purposive sampling. Punch (2009) states that the aim of purposive sampling is to select participants in a tactical way, so as to ensure they are satisfactory for the researcher's needs. Purposive sampling is undertaken to achieve representativeness and to enable comparisons to be made (Teddlie & Yu, 2007). The researcher used purposive sampling to choose one teacher from each class level, as well as a teacher in the role of Health Promoting Officer (HPO), to investigate if these factors had any bearing on teacher's views with relation to effective strategies for teaching NE. This sampling technique was advantageous to this research as it enabled the researcher to draw comparisons between strategies and resources used in different class levels. The study participants had a variety of backgrounds including culinary arts, yoga teaching and early childhood education. It is important to note that their background degree had no impact on the sample selection process however may have some bearing on the results.

Data collection

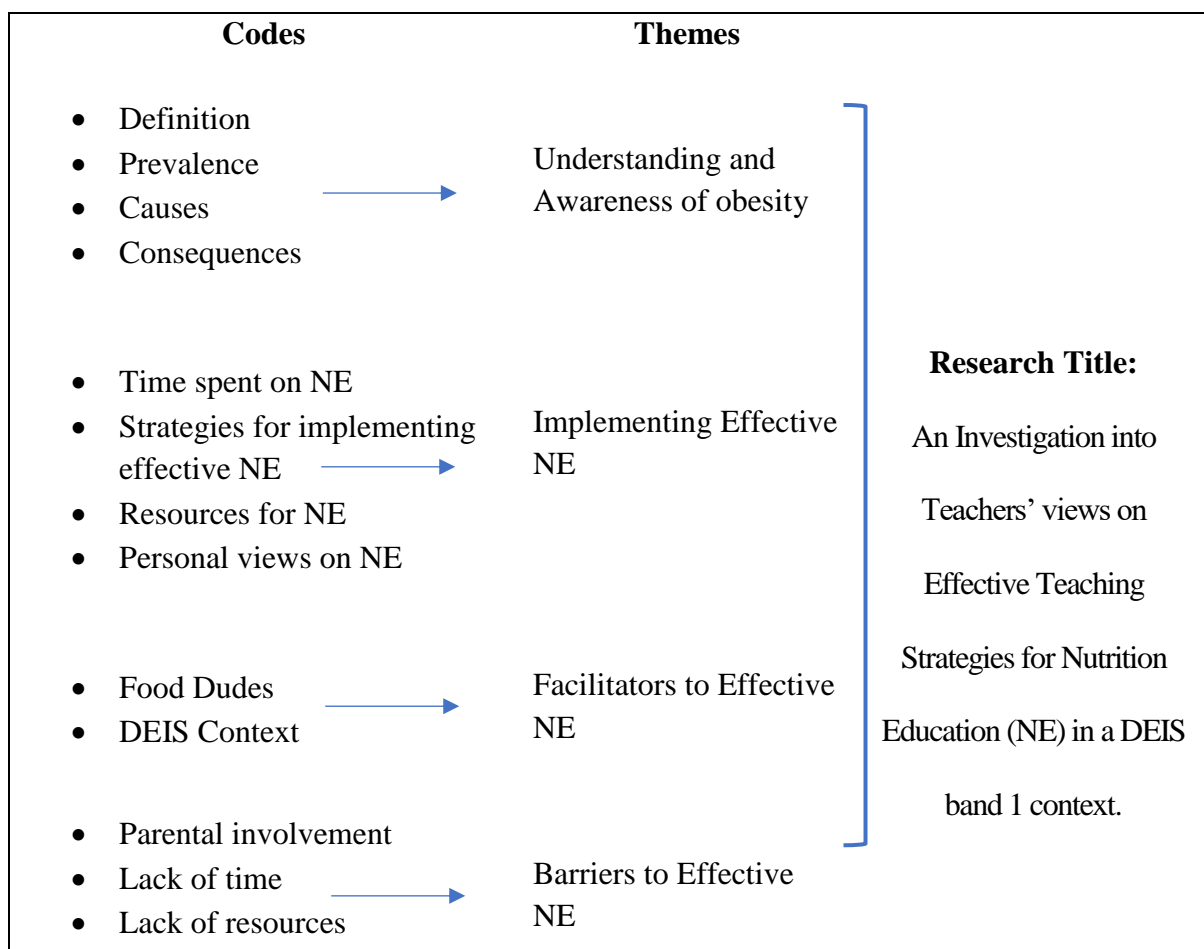
The principal of this school was contacted to seek permission to conduct this research. The purpose and structure of the study was explained in detail and once permission was obtained from the principal, an information sheet outlining all relevant information about the research was distributed to the staff members. Prior to conducting each interview, the interviewee was asked to read and sign a consent form. Each interview lasted 30 minutes in length and was carried out at a time and place convenient for the interviewee. Denscombe (2007) identified trust as an issue during interview data collection, to combat this, the interviewer first met with the participants before the interview to discuss the structure and purpose of the interview and answer any questions.

Data Analysis

The researcher followed the process of qualitative data analysis as described by Denscombe (2010) when recording and interpreting the data collected. The researcher firstly prepared the data, by transcribing the interviews into a written format to facilitate coding. The researcher then read and reread the transcripts to familiarise herself with the data and to identify any recurring patterns in the data collected. Through the thorough examination of the interview transcripts, the researcher has identified several thematic categories and subcategories which will be presented under four main themes (see table 1).

Table 1

Transition from codes to themes, relating back to the research title



Positionality

Positionality refers to an individual's view of the world, as well as the view they choose to adopt with regards to specific research (Opie, 2004). Reflexivity, which informs positionality, is the idea that researchers ought to acknowledge and disclose their own selves in the research seeking to understand their influence on the research (Cohen et al., 2007). It is considered good practice to declare your position from the outset. For this reason, the researcher has made her position clear to the research participants (i.e. BSc in Human Nutrition and Dietetics) Denscombe (2010) describes the interviewer effect which refers to the influence that the interviewer can have on the responses of the research participant. To minimise the interviewer effect, the researcher made every effort to remain as objective as possible and create a strong rapport with each participant so as to ensure they felt comfortable expressing their true opinions and beliefs. When conducting the interviews, the researcher refrained from asking leading questions or making sumptuary comments, while being aware that their positionality could influence the way they phrase certain comments or pose certain questions.

Ethical considerations

The *Ethics in Research Policy for Marino Education 2018-2019* was adhered to throughout the duration of this project to ensure optimal safety and protection of the research participants. As interviews are centred around interpersonal interaction, they have an ethical dimension which can be divided into three categories; informed consent, confidentiality and consequences of the interviews (Cohen et al., 2007). Prior to the commencement of this research project, actions were taken to minimise risk of harm by gaining consent from the school principal to conduct research with members of their staff (see appendix A). An information letter was then distributed to the school teachers informing them about the

purpose, structure and objectives of this research. A consent form was signed by all participants who agreed to participate in this study (see appendix C). According to Harcourt, Perry, & Waller (2011), it is important to consider the creation of respectful, reciprocal and trusting relationships between the researcher and participants. Participants of the present research were informed that all data gathered would remain confidential and that they had the right to withdraw from the research at any stage. Each interview was recorded on a Dictaphone, as well as with an alternative recording device to reduce the risk of data loss due to technical errors. The transcripts were filed on a password protected computer to which only the researcher has access to. Both voice recordings and transcripts will be destroyed within thirteen months of completing this research. The findings of the study will be published for viewing by the researcher, the supervisor and the external examiner only.

Conclusion

As evident from this chapter, the conduction of a piece of research requires detailed planning and preparation in order to choose the correct research design, instrument and sample population. The researcher must consider the ethical aspects of qualitative research and ensure that all precautions are taken to protect the research participants. The next chapter of this dissertation will address the study findings in the context of the current literature.

Chapter 4: Discussion of Findings

Several categories and subcategories were identified and will be presented under four main themes: understanding and awareness of childhood obesity, implementing effective NE in schools, facilitators to implementing effective NE and barriers to implementing effective NE. The literature reviewed in chapter two will be referred to alongside other relevant literature in this area.

Understanding and Awareness of Obesity

A well-defined relationship has been established between SES and obesity, where obesity tends to be higher among those with lower SES (Pampel, Denney, & Krueger, 2012; Singh & Kogan, 2010). The participants were asked to articulate their definitions of CO, their understanding of its prevalence as well as discussing the causes and consequences of this condition. This enabled the researcher to elicit their understanding of obesity, prior to discussing the importance of NE in the current climate of the obesity epidemic.

Defining Childhood Obesity. Childhood obesity is defined by the World Health Organisation (WHO) as an excessive or abnormal fat accumulation which poses a risk to health (World Health Organisation, 2018). The findings of this research concur with this definition as all nine participants referred to excessive weight accumulation "...carrying extra weight on your body and around your organs." (T1), "...when your body weight is over and above what it should be." (T3), and the effects of this weight on the child's health and lifestyle "...impinges on their physical abilities." (T5), "...impending negatively on their life." (T2), "their weight is affecting their lifestyle." (T6).

Prevalence of childhood obesity. The Growing up in Ireland study found that almost a quarter of nine-year olds are currently defined as overweight or obese (Layte & McCrory, 2011). Interestingly only five of the participants in this study were aware of this statistic "...

only recently those figures were given out at the course” (T9), “I did hear of that and I suppose it’s shocking really” (T7). However the other four participants did not express any surprise upon hearing these figures. Participant three stated “I actually wasn’t aware of that but having said that I’m not surprised because I’m thinking of my own class”. Teachers of the younger classes i.e. junior infants, senior infants and first class, did not identify obesity as a significant problem in their class but alluded to its higher prevalence further up the school. This is consistent with recent research which demonstrates a higher prevalence of overweight and obesity in older children attending DEIS schools (Bel-Serrat et al., 2017) .

Causes of childhood obesity.

Diet. Nutritional intake and dietary quality were identified as key causal factors in the onset of childhood obesity by participants in this study “... the types of food and the frequency at which they’re eating them” (T9), “the processed food” (T5), “... the element of fast food restaurants” (T4). As this research was conducted in a DEIS band 1 area, there was significant reference made to the lack of consistency between diet quality in school and in the home environment “I think a lot of it is to do with home life, how educated the parents are on healthy eating” (T2), “... it’s probably the parents giving them the wrong food” (T8). A recent report from the HSE found that children attending DEIS schools consumed chocolate, crisps and biscuits more frequently, ate fruit and vegetables less often and, ate breakfast less often than children attending non-DEIS schools (Heinen et al., 2016b).

Physical activity. Seven out of nine respondents identified physical inactivity as a key causal factor for the development of childhood obesity “They’re indoors more than they’re outdoors” (T9), “They’re not doing those activities that we would have done before” (T5). Some of the main reasons for a lack of physical activity cited by the participants include: increased exposure to screens, lack of parental awareness of the benefits of physical

activity and a general negative attitude towards exercise. Participant nine refers to the “lack of education when it comes to their fitness and their lack of fitness activity” as a significant causal factor. These findings are in line with research which highlights the pertinent role physical inactivity plays in the development of childhood obesity (Davison & Birch, 2001). According to Heinen et al (2016b), children attending DEIS schools were less likely to be a member of a sports club, spent more time watching television and were more likely to live near their school.

Parental education. Recurring patterns were noted with regards to the impact of parental education on effective implementation of NE. Parental education refers to both the parent’s ability to identify weight-related problems in their children as well as their ability to provide healthy meals in the home environment. Research has highlighted that mothers of overweight children show poor awareness of their child’s weight status (Queally et al., 2018). This strengthens the case for the role of the teacher in identification and management of CO. Each of the participants referred to the importance of parental education “lack of education, with parents, on the whole nutrition end of things” (T6), “Parents as well. They’re not sure what’s right and what’s good for us” (T7), and parental involvement “the parents have a lot to answer for...” (T3), “You have to get the parents on board, which can be difficult!” (T2), throughout their interviews highlighting the work that needs to be done in addressing this issue.

Tying in with the concept of parental education is the role that SES has to play in NE. This research was conducted in a DEIS band 1 school, where the level of disadvantage is greatest. Parents living in low income areas are likely to have a lower level of education (Department of Education and Science, 2005), which may impact on their knowledge and awareness of health and lifestyle behaviours. Research by Higgins & Lavin (2008) illustrates a direct link between education level and dietary habits, suggesting that those who achieve a

higher level of education are more likely to engage in healthy behaviours. A recent study has found that girls whose mothers have the lowest level of education, are at a particular disadvantage and significantly higher risk of developing obesity (Madden, 2016). This finding is of particular significance in this school as there is a predominantly female population.

Altered gut bacteria. Participant 3 mentions the role that the “microbiome” has to play in the development of childhood obesity, referring to the imbalance of bacteria in the gut “maybe their gut is not filled with that good bacteria that you need to metabolically burn off their food” (T3). The term microbiome is used to describe all the micro-organisms living in a certain environment, in this case the human intestine. Current literature suggests that dietary modification of the gut microbiome can influence obesity. A high fat, high sugar diet typical of the diet consumed in low income families correlates with an increased proportion of certain microbes which can lead to obesity (Turnbaugh et al., 2006). However, it is important to acknowledge that correlation does not mean causation here, and it is not the microbes which are causing obesity but the diet and lifestyle of the population. In addition to this, also mentioned by teacher 3, breastfeeding has an important role to play in determining microbial composition and lowering the propensity to obesity in later life (Kalliomäki, Carmen Collado, Salminen, & Isolauri, 2008). Participant 3 reports “... if they weren’t breastfed as a baby, that they have a tendency to be heavier”. Research illustrates lower rates of breastfeeding in women from lower SES groups, which may further increase risk of developing obesity in later life (Petry, 2013).

Consequences of childhood obesity. The majority of the participants made reference to the long-term effects of childhood obesity on the child’s physical health including dental decay, heart disease, diabetes and mobility problems. It is important to note that many of the respondents referred to the long-term physical effects of childhood obesity “... the dental

problems” (T9), “... physical health in the future” (T7), without acknowledging the current impact that obesity is having on children. Childhood obesity can have an immediate effect on a child’s physical and mental health as it is associated with high blood pressure, high cholesterol, breathing problems, joint problems and impaired glucose tolerance (Bacha & Gidding, 2016; Cote, Harris, Panagiotopoulos, Sandor, & Devlin, 2013; Mohanan, Tapp, McWilliams, & Dulin, 2014; Narang & Mathew, 2012; Pollock, 2015). Participant 6 identified poor muscle development as a significant short-term consequence of childhood obesity “You can see their muscle development is really poor, due to lack of movement”, referring to both gross and fine motor function “I can see it in their pencil grip as well” (T6).

As well as problems concerning the child’s physical health, participants in this study made significant reference to the social, emotional and psychological elements of childhood obesity. Many participants reported that obesity has a negative impact on the child’s self-esteem and self-confidence “... extremely low confidence for a child who is obese.” (T2), “Self-esteem is a huge thing” (T5), “If your self-esteem is knocked at a young age, it’s very hard to pick it up” (T4). There is a wealth of research to demonstrate the negative effects of obesity on a child’s mental health (Sahoo et al., 2015). All precautions to reduce the risk of damage to mental and physical health should be at the top of all teachers’ and parents’ priority lists.

Implementing effective NE in schools

Time spent on NE. Findings from this research dissertation show that on average approximately one month of the school year is given to this topic “I’d probably spend a month on that strand” (T2), “It would be two weeks to a month, it’s not much” (T1). As SPHE is denoted 30 minutes per week in the primary school curriculum, this equates to a total of two hours teaching time per month. However, five teachers reported that they were

partaking in the Food Dudes programme which allocated a further two hours being spent on NE "... that would probably use up another two hours." (T3). The amount of time being spent on NE is above the global average of 3.4 hours per school year, as identified in the 2006 School Health Policies and Practices Study (SHPPS) (Kann, Telljohann, & Wooley, 2007). All participants stated that they tried to integrate this topic where possible with other curricular areas such as science, literacy, maths and physical education "... we grow things in science" (T1), "It could feed into PE because if you're talking about being healthy and having the energy to perform on the field" (T3). T8 reports that he 'constantly' spends time on this topic, which demonstrates that the personal views of the teacher in relation to this topic are vital in defining how much exposure the children receive to this curricular area, and indeed how their views on healthy eating are shaped.

Effective strategies for NE implementation. This research revealed that the most effective methods for teaching NE in a DEIS band 1 context include practical, hands-on, student centred activities, for example: "group work, pairs, interviews in pairs... creating and designing" (T3), "blind food tasting" (T4), "label reading" (T1), and "sorting or comparison activities" (T6). Literature proposes that child-centred approaches are crucial for maintaining the engagement and participation of children (Woolfe & Stockley, 2005). All participants referred to the element of "active learning" which is the principal teaching and learning approach recommended for SPHE (National Council for Curriculum and Assessment, 1999). Active learning places the children at the centre of the learning experience, thereby increasing the likeliness of knowledge retention and the ability to use their learning in real life situations. Participants also made reference to collaborative learning and talk-and-discussion as key strategies for NE implementation in the classroom: "... think, pair and share" (T7), "talk to kids about the actual making of food" (T1), "... getting the kids to talk about what they eat so they can all share what ways they eat healthily" (T8).

Common to all participants' responses was the element of the child's voice. Providing students with agency and the opportunity to have their voice heard will help to foster a positive learning environment in the classroom (National Council for Curriculum and Assessment, 1999). One participant highlighted the importance of "getting people's opinions on different things and letting them have a say in it." (T2). Another participant referred to the use of the child's experience in teaching the class about different types of food: "One boy just came back from India today, he was away for two weeks. So, we talked about what he ate, what they do over there." (T8). Participants referred to the benefit of practical cookery sessions in teaching the children about how food is made "... to show them the benefits of eating healthy and how easy it is to actually make healthy stuff" (T8), "... there could be more of that end of it where they could talk about the making of food" (T1). However the provision of cookery classes in NE was seen as a treat for the children, and not something they were frequently exposed to. There is research to illustrate the effectiveness of cookery sessions in educating children about healthy eating and promoting the application of nutritional theory into practice (British Nutrition Foundation (BNF), 2004; McCullough, Yoo, & Ainsworth, 2004).

Resources. Common to all participants' responses was the use of visual aids such as photographs and food samples in the teaching of NE. Most of the participants reported that they get the children to bring in food from home to be used as a resource in the classroom e.g. label reading or sorting activities. Participants from the junior end of the school referred to the use of games and stories such as *The Hungry Caterpillar* as resources for NE. All of the teachers reported they did not have a specific textbook or teaching pack for the teaching of food, healthy eating and nutrition issues. Many teachers also quoted the Food Dudes programme as a resource to aid their own teaching of this topic: "It's a stepping stone for me to lead the conversation. So, I use the food dudes as a resource." (T8). Upon discussion of NE

resources with the HPO (T9), she advised that she used a lot of HSE and HI resources when developing the school's healthy eating policy and when developing any healthy eating initiatives in the school.

Personal views on NE. Six out of the nine respondents reported that they were implementing personal interventions to promote healthy eating. These interventions included praise and encouragement for eating fruit and veg, rewards systems, growing food in class, busy breaks and "fruit breaks". Participant three refers to her innovative concept of fruit breaks "I don't allow them to eat anything else in their lunchbox at that time". All nine participants regarded NE as an important part of the primary school curriculum. All participants reported that it is unlikely that the children in this school will receive NE at home; therefore, it has to come from the school "We are up against the home life and children are not being educated at home." (T6), "We're supposed to be equipping these children with life skills." (T5). One teacher talked about her own personal experience at primary school as an overweight child. She describes NE as "fundamental" to the child's development, based on her own experience. Participant three reports "It wasn't that my parents were neglectful and feeding me a pile of rubbish, it was lack of knowledge on their behalf".

Facilitators to implementing effective Nutrition Education

Participants in this study identified the Food Dudes programme as complementary to the NE that they were providing in class "... it very much informs what they're doing in class" (T9), "I use it as a resource" (T8), "... it would be great if you had more of it" (T5). Results found that Food Dudes provides a fun, interactive and sensory method of exploring the properties of different fruit and vegetables. All teachers report that Food Dudes is a successful initiative in the classroom setting. However, one of the participants of the study made the valid point that there is little merit to a programme like this in a DEIS band 1 school as the fruit and

vegetables are not to be found in the home environment “I don’t think giving carrots or giving cucumber to children in school to taste is going to encourage their parents to cook vegetables in the evening.” (T2). A second facilitator to the effective implementation of NE was the provision of school lunches by the DEIS scheme. All participants referred to the high-quality breakfast and lunches that the children receive during the school day. The provision of lunch and breakfast ensures that children from an area of low SES who may not be receiving a nutrient dense diet in their home environment are receiving two nutritious meals per day. It also offers opportunities for discussion around healthy versus unhealthy foods.

Barriers to implementing effective Nutrition Education

Participants reported lack of time, lack of concrete resources and lack of parental involvement as key barriers faced in the effective implementation of NE. The SCOTENS report also highlighted time constraints in an overcrowded curriculum and limited resources as key barriers to implementing effective NE (Mooney et al., 2011).

Parental involvement. The majority of participants in this study highlighted parental involvement as a key barrier to the effective implementation of NE. Participants expressed concerns about the transition of healthy eating information from school to home “we can teach them one thing but then they’re going home and its going out the window” (T1), “It’s when they go home that they’re going to see the barriers” (T8). Findings from this study revealed that without support from parents, there is little value to implementing NE in schools. A common theme emerging from this study was that the school should work in partnership with the parents through providing NE sessions to support parents in providing healthy food choices for their children. This could involve experiential learning, classes,

events or workshops. As all of the participants mentioned a lack of parental involvement as a barrier, this supports that NE should incorporate parental as well as child-centred education.

Lack of time. Although all nine participants recognised NE as an important part of the primary school curriculum, they identified time constraints due to academic pressures as another barrier to effective NE implementation: “It’s something that’s pushed to the back because it’s not maths, it’s not English, it’s not a core subject” (T4), “... pressure on trying to get the English and the maths up” (T1). This is consistent with current literature which highlights a time-constrained environment as a barrier to delivering NE (Griffin et al., 2015; Hall et al., 2016; Mooney et al., 2011). Teachers are under significant pressure to focus on core subjects such as numeracy and literacy in order for the students to achieve in the standardised tests. A systematic review by Clarke, Fletcher, Lancashire, Pallan, & Adab (2013) highlighted the academic pressures that teachers face as a barrier to NE. This pattern is similar in low income schools as per Hammerschmidt, Tackett, Golzynski, & Golzynski (2011).

Many teachers cited the lack of formal assessment as a deciding factor in subject prioritisation. Research has identified a disconnect between the number of hours expected to teach NE and the time taken to achieve learning outcomes (Oregon Department of Education, 2012). According to Contento et al., (1995), successful NE programmes require fifteen hours per year to bring on a change in knowledge and a further 50 hours per year to result in long term changes in attitudes and behaviour. Extracting this information into the Irish content, a total of 65 hours of NE (approximately 3 full weeks) could result in long term changes in attitude and behaviour resulting in healthier and happier children with a longer life span.

Lack of resources. Although there is a wealth of literature highlighting the lack of concrete resources as a barrier to effective NE implementation (Mooney et al., 2011), this was not cited as a major barrier by the majority of teachers. Only two out of the nine

participants made reference to the necessity for more concrete resources “I think we could have more concrete resources” (T3), “... other barriers, I suppose resources” (T5), while the remaining participants felt content with current resources. Perhaps these participants who identified the need for further resources had a special interest in health and nutrition given their backgrounds in yoga teaching and education and training respectively, and therefore wanted to execute their teaching of this subject to a higher standard. However, given that all teachers reported that they did not have a specific textbook or teaching pack for NE, and the reliance on Food Dudes as a resource, it is evident that a more concrete, standardised resource needs to be created to ensure quality and consistency in NE.

Limitations.

As in any research, there are certain factors which may have a limiting effect on the study. The sample size in this study is small in number (n=9), therefore results should not be applied to the larger population. Confirmability is also a limitation to this research, as the findings of the study may be taken out of context, which would give false meaning to the data. Cognisance must be given to the fact that this piece of research was carried out in a DEIS band 1 school context. The teachers were asked about their perceptions of obesity, NE, and potential facilitators/barriers, which are their personal assessments and may not represent the experiences of all teachers in DEIS schools. The findings of this study highlight the link between breastfeeding and propensity to developing obesity. Although this finding is significant and demonstrates a preventative measure for developing obesity, it also has a limitation in that the awareness, resources and education aren't available to motivate parents from low income backgrounds to breastfeed their children. Further work is required, and this study identifies this finding as a recommendation for further thought.

Chapter 5: Conclusion

Introduction

This research set out to investigate the views of primary school teachers on effective teaching strategies for NE in a DEIS band 1 context. This study proposed to give a closer focus on the current practices in relation to NE and explore teachers' attitudes in relation to these. It also intended to analyse any alternative approaches used when teaching the subject across different class levels. This is an under-researched area at primary level in the Irish context, therefore it was deemed appropriate to explore the potential facilitators and barriers to the successful implementation of NE.

Summary of findings

1. There is a positive health culture in this school as evidenced by their healthy eating policy, provision of healthy lunches, HPS status and teachers' attitude towards the importance of NE. A healthy environment is important in reinforcing the teaching of a healthy eating curriculum (Lee, 2009). The creation of a positive health culture cultivates higher levels of health literacy by encouraging students to develop personal, cognitive and social skills for maintaining good health (Lee, 2009).
2. Lack of time in an overcrowded curriculum was identified as a significant barrier to effective NE implementation. While the school is spending an average of 4 hours per school year on NE as a discrete subject, (above the international average of 3.4 hours (Kann et al., 2007)) according to literature, a total of 65 hours of NE per school year is required to yield long term changes in attitude and behaviour (Contento et al., 1995).

3. Lack of parental involvement was cited as another major barrier to the effective teaching of NE in a DEIS context. Seven out of nine teachers contended that the school and home must work together to provide quality NE for the children. The active involvement of parents in healthy lifestyles initiatives has been shown to enhance the effectiveness of school-based interventions (Katz, 2009; Kriemler et al., 2011; Waters et al., 2011).
4. Teachers identified child-centred, active methodologies as effective strategies for NE implementation. This was common across all class levels, with infant teachers using storytelling to teach NE also. There is no particular resource/book that is adhered to in the teaching of NE, suggesting that information provided could be biased based on the personal views of the teacher.
5. Teachers showed a good awareness of the definition of obesity; however, only half of the participants were aware of the high prevalence of childhood obesity in the DEIS context. Seven out of the nine teachers thought the recent GUI statistics were applicable to this school environment, suggesting that childhood obesity is an issue in this school and requires attention.

Recommendations

Recommendation 1: Time Management

- The researcher advises that the DES conduct an urgent review of the current primary school curriculum in terms of time allocated to NE, so as to reflect its growing importance in the current health climate. Teachers can prioritise the teaching of NE in their classroom, however they need direction from higher authorities to implement effective NE.

- There are numerous initiatives to aid NE e.g. HPS and Food Dudes, however these are of little use if there isn't sufficient time allocated for their implementation.
- Primary school teachers are subject to increasing pressures to produce students who score well on standardised tests for numeracy and literacy. Perhaps the introduction of an assessment rubric for NE would entice teachers to spend more time on this subject area, as well as guide them towards the specific subject content that they should be teaching.

Recommendation 2: Review of Curricular Content

- Considering the escalating levels of childhood obesity, particularly in DEIS schools, it is recommended that the DES complete regular reviews of course content pertaining to food and nutrition in SPHE. The involvement of health promotion agencies would be favourable to ensure a holistic approach to the teaching of NE.
- This research calls for the construction of a standardised coherent teaching resource kit for NE, consisting of resources which promote active learning methodologies. Using the NHES grade descriptors in designing our own national NE programme could be beneficial in ensuring standardised and high-quality instructional strategies across the board for NE. These resource packs should be streamlined in line with the national curriculum and be made accessible for teachers.
- It is essential that any curricular review considers the benefits of including practical culinary skills as a compulsory component of the curriculum.

- The researcher recommends that the HPO works with teams of staff and is allocated a specific amount of time each month to engage in health promoting activities.

Recommendation 3: Strengthen the link between the school and the community

- The researcher recommends that efforts are made to strengthen the link between the home and school environment in delivering effective NE, to empower children and parents to transfer NE from theory in to practice. Schools need to consider the context of the home and local environment when constructing NE initiatives, as the tailoring of programmes to suit the needs of the families in question is an important step in optimising parental compliance (Sylvetsky et al., 2013).
- Instead of limiting these initiatives to the school environment, idea possible plan of action would be to spread NE into the community and involve parents in the organisation and implementation of these initiatives.
- Although the HPS framework provides a model for involving parents, schools need assistance with this on a practical level, and innovative approaches are needed to solve the problem of parent engagement. Perhaps the introduction of a third party -for example the HSCL- to strengthen this link would be beneficial. There is a potential role for the District Nurse or Community Dietitian to provide continuous education to the parents, but this must be enforced by the DOH. This research recognises a need for the DES and the DOH to work together for the better of children in education.

Conclusion

In conclusion, primary school teachers may be regarded as the first point of contact in introducing concepts, knowledge and attitudes regarding food to children from an early age. Given the escalating rates of overweight and obesity in the DEIS context, it is evident that there is a significant amount of work to be done in NE in low-income areas. The researcher suggests that if there is more time allocated to NE, teachers will be able to provide higher quality NE that will result in long term health benefits. The researcher recommends a review of the current curricular content pertaining to NE, with the construction of standardised resource packs to ensure each child is receiving the same health information and opportunities. Finally, this paper identifies that without parental involvement NE will be of little benefit. Therefore, the final recommendation of this research is to strengthen the link between the school and the community, to create a seamless transition of NE from the school to the home environment.

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Appendix 1: Letter of Consent for School Principal



Niamh Kelly,
Marino Institute of Education,
Griffith Avenue,
Dublin 9

Dear (insert Principal's name here),

My name is Niamh Kelly and I am a final year student in the Professional Masters of Education (Primary School) in Marino Institute of Education. As part of my final year studies, I am required to undertake a piece of educational research in the form of a dissertation. Given my background as a dietitian, I have decided to complete a study investigating the views of teachers regarding effective strategies for the teaching of nutrition education in a DEIS band 1 school.

The data collection for the project will consist of semi-structured interviews. I intend to carry out interviews with teachers of various class levels to help me gain a deeper insight into the aforementioned topic. The interviews will last approximately 30 minutes and will take place at a time and location that suits the participants. I am writing to you to gain permission to contact members of your staff in hope that they will agree to participate in one-to-one interviews for this piece of research.

I would like to inform you that full confidentiality, care and discretion will be taken with the data collected. Both the school and participants will remain anonymous. All information collected will be treated with upmost privacy and stored on a password protected computer and access will be available only to myself, my supervisor and if required my external examiner.

Please note that the teachers in your school are under no obligation to participate in this study and withhold the right to withdraw from this study at any given time, should they wish to do so. If you have any further questions regarding this study, please do not hesitate to contact me by email or by phone.

Kindest regards,
Niamh Kelly

Appendix 2: Participant Information Sheet



Title of Project: An investigation into Primary School Teachers' views on effective teaching strategies for Nutrition Education in a DEIS band 1 school

The Study: My name is Niamh Kelly and I am a final year student in the Professional Masters of Education (Primary School) in Marino Institute of Education. As part of my final year studies, I am required to undertake a piece of educational research in the form of a dissertation. Given my background as a dietitian, I have decided to complete a study investigating the views of teachers regarding effective strategies for the teaching of nutrition education in a DEIS band 1 school.

Participant Information: My method of data collection is in the form of an interview. If you agree to participate in this study, you will be asked to partake in a 30-minute interview at a time and location that suits you. This interview will be audio-recorded and subsequently transcribed for data collection and interpretation.

I can foresee no risks for your participation in this study. I would like to inform you that full confidentiality, care and discretion will be taken with the data collected. Both the school and participants will remain anonymous. All information collected will be treated with upmost privacy and stored on a password protected computer and access will be available only to myself, my supervisor and if required my external examiner. The data will be destroyed 13 months after the dissertation has been submitted.

You are under no pressure to partake in this study, but your participation would be greatly appreciated. If at any stage you wish to withdraw from the study, you withhold the right to do so. If you require any further information on this study, please do not hesitate to contact me by phone on (insert phone number here) or by email at (insert email address here).

Thank you for taking the time to read this,

Kind regards,

Niamh Kelly

Appendix 3: Participant Consent form



Title of study: A qualitative study exploring Primary School Teachers' views on effective teaching strategies for Nutrition Education in a DEIS band 1 school.

I agree to participate in this research project led by Niamh Kelly from Marino Institute of Education. The purpose of this document is to verify that I understand fully my role, rights and responsibilities in this study.

1. I have been given sufficient information about this research project. The purpose of my participation as an interviewee has been explained to me and is clear. Yes/No

2. The interview will last for 30 minutes and will be recorded on an audio device and transcribed. I allow the researcher to take notes during the interview. Yes/No

3. I am aware that data collected will be treated as confidential and all participating parties will remain anonymous. I am aware that all data will be stored on a password protected computer and access will be available only to the researcher, supervisor and if required external examiner. The data will be destroyed 13 months after the dissertation has been submitted. Yes/No

4. I understand that the interviews will be carried out in a sensitive and non-stressful manner, and that I have the right to cease participation at any time and without the need to provide a reason. Yes/No

I have read and understood the contents of this form. I have had the opportunity to ask any questions about the research. I have been provided with the contact details of the researcher should I need to make follow-up inquiries. Therefore, I consent to take part in this research project.

Participants Signature: _____

Name in Block Capitals: _____

Date: _____

Appendix 4: Interview Schedule

| | |
|---------------------------------|--|
| Name of Teacher | |
| Name of School | |
| Class level | |
| How many years qualified | |
| Any other qualifications | |

1. How would you define childhood obesity in your own words?
2. Are you aware of the latest Growing Up in Ireland statistics which show that almost one quarter of our nine-year olds are either overweight or obese?
3. Do you identify obesity as a problem in your school?
4. What are the causal factors for childhood obesity?
5. What are the effects of obesity on the child?
6. Do you believe it to be the responsibility of school or home environment to tackle this issue?
7. How much time do you contribute to Nutrition Education in the school year?
8. What strategies do you use when implementing nutrition education during SPHE?
9. What resources do you use, if any, to teach the children Nutrition Education?
10. Do the parents have an important role to play in NE in this school? If so, how?
11. Is this school a Health Promoting School/ an Active Flag school?
12. Are you implementing any personal class-based interventions, that may not feature in other classrooms?
13. What are your personal views in relation to healthy eating? Do you think it is an important part of the primary school curriculum?
14. When educating the children about nutrition education, do you ensure to cater for all diets or are your lessons specific to the typical westernised diet?
15. Are you aware of any healthy food initiatives in the school e.g. Food Dudes? If so, do they help to inform the NE you provide?
16. What are the barriers you perceive to implementing effective NE?

Appendix 5: Table 2- Population Characteristics

| Participant Number | Class Level | Years Teaching Experience | Any Other Qualifications |
|---------------------------|--|----------------------------------|-------------------------------------|
| 1 | Junior Infants | 10 years | Degree in Computer Science |
| 2 | Senior Infants | 5 years | Degree in Early Childhood Education |
| 3 | First Class | 4 years | Degree in Environmental Science |
| 4 | Second Class | 4 years | Degree in Education and Training |
| 5 | Third Class | 12 years | Diploma in Yoga Teaching |
| 6 | Fourth Class | 4 years | Level 6 Culinary Arts Degree |
| 7 | Fifth Class | 10 years | n/a |
| 8 | Sixth Class | 15 years | Bachelor of Arts and Humanities |
| 9 | Learning Support/ Health Promotion Schools Officer | 20 years | n/a |